

Road Accidents in India

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Introduction

India, officially the Republic of India (*Bhārat Gaṇarājya*),¹ is a country in South Asia. It is the seventh-largest country by area, the second-most populous country (with over 1.2 billion people), and the most populous democracy in the world. It is bounded by the Indian Ocean on the south, the Arabian Sea on the southwest, and the Bay of Bengal on the southeast. It shares land borders with Pakistan to the west; China, Nepal, and Bhutan to the northeast; and Myanmar (Burma) and Bangladesh to the east. In the Indian Ocean, India is in the vicinity of Sri Lanka and the Maldives. India's Andaman and Nicobar Islands share a maritime border with Thailand and Indonesia.

Being a second world country, India is still in its development phase. This paper deals with the road security of the people of the nation and dwells into great depths in order to decipher what are the loopholes in the traffic security conditions of the country that are causing all the possible accidents.

Data

The data for this project has been taken from data.gov.in, an authorized portal by the Government of India. The data consist of many sheets having data representing accidents caused by road conditions, type of vehicles used, location of the accident etc. The data has been cleaned and tested before putting it into actual use.

Cleaning and normalizing the data

The data which was originally available was actually in the absolute form. Being in the absolute form, it would not have provided us with a good index. In order to normalize the data, we divided the data of each state by the respective population of that state after which we multiplied it by 100000 in order to get the accidents per 100000 people, which would give us a fair estimate and a sense of uniformity in across all the states.

The reason why we did this was due to the fact that states like Uttar Pradesh have considerably large populations, which results in more absolute number of accidents in case of Uttar Pradesh. Hence to avoid such anomalous situation we normalized the data set.

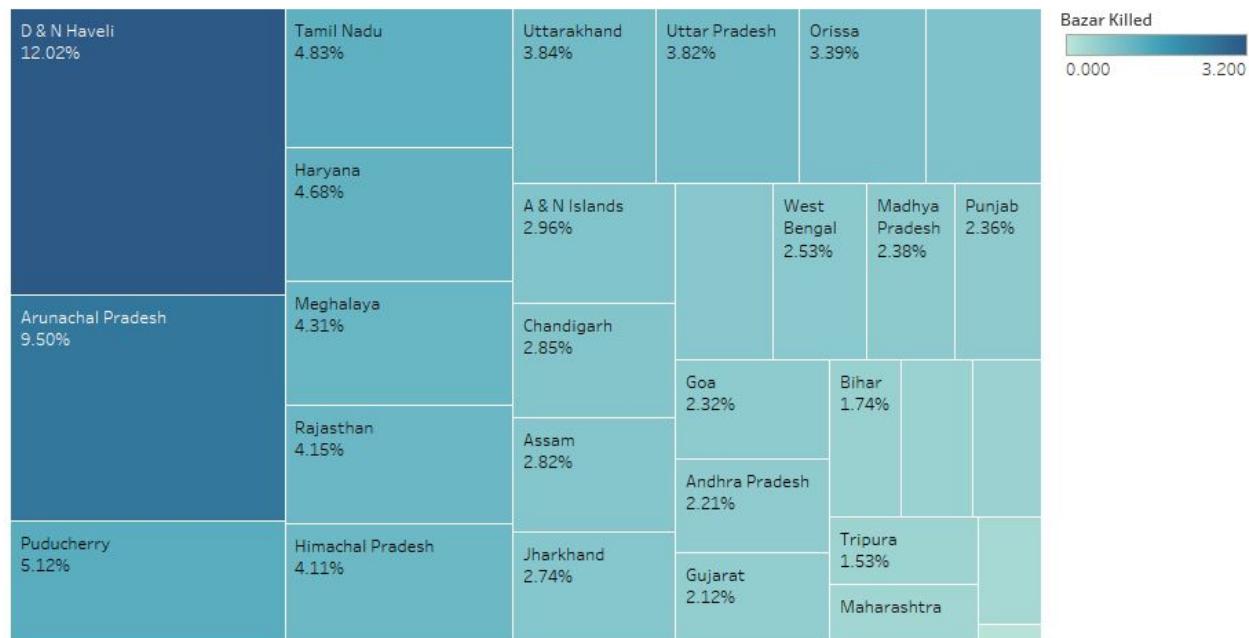
Analysis

In this section we would be analyzing and visualizing the data of each state.

1. Data according to location

People killed near a bazar

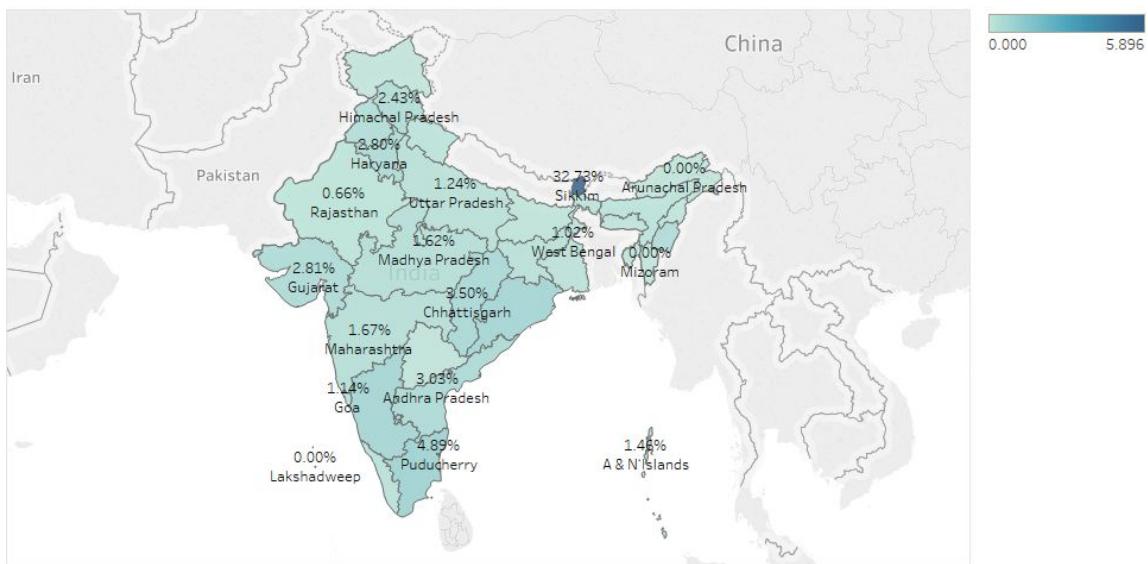
Sheet 1



States UTs and % of Total Bazar Killed. Color shows sum of Bazar Killed. Size shows % of Total Bazar Killed. The marks are labeled by States UTs and % of Total Bazar Killed.

Percentage of people killed near a Bridge

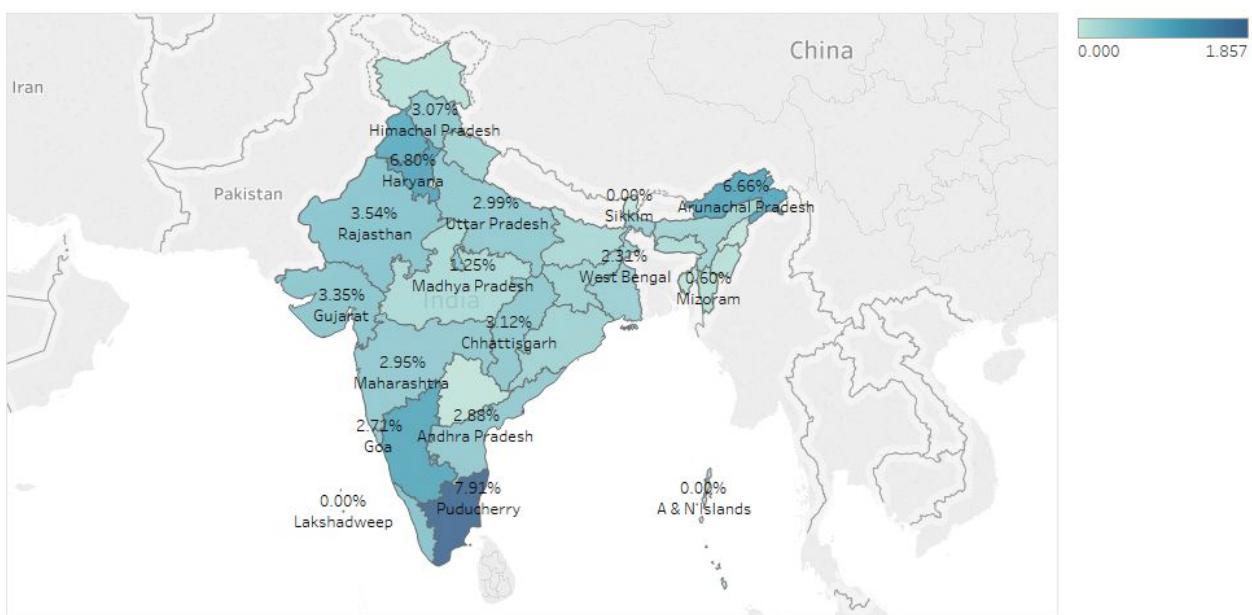
Sheet 1



Map based on Longitude (generated) and Latitude (generated). Color shows sum of Bridgekill. The marks are labeled by % of Total Bridgekill and States UTs. Details are shown for States UTs.

Percentage of People killed near a bus stand

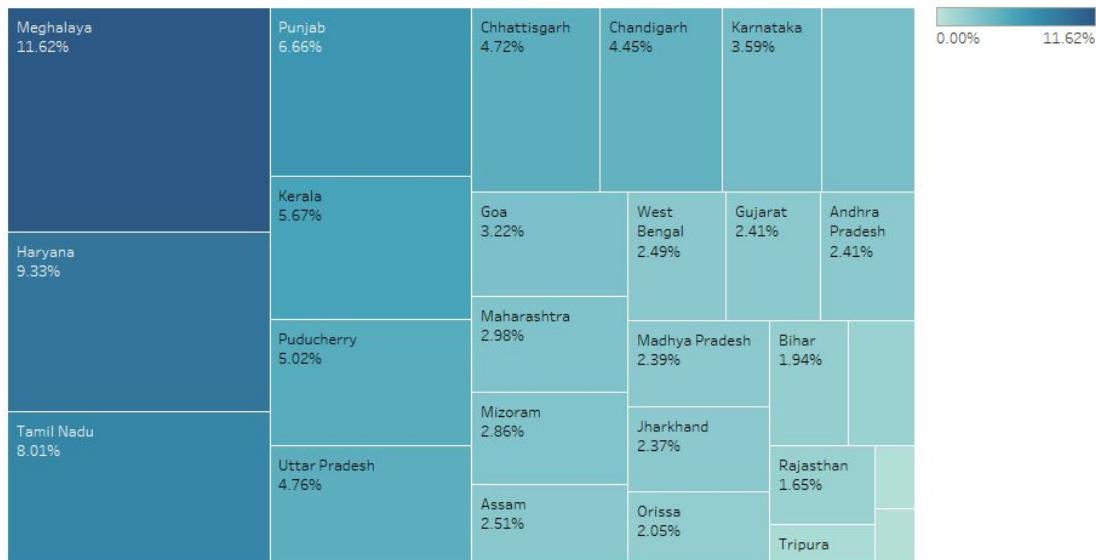
Sheet 1



Map based on Longitude (generated) and Latitude (generated). Color shows sum of Buskill. The marks are labeled by % of Total Buskill and States UTs. Details are shown for States UTs.

Percentage of people killed near a cinema hall

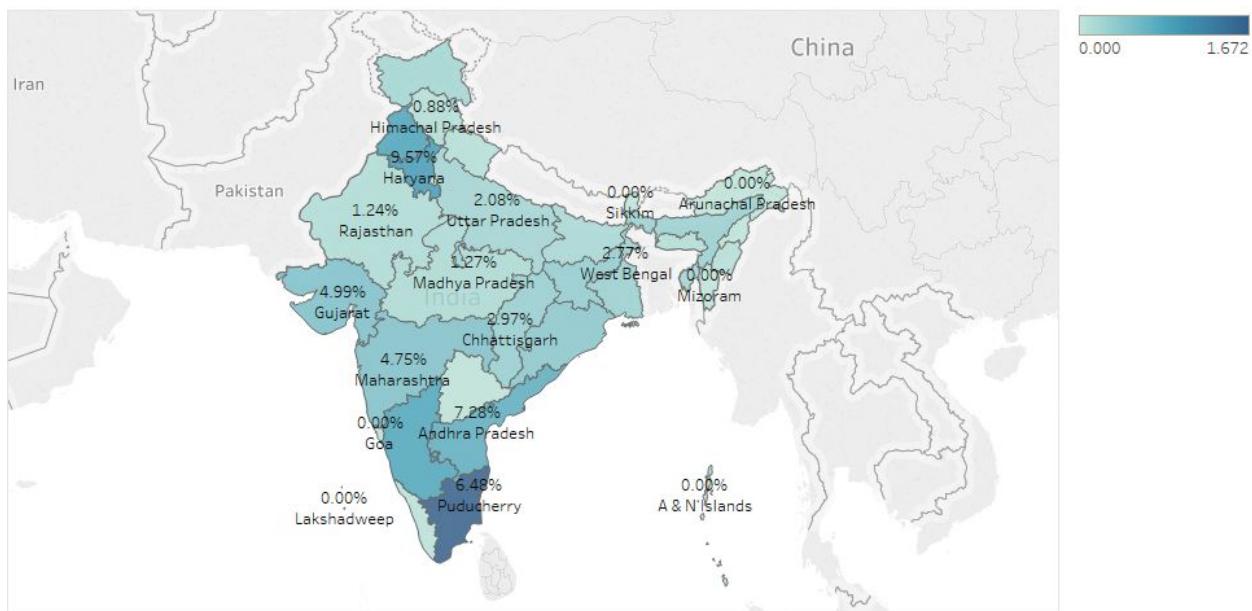
Sheet 1



States U Ts and % of Total Cinema Killed. Color shows % of Total Cinema Killed. Size shows sum of Cinema Killed. The marks are labeled by States U Ts and % of Total Cinema Killed.

Percentage of people killed near a crossing

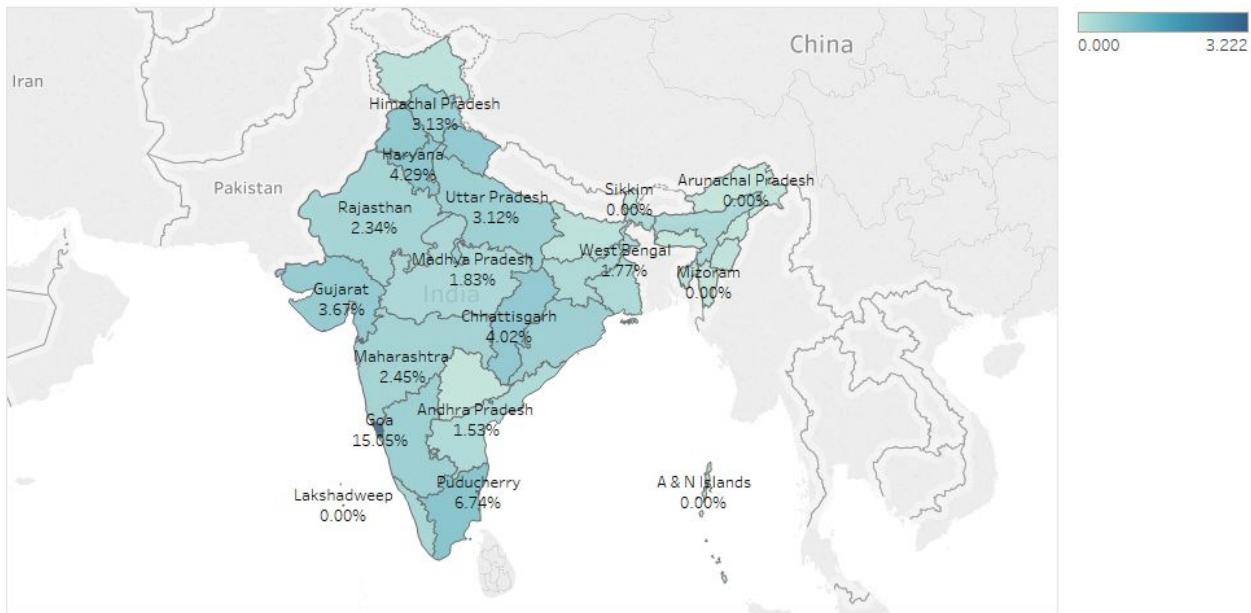
Sheet 1



Map based on Longitude (generated) and Latitude (generated). Color shows sum of Crossingkill. The marks are labeled by % of Total Crossingkill and States U Ts. Details are shown for States U Ts.

Percentage of people killed in/near a Factory

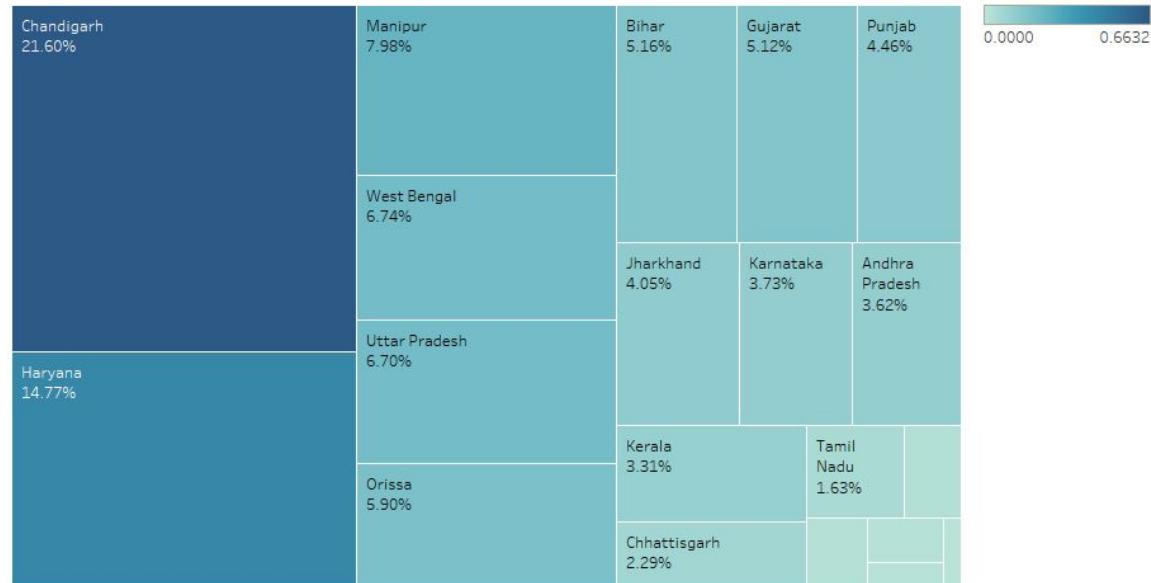
Sheet 1



Map based on Longitude (generated) and Latitude (generated). Color shows sum of Fact Kill. The marks are labeled by States UTs and % of Total Fact Kill. Details are shown for States UTs.

Percentage of people killed near an encroachment

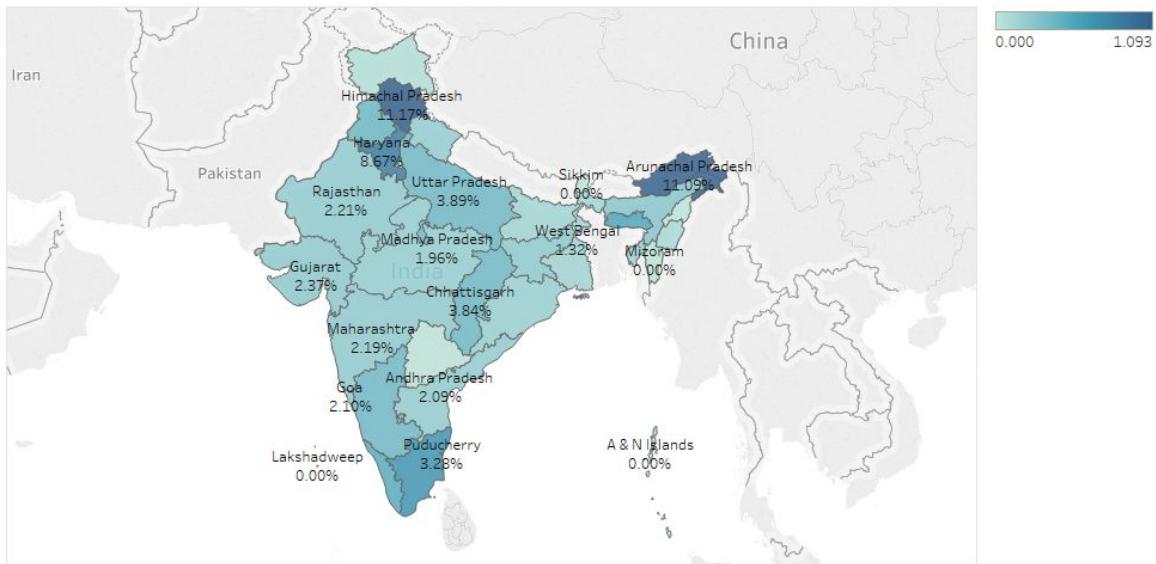
Sheet 1



States UTs and % of Total Enroachmentskill. Color shows sum of Enroachmentskill. Size shows sum of Enroachmentskill. The marks are labeled by States UTs and % of Total Enroachmentskill.

Percentage of people killed near a hospital

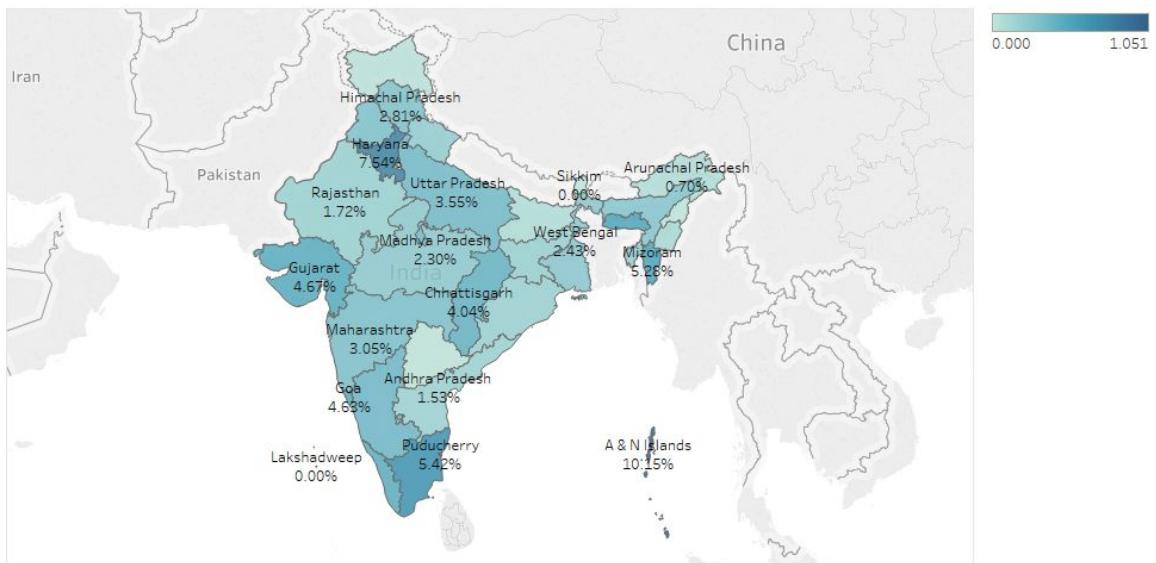
Sheet 1



Map based on Longitude (generated) and Latitude (generated). Color shows sum of Hoskill. The marks are labeled by States U Ts and % of Total Hoskill. Details are shown for States U Ts.

Percentage of People Killed near an Office Complex

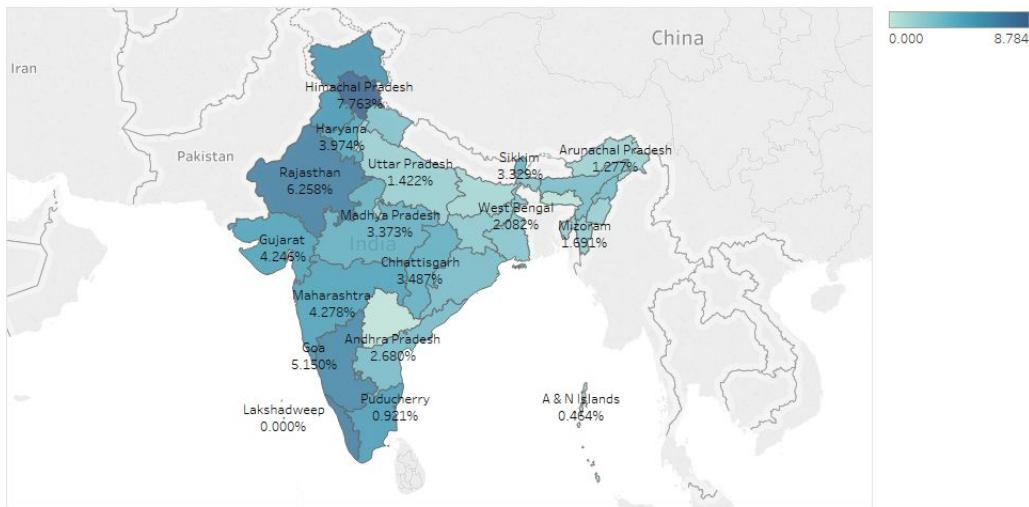
Sheet 1



Map based on Longitude (generated) and Latitude (generated). Color shows sum of Office Kill. The marks are labeled by States U Ts and % of Total Office Kill. Details are shown for States U Ts.

Percentage of People killed in Open area

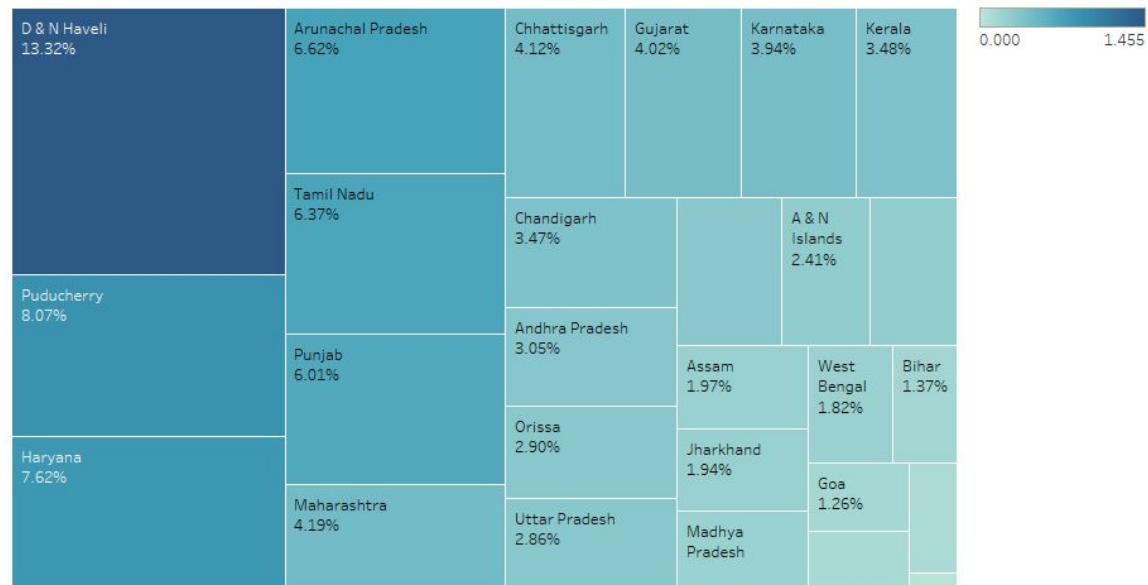
Sheet 1



Map based on Longitude (generated) and Latitude (generated). Color shows sum of Openare KILL. The marks are labeled by States UTs and % of Total Openare KILL. Details are shown for States UTs.

Percentage of people killed near a petrol pump

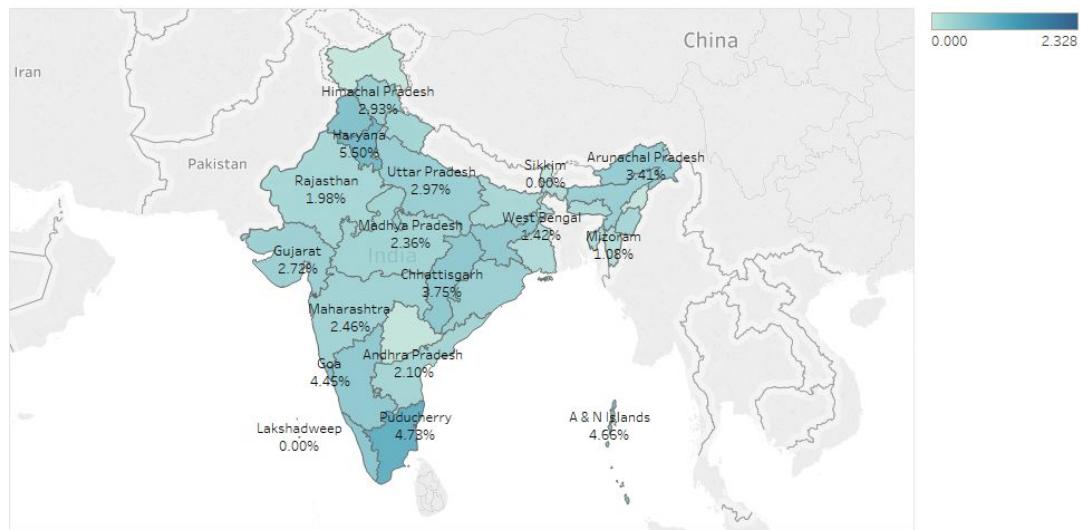
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States UTs and % of Total Petrolkill. Color shows sum of Petrolkill. Size shows % of Total Petrolkill. The marks are labeled by States UTs and % of Total Petrolkill.

Percentage of people killed near schools

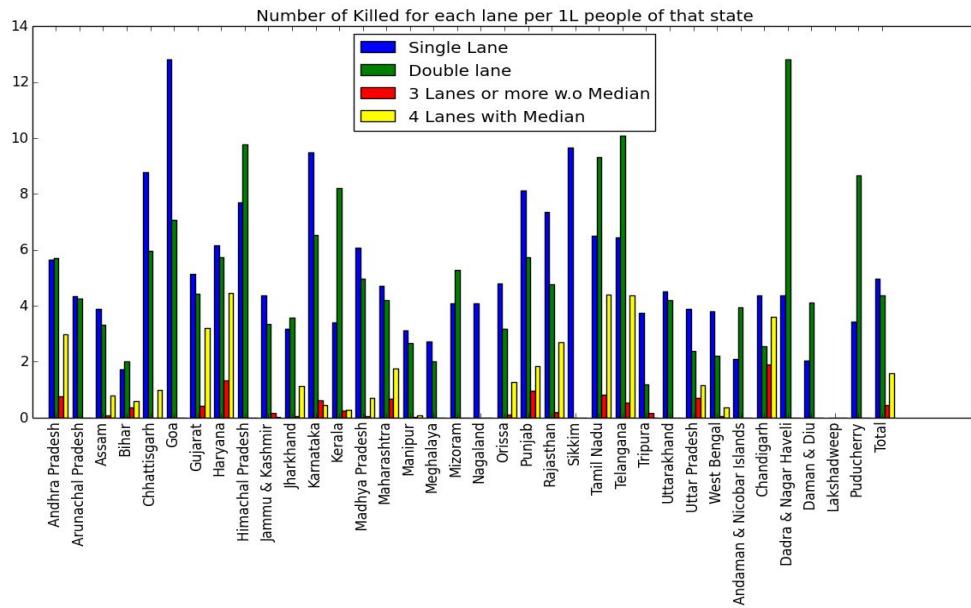
Sheet 1



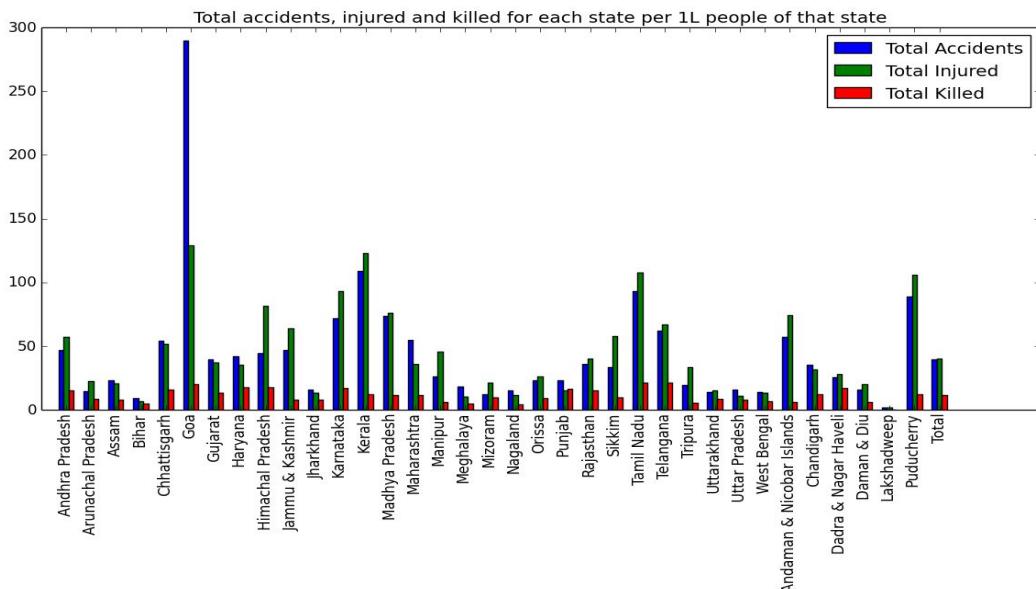
Map based on Longitude (generated) and Latitude (generated). Color shows sum of Sckl. The marks are labeled by States U Ts and % of Total Sckl. Details are shown for States U Ts.

2. Data according to the number of lanes

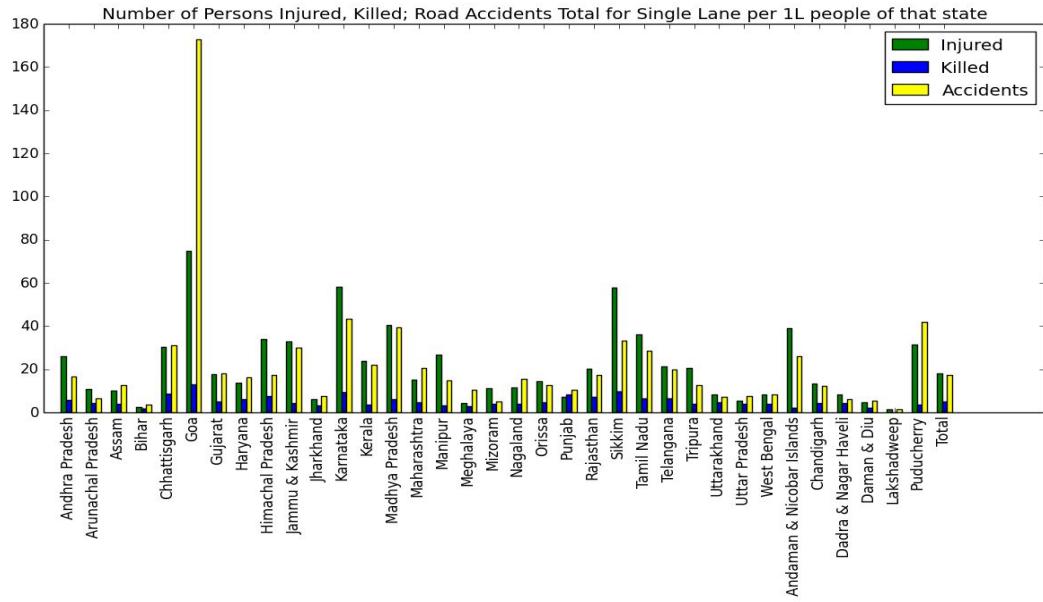
Overall data for no. of people killed for each lane



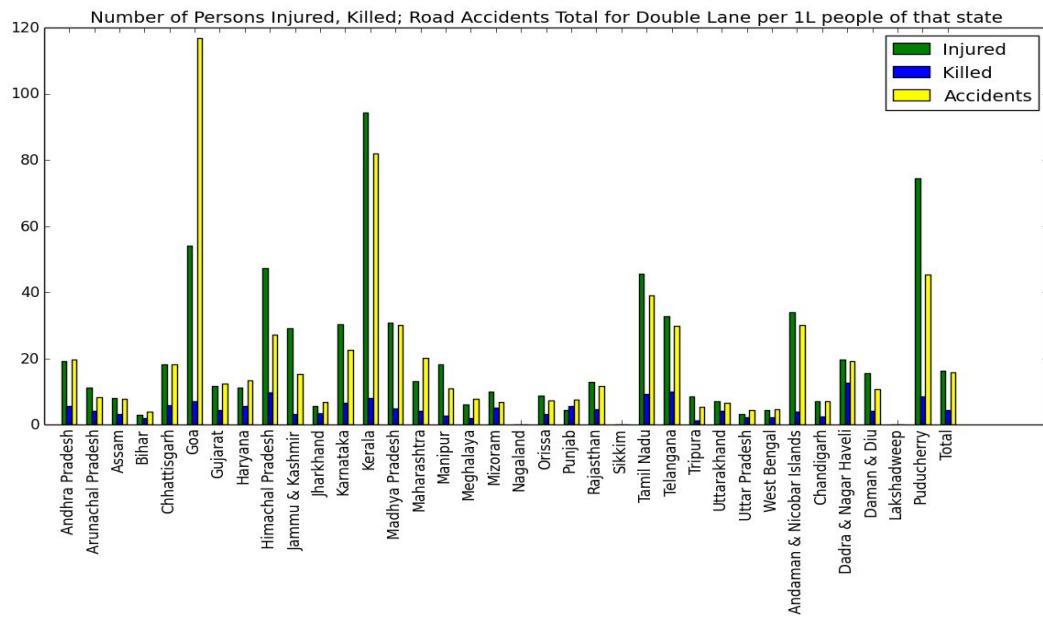
Overall Data for each state



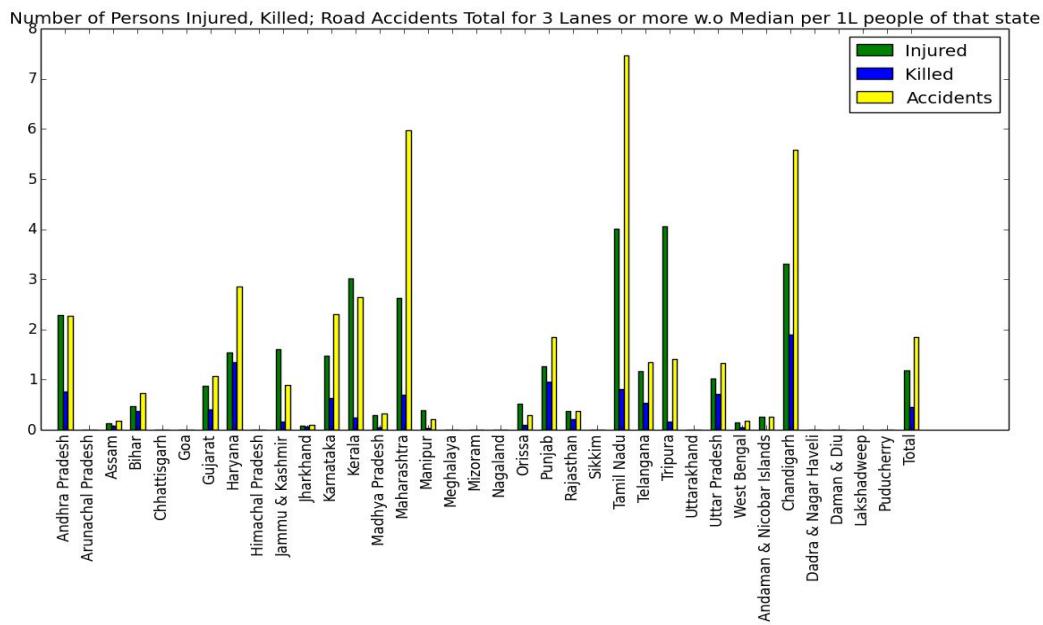
Data for Single lane



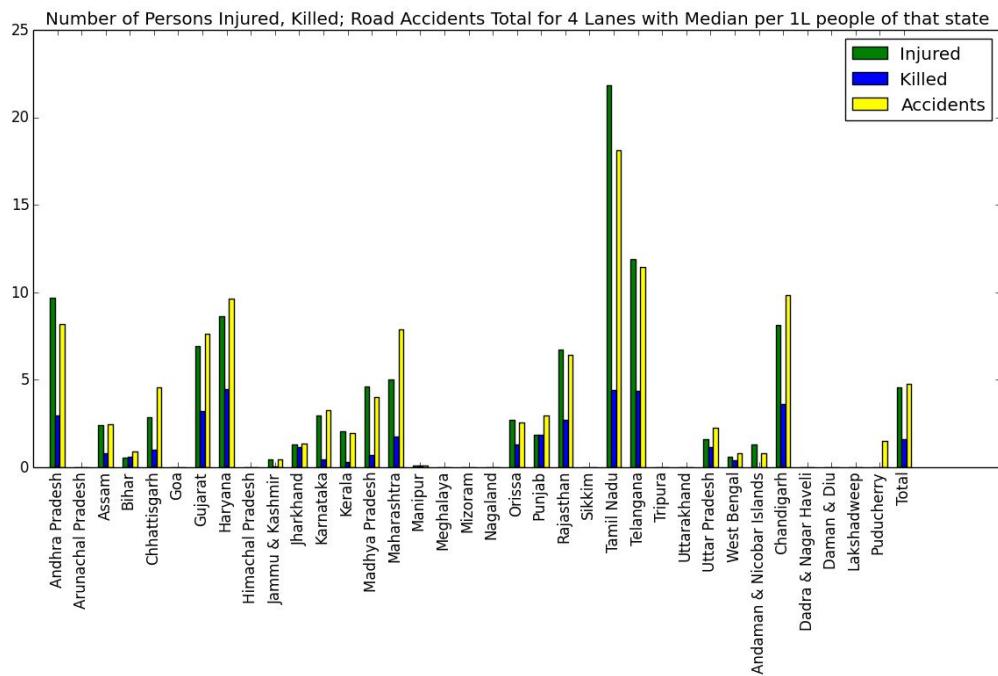
Data for Double lane



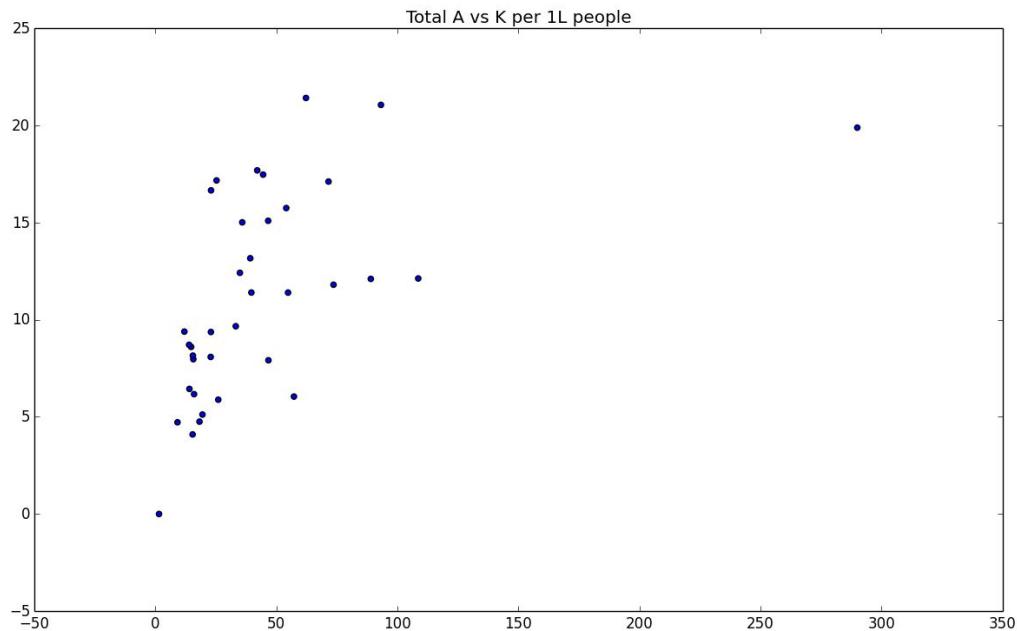
Data for 3 lanes or more without median



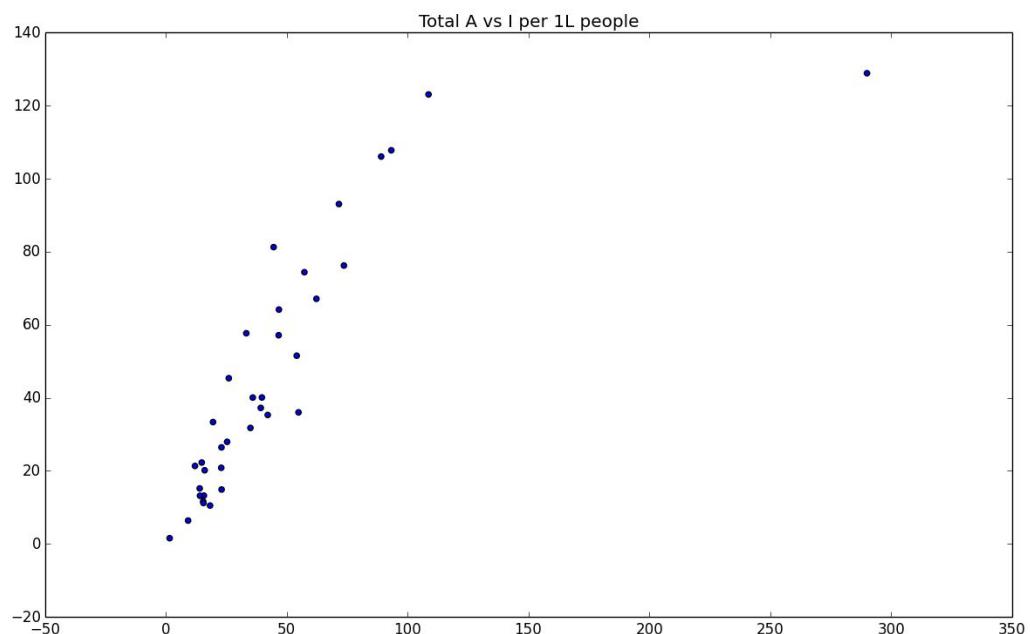
Data for 4 lanes with median



Scatter plot showing Total Sum of Accidents vs Killed for all types of lanes for the accident (dots represent each state)



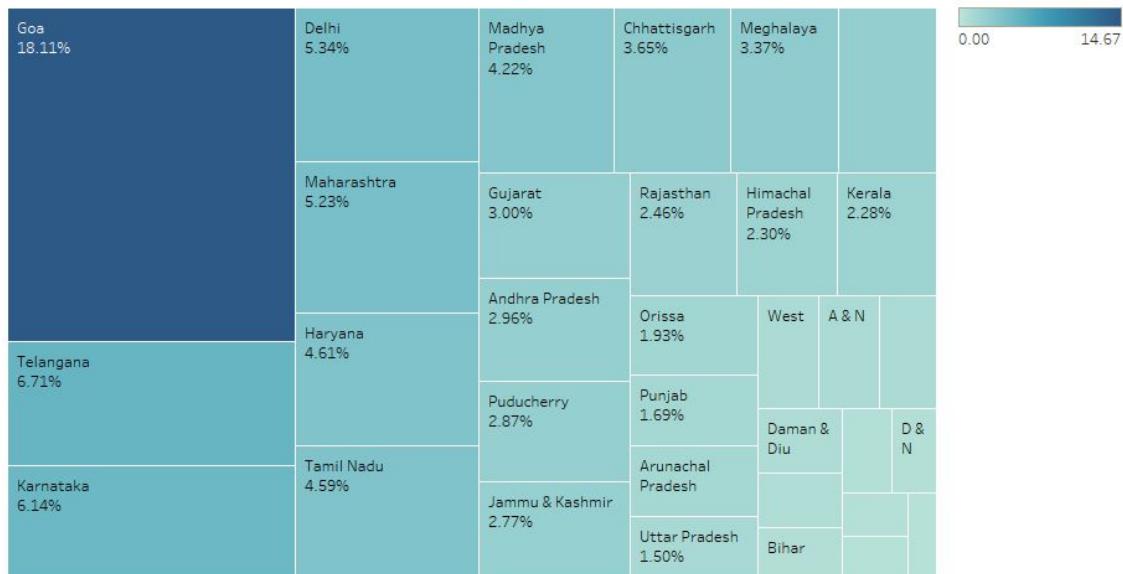
Scatter plot showing Total Sum of Accidents vs Injured for all types of lanes for the accident (dots represent each state)



3. Data according to the time of the day

Percentage of people killed between 12am to 3am

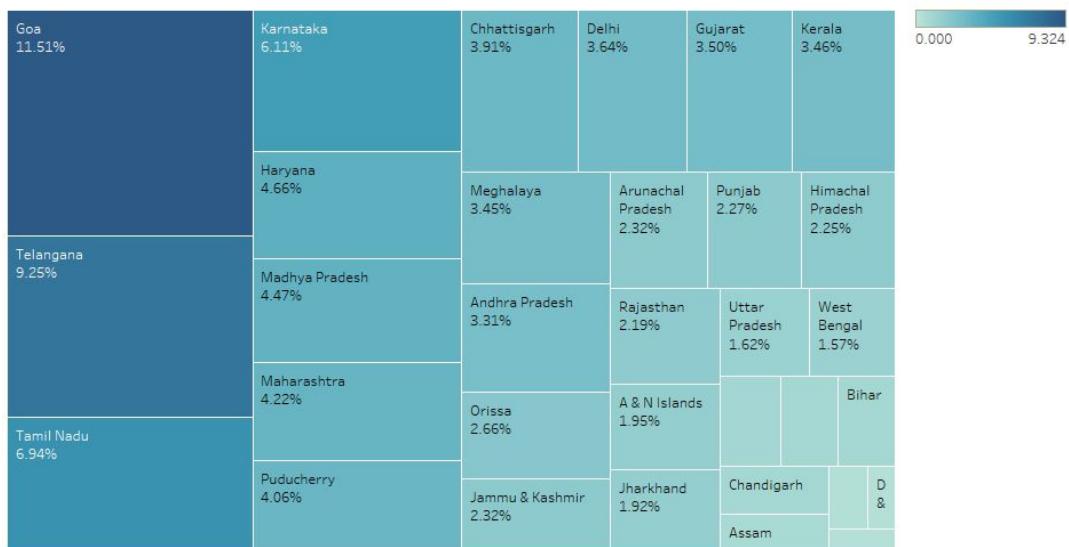
Sheet 1



States/Uts and % of Total 00-300. Color shows sum of 00-300. Size shows sum of 00-300. The marks are labeled by States/Uts and % of Total 00-300.

Percentage of people killed between 3am to 6am

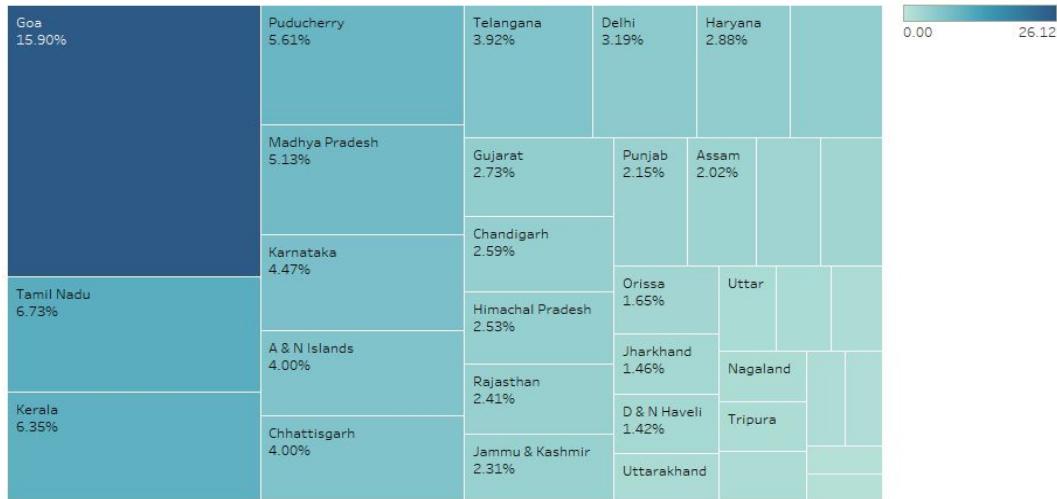
Sheet 1



States/Uts and % of Total 03-0600. Color shows sum of 03-0600. Size shows sum of 03-0600. The marks are labeled by States/Uts and % of Total 03-0600. The view is filtered on sum of 03-0600, which keeps non-Null values only.

Percentage of people killed between 6 and 9am

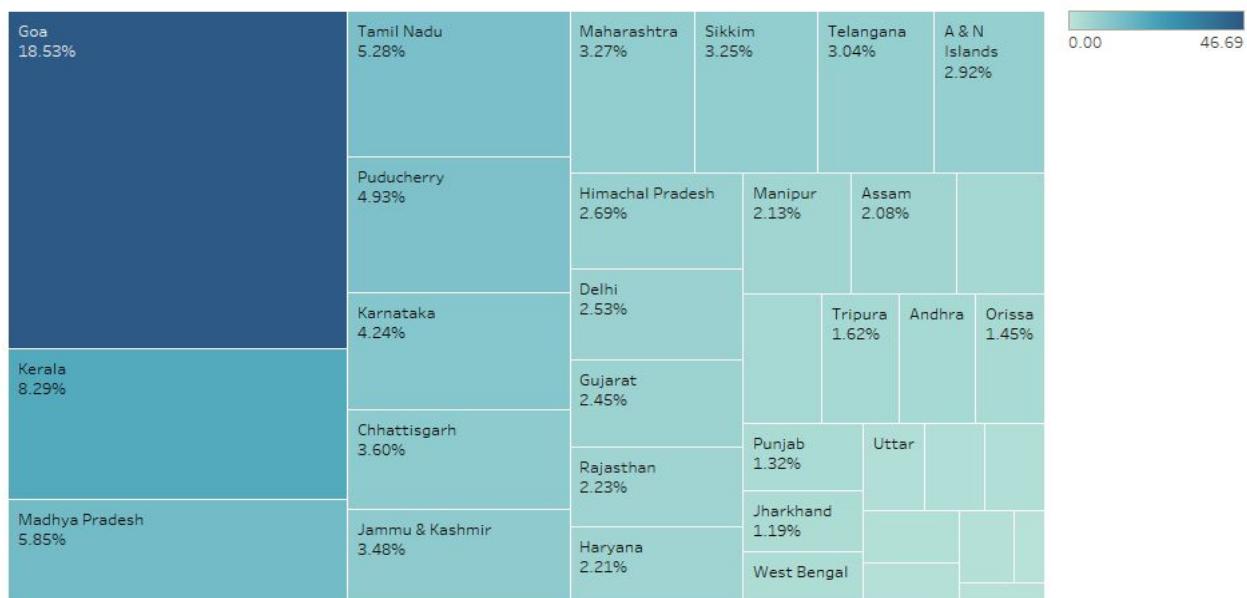
Sheet 1



States/Uts and % of Total 9-Jun. Color shows sum of 9-Jun. Size shows sum of 9-Jun. The marks are labeled by States/Uts and % of Total 9-Jun. The data is filtered on sum of 03-0600, which keeps non-Null values only.

Percentage of people killed between 9am and 12pm

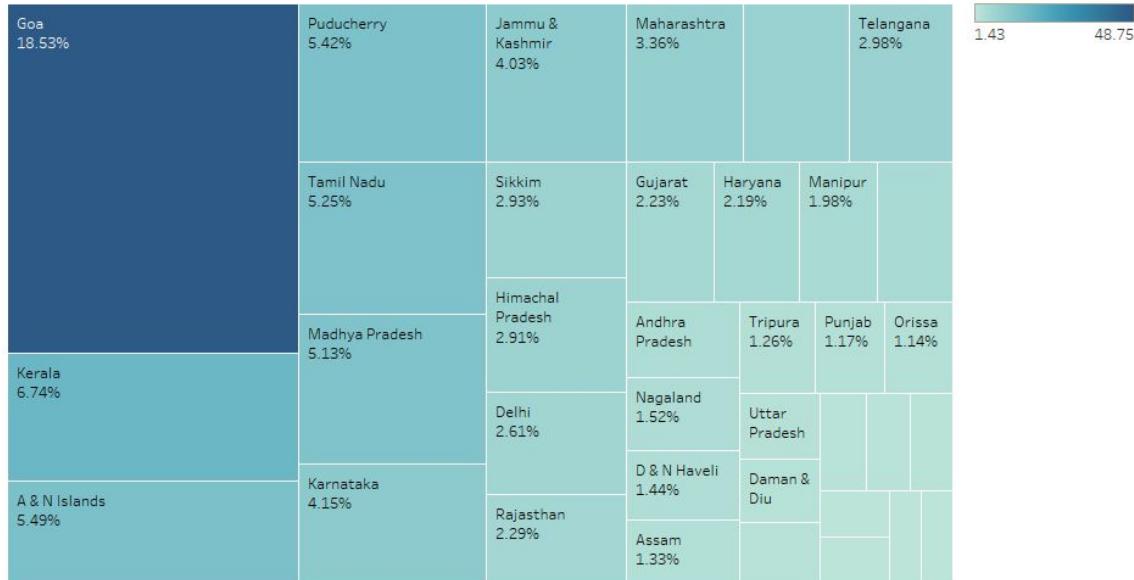
Sheet 1



States/Uts and % of Total 900-1200. Color shows sum of 900-1200. Size shows sum of 900-1200. The marks are labeled by States/Uts and % of Total 900-1200. The data is filtered on sum of 03-0600, which keeps non-Null values only.

Percentage of people killed between 12pm and 3pm

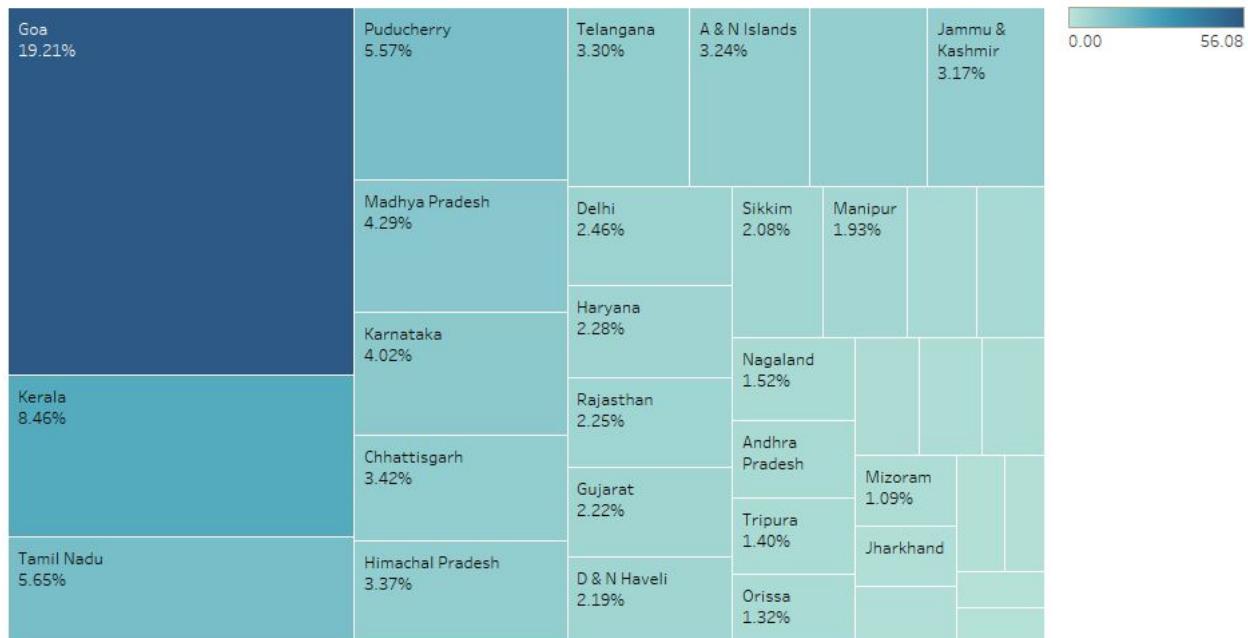
Sheet 1



States/Uts and % of Total 12-1500. Color shows sum of 12-1500. Size shows sum of 12-1500. The marks are labeled by States/Uts and % of Total 12-1500. The data is filtered on sum of 03-0600, which keeps non-Null values only.

Percentage of people killed between 3pm and 6pm

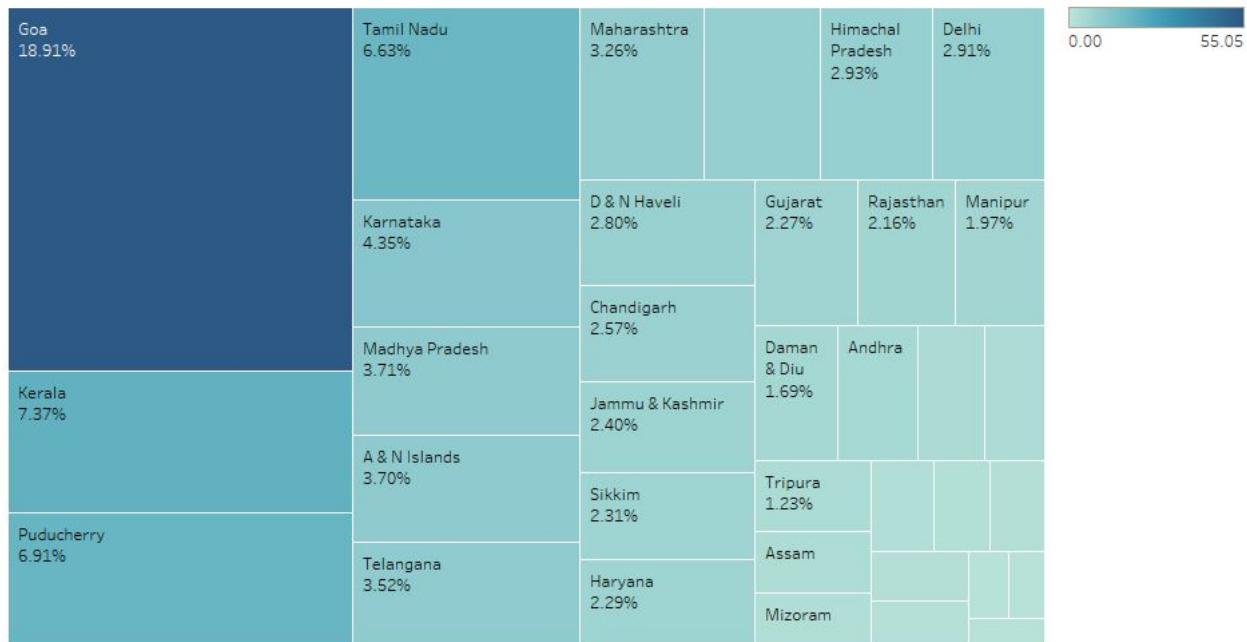
Sheet 1



States/Uts and % of Total 15-1800. Color shows sum of 15-1800. Size shows sum of 15-1800. The marks are labeled by States/Uts and % of Total 15-1800. The data is filtered on sum of 03-0600, which keeps non-Null values only.

Percentage of people killed between 6pm and 9pm

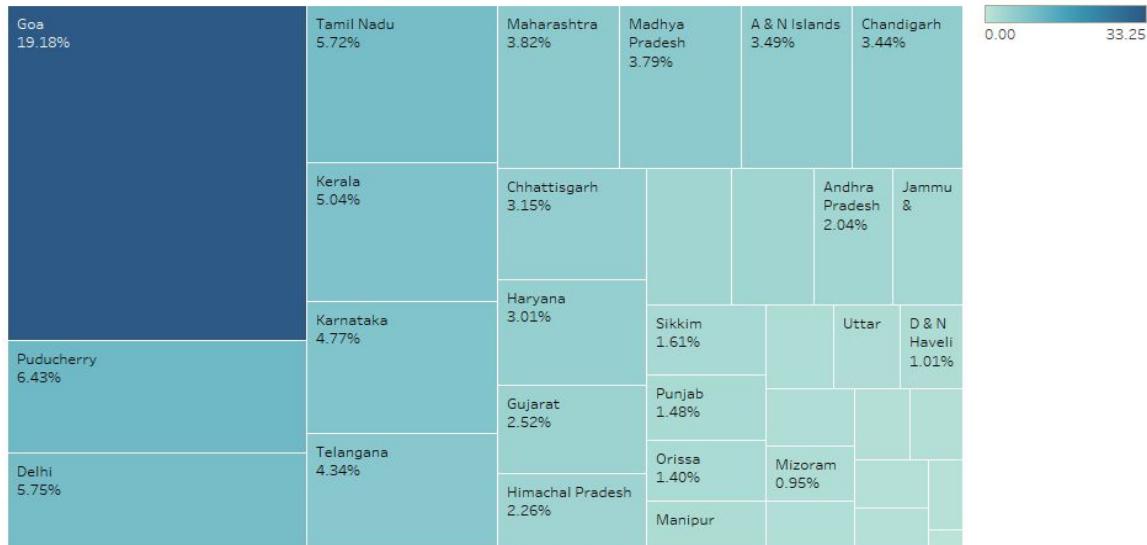
Sheet 1



States/Uts and % of Total 18-2100. Color shows sum of 18-2100. Size shows sum of 18-2100. The marks are labeled by States/Uts and % of Total 18-2100. The data is filtered on sum of 03-0600, which keeps non-Null values only.

Percentage of people killed between 9p and 12pm

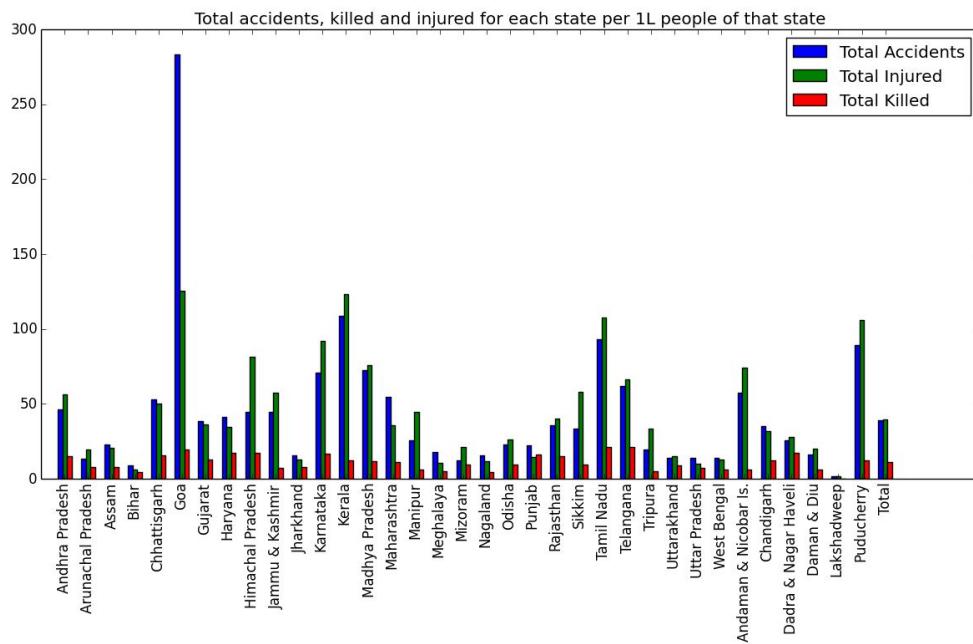
Sheet 1



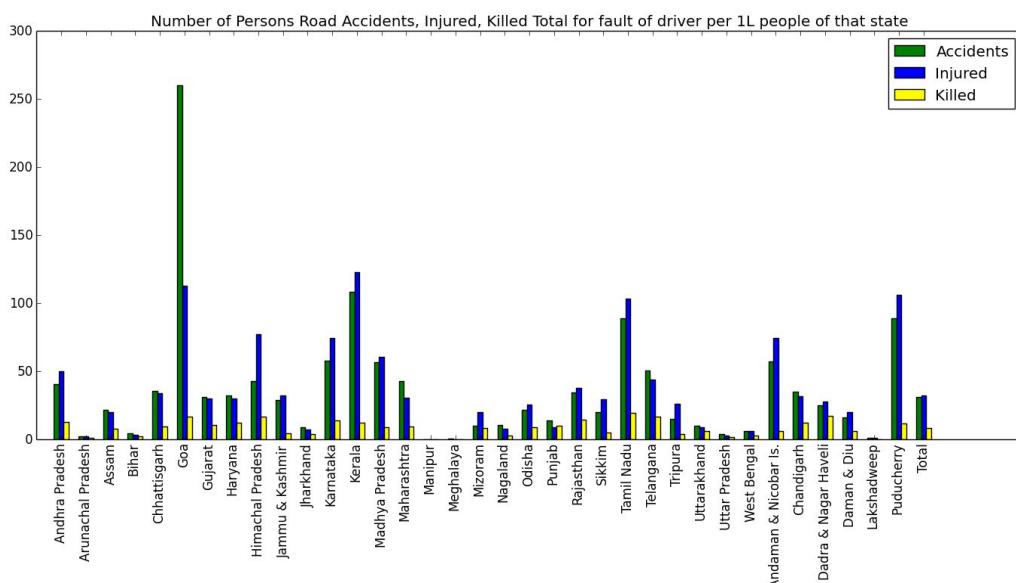
States/Uts and % of Total 21-2400. Color shows sum of 21-2400. Size shows sum of 21-2400. The marks are labeled by States/Uts and % of Total 21-2400. The data is filtered on sum of 03-0600, which keeps non-Null values only.

4. Data according to the reason for accident

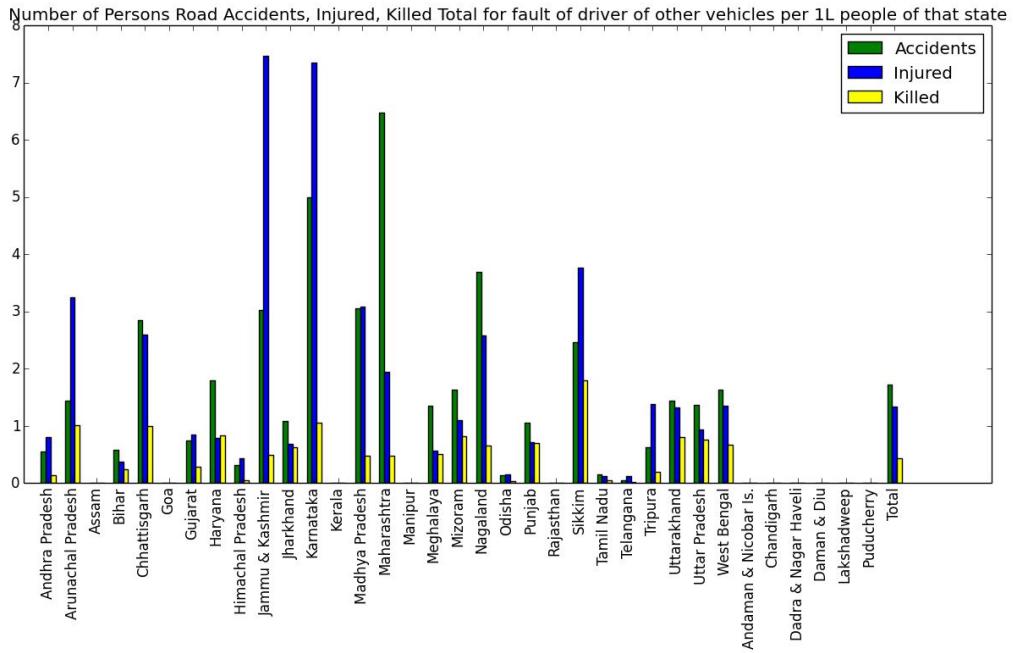
Overall data for each state



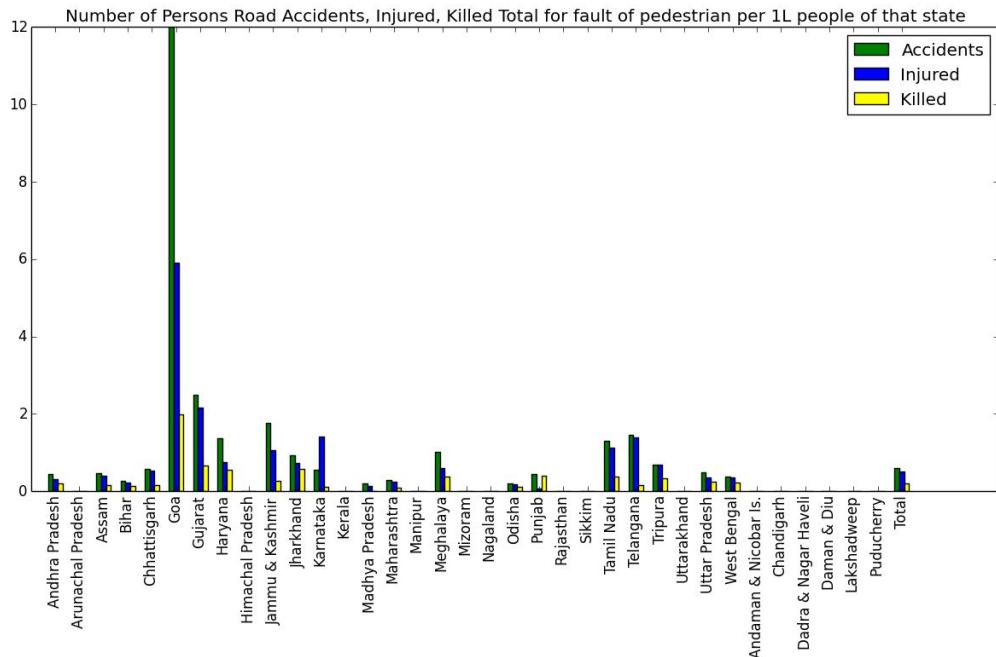
Data due to fault of driver



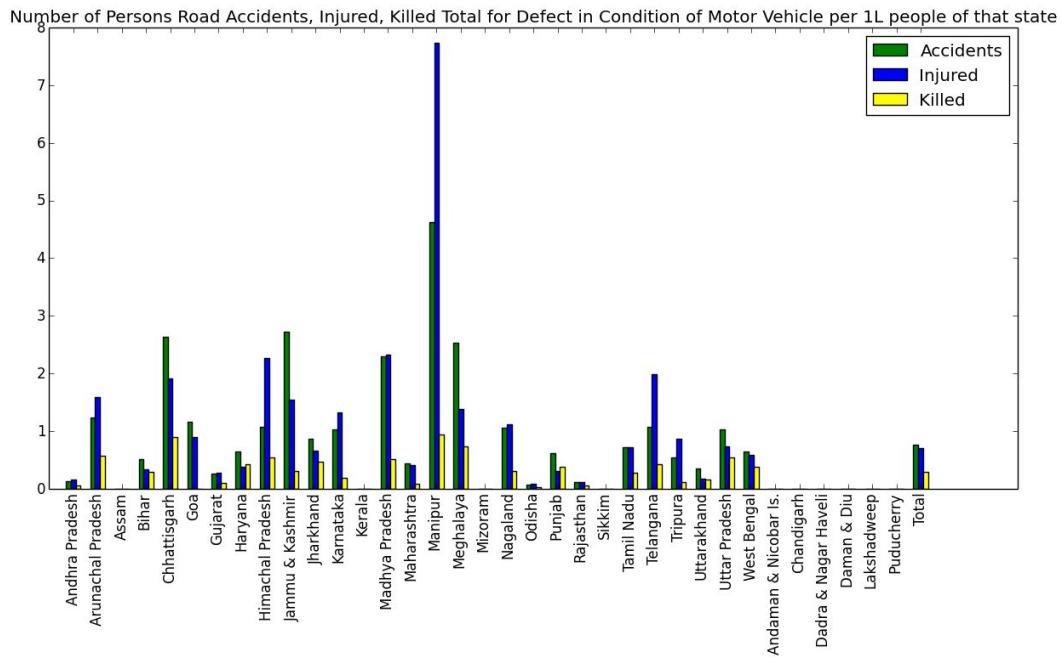
Data due to fault of driver of other vehicle



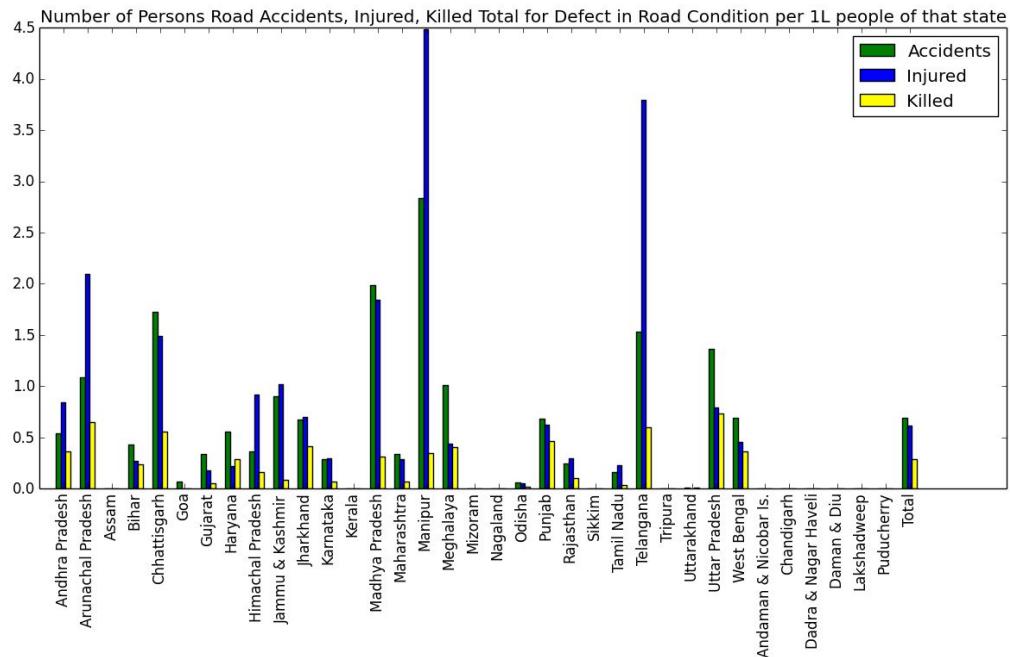
Data due to fault of pedestrian



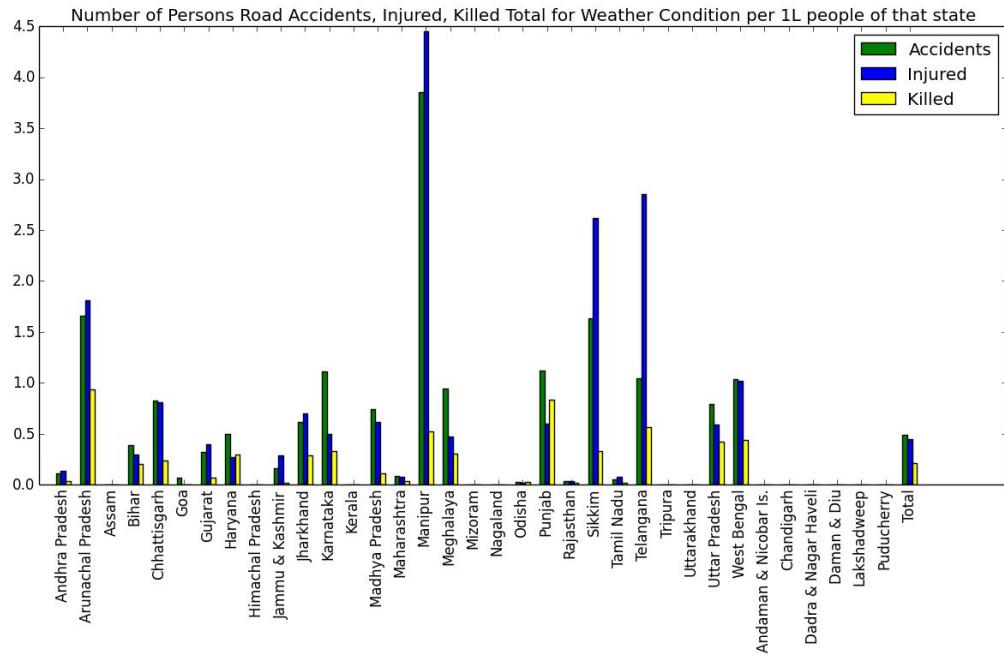
Data due to defect in condition of motor vehicle



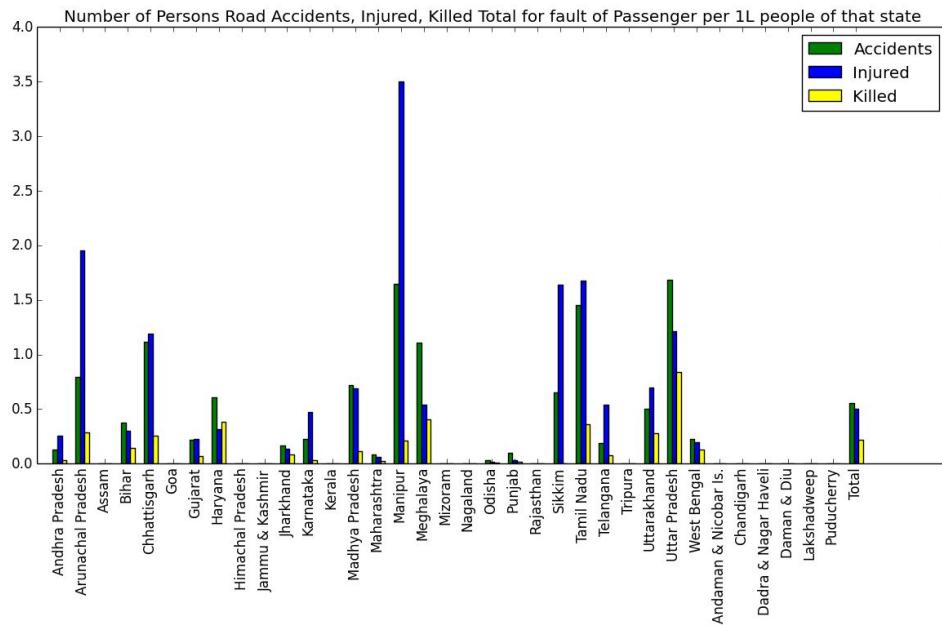
Data due to defect in road condition



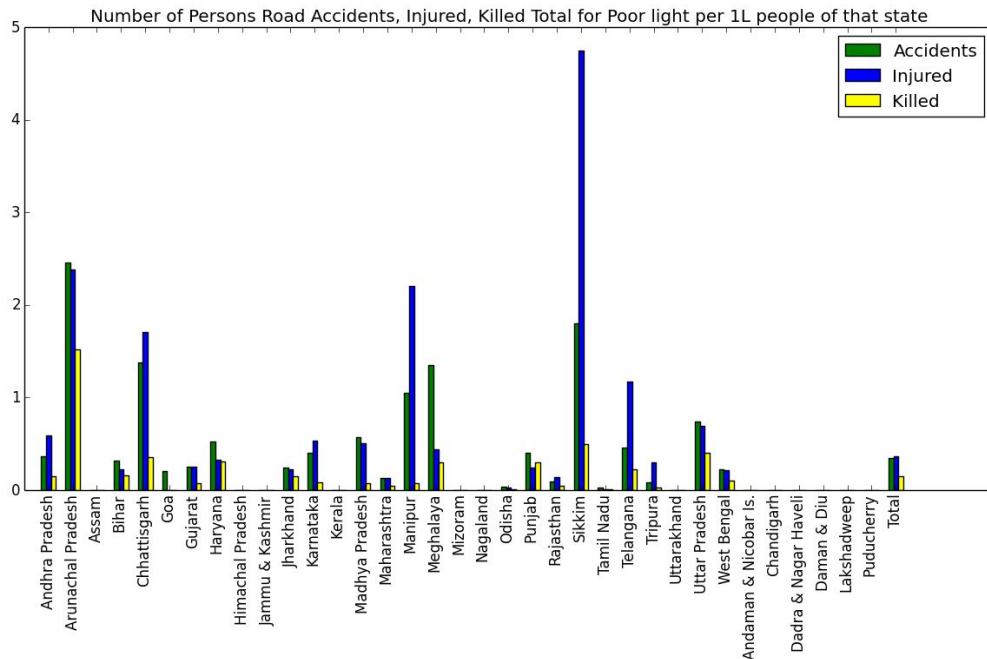
Data due to weather condition



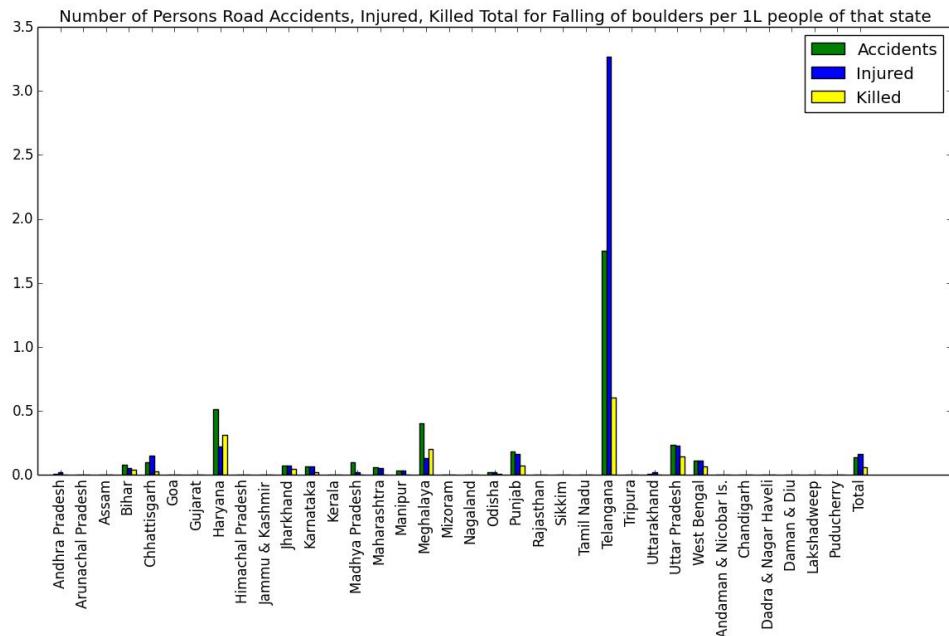
Data due to fault of passenger



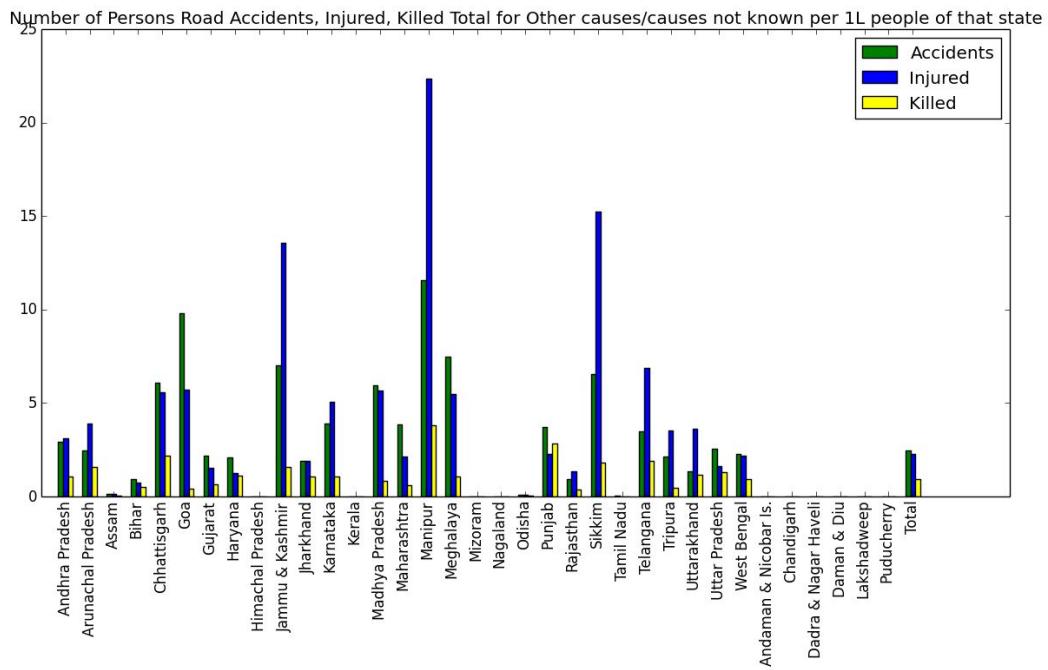
Data due to poor light



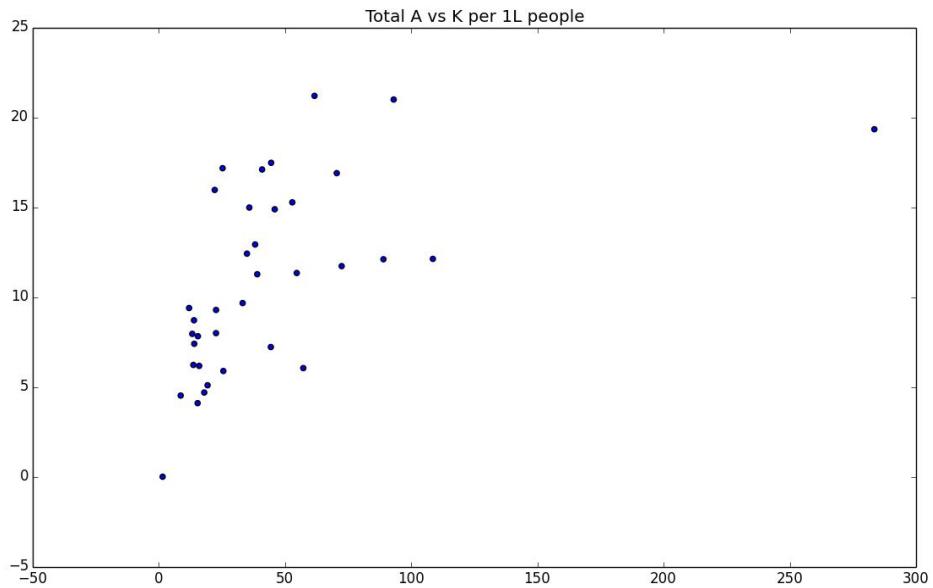
Data due to falling of boulders



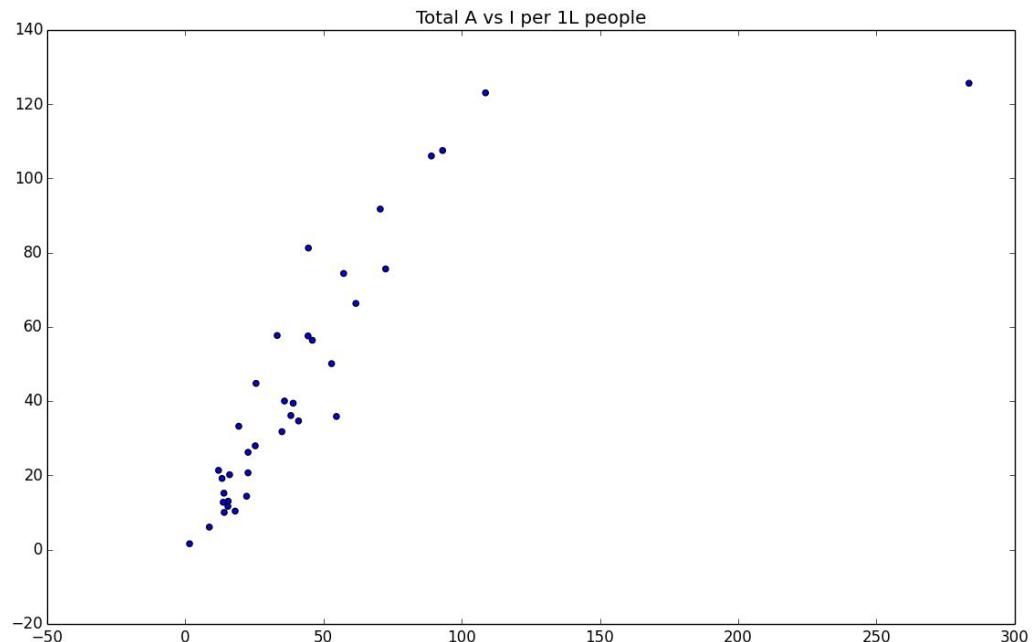
Data due to other causes/cause not known



Scatter plot showing Total Sum of Accidents vs Killed for all the reasons for the accident (dots represent each state)



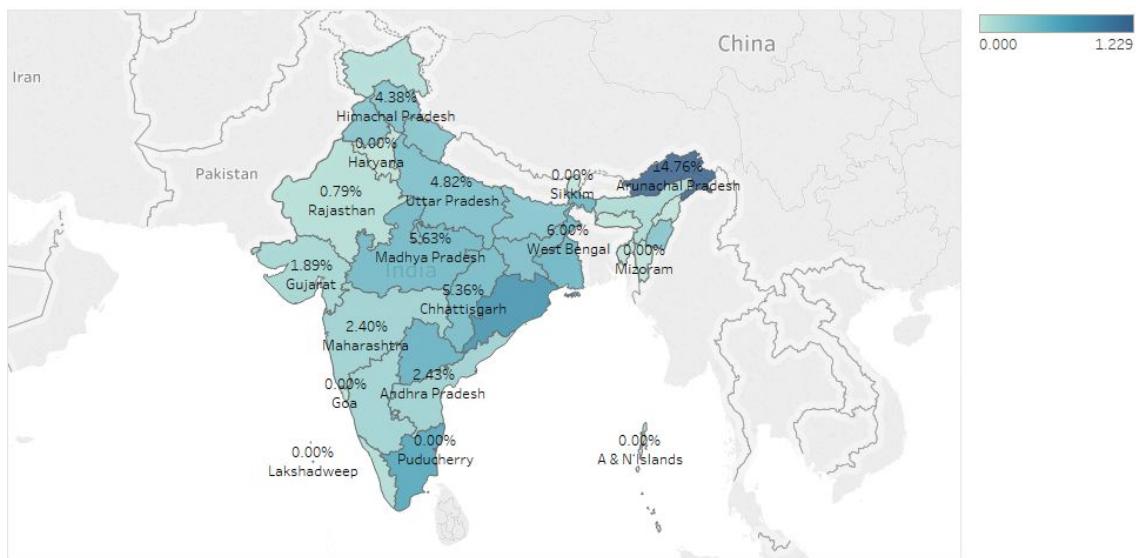
Scatter plot showing Total Sum of Accidents vs Injured for all the reasons for the accident(dots represent each state)



5. Data according to Different Roads

Percentage of people killed on repaired roads

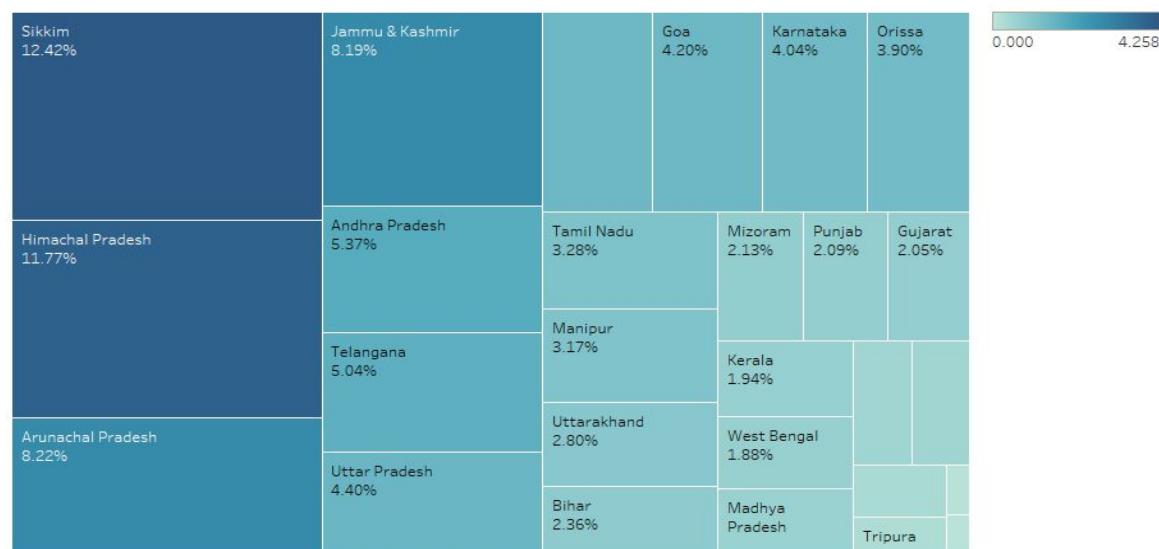
Sheet 1



Map based on Longitude (generated) and Latitude (generated). Color shows sum of Constructkil. The marks are labeled by % of Total Constructkil and States/UTs. Details are shown for States/UTs.

Percentage of people killed on curved roads

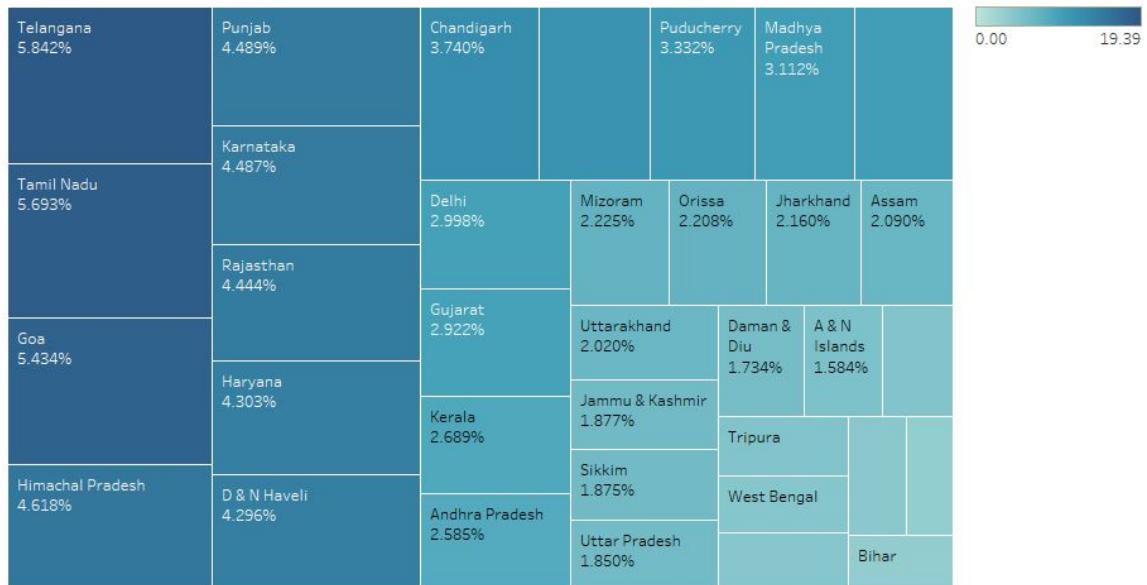
Sheet 1



States/UTs and % of Total Curvekil. Color shows sum of Curvekil. Size shows sum of Curvekil. The marks are labeled by States/UTs and % of Total Curvekil.

Percentage of people killed on dry roads

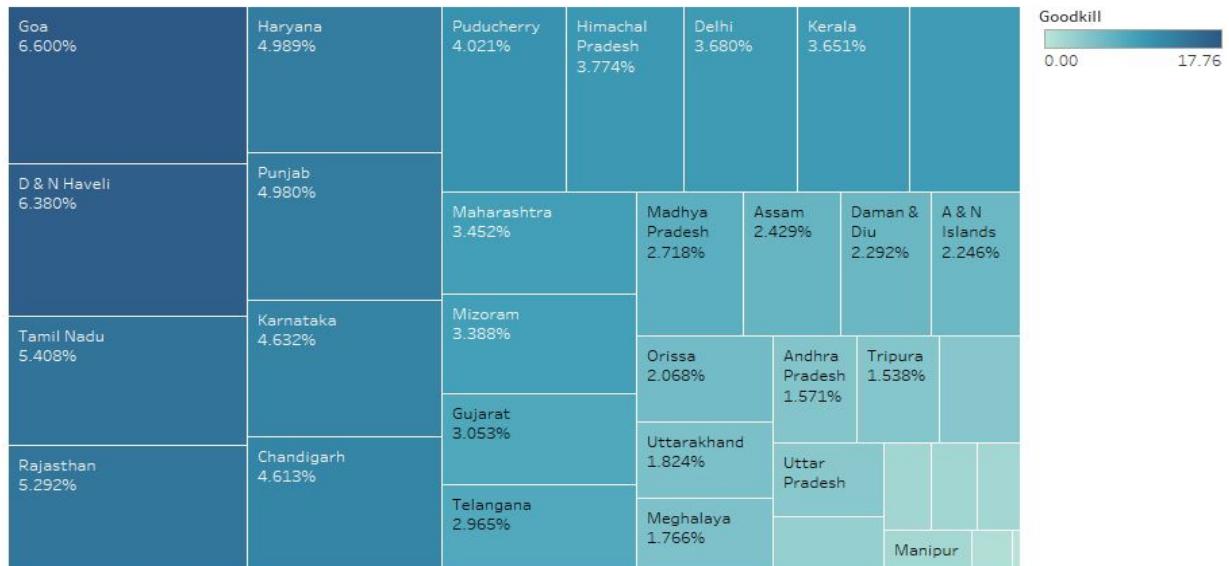
Sheet 1



States/UTs and % of Total Drykill. Color shows sum of Drykill. Size shows % of Total Drykill. The marks are labeled by States/UTs and % of Total Drykill.

Percentage of people killed on furnished roads

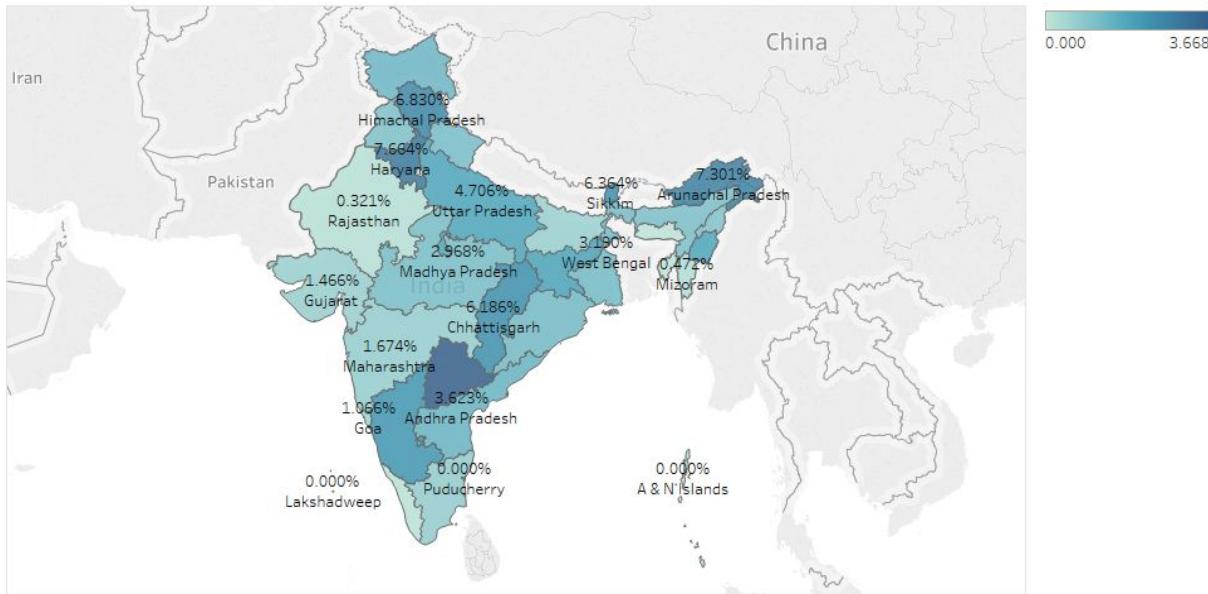
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States/UTs and % of Total Goodkill. Color shows sum of Goodkill. Size shows sum of Goodkill. The marks are labeled by States/UTs and % of Total Goodkill.

Percentage of people killed on “Kuchcha” Roads

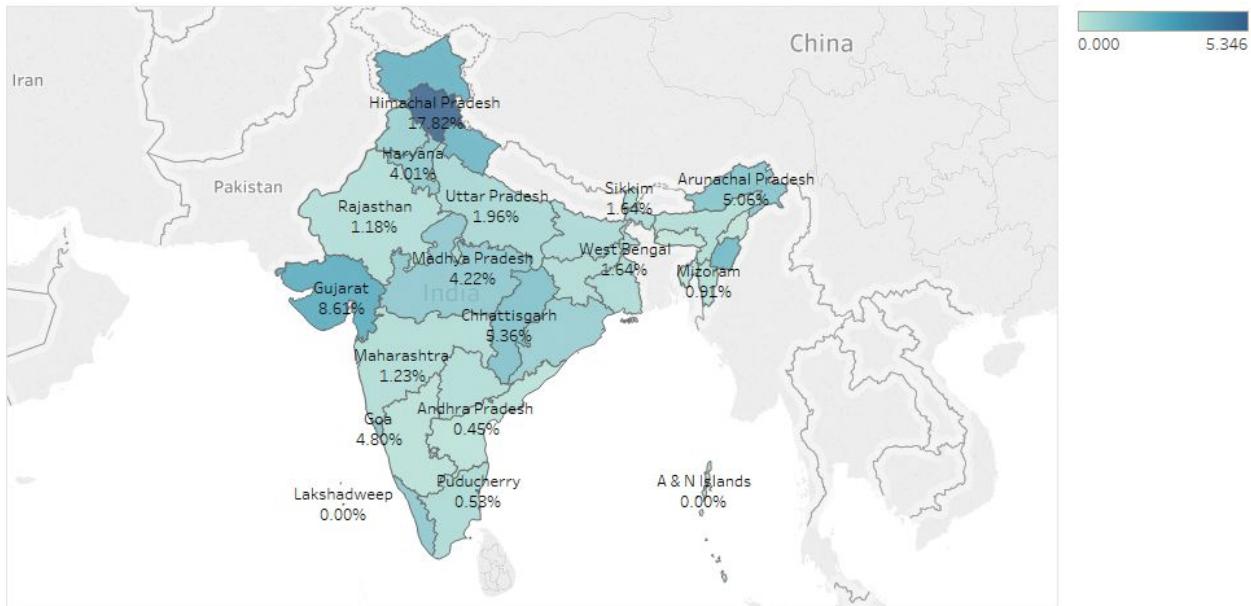
Sheet 1



Map based on Longitude (generated) and Latitude (generated). Color shows sum of Kuchakil. The marks are labeled by % of Total Kuchakil and States/UTs. Details are shown for States/UTs.

Percentage of people killed on loose surfaced roads

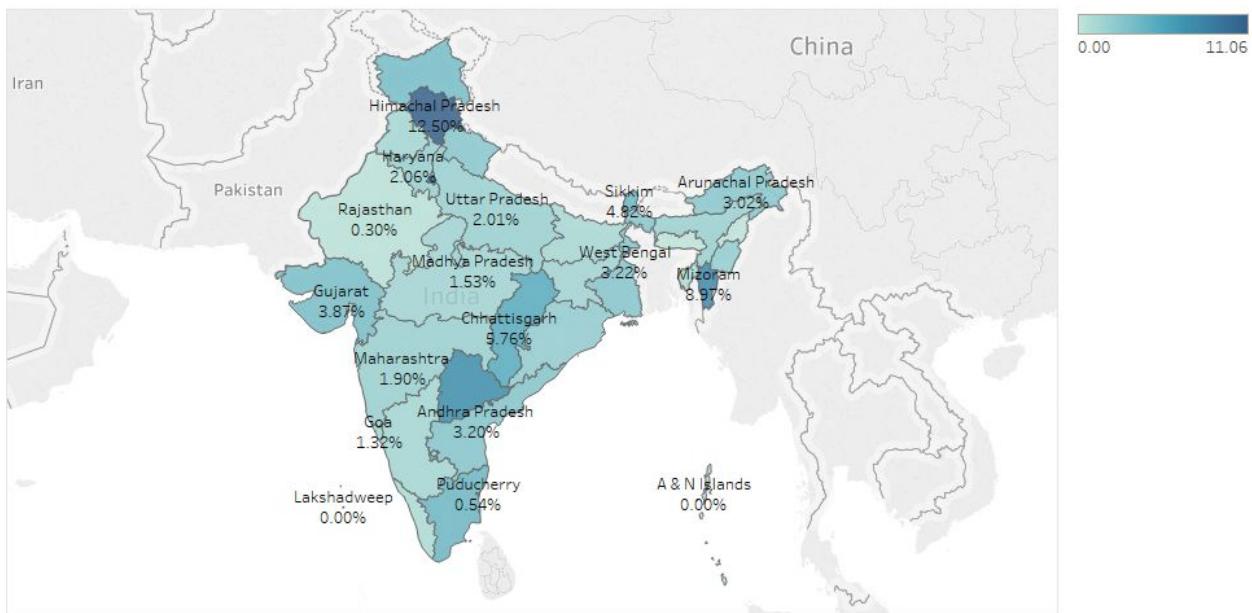
Sheet 1



Map based on Longitude (generated) and Latitude (generated). Color shows sum of Losekill. The marks are labeled by States/UTs and % of Total Losekill. Details are shown for States/UTs.

Percentage of people killed on metal roads

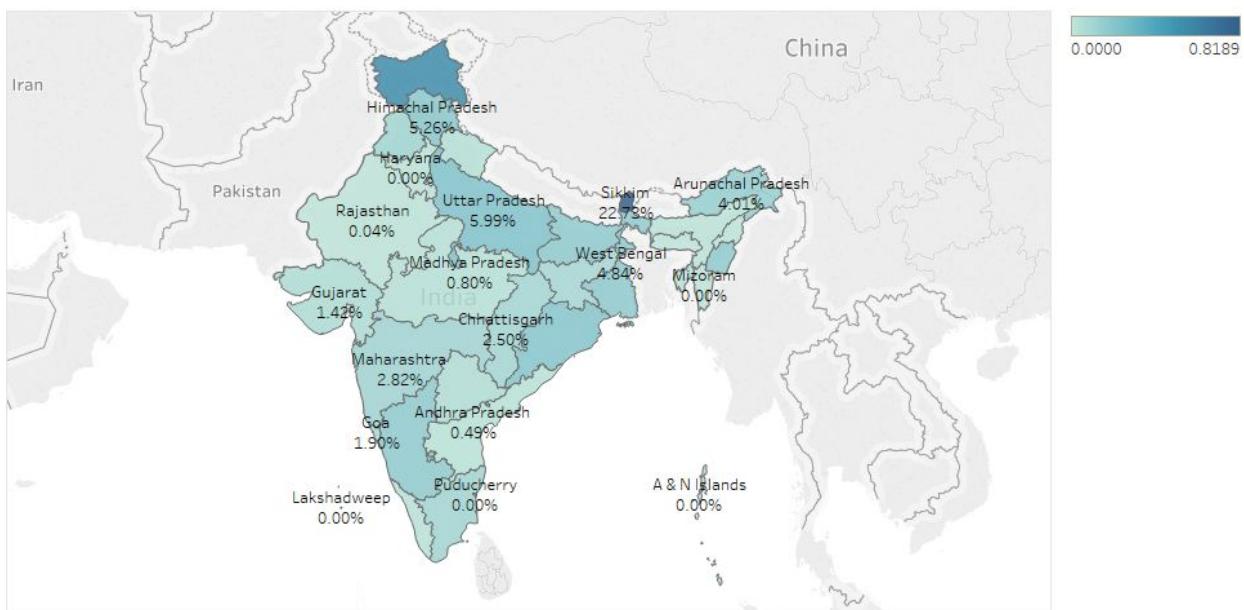
Sheet 1



Map based on Longitude (generated) and Latitude (generated). Color shows sum of Metalkill. The marks are labeled by States/UTs and % of Total Metalkill. Details are shown for States/UTs.

Percentage of people killed on muddy roads

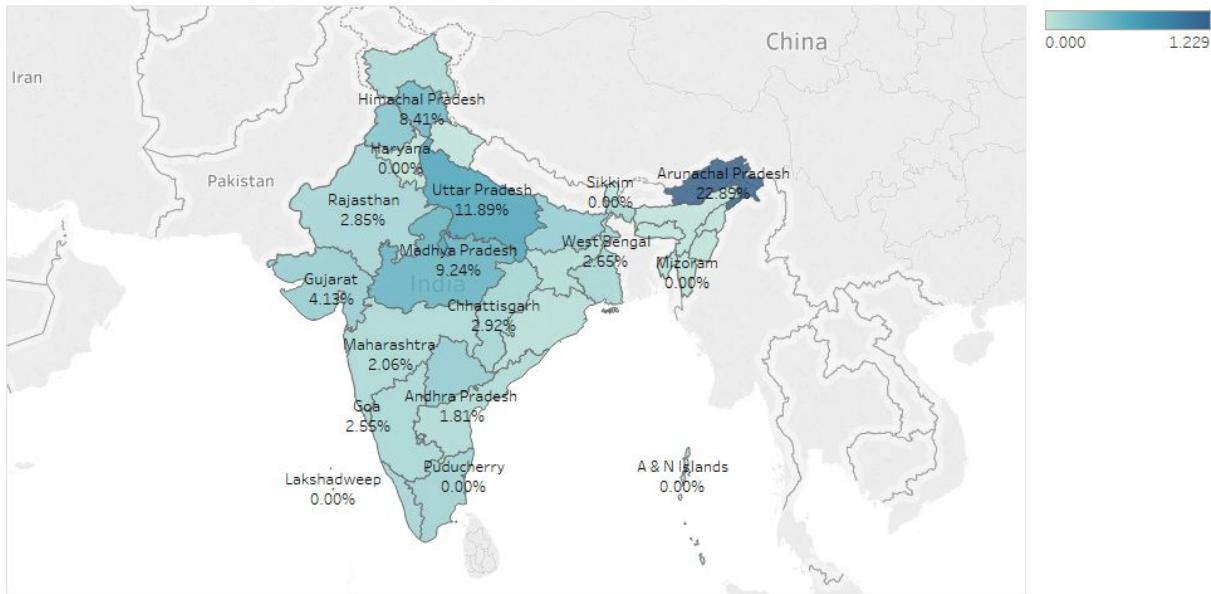
Sheet 1



Map based on Longitude (generated) and Latitude (generated). Color shows sum of Mudkil. The marks are labeled by States/UTs and % of Total Mudkil. Details are shown for States/UTs.

Percentage of people killed due to potholes

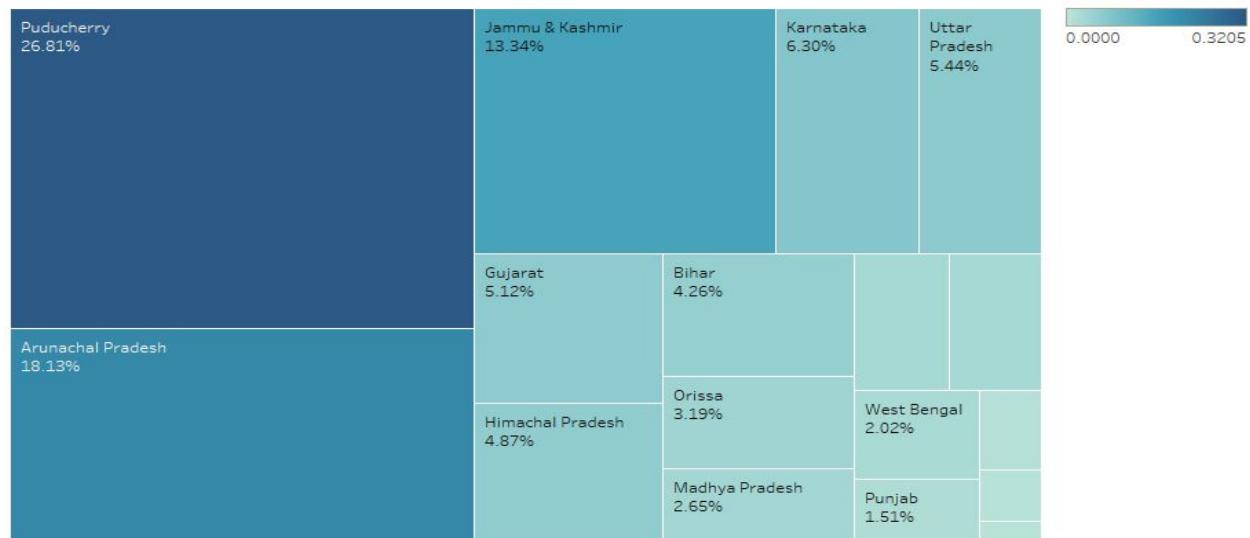
Sheet 1



Map based on Longitude (generated) and Latitude (generated). Color shows sum of Potholekill. The marks are labeled by States/UTs and % of Total Potholekill. Details are shown for States/UTs.

Percentage of people killed on snowy roads

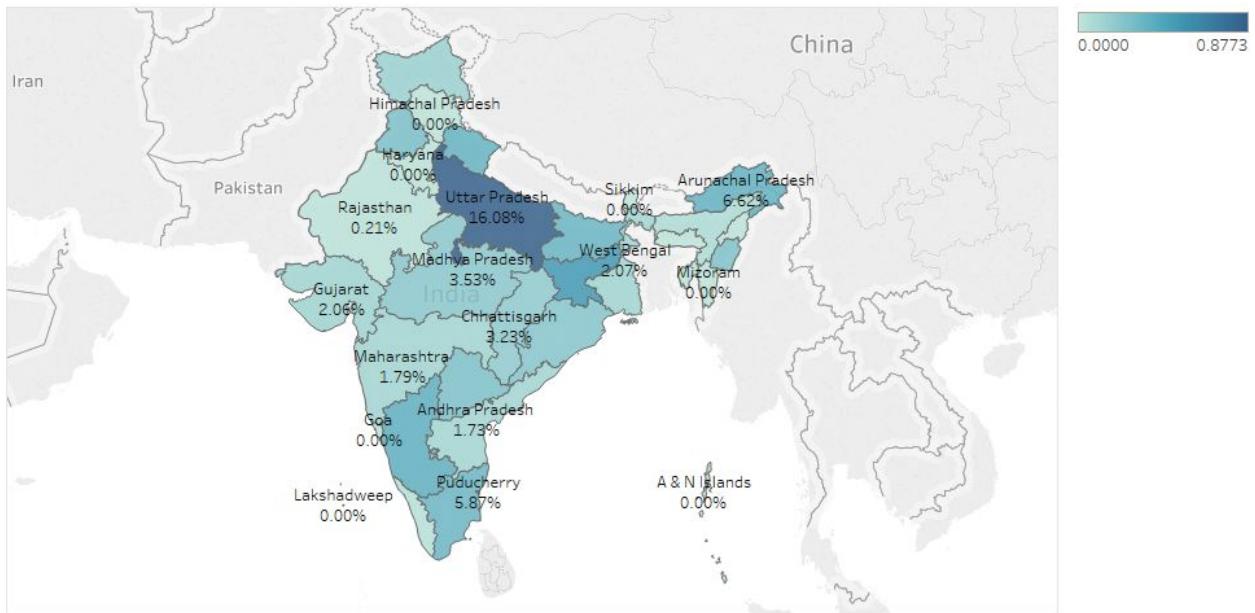
Sheet 1



States/UTs and % of Total Snowkil. Color shows sum of Snowkil. Size shows sum of Snowkil. The marks are labeled by States/UTs and % of Total Snowkil.

Percentage of people killed due to speed breakers

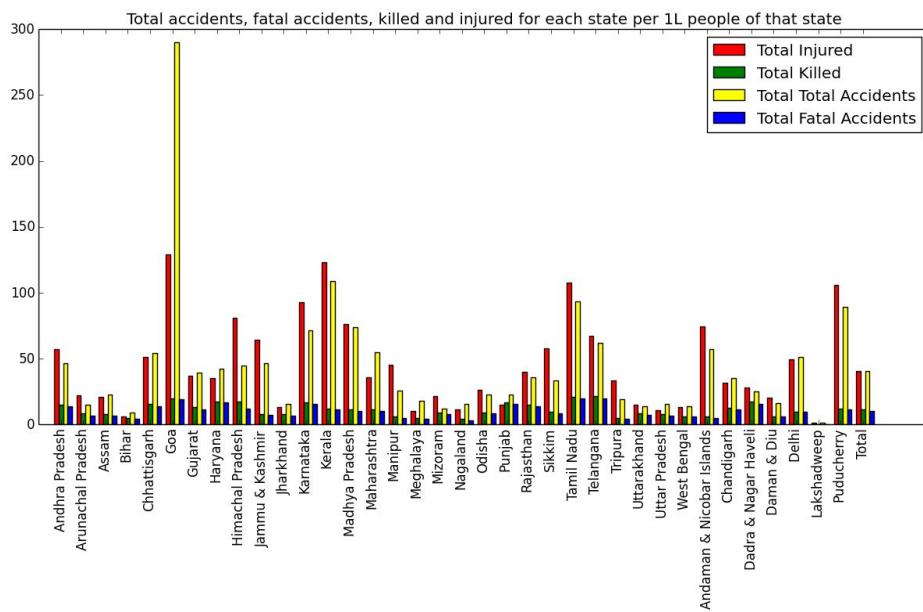
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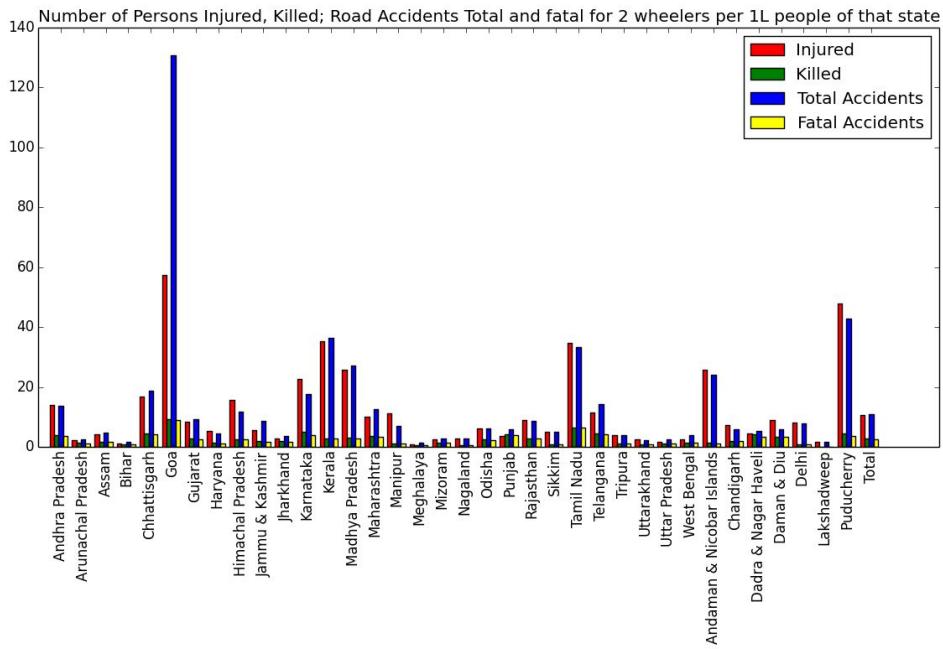
Map based on Longitude (generated) and Latitude (generated). Color shows sum of Speedkil. The marks are labeled by States/UTs and % of Total Speedkil. Details are shown for States/UTs.

6. Data according to the type of vehicle

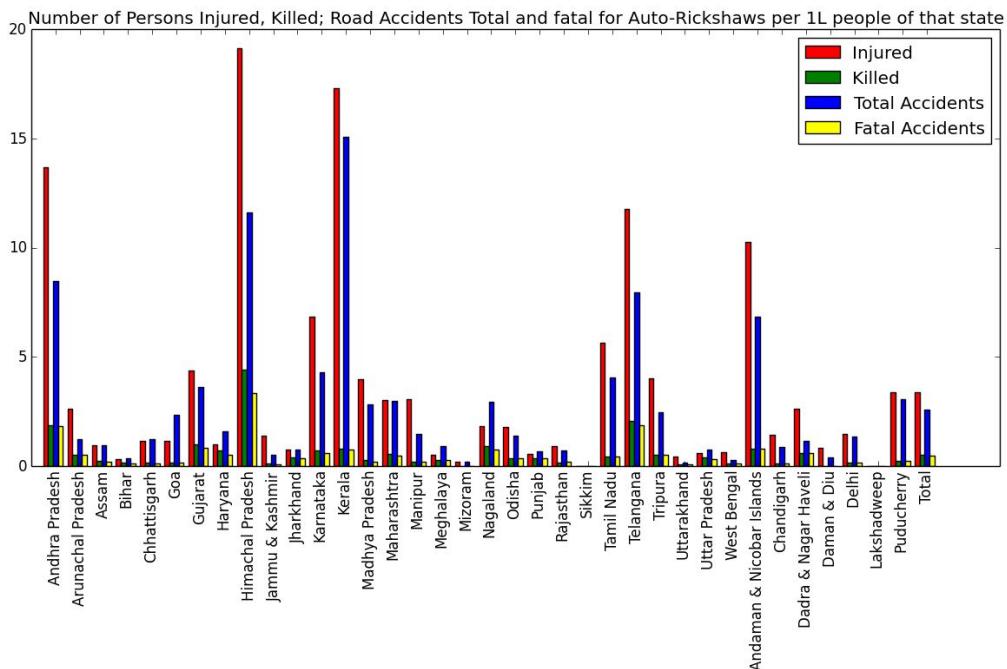
Overall data for each state



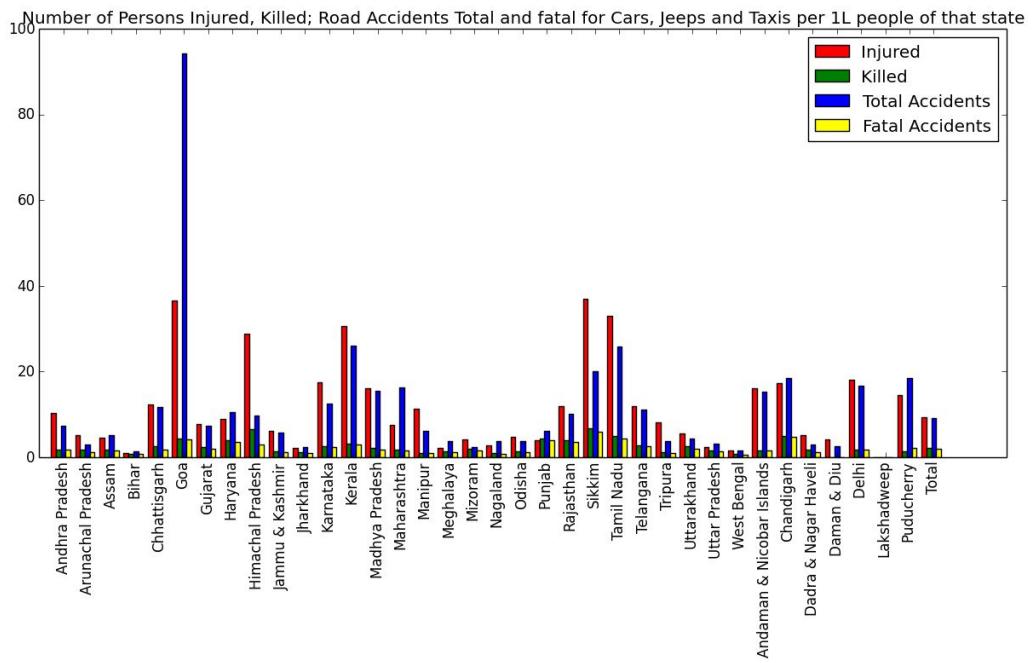
Data of 2 wheelers



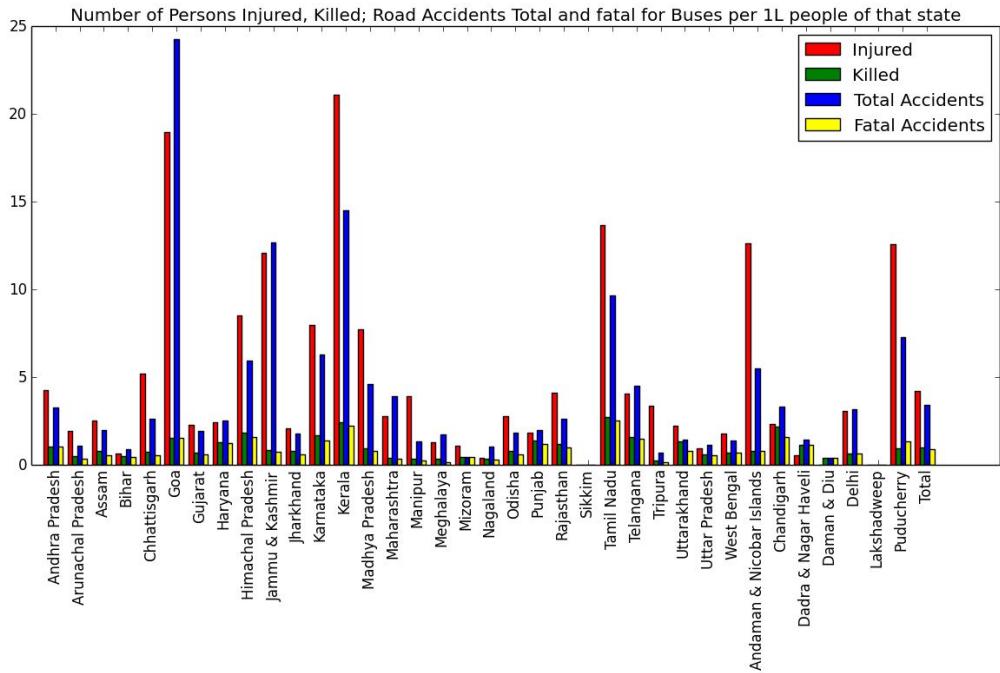
Data of Auto-Rickshaws



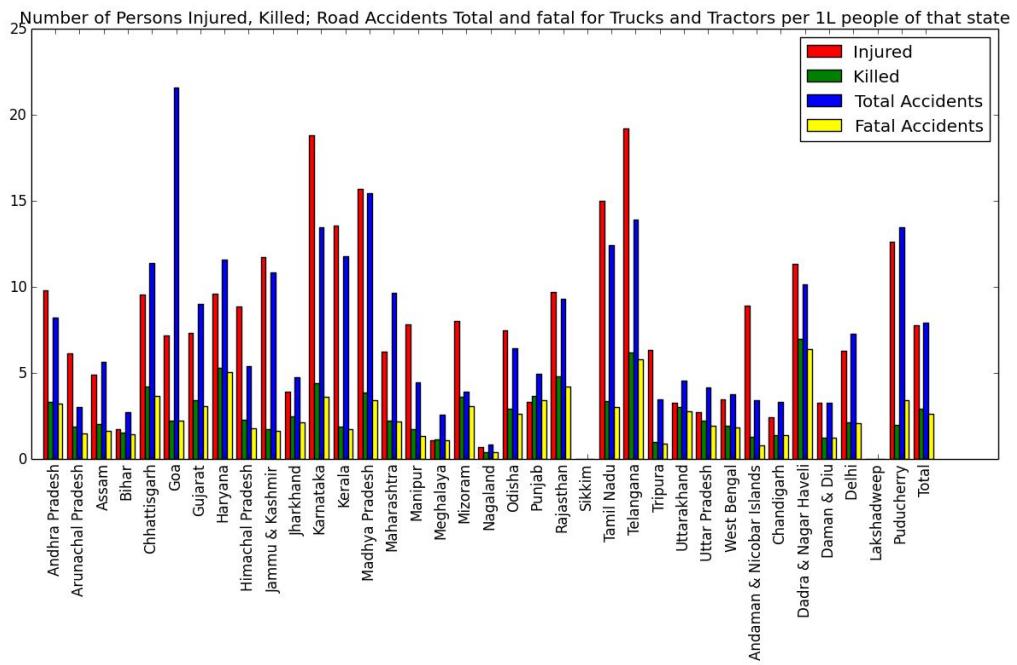
Data of Cars, Jeeps and Taxis



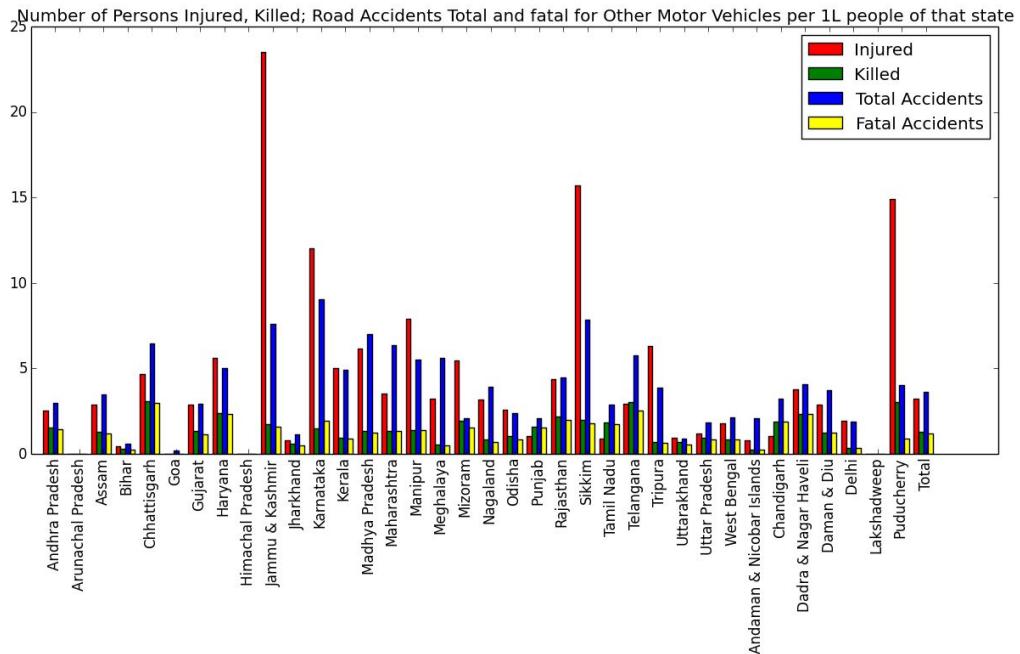
Data of Buses



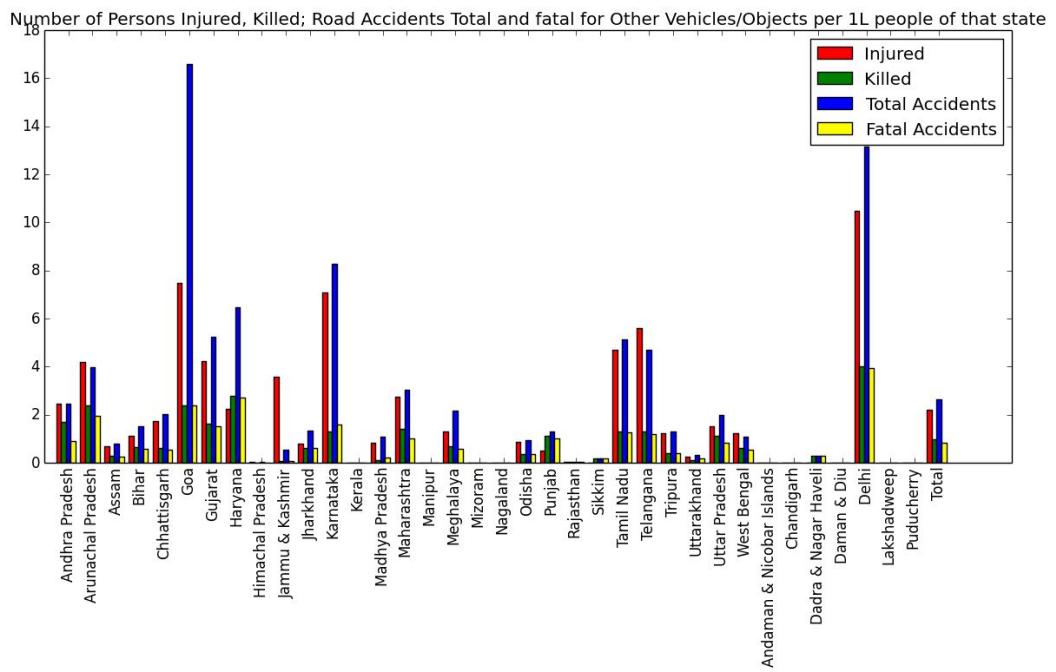
Data of Trucks, Tempos, MAVs and Tractors



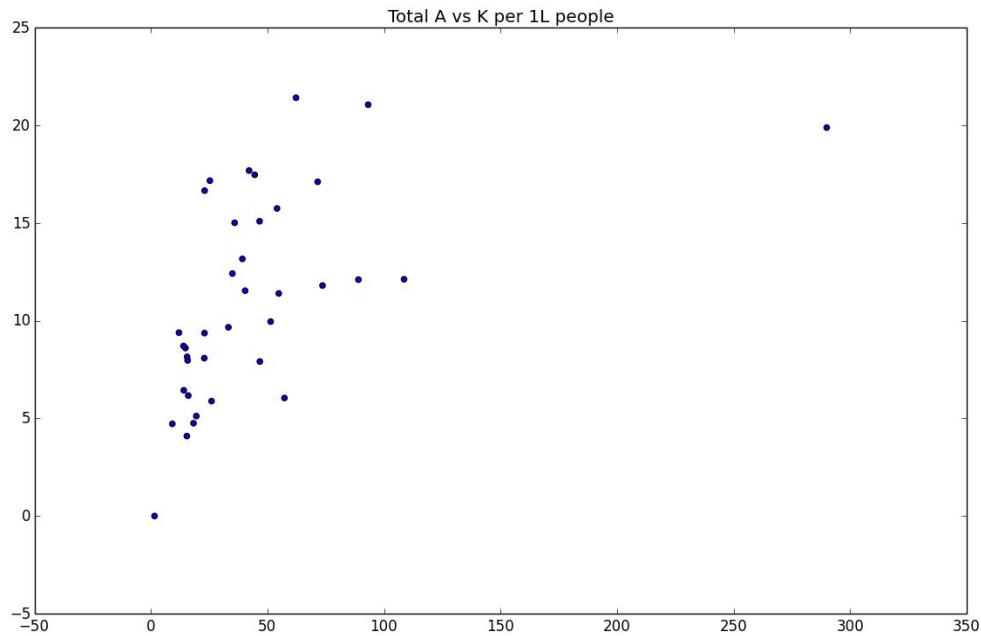
Data of other motor vehicles



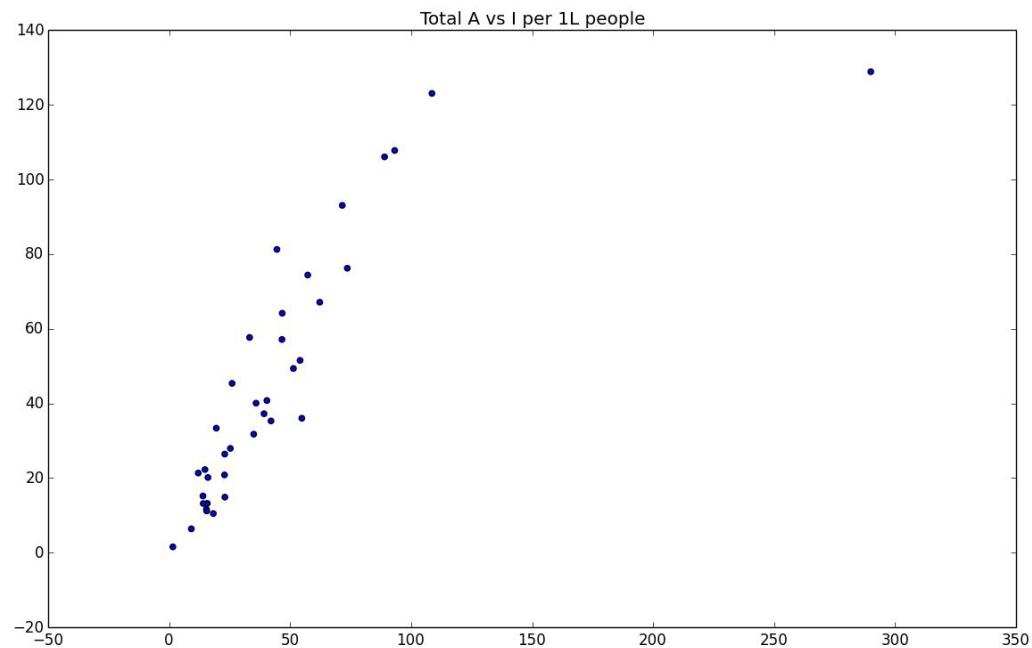
Data of Other Vehicles/Objects



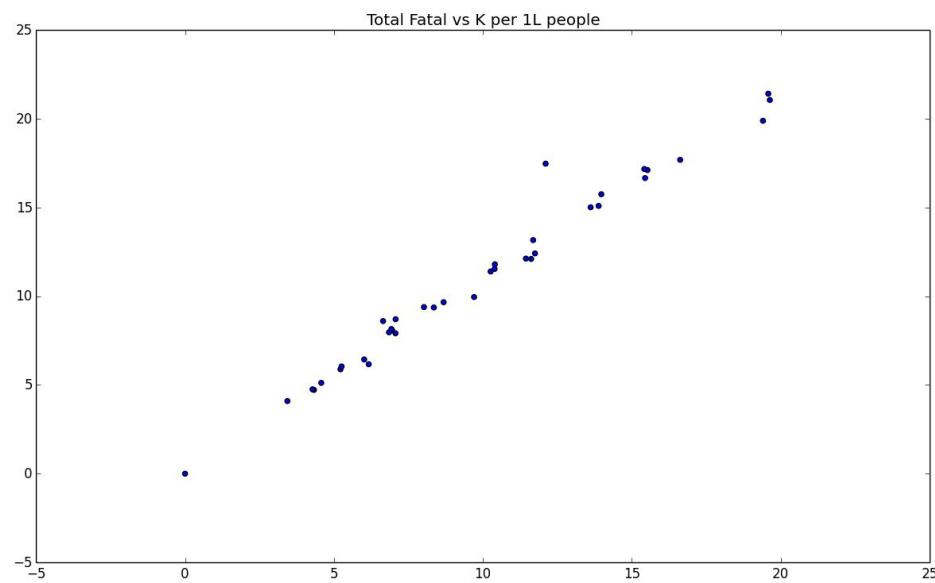
Scatter plot showing Total Sum of Total Accidents vs Killed for all types of vehicles (dots represent each state)



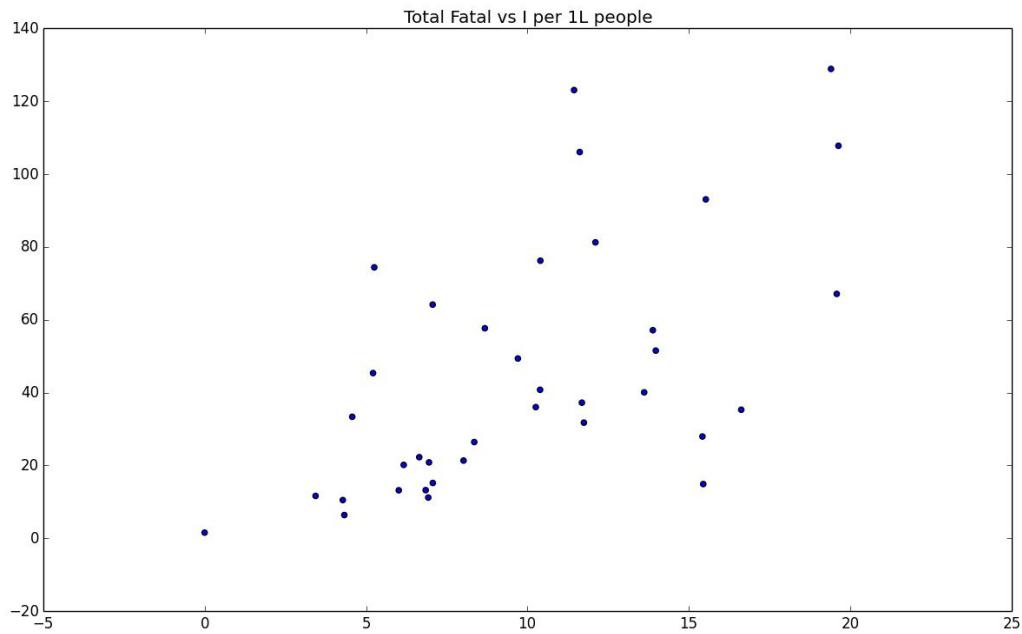
Scatter plot showing Total Sum of Total Accidents vs Injured for all types of vehicles (dots represent each state)



Scatter plot showing Total Sum of Fatal Accidents vs Killed for all types of vehicles (dots represent each state)



Scatter plot showing Total Sum of Fatal Accidents vs Injured for all types of vehicles (dots represent each state)



INFERENCE

We thought of doing a regional analysis of the data by dividing the states into the various regions (North, South, East, West) and exploring and visualising the data accordingly. However, we let go of the idea because we felt that the inference drawn from it would not be of much use since there is no governance for a regional, while each state has its own governance.

Hence, we pursued our visualisation for the states and came up with the analysis of the most people killed per 1L population of the state for the top 4 states, as well as the top state for each region for the various reasons (selectively).

National Highests

| | | | | |
|---|---------|-----|-----|-----|
| Top 4 -> People killed due to accident (down) | Highest | 2nd | 3rd | 4th |
|---|---------|-----|-----|-----|

Reason of the accident

| | | | | |
|--------------------------------------|-------------------|-------------------|---------------|-------------------|
| Fault of Driver | Tamil Nadu | D & N Haveli | Goa | Himachal Pradesh |
| Fault of pedestrian | Goa | Gujarat | Jharkhand | Haryana |
| Defect in condition of motor vehicle | Manipur | Chhattisgarh | Meghalaya | Arunachal Pradesh |
| Defect in Road Condition | Uttar Pradesh | Arunachal Pradesh | Telangana | Chhattisgarh |
| Poor Light | Arunachal Pradesh | Sikkim | Uttar Pradesh | Chhattisgarh |

Type of vehicle

| | | | | |
|-----------------------------------|------------------|------------------|----------------|------------------|
| In 2 wheelers | Goa | Tamil Nadu | Karnataka | Chhattisgarh |
| Auto-Rickshaws | Himachal Pradesh | Telangana | Andhra Pradesh | Gujarat |
| Cars, jeeps and taxis | Sikkim | Himachal Pradesh | Chandigarh | Tamil Nadu |
| Buses | Tamil Nadu | Kerala | Chandigarh | Himachal Pradesh |
| Trucks, tempos, MAVs, Tractors | D & N Haveli | Telangana | Haryana | Rajasthan |

Place of Accident

| | | | | |
|--------------------|------------------|-------------------|---------|-------------------|
| Near a school | D & N Haveli | Tamil Nadu | Haryana | Puducherry |
| Near a hospital | Himachal Pradesh | Arunachal Pradesh | Haryana | Tamil Nadu |
| Near a Bus Stop | Tamil Nadu | Puducherry | Haryana | Arunachal Pradesh |
| Near a petrol pump | D & N Haveli | Puducherry | Haryana | Arunachal Pradesh |

Type of road

| | | | | |
|----------------|------------------|----------------|------------------|-------------|
| Metalled Road | Himachal Pradesh | Delhi | Mizoram | Telengana |
| Kutcha Road | Telengana | Haryana | Himachal Pradesh | Sikkim |
| Potholes | Uttar Pradesh | Madhya Pradesh | Himachal Pradesh | Punjab |
| Speed Breakers | Uttar Pradesh | Jarkhand | Karnataka | Uttarakhand |

Regional Highes

| Region -> People killed due to accident (down) | East | West | South | North |
|--|------|------|-------|-------|
|--|------|------|-------|-------|

Reason of the accident

| | | | | |
|--------------------------------------|-------------------|----------------|------------|------------------|
| Fault of Driver | Odisha | D & N Haveli | Tamil Nadu | Himachal Pradesh |
| Fault of pedestrian | Jharkhand | Goa | Tamil Nadu | Haryana |
| Defect in condition of motor vehicle | Manipur | Madhya Pradesh | Telangana | Chhattisgarh |
| Defect in Road Condition | Arunachal Pradesh | Madhya Pradesh | Telangana | Uttar Pradesh |
| Poor Light | Arunachal Pradesh | Madhya Pradesh | Telangana | Uttar Pradesh |

Type of vehicle

| | | | | |
|--------------------------------|-----------|--------------|------------|------------------|
| In 2 wheelers | Odisha | Goa | Tamil Nadu | Chhattisgarh |
| Auto-Rickshaws | Nagaland | Gujarat | Telangana | Himachal Pradesh |
| Cars, jeeps and taxis | Sikkim | Goa | Tamil Nadu | Himachal Pradesh |
| Buses | Jharkhand | Goa | Tamil Nadu | Chandigarh |
| Trucks, tempos, MAVs, Tractors | Mizoram | D & N Haveli | Telangana | Haryana |

Place of Accident

| | | | | |
|--------------------|-------------------|--------------|------------|------------------|
| Near a school | Jharkhand | D & N Haveli | Tamil Nadu | Haryana |
| Near a hospital | Arunachal Pradesh | D & N Haveli | Tamil Nadu | Himachal Pradesh |
| Near a bus stop | Arunachal Pradesh | D & N Haveli | Tamil Nadu | Haryana |
| Near a petrol pump | Arunachal Pradesh | D & N Haveli | Puducherry | Haryana |

Type of road

| | | | | |
|----------------|-----------|----------------|-----------|------------------|
| Metalled Road | Mizoram | Gujarat | Telengana | Himachal Pradesh |
| Kuchha Road | Sikkim | Madhya Pradesh | Telengana | Haryana |
| Potholes | Bihar | Madhya Pradesh | Telengana | Uttar Pradesh |
| Speed Breakers | Jharkhand | Madhya Pradesh | Karnataka | Uttar Pradesh |

Overall lowests

On the other hand, we would like to commend the following states which have the lowest kills due to the selected reasons

| | |
|--------------------------------------|---|
| People killed due to accident (down) | States having the lowest killed for the reasons |
|--------------------------------------|---|

Reason of the accident

| | |
|--------------------------------------|---|
| Fault of Driver | Manipur, Arunachal Pradesh, Lakshwadeep Islands, Meghalaya |
| Fault of pedestrian | Assam, Himachal Pradesh, Kerala, Manipur, Mizoram, Nagaland, Rajasthan, Sikkim, Uttarakhand, A & N islands, Chandigarh, Daman & Diu, D & N Haveli, Puducherry, Lakshwadeep Islands (ALL HAVE 0) |
| Defect in condition of motor vehicle | Assam, Goa, Kerala, Mizoram, Sikkim, A & N islands, Chandigarh, Daman & Diu, D & N Haveli, Puducherry, Lakshwadeep Islands (ALL HAVE 0) |
| Defect in Road Condition | Assam, Goa, Kerala, Mizoram, Nagaland, Sikkim, Tripura, A & N islands, Chandigarh, Daman & Diu, D & N Haveli, Puducherry, Lakshwadeep Islands (ALL HAVE 0) |
| Poor Light | Assam, Goa, Himachal Pradesh, Jammu & Kashmir, Kerala, Mizoram, Nagaland, Uttarakhand, A & N islands, Chandigarh, Daman & Diu, D & N Haveli, Puducherry, Lakshwadeep Islands (ALL HAVE 0) |

Type of vehicle

| | |
|--------------------------------|--|
| In 2 wheelers | Lakshwadeep Islands, Meghalaya, Bihar, Sikkim |
| Auto-Rickshaws | Mizoram, Daman & Diu, Lakshwadeep Islands, Sikkim |
| Cars, jeeps and taxis | West Bengal, Daman & Diu, Lakshwadeep Islands, Bihar |
| Buses | Manipur, Tripura, Lakshwadeep Islands, Sikkim |
| Trucks, tempos, MAVs, Tractors | Nagaland, Tripura, Lakshwadeep Islands, Sikkim |

Reason of the accident

| | |
|--------------------|--|
| Near a school | Jammu and Kashmir, Mizoram, Tripura |
| Near a hospital | Mizoram, Nagaland, Sikkim, A & N islands, Chandigarh, Daman & Diu, D & N Have (ALL HAVE 0) |
| Near a Bus Stop | Sikkim, A & N islands, Daman & Diu, Lakshwadeep Islands (ALL HAVE 0) |
| Near a petrol pump | Mizoram, Nagaland, Sikkim, Tripura, A & N islands, Daman & Diu, Lakshwadeep Islands (ALL HAVE 0) |

Type of road

| | |
|---------------|---|
| Metalled Road | Lakshwadeep Islands, Meghalaya, Nagaland, Chandigarh, D & N Haveli, Daman and Diu(ALL HAVE 0) |
|---------------|---|

| | |
|----------------|---|
| Kutcha Road | Tripura, Puducherry, Meghalaya, Chandigarh, Lakshwadeep Islands, D & N Haveli, Daman and Diu(ALL HAVE 0) |
| Potholes | Haryana, Sikkim, Manipur, Uttarakhand, Nagaland, Mizoram, Puducherry, Meghalaya, Chandigarh, A & N Islands, Daman & Diu(ALL HAVE 0) |
| Speed Breakers | Haryana, Sikkim, Manipur, Uttarakhand, Nagaland, Mizoram, Puducherry, Meghalaya, Chandigarh, A & N Islands, Daman & Diu(ALL HAVE 0) |

RECOMMENDATIONS

Recommendations for the fault of the drivers:

1. Drivers should not over speed and maintain lanes
2. Drinking and driving is an absolute NO.
3. Make sure tail lights are on at night and during rains/fog.
4. Maintain safe distance between 2 vehicles.

Recommendations for the fault of the pedestrians:

1. Not have earphones on while on the road; else nothing else can be heard. the government should fine people who walk with earphones on.
2. Wear visible (light coloured) clothes especially at night
3. The government should fine people who jaywalk.

Recommendations for defect in condition of motor vehicles:

1. Regulations should be imposed for a periodic check of the vehicle. If found unsatisfactory, the vehicle should not be allowed to ply.
2. Only official manufacturer's parts should be fitted in the vehicles and local or unofficial spare parts should not be fitted in the vehicle.
3. Ensure all lights like the sidelights and tail lamps are working as in case it does not work, then it leads to greater number of accidents.

Recommendations for defect in condition of road:

1. Government to ensure there is sufficient banking in the roads that are curving to prevent accidents due to centrifugal force.
2. Ensure markings and barriers in 2 way roads, to prevent vehicles from plying on the other side of the road and thus prevent accidents
3. Maintain road surfaces and cover potholes to ensure the road is smooth so that the friction can act to prevent the vehicles from jumping or skidding. Roads should be relaid regularly and potholes covered.

4. There should be proper markings and signage to maintain safety during the night and poor light conditions. Also, speed breakers should be marked with white strips to ensure visibility of the same.

Recommendations for poor light:

1. The government should ensure that there is enough lighting on roads post dusk, especially in highways.
2. Government should ensure proper markings to enable the drivers to see it due to poor light.
3. In case there is poor lighting, the vehicles should make sure their parking lights are blinking.
4. The vehicles should maintain safe distance from other vehicles and drive slow.

Recommendations for 2 wheelers:

1. Always wear a helmet and make sure not more than 2 people are sitting on the bike
2. Maintain lanes and don't try to squeeze between 2 traffic lanes
3. Do not speed and cut in front of other vehicles.
4. Make sure tail lights are on at night and during rains.
5. Don't drink and drive

Recommendations for auto-rickshaws:

1. They should not carry more than the capacity allowed to carry
2. More importantly, they should not overspeed as it might lead the rickshaw to topple.
3. Also they should not cut in front of other vehicles or change lanes really quickly

Recommendations for Cars, jeeps and taxis:

1. There is a blind spot in the side view mirrors, make sure to consider that while changing lanes
2. Make sure the passengers look before opening the door as there maybe cars/bikes speeding down the road.
3. Maintain lanes and don't try to overtake if there is not space.
4. Do not be too close to other cars. Maintain safe distance between cars, 2 wheelers and pedestrians
5. Make sure tail lights are on at night and during rains.
6. Don't drink and drive.
7. Wearing seat belts should be made mandatory.

Recommendations for buses:

1. Buses should not be allowed to overload more than their capacity

2. Companies should maintain the chassis length of the bus when manufacturing as in order to increase the capacity of the bus, they increase the width of the bus with a narrow chassis which leads to overturning.
3. Strict laws should be in place for racing between buses
4. Buses should only be allowed to stop on bus stops

Recommendations for Trucks, tempos, MAVs, Tractors:

1. Trucks should not be allowed to ply in the city during the daytime (8 am - 10 pm)
2. Strict lanes rules need to be maintained on the highway
3. Trucks should not be playing loud music in order to hear the horn of other vehicles
4. Ensure the truck driver is not fatigued and to have regulations for the same
5. Trucks should not be overloaded (using an axle load indicator) and an assistant should always be present with the truck driver.
6. The seating of the driver should be made more comfortable
7. Trucks should stick to the left lane so that other vehicles can overtake them on a highway with 2 or more lanes. In case of 1 lane, the truck driver should be extra cautious while giving the other vehicle the permission to overtake. Samsung's panoramic view system should be implemented in the future.

Recommendations to avoid accidents near a hospital :

1. Crowding near the front gate of the hospital should be avoided.
2. Ample space should be given to ambulances when they are close approaching the hospital.
3. Proper pathways are to be made to carry the stretchers to avoid any hostility.

Recommendations to avoid accidents near a bus stand:

1. Development of proper bus stands so that people don't find themselves in the middle of a haywire.
2. Buses should reduce their speed and avoid overtaking when approaching a bus stop.
3. Passengers should avoid pushing each other whilst boarding the bus.

Recommendations to avoid accidents near a petrol pump:

1. Avoid using phones or cellular devices in and around a petrol station to avoid fatalities of any sort.
2. Check that the fuel tank is sealed properly after the fuel has been filled.

Recommendations to avoid accidents on Kutch roads :

1. Avoid speeding up on these roads as it may result in severe jerks and fatal accidents.
2. Maintain considerable distance between two cars to avoid collision.
3. Try avoiding holes or uneven masses created due to rain water erosion or construction work.

Recommendations for Accidents near school:

1. One should watch for children when they are crossing the road.
2. One should avoid blocking the crosswalk near the school.
3. Safety measures are to be taken near school buses.

Recommendations for avoiding accidents due to potholes :

1. Leave more space between you and the driver ahead.
2. Always stay on the lookout in a waterlogged street.
3. Try driving at a relatively slow speed.

Recommendations for avoiding accidents due to speed breakers :

The technique which is widely being accepted to avoid accidents due to speed breakers is to mark the speed breakers with solar blinkers so that drivers can know of its presence from a long way off.

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