

# EFFECTIVE AND INNOVATIVE USE OF TECHNOLOGY IN DATA REPORTING & ANALYSIS

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## Overview:

The fire service of today is changing. More and more, it is not fighting fires as much as it is doing EMS, HAZMAT, inspections, investigations, prevention, and other non-traditional but important tasks which are vital to the community.

Balancing limited resources and justifying daily operations and finances in the face of tough economic times is a scenario that is familiar to every department. Turning data into information is neither simple nor easy. It requires some knowledge of the tools and techniques used for this purpose. Historically, the fire service has had few of these tools at its disposal and none of them has been designed with the fire service in mind. Every fire department is responsible for managing its operations in such a way that firefighters can do the most effective job of fire control and fire prevention in the safest way possible. Effective performance requires careful planning, which can take place only if accurate information about fires and other incidents is available. Patterns that emerge from the analysis of incident data can help departments focus on current problems, predict future problems in their communities, and measure their programs' successes.

The reports can, however, provide a more beneficial service to fire departments by yielding insight into the nature of fires and injuries in their jurisdiction. Basic information probably is available already. Typically, the number of fires handled last year, the number of fire-related injuries, and the number of fire deaths are tracked. It is another story, however, if more probing questions are asked:

- How many fires took place on Sundays, Mondays, etc.?
- How many fires took place each hour of the day or month of the year?
- What was the average response time to fires?
- How much did response times vary by fire station areas?
- What was the average time spent at the fire scene?
- How much did the average time vary by type of fire?

## Scope:

The Directorate of Fire & Emergency Services has

been in the process of undertaking Technological research in various domains of IoT, Communication & Data Analysis.

The Directorate of Fire & Emergency Services has created Automated Dynamic Statistical Dashboard, as a part of populating a Set of Reports of Fire and Emergency Calls attended, along with Summary, Trends and Thermal Mapping. This has helped the Department in understanding the requirement of resources depending on the season type of incidents arising in the locations.

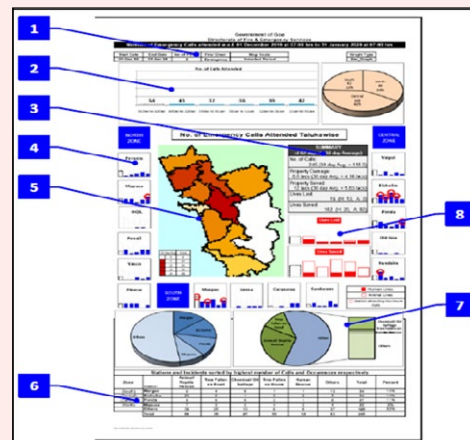
## Objective:

The Automated Dynamic Statistical data is a conceptual and methodological tool for the construction of databases of loss, damage, or effects caused by emergencies or disasters. It includes:

- I. Methodology (definitions that help in the management of data).
- II. Database with flexible structure.
- III. Database input for Software.

The Automated Dynamic Statistical Dashboard is a part of a Consolidated Set of Reports of Fire & Emergency Calls attended, along with Summary, Trends and Thermal Mapping. Start Date and End Date have to be set at only one location and is applicable to the entire set of reports. 30-day averages have been introduced for uniform comparisons.

## Salient Features and Major Technical Specifications:

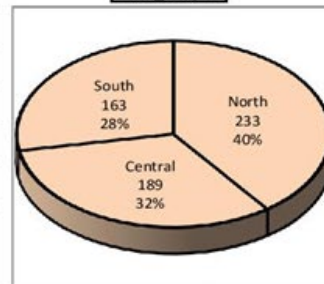
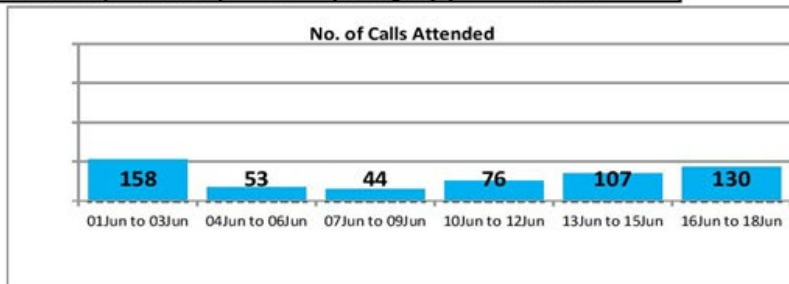


**Government of Goa  
Directorate of Fire & Emergency Services**

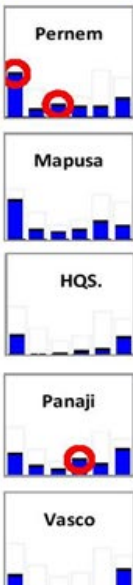
**Number of Emergency Calls attended w.e.f. 01 June 2020 at 07:00 hrs to 18 June 2020 at 07:00 hrs**

Start Date	End Date	No of Points	Fire/ Emer.	Map Scale
01/Jun 20	18/Jun 20	6	Emergency	Default

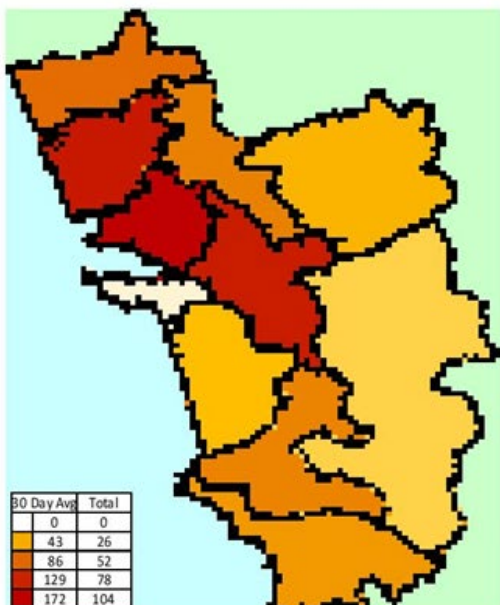
Graph Type
Bar_Graph



**NORTH ZONE**



**No. of Emergency Calls Attended Talukawise**

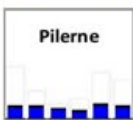


**SUMMARY of 18 days (+ 30 day Average)**

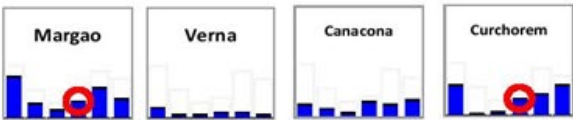
No. of Calls: 568 (30 day Avg. = 946.7)  
 Property Damage: 21.4 lacs (30 day Avg. = 35.6 lacs)  
 Property Saved: 85 lacs (30 day Avg. = 1.41 crores)  
 Lives Lost: 7 (H: 5, A: 2)  
 Lives Saved: 47 (H: 2, A: 45)



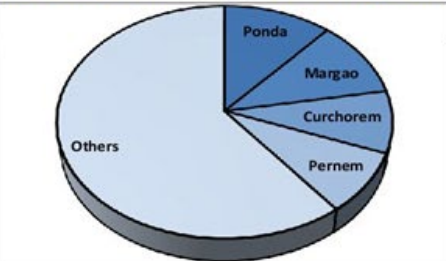
**CENTRAL ZONE**



**SOUTH ZONE**



<span style="color: red;">■</span>	Human Lives
<span style="color: pink;">■</span>	Animal Lives
<span style="color: blue; border: 1px solid blue; border-radius: 50%; padding: 2px;"> </span>	Station attending Maximum Calls



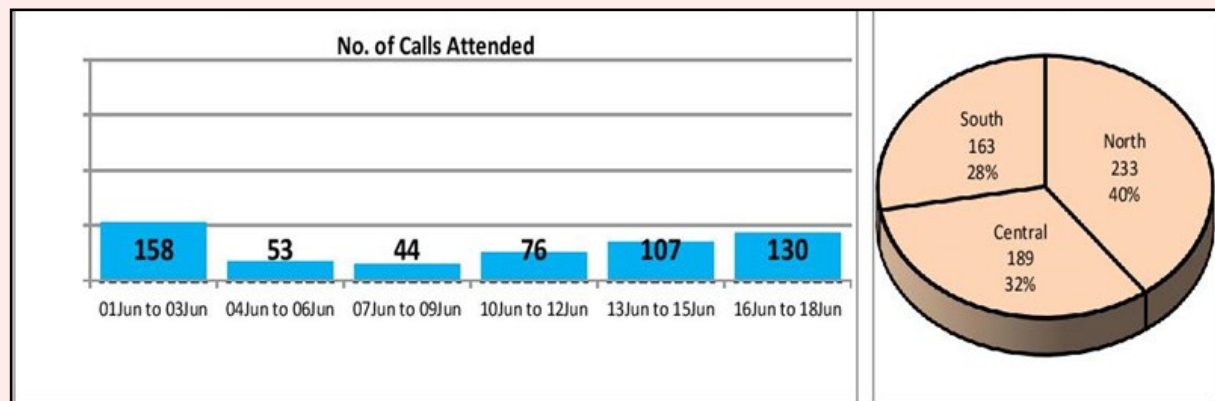
**Stations and Incidents sorted by highest number of Calls and Occurences respectively**

Zone	Station	Tree Fallen on Road	Tree Fallen on House	Tree Fallen on Electrical Line	Animal/ Reptile Rescue	Any other reason other than the above	Others	Total	Percent
(Central)	Ponda	23	10	14	7	2	9	65	11%
(South)	Margao	31	15	5	5	1	4	61	11%
(South)	Curchorem	26	7	12	2	0	2	49	9%
(North)	Pernem	20	16	9	2	0	2	49	9%
	Others	118	74	58	30	14	50	344	61%
	<b>Total</b>	<b>218</b>	<b>122</b>	<b>98</b>	<b>46</b>	<b>17</b>	<b>67</b>	<b>568</b>	

1. SELECTION PANE	
Start & End Date	Will display the Selected Start Date and End Date.
No of Points	Number of Bars to be displayed in charts can be selected from 3 to 12.
Fire & Emergency	The Dashboard can be used for Fire and Emergency as per selection.
Map Scale	Default Colour Scale is to be used for Monthly Comparative Reports. Scale for Specific Period is to be used for General Analysis.

Start Date	End Date	No of Points	Fire/ Emer.	Map Scale
01/Jun 20	18/Jun 20	6	Emergency	Default

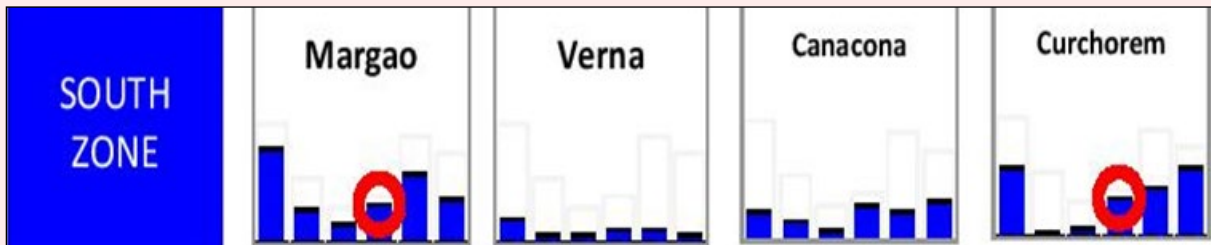
2. GRAPH FOR TOTAL CALLS ATTENDED	
Blue Scale	Number of Bars depend on the Value selected and depict the number of calls attended in the selected period. Dates for individual bars are Auto Calculated based on the Start Date, End Date, Duration, and Number of Bars selected.
Dotted Scale	If number of days in the selected period is not divisible by number of bars selected, then the first bar will be shown dotted. Example: 4 bars for 31 days = 7 days per bar for 3 bars +10 days for the first bar.
Uniform Scaling	Default Colour Scale is to be used for Monthly Comparative Reports. Scale for Specific Period is to be used for General Analysis.



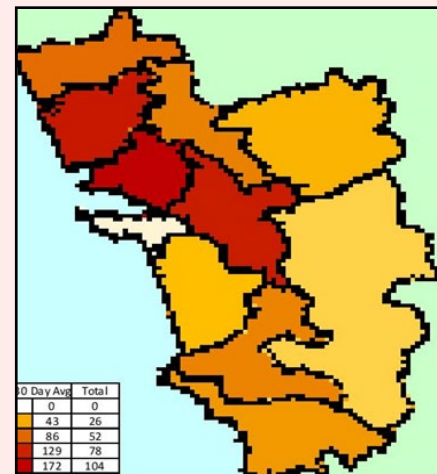
3. SUMMARY	
Call Details	Number of Calls Attended and Duration Selected in Days.
Property Lost & Saved	Property Lost and Saved is displayed after converting it to the nearest Thousands, lacs or crores.
Life Lost & Saved	Shows Total Lives Lost & Saved, with split up of Human & Animal Life.
30 Days average	Number of Calls, Property Lost and Property Saved are also scaled to 30-day period, for easier comparison.

SUMMARY of 18 days (+ 30 day Average)	
No. of Calls:	568 (30 day Avg. = 946.7)
Property Damage:	21.4 lacs (30 day Avg. = 35.6 lacs)
Property Saved:	85 lacs (30 day Avg. = 1.41 crores)
Lives Lost:	7 (H: 5, A: 2)
Lives Saved:	47 (H: 2, A: 45)

4. STATION TRENDS	
Blue Scale	Depicts the Number of Calls attended during each period.
Max Comparison	To compare each month with the station with the highest call, an additional light grey scale has been introduced in the trend graph of each station.
Uniform Scaling	All stations have been equally scaled for uniform comparison.
Red Circle	The Station with highest number of Calls during each period is circled Red.



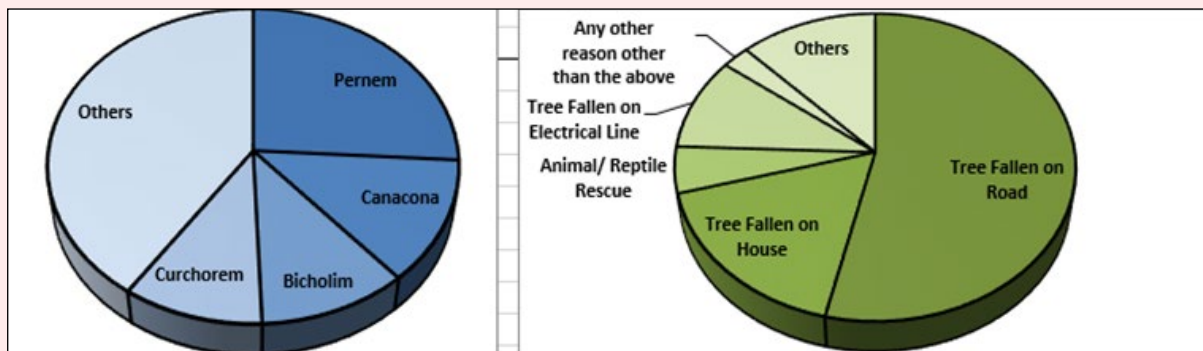
5. MAP FOR TALUKAWISE CALLS ATTENDED	
Legend Colour	The Colour Scale of Legend changes as per selection of Scale.
Actual Value	Number of incidents in the Taluka with highest calls rounded and scaled. When a station attends call outside its home taluka, the same has to be Entered in Data Entry. Otherwise Talukas are Auto detected.
30 Day Average	The Number of Calls attended are also displayed as a 30-Day Average.
Map Colour	The Map displays the sum of all Calls attended by all stations within each Taluka. When Stations attend calls outside their home taluka, then this data is used. Colour of Map is Dependent on whether Default Scale is Selected or the scale for Specific Period is Selected. Provision to adjust colour scale settings has been introduced for Fire, Emergency and Mid-point.



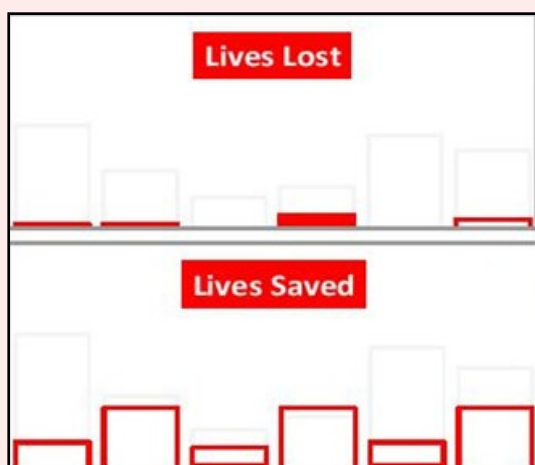
6. SORTED LIST OF FIRE STATIONS AND CALL TYPES	
Top 4 Fire Stations Sorted	4 stations with the highest number of calls are sorted with number, number of calls, percentage of total and zone.
Top 5 Incident Calls Sorted	Top 5 Calls are Sorted along with Number of Calls and Total.

Stations and Incidents sorted by highest number of Calls and Occurences respectively									
Zone	Station	Tree Fallen on Road	Tree Fallen on House	Tree Fallen on Electrical Line	Animal/ Reptile Rescue	Any other reason other than the above	Others	Total	Percent
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7. GRAPH	
Station & Incident types.	Pie Charts for Station and Faults, display the Number of Calls and Type of Calls Sorted respectively, sorted in Descending order.
Zone wise Graphs	Zone wise calls with percentage are displayed.



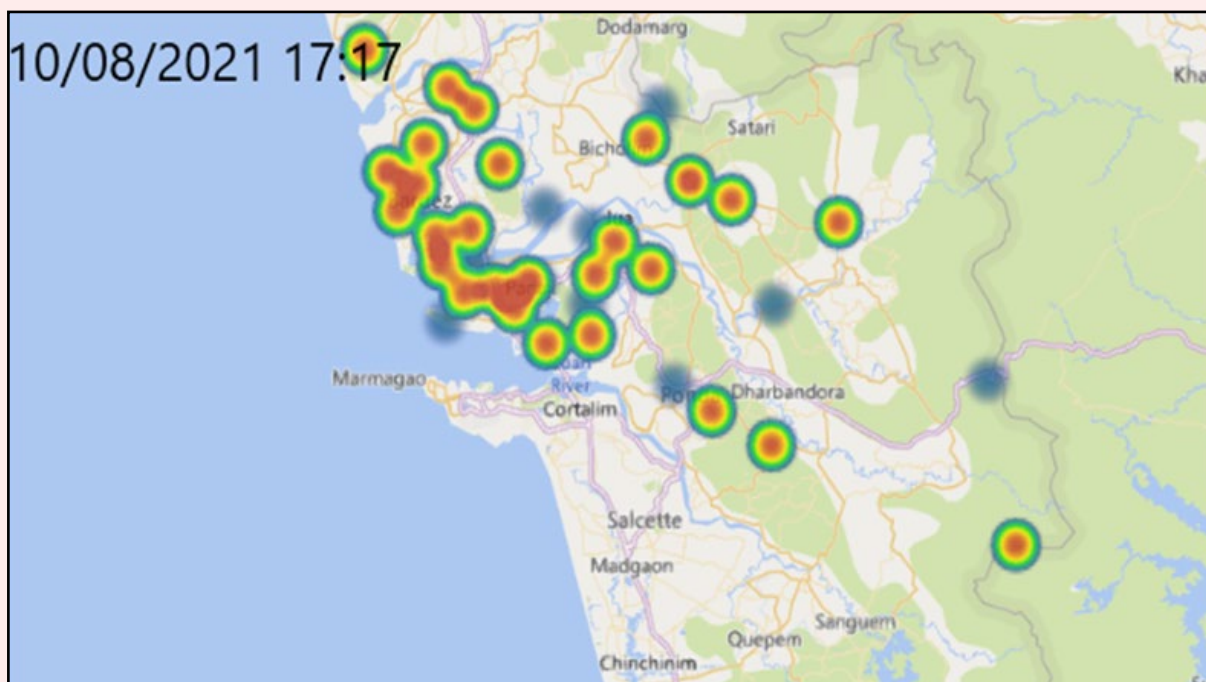
8. LIVES – TREND GRAPH	
Lives Lost & Saved	Trends of Lives Saved and Lost are displayed for the same periods.
Human & Animals	Human & Animal lives Lost & Saved are shown separately.



9. OTHER FEATURES	
Report Generation	All standard reports can be generated by a procedure as simple as Select Dates > Refresh > Save > Save As PDF/ Print. Data kept ready for Pivot Tables make generation of unique or specialised reports faster than ever before.
Macro Security	No Macros have been used for any aspect. Hence no Macro Viruses can enter.
Compatibility	The formulas are backwards compatible and forward compatible with Excel Versions 2007 to 2016.
Data Entry	Data Entry has been kept in a independent and separate File.
Data Export	All sheets in the Data Entry file have been organised in a way that data can be exported directly to any Software or application that the department may intend to push on too
Ease of Data Entry	Dynamic Drop-down lists has been created for several Data Entry Fields, for Quick and Accurate entry of Data.

The analysis of data from the reports will have a profound impact in planning of Disaster Management. The Department is now upgrading the said features in Excel to Power Maps for data visualization that creates interactive charts, graphs, maps, and other visuals that bring the data to life which will help the Department in visualising the incidents occurring in the State at a glance.

The graphical representation of data (i.e incidents occurring on day to day basis) will also be viewable to the stakeholders in the Disaster Management Cell in real-time as well as provide updates to the general public regarding incidents that are occurring within the State.



The data collated on day to day basis will be entered offline using Microsoft Excel 2016 and the same which will be visualised on the Power Maps in the offline mode for inhouse usage and as a comma-separated values file (.csv format) will be pushed via Application Programming Interface (API) to Google maps on regular basis for the information of G2C, G2B and G2G. This will assist in identifying hazard prone areas, archiving of data for research of various stakeholders/ research analysts, department wise preparedness, identification of resources area wise such as Fire Resources such as Water Reservoirs, Open Ponds etc.

Major incidents occurring will be also be periodically pushed to the National Database for Emergency Management (NDEM) 3.0 ver Geo-Portal for Emergency Management.

The Automated Dynamic Statistical Dashboard initially had provisions for categories of Fire & Emergency related incidents that were user defined, however on seeing the potential of the output from the data collated, the department adopted the widely accepted classification system used by the Disaster Information Management System of DesInventar, which classifies disasters arising from natural hazards with amendments to incorporate for Manmade Hazards also.

Types of Disasters/Incidents	Category	Main Event
Natural Hazards	<b>Geophysical</b> related incidents: Events originating from solid earth	a. Landslides and mudflows. b. Earthquakes. c. Tsunami. d. Dam failures/Dam Bursts.
	<b>Climatological</b> : Events caused by long-lived/meso to macro scale processes (in the spectrum from intra-seasonal to multi-decadal climate variability)	a. Drought. b. Extreme hot/cold conditions. c. Forest/Wildfire Fires. d. Subsidence.
	<b>Meteorological</b> : Events caused by short-lived/small to mesoscale atmospheric processes (in the spectrum from minutes to days)	a. Cyclone, Storm Surge, Tornado, Convective Storm, Extratropical Storm. b. Cloud Burst c. Cold Wave, Derecho. d. Extreme Temperature, Fog, Frost, Freeze, Hail. e. Lightning, Heavy Rain/wind. f. Sand-Storm, Dust-Storm. g. Heat-wave.

Natural Hazards	<b>Hydrological:</b> Events caused by deviations in the normal water cycle and/or overflow of bodies of water caused by wind set-up	a. Coastal Erosion. b. Coastal flood. c. Flash Flood Hydrological. d. Flood Hydrological. e. Drainage Management.
	<b>Biological:</b> Disaster caused by the exposure of living organisms to germs and toxic substances.	a. Epidemics. b. Insect infestations. c. Animal stampedes. d. Food poisoning.

Types of Disasters/Incidents	Category	Main Event
Technological or man-made hazards	<b>Emergency/Accident related incidents</b>	a. Open Pit Mine flooding. b. Chemical/Oil Spills. c. Structure collapse. d. Air, Road, Sea and Rail accidents. e. Major Liquefied gas or Chemical tanker incidents. f. Person Rescued (Major). g. Person trapped (Light). h. Animal rescue. i. Drowning incidents. j. Accident related incidents in industries, Storage & Hazardous structures. k. Special Service Calls. l. Near Misses. m. Other emergency related incidents.
	<b>Fire related incidents</b>	a. Fire to &/or in a Highrise Buildings b. Fire to &/or in a commercial/ business/assembly/ hospital/ educational structures. c. Fire to &/or in a residential low rise structures, house, village. d. Fire to &/or in a slum area, huts, labour camp. e. Fire to temporary structures. f. Fires to &/or in Industries, Storage & Hazardous structures. g. Dry Grass & field fires. h. Wildland fires. i. Electrical related fires. j. Inflammable/toxic chemical & liquefied gas incidents. k. Air, Road, Sea and Rail fire incidents. l. Arson. m. Garbage and Scrap Fire. n. False alarms/ Unconfirmed. o. Other Fire related incidents.

**I. Methodology (definitions that help in the management of data):** The main events as per the category of incidents are described below.

Category/ Main Event	Short Description
<b>Geophysical:</b>	
a. Landslides and mudflows.	Landslides occur when masses of rock, earth, or debris move down a slope. Debris flows, also known as mudslides, are a common type of fast-moving landslide that tends to flow in channels. Mudslides usually start on steep slopes and can be activated by natural disasters.
b. Earthquakes.	a sudden violent shaking of the ground, typically causing great destruction, as a result of movements within the earth's crust or volcanic action.

Category/ Main Event	Short Description
c. Tsunami.	A long, high sea wave caused by an earthquake or other disturbance.
d. Dam failures/Dam Bursts.	Overtopping caused by water spilling over the top of a dam. Foundation Defects, including settlement and slope instability, cause dam failures.
<b>Climatological:</b>	
a. Drought.	a prolonged period of abnormally low rainfall, leading to a shortage of water.
b. Extreme hot/cold conditions.	Extreme Temperatures. Heat and cold stress are environmental hazards. These temperature extremes can result from natural or manmade causes. Natural causes include heat waves, unseasonably cold weather, wildfires, and winter storms.
c. Forest/Wildfire Fires.	Forest/Wildfire Fires caused due to extreme temperatures.
d. Subsidence.	the gradual caving in or sinking of an area of land.
<b>Meteorological:</b>	
a. Cyclone, Storm Surge, Tornado, Convective Storm, Extratropical Storm.	Convective storms are also known as thunderstorms.
b. Cloud Burst	a sudden violent rainstorm
c. Cold Wave, Derecho.	Derecho is a storm system that moves a long distance rapidly and brings winds which can devastate an area several miles wide.
d. Extreme Temperature, Fog, Frost, Freeze, Hail.	forms when the temperature at the surface is at or below the freezing mark (32 degrees Fahrenheit.
e. Lightning, Heavy Rain/wind.	Trees fallen on Structures, Roads, Electrical lines, Vehicles due to heavy winds/rains.
f. Sand-Storm, Dust-Storm.	severe weather condition characterized by strong winds and dust-filled air over an extensive area.
g. Heat-wave.	A heat wave is simply a period of unusually hot weather that typically lasts two or more days. The temperatures have to be outside the historical averages for a given area.
<b>Hydrological:</b>	
a. Coastal Erosion.	Involves the breaking down and removal of material along a coastline by the movement of wind & water.
b. Coastal flood.	Occurs when normally dry, low-lying land is flooded by seawater.
c. Flash Flood Hydrological.	A flash flood is a rapid flooding of low-lying areas: washes, rivers, dry lakes and depressions. It may be caused by heavy rain associated with a severe thunderstorm, hurricane, tropical storm.
d. Flood Hydrological.	Occurs when the water level in a river, lake or stream rises and overflows onto the surrounding banks, shores and neighboring land.
e. Drainage Management	Water logging due to blockage of drains.
<b>Biological:</b>	
a. Epidemics.	Viral, bacterial, parasitic, fungal, or prion infections
b. Insect infestations.	
c. Animal stampedes.	
d. Food poisoning.	

Category/ Main Event	Short Description
<b>Emergency/ Accident:</b>	
a. Open Pit Mine flooding	
b. Chemical/Oil Spills.	spills on roads, in industries etc.,
c. Structure collapse.	shall include all types buildings, temporary structures, street poles, Compound walls etc.,
d. Air, Road, Sea and Rail accidents.	Boats capsizing, drifting out of control. Automotive & Train accidents, aircraft crash.
e. Major Liquefied gas or Chemical tanker incidents	



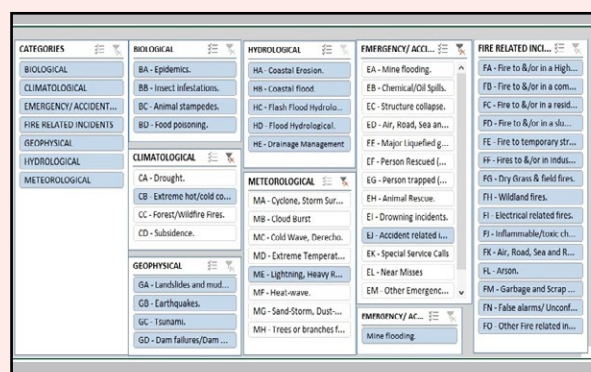
f. Person Rescued (Major).	rescued person from drowning, from fire, from vehicle accident.
g. Person trapped (Light).	Lift Rescue, Door Locked etc.,
h. Animal rescue.	Shall include Mammals, Birds, Reptiles, Amphibians.
i. Drowning incidents.	search & rescue of drowning victim, retrieving dead bodies.
j. Accident related incidents in industries, Storage & Hazardous structures.	
k. Special Service Calls	On Hire/ Chargeable calls.
l. Near Misses	A narrowly avoided collision or other accident.
m. Other emergency related incidents.	Minor incidents, trees / branch of tree had fallen due to other reasons.
<b>Fire related incidents:</b>	
a. Fire to &/or in a Highrise Buildings.	
b. Fire to &/or in a commercial/ business/assembly/ hospital/ educational structures.	include shops, market, garage, scrap yards, gyms, bus stands, banks, cinema halls etc.
c. Fire to &/or in a residential low-rise structure, house, village.	
d. Fire to &/or in a slum area, huts, labour camp.	Residential dwellings of in slums (jhuggi jhopdi) etc.
e. Fire to temporary structures.	All structures erected temporarily viz.; tents, cabins, shamianas, shacks and tarpaulin shelters for temporary purposes and ceremonial occasions for a limited time.
f. Fires to &/or in Industries, Storage & Hazardous structures.	Will include all industries, warehouses, shipyards, Port areas, petrol pumps, lpg gas godowns.
g. Dry Grass & field fires.	
h. Wildland fires.	A wildfire, wildland fire or rural fire is an uncontrolled fire in an area of combustible vegetation occurring in rural areas. Shall include plantation fires too.
i. Electrical related fires.	
j. Inflammable/toxic chemical & liquefied gas incidents.	Leakage or fire.
k. Air, Road, Sea and Rail fire incidents.	Boats, Automotive, Train& aircraft fires.
l. Arson.	
m. Garbage and Scrap Fire.	
n. False alarms/ Unconfirmed.	
o. Other Fire related incidents.	Minor fire incidents.

The KML data and KML data in CSV format of the Base Layers, Infrastructure Layers, Thematic, Point of Interest for the State of Goa are being utilised from open source platforms for constructing the maps.

## II. Database with flexible structure for report generation and data analysis.

Sr No	Report Date (7 to 7)	Station	Call No	Type of Call	Type of Fire/Emergency	Time Out	Time In	Vehicle No	Lost Human	Saved Human	Lost Animal	Saved Animal
11927	23 Jul 20	8 Margao	11	Special Service	-	15:05	16:50	GA-07 G-1569				
11928	23 Jul 20	12 Canacona	12	Emergency	-	19:40	00:10	GA-07 G-6363				
11929	23 Jul 20	12 Canacona	13	Rescue	-	01:20	04:00	GA-07 G-6363				
11930	23 Jul 20	2 Panaji	14	Nil	-							
11931	23 Jul 20	4 Bicholim	15	Nil	-							
11932	23 Jul 20	6 Valpoi	16	Nil	-							
11933	23 Jul 20	7 Old Goa	17	Nil	-							
11934	23 Jul 20	11 Corchorem	18	Nil	-							
11935	23 Jul 20	13 Verna	19	Nil	-							
11936	23 Jul 20	14 Kundam	20	Nil	-							
11937												
11938												
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11942												
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Data is collected on day to day basis in excel



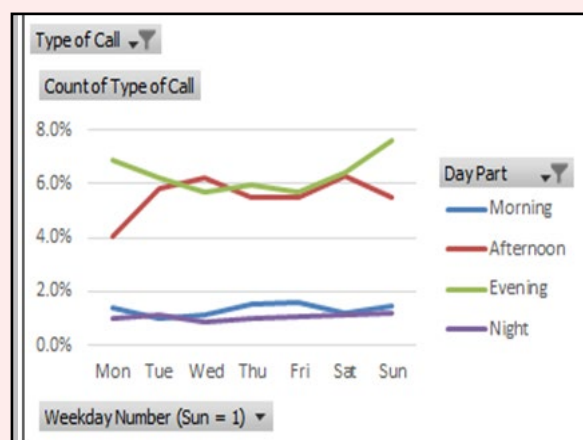
Dash Board for Selection of category of incidents for data analysis.

## Data Reports & Analysis:

INCIDENT		Headquarters	Panaji	Mapusa	Bicholim	Pernem	Valpoi	Old Goa	Margao	Vasco	Ponda	Curchorem	Canacona	Verna	Kundaim	Pilerne
f. Trees or branches fallen on Structures, Roads, Electrical lines, Vehicles due to heavy winds/rains.	MF	189	215	369	290	377	328	226	371	182	436	424	237	127	141	153
d. Flood Hydrological.	HD	3	2	4	4	7	-	2	4	1	2	2	4	1	1	1
c. Structure collapse.	EC	2	4	5	-	4	1	1	6	1	6	2	-	2	2	1
d. Air, Road, Sea and Rail accidents.	ED	2	8	5	2	9	1	9	11	3	7	4	5	3	2	4
g. Person trapped (Light).	EG	4	20	6	1	-	-	3	10	5	7	-	1	-	-	3
m. Other Emergency related incidents.	EM	14	15	6	2	10	2	10	12	11	17	9	10	3	7	7
b. Fire to &/or in a commercial/ bussiness/ assembly/ hospital/ educational structures.	FB	-	2	6	1	2	2	3	14	-	1	1	3	3	1	3
c. Fire to &/or in a residential low rise structures, flat, house, village.	FC	2	15	18	13	8	6	9	23	11	7	6	10	9	4	12
f. Fires to &/or in Industries, Storage & Hazardous structures.	FF	-	-	6	-	-	2	1	4	1	-	1	-	2	1	3
g. Dry Grass & field fires.	FG	6	105	170	136	95	26	62	116	62	70	63	32	66	36	81
h. Wildland fires.	FH	3	13	51	34	56	42	16	37	8	23	35	14	9	7	25
i. Electrical related fires.	FI	5	36	31	4	2	2	5	20	15	17	4	6	2	6	12
j. Inflammable/toxic chemical & liquefied gas incidents.	FJ	1	7	1	1	-	4	7	6	6	6	5	-	1	2	4
k. Air, Road, Sea and Rail fire incidents.	FK	-	15	11	4	9	1	12	13	8	7	5	3	6	-	6
m. Garbage and Scrap Fire.	FM	2	39	7	2	1	1	2	59	16	12	3	-	7	2	7
o. Other Fire related incidents.	FO	-	17	12	5	4	3	9	17	7	10	10	4	7	2	8
GEOPHYSICAL	G	2	1	1	-	1	4	-	1	4	2	-	-	2	-	-
CLIMATOLOGICAL	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
METEOROLOGICAL	M	189	215	369	290	377	328	226	371	182	436	424	237	127	141	153
HYDROLOGICAL	H	3	2	4	4	7	-	2	4	1	2	2	4	1	1	1
BIOLOGICAL	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EMERGENCY/ ACCIDENT RELATED	E	25	106	128	103	76	43	56	152	47	143	75	51	24	53	52
FIRE RELATED INCIDENTS	F	19	249	313	200	177	89	126	310	134	153	133	72	112	61	161
<b>TOTAL</b>	<b>T</b>	<b>238</b>	<b>573</b>	<b>815</b>	<b>597</b>	<b>638</b>	<b>464</b>	<b>410</b>	<b>838</b>	<b>368</b>	<b>736</b>	<b>634</b>	<b>364</b>	<b>266</b>	<b>256</b>	<b>367</b>

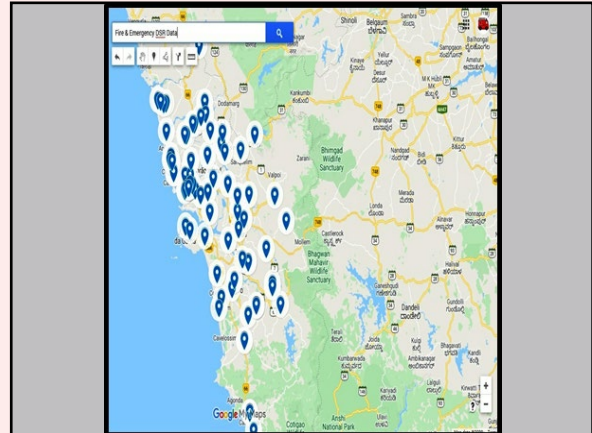
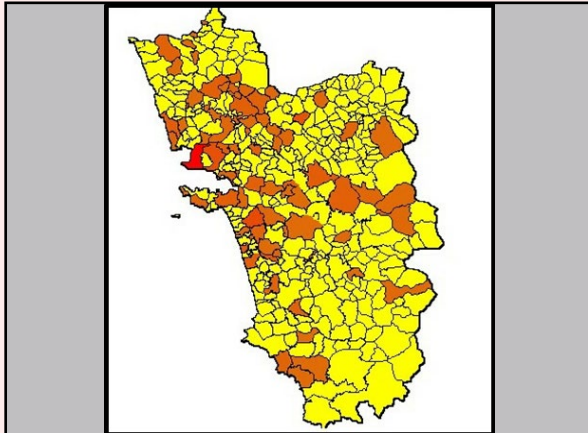
## Sample Report of Type of Calls categorised occurring Station wise

Type of Call	Fire related incidents					
Count of Type of Call	Column Label					
Row Labels	Morning	Afternoon	Evening	Night	Grand Total	
Mon	1.4%	4.1%	6.8%	1.0%	13.3%	
Tue	1.0%	5.8%	6.2%	1.1%	14.2%	
Wed	1.1%	6.2%	5.7%	0.9%	14.0%	
Thu	1.5%	5.5%	5.9%	1.0%	14.0%	
Fri	1.6%	5.5%	5.7%	1.1%	13.9%	
Sat	1.2%	6.3%	6.4%	1.1%	15.0%	
Sun	1.4%	5.5%	7.6%	1.2%	15.7%	
<b>Grand Total</b>	<b>9%</b>	<b>39%</b>	<b>44%</b>	<b>7%</b>	<b>100%</b>	

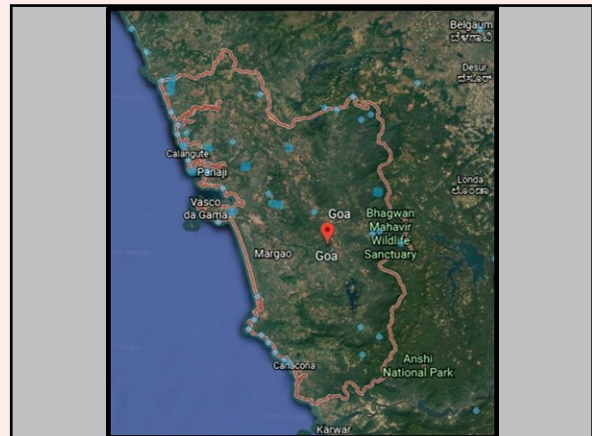
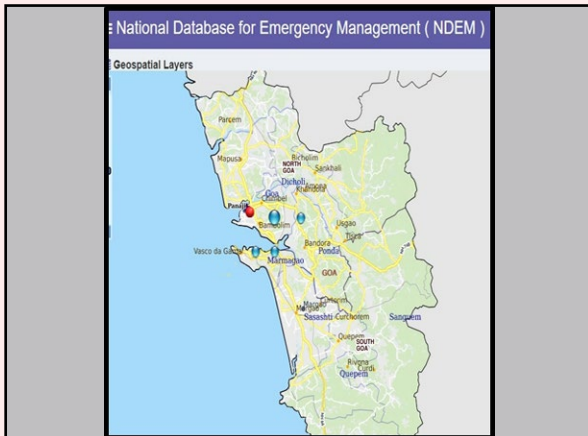


Sample Report of selected category of call with respect to day of the week & duration of the day.

III. Database input for Software. Data collated can be pushed over API to various open source applications for data visualization/ presentation purpose.



Sample category of incidents earmarked in excel and Power maps.



Sample category of incidents earmarked in NDEM portal and Google maps.



Mr. Ashok Menon is currently serving the position of Director, Fire & Emergency Services. His qualifications include A.D.F.E. from National Fire Service College (NFSC), Nagpur, along with graduate ships from both the Institutions of Fire Engineers I.F.E (India & UK). Mr. Menon also holds an Advanced Diploma in Disaster Management. He received Gold Medal for topping the “Station Officers’ & Instructor Training Course” at NFSC. Mr. Menon is an Associate Member of I.F.E (India & UK.) He is a SAARC accredited ‘Incident Command Trainer’ for their member countries.

His task responsibility attributes include Policy-framing, SOP Formulation, Chief Executive functions & Troubleshooting, Administrative Control and Staff Empowerment through effective leadership.

In addition, he maintains excellent rapport with local administration, regulatory agencies, government, statutory bodies, professional institutions and society at large. Mr. Menon has also been awarded President’s Fire Service Medal for Meritorious Service by Govt. of India & Chief Minister’s Gallantry Medal by Goa State Govt. He is also Advisor to FSAI, Goa Chapter and Past President of Rotary Club of Panaji, Midtown.



Mr. Neelesh Fernandez is a Qualified & Motivated Professional with progressive responsible experience in the private as well as government sector. Strong qualifications in fire fighting, training, public safety, and emergency response. Well-developed leadership and analytical skills as evidenced by ability to continuously improve fire/rescue operations and emergency medical services. Reputation for strong work ethic and uncompromising devotion to service.

- A Pro - Active and result oriented with professional experience in the field of Fire Fighting, Fire Protection, Prevention, Operation, Maintenance and Administration in the State Govt. Fire Department.
- Possesses competency and skill to , manage, command and take effective action during emergency.
- Endowed with Proficiency in Incident investigation and make corrective actions, recommendations as per applicable standards.
- Important academic credentials:
  - Divisional Officers’ Course, NFSC, Nagpur.
  - International General Certificate in Occupational Health & Safety, NEBOSH.
  - Post Graduate Diploma in Fire Protection Engineering, MIT, Pune.
  - Junior Fire Officers Course, Tambaram State Fire Training Centre, Chennai.