COUNTING CALLS

Telling the Story: Fire Department Response
FIRE DEPARTMENT CORE VALUES

Protect lives, property, and the environment through preparedness, prevention, public education, and emergency response with an emphasis on quality services, efficiency, effectiveness, and safety.
Effectively managing a fire department requires an understanding of and an ability to demonstrate how changes to resources in any of these areas will affect the service to the community.

One of the greatest challenges to public safety is articulating its value in a quantifiable manner.
DATA: THE SUSTAINING LIFELOOD OF THE FIRE SERVICE.

Data, and the information gleaned from it, show the need for prevention, public education, and emergency response services including the number of apparatus necessary to mitigate the emergencies that do occur, assure optimal performance of responders on scene, and best facilitate a positive outcome of the incident.
Fire department leaders must have reliable statistical data useful for optimization of resources in every area of the fire department.
ANNUAL REPORTS…
WHAT’S IN YOURS?

- **Response statistics, division reports, specialty team reports, and highlights of other services provided**
- Provide an opportunity for leaders to demonstrate the department’s value and educate stakeholders.
- Powerful, effective and efficient way to connect with the community.
HISTORIC REPORTING

- Fires per capita (per 1000 population)
- Fire Loss estimates vs assessed property value
- Fire Loss per capita (per 1000 population)
- Civilian injury/ death per year
- Smoke detectors installed
- **Incidents total** number
- Incidents number /percentage by category (fire, EMD, Hazmat)
- Incident number/percentage by type (cardiac, trauma, vehicle fire, trash fire, etc)
LEADERS MUST …
TELL A MORE COMPLETE STORY

- The **first rule** is to **anticipate the questions** to be asked by decision makers, the press and the public.

- The next step is to not only **answer those questions** but also **go beyond to educate** them on your message and the reality of the fire departments' capability, activity, performance and resilience.
DATA ACQUISITION

- Computer Aid Dispatch (CAD) Data (1-3 years preferred)
- Station First due boundaries
- Station First due response zones (fire box zones)
- Building footprint and building type
- Parcel data (land/property value)
- Demographic data from the American Community Survey portion of the U.S. Census at the census block level preferred (Gender, Age, Race, Education, Income/Poverty, Housing Characteristics)
- Physical Data (e.g. transportation network, utility lines, river, and floodplains)
- Computer Aid Dispatch (CAD) or RMS Data
- Unit Responses by first due
- Unit Responses by call type
- Unit Responses by council district
- Unit Responses by Battalion
- Searchable by keywords
FIRECARES - VISUALIZE DATA

- **Station First due boundaries**
- **Building footprint** and building type
- **Parcel data** (land/property value)
- **Demographic data** from the American Community Survey portion of the U.S. Census at the census block level preferred (Gender, Age, Race, Education, Income/Poverty, Housing Characteristics)
- **Physical Data** (e.g. transportation network, utility lines, river, and floodplains)
PERFORMANCE INDICATORS

- **Intervention time** is the time that responders arriving on scene engage to stop the emergency.

- For **EMS** this time is typically when the responders are at patient side.

- For **FIRE** response, this time is documented for water on fire. Intervention time is a critical indicator of operational performance.
These times can be captured and recorded in simple charts to show the effectiveness of fire department response and intervention.

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<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>4 – MIN ENGINE</strong></td>
<td>29.3%</td>
</tr>
<tr>
<td><strong>8 – MIN ENGINE</strong></td>
<td>80.3%</td>
</tr>
<tr>
<td><strong>4 –MIN LADDER TOWER</strong></td>
<td>13.7%</td>
</tr>
<tr>
<td><strong>8 – MIN LADDER TOWER</strong></td>
<td>62.8%</td>
</tr>
<tr>
<td><strong>4 –MIN “2 IN – 2 OUT”</strong></td>
<td>29.6%</td>
</tr>
<tr>
<td><strong>8 –MIN “2 IN – 2 OUT”</strong></td>
<td>80.5%</td>
</tr>
<tr>
<td><strong>8 –MIN MEDIC UNIT</strong></td>
<td>53.4%</td>
</tr>
<tr>
<td><strong>8 –MIN AMBULANCE UNIT</strong></td>
<td>61.2%</td>
</tr>
</tbody>
</table>
USING GIS

Using Geography is an effective way to **visualize response capability** based on the performance objectives in the NFPA 1710 Standard.
WORKLOAD ANALYSIS

- Must have sufficient resources positioned appropriately to address emergencies as they occur in an equitable manner.

- A Department’s workload or “busy-ness” can be revealed by analyzing the number of companies/units that are engaged on assignment per hour.

- This method of analysis will identify the percentage of times Department resources are depleted over a given time period.
WORKLOAD ANALYSIS

- **Overlapping Incidents** refers to the total number of emergency events to which apparatus are assigned within any one-hour time interval.

- Overlapping incidents are measured in one-hour intervals though the total time assigned to a particular incident may be shorter or longer than a single hour.

- **For example**, A department could have overlapping incidents for ambulance units to the point of having 100% of units engaged on assignment 25.0% of total hours in 2017.
OVERLAPPING RESPONSES

A Department may experience numerous hours where a **significant** percentage of resources are engaged on assignment.

These incidents can also be **geographically located in the same neighborhood** causing resources throughout the department to be **displaced due to continuously responding outside their first due area.**
ASSESSING RESPONSE DATA: AVAILABILITY AND CAPABILITY

- Data necessary to assess availability and capability include **unit response hours by unit and station**.

- **Response time data from other units responding INTO these station’s first due areas will likely show longer response times since they are traveling longer distances to assist in covering the call volume for these neighborhoods.**
Another means of evaluating a Department’s workload is to analyze the number of companies/units that are engaged on assignment per hour. The analysis focuses on all responses by engines, ladders, ambulances, and other companies. “Dispatch time” and “clear time” for each apparatus can examined to identify the total number of apparatus that were engaged on assignment within an hour.
SYSTEM CAPACITY

- **System capacity** may be defined as the **maximum service output** that the system of workers, equipment and vehicles is capable of producing as a whole.

- **System capacity** can reach a maximum and at that point become **fragile**.
SYSTEM PERFORMANCE

► Responses by **hour and by year**.

► Provides insight into the **overall pattern of responses** and any increase in **volume by year**.

► This example clearly shows the call volume increase between 2014 and 2016.
Another way to tell the story of system capacity is to assess the number of incidents along with the number of overall responses to those incidents.
**SYSTEM RESILIENCE**

- **Resilience** is the capacity to recover quickly from difficulties or stresses.
- This concept applies to emergency response systems under stress.
- **Excess capacity** to assure that they are resilient in the face of excess demand.
- Departments with maximum use of apparatus on a daily basis without such built in redundancy are destined to experience failure in the form of negative outcomes.

<table>
<thead>
<tr>
<th>Fire Stations</th>
<th>Total Station Responses</th>
<th>Total Engine Responses</th>
<th>Percent of 24 Hour Shift Engine on Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire Station 2</td>
<td>4649</td>
<td>3,436</td>
<td>39%</td>
</tr>
<tr>
<td>Fire Station 3</td>
<td>6230</td>
<td>4,332</td>
<td>49%</td>
</tr>
<tr>
<td>Fire Station 4</td>
<td>6083</td>
<td>4,087</td>
<td>47%</td>
</tr>
<tr>
<td>Fire Station 5</td>
<td>4907</td>
<td>3,540</td>
<td>40%</td>
</tr>
<tr>
<td>Fire Station 6</td>
<td>5431</td>
<td>3,242</td>
<td>37%</td>
</tr>
<tr>
<td>Fire</td>
<td>10483</td>
<td>5,445</td>
<td>62%</td>
</tr>
</tbody>
</table>
Fire departments are often faced with challenges that multiply after natural or human-caused events or disasters.

Surge planning for immediate response resource availability should be critical components of every fire departments emergency plan for these type events.

Surge capacity is a measurable representation of ability to manage a sudden influx of call volume.
EMS REPORTING

- **Cardiac arrest emergencies** are one of the most resource-intensive incidents to which firefighters and paramedics respond.

- Though these calls are typically less than 3% of most responses, they serve as a measure of system capability and operational performance.

<table>
<thead>
<tr>
<th>Year</th>
<th>% ROSC at ED Arrival</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY2015</td>
<td>23%</td>
<td>ROSC @ ED/all resuscitations</td>
</tr>
<tr>
<td>FY2016</td>
<td>21%</td>
<td>ROSC @ ED/all resuscitations</td>
</tr>
</tbody>
</table>
Many departments work hard to stay in the forefront of firefighting and emergency medical techniques and technology. Therefore, training is a vital part of everyday activities.

These activities occur in addition to all response activity and should be tracked, recorded, and reported.
OTHER ACTIVITIES

- Normal daily activities comprise many hours in a shift.
- Activities other than response and training include
  - completing incident reports,
  - station supply requisitions,
  - maintenance reports,
  - training records,
  - preplan inspections,
  - hydrant testing,
  - street map books upkept,
  - daily inspection of all equipment and PPE,

- apparatus maintenance, daily staffing scheduling,
  - time and attendance records,
  - leave scheduling,
  - employee orientation,
  - rookie task book completion and review, and
  - employee evaluations.

- Many departments also spend hours interacting with the public during station blood pressure checks, school fire and other emergency drills, and infant seat installation.
COMMUNITY RISK REDUCTION

- Community risk reduction activity is necessary in every community and it is a fire service role. CRR coordinates emergency operations with prevention and mitigation efforts throughout both the community and at the fire-station level.

- The cumulative efforts of the Fire Marshal help to ensure lower property insurance costs, foster economic development, lower the number and severity of firefighter injuries, and increase the quality of life in the community.

### FIRE PREVENTION SERVICES

<table>
<thead>
<tr>
<th>Service</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire Systems Tests</td>
<td>11,936</td>
</tr>
<tr>
<td>Fire Inspections</td>
<td>20,520</td>
</tr>
<tr>
<td>Plans Reviewed</td>
<td>10,788</td>
</tr>
</tbody>
</table>
COMMUNITY RISK REDUCTION

- In addition to responding to emergencies that occur, a goal of a fire department is preventing the 911 call.
- Departments employ various tactics to reach the public, educate and protect them from preventable emergencies.
- Recording these contacts is vital to telling the story of the reach of the fire department in the community.

**LIFE SAFETY EDUCATION - Direct Contacts**

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preschool Children</td>
<td>23,745</td>
</tr>
<tr>
<td>School-Aged Children</td>
<td>9,028</td>
</tr>
<tr>
<td>Older Adults 50+</td>
<td>19,837</td>
</tr>
<tr>
<td>Juvenile Fire-setters</td>
<td>48</td>
</tr>
</tbody>
</table>

**Additional Statistics**

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Homes Visited- CO Testing</td>
<td>35,125</td>
</tr>
<tr>
<td>Number persons trained in CPR</td>
<td>2,700</td>
</tr>
<tr>
<td>Smoke Alarms Installed</td>
<td>3,908</td>
</tr>
</tbody>
</table>
Fire Chiefs and other department leaders must learn to leverage data available in their emergency response system to tell the fire department’s story.

Data, and the knowledge gleaned from it, show the adequacy or the need for prevention, public education, and emergency response services.