



**SAFE-D**

2020

**Texas State Association of Fire and Emergency Districts**

# Fire and EMS Trends

Mike Montgomery

Associate Consultant, ESCI

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# How to . . .



- **Compare national and state data and measures to those for your District**
- **Find the information you need to be able to answer the questions you get**
- **Use data and technology to:**
  - tell a compelling story
  - visualize your information
  - improve understanding and
  - build community support

# Your Instructor

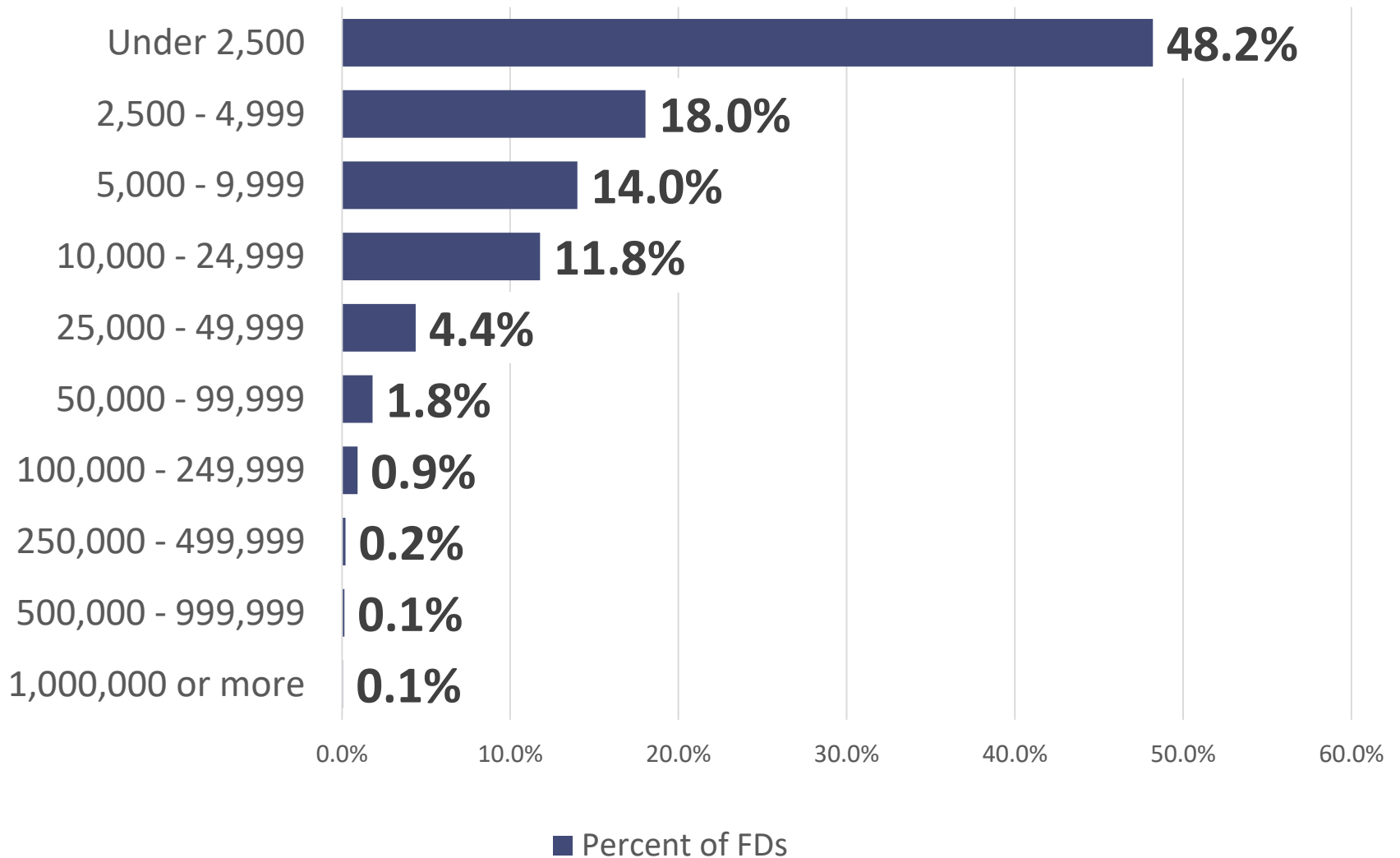


- **32 years fire service experience**
  - Master Structural Firefighter, Inspector, & Investigator
  - BBA: Texas A&M and AAS: Lone Star College
  - Public Safety Consultant
  - Harris County Fire Marshal & interim EMC
  - Asst. Chief, Cy-Fair VFD
  - TX-TF1 Logistics Manager
  - Guest Instructor, TEEX Municipal School
  - Guest Instructor, FEMT-FM program
  - Serve on several advisory boards, councils, & committees
- **24 years private sector experience**

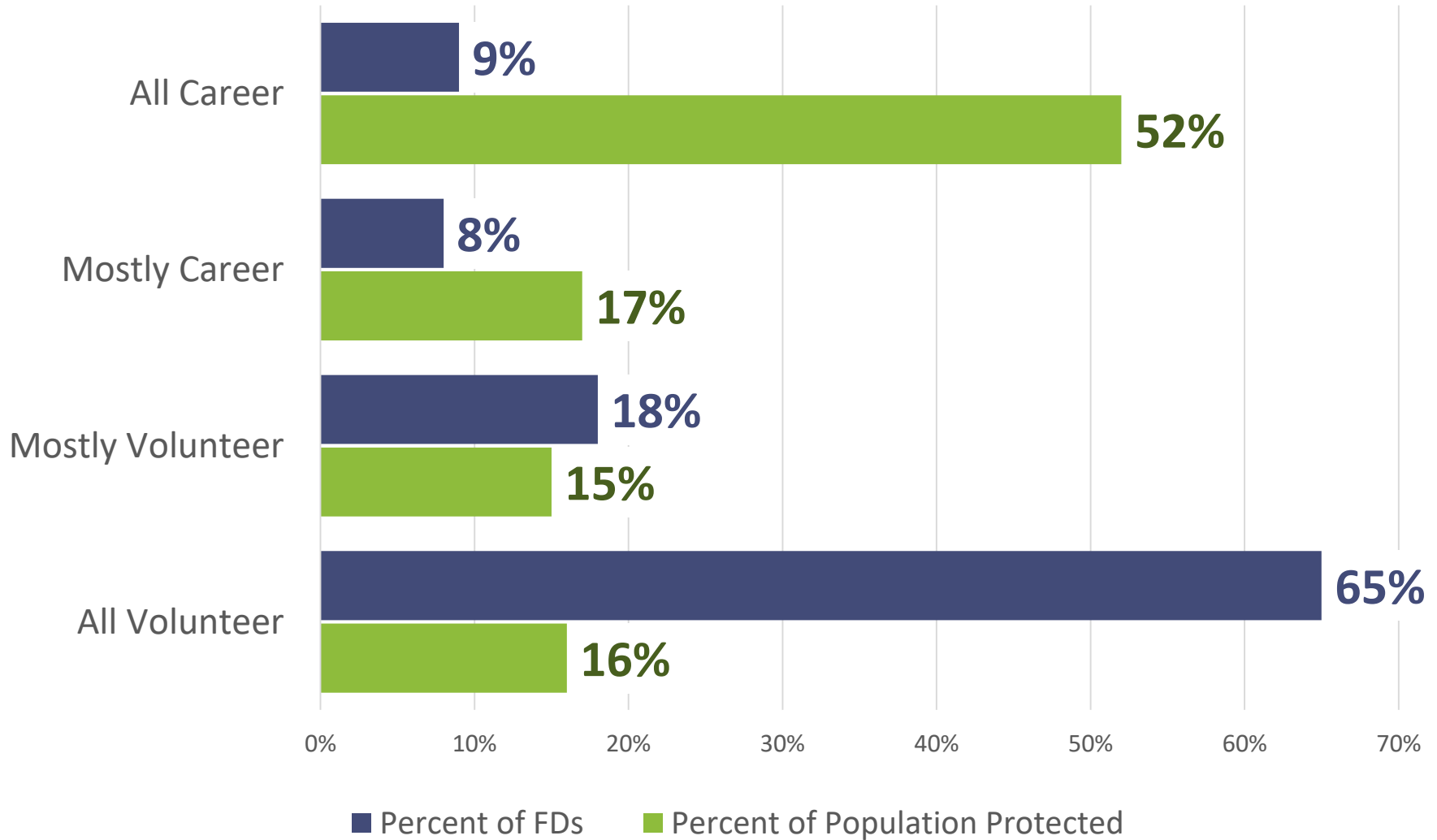


Fire

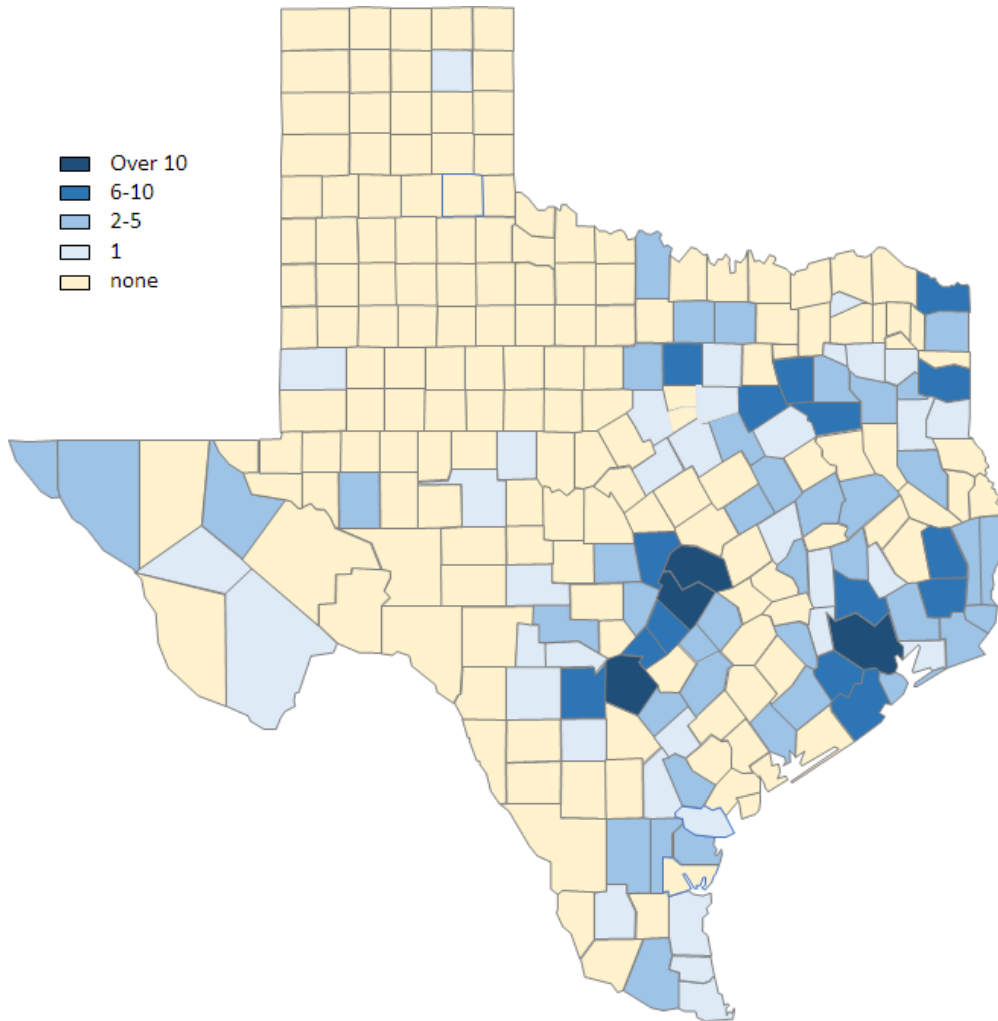
# FDs by Population



# Fire Service Models



# The Texas Fire Service



## ESDs

**334** districts in  
**94** counties  
**318** SAFE-D  
members

## Fire departments

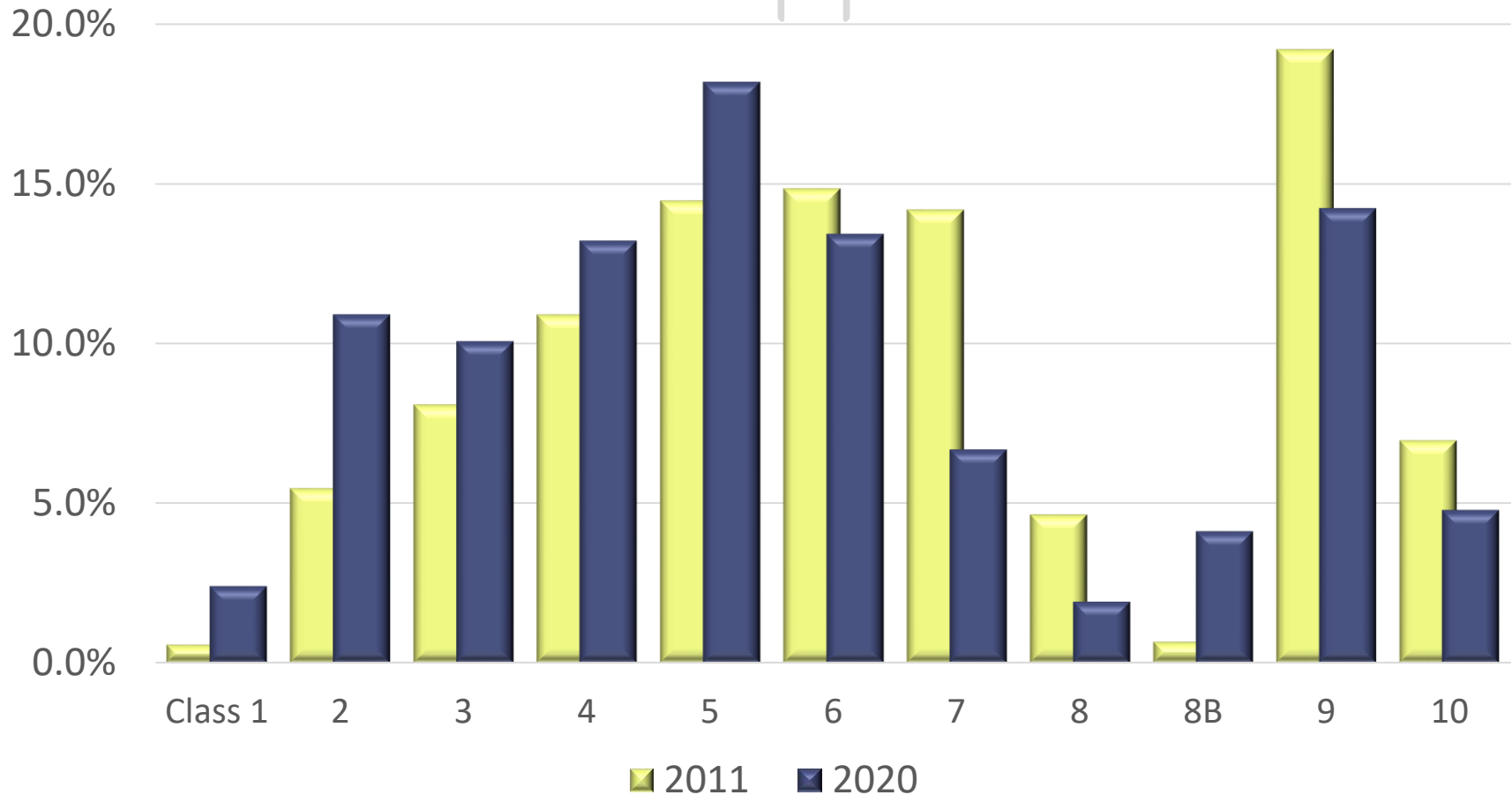
↓ **1063** volunteer **71%**  
↑ **179** mostly vol **12%**  
↑ **96** mostly paid **6%**  
↑ **172** career **11%**

# The Texas Fire Service



## Distribution of PPC® Class Ratings

**5.5** = 2020 avg.      2011 avg. = **6.3**





# Fire Trends



- **Changing expectations**
- **Balancing costs and payments**
- **Recruitment and retention**
- **Staffing – risk-based, base-peak, cross**
- **Provider Safety and Wellness**
- **Increased Use of Technology**

# Changing role of the Fire Service



## REACTIVE



- Respond to failures
- After-action reports
- Historic Analysis

## PROACTIVE



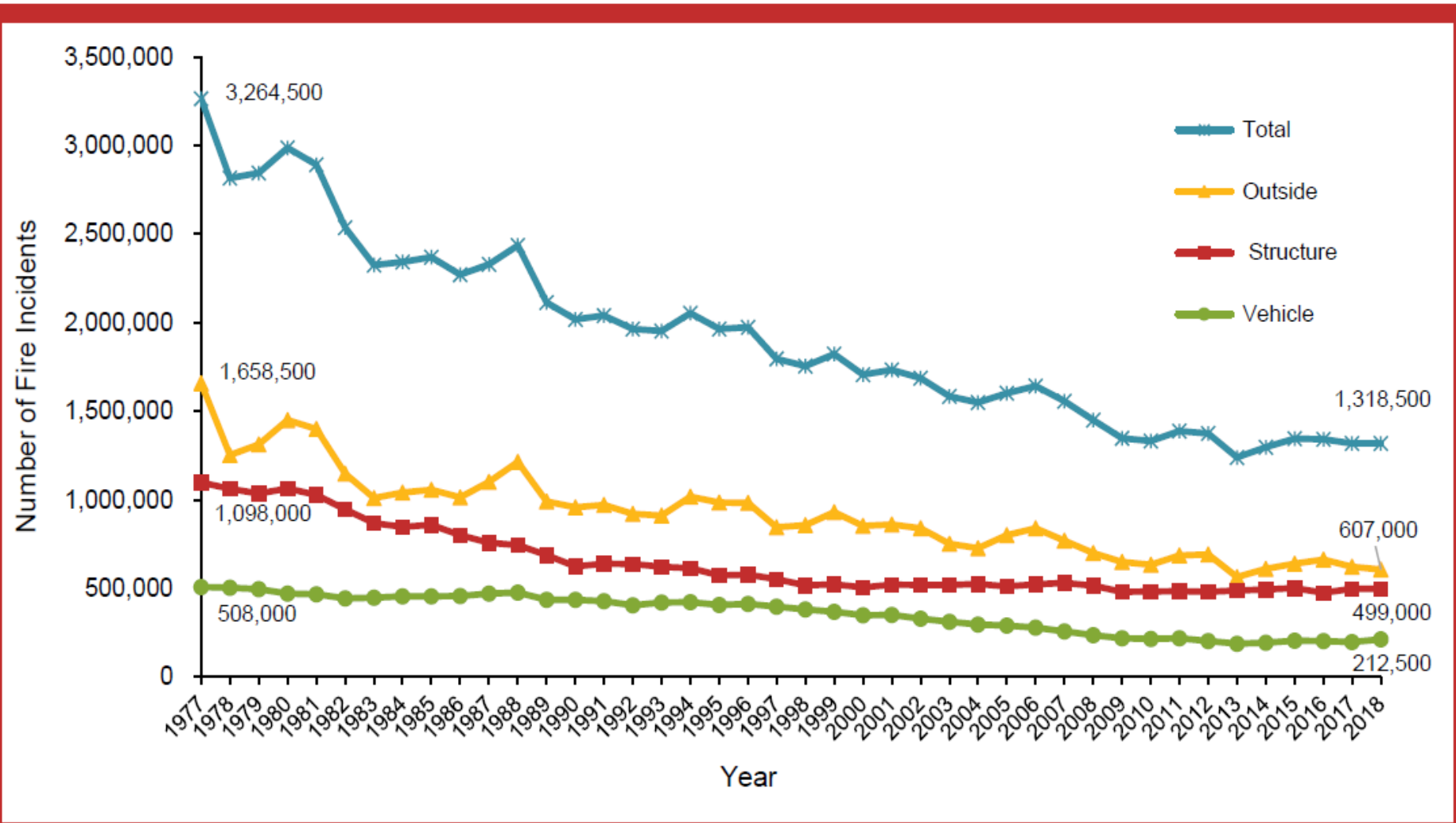
- Respond to needs
- Output Analytics
- Tactical Planning

## PREDICTIVE

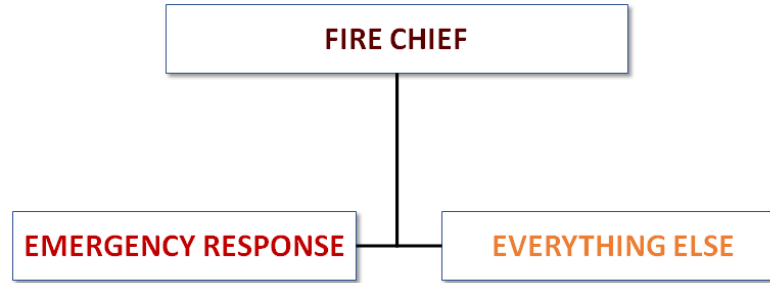


- Anticipate opportunities
- Forecast Analytics
- Strategic Planning

# Number of fires



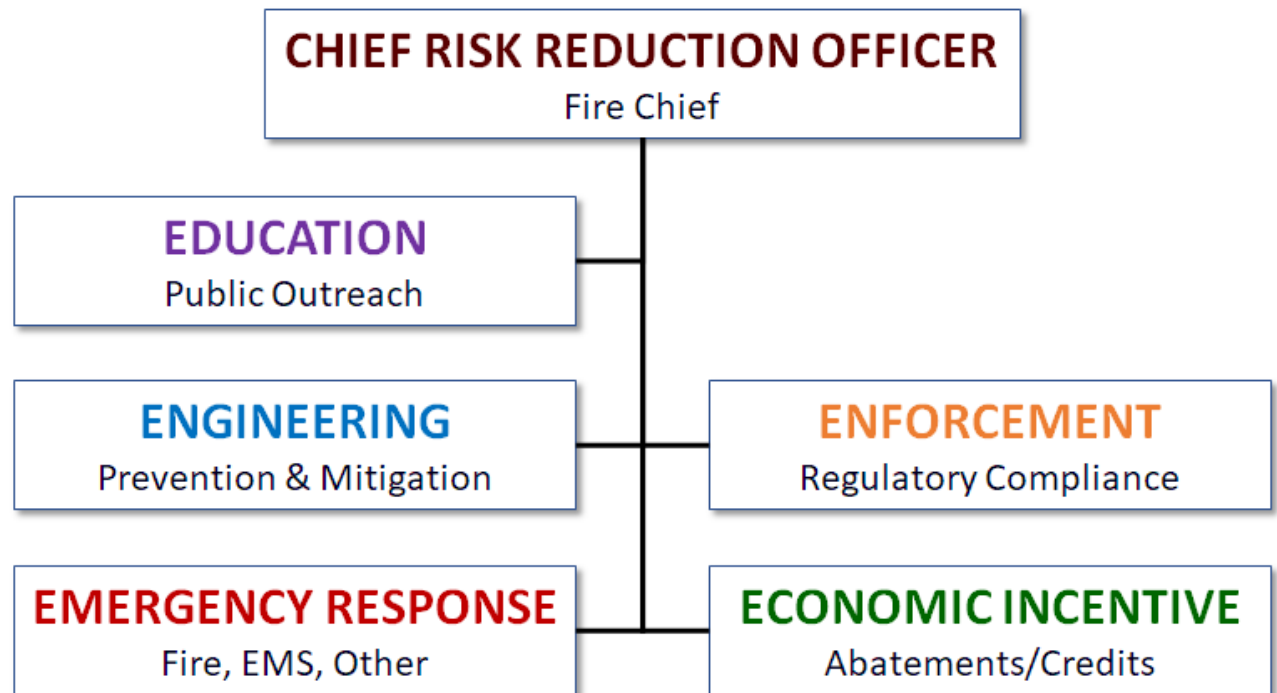
# Traditional Fire Department



## Traditional Fire Department



## Fire Department of the Future



# Critical issues



**1**

 Funding

**2**

 Staffing

**3**

 Training

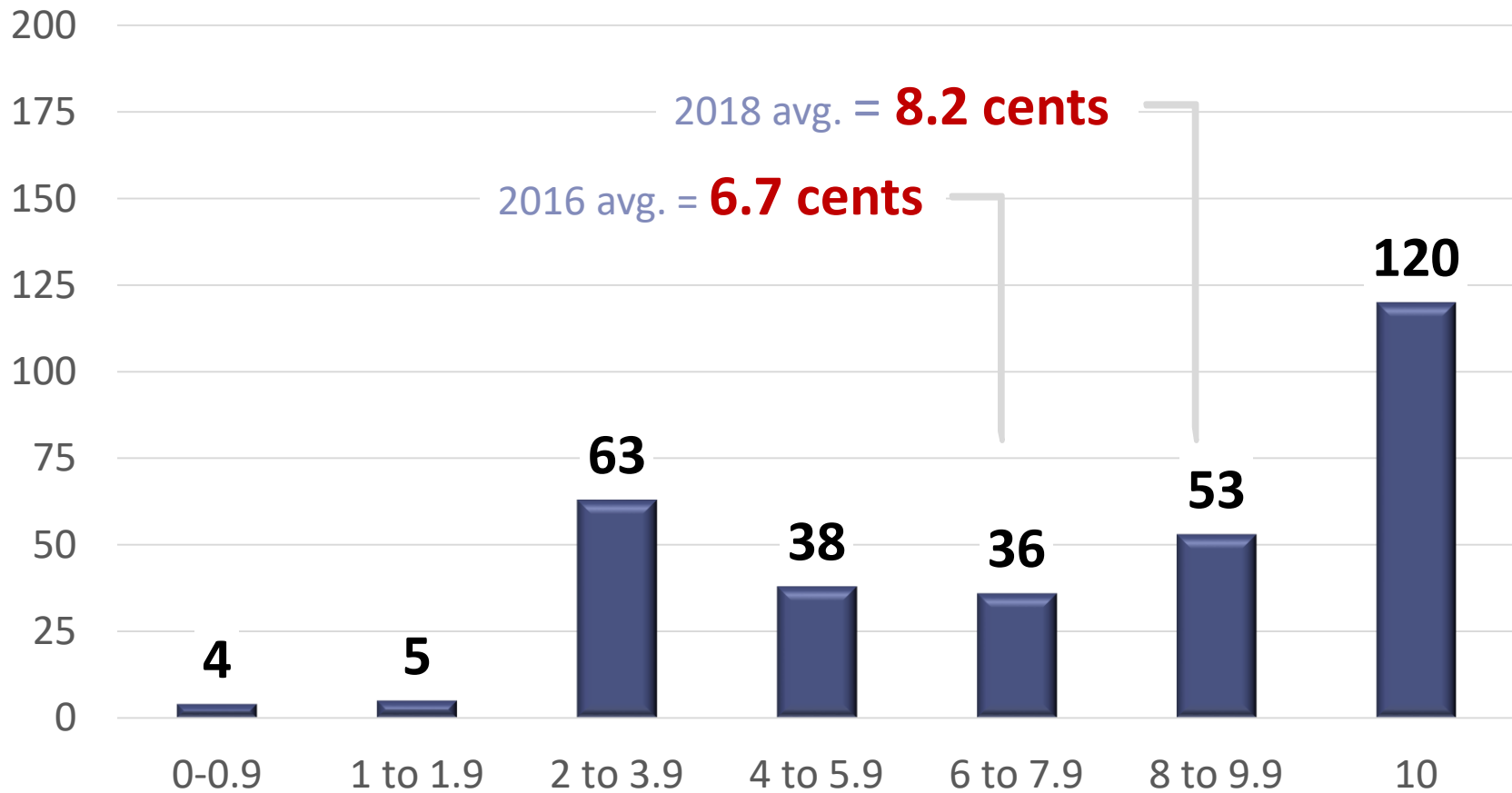
**4**

 Infrastructure

# ESD Tax Rates



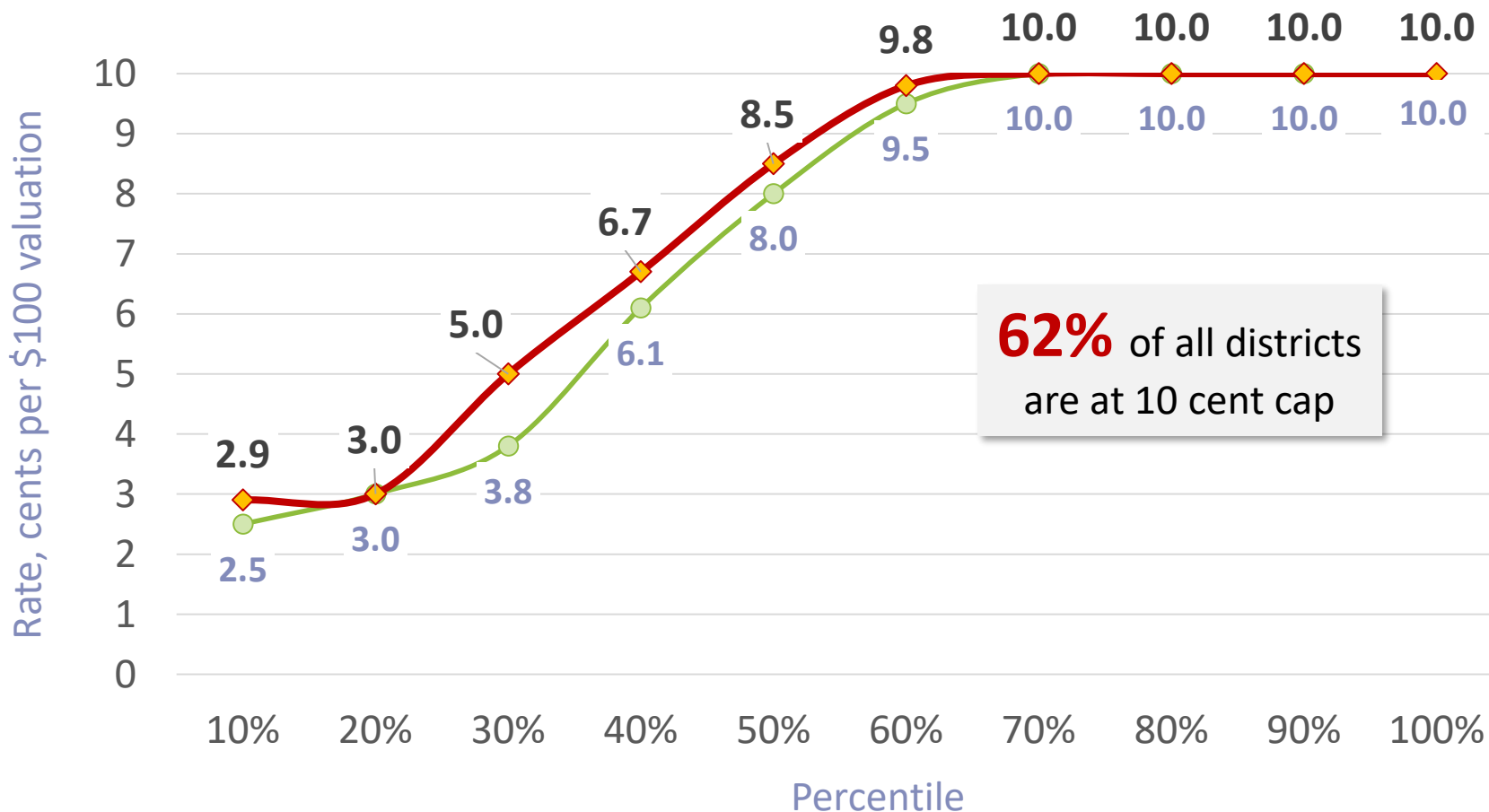
2018 Property Tax Rates, cents per \$100 valuation



# ESD Tax Rates



## 2018 ESD Property Tax Rates, by percentile

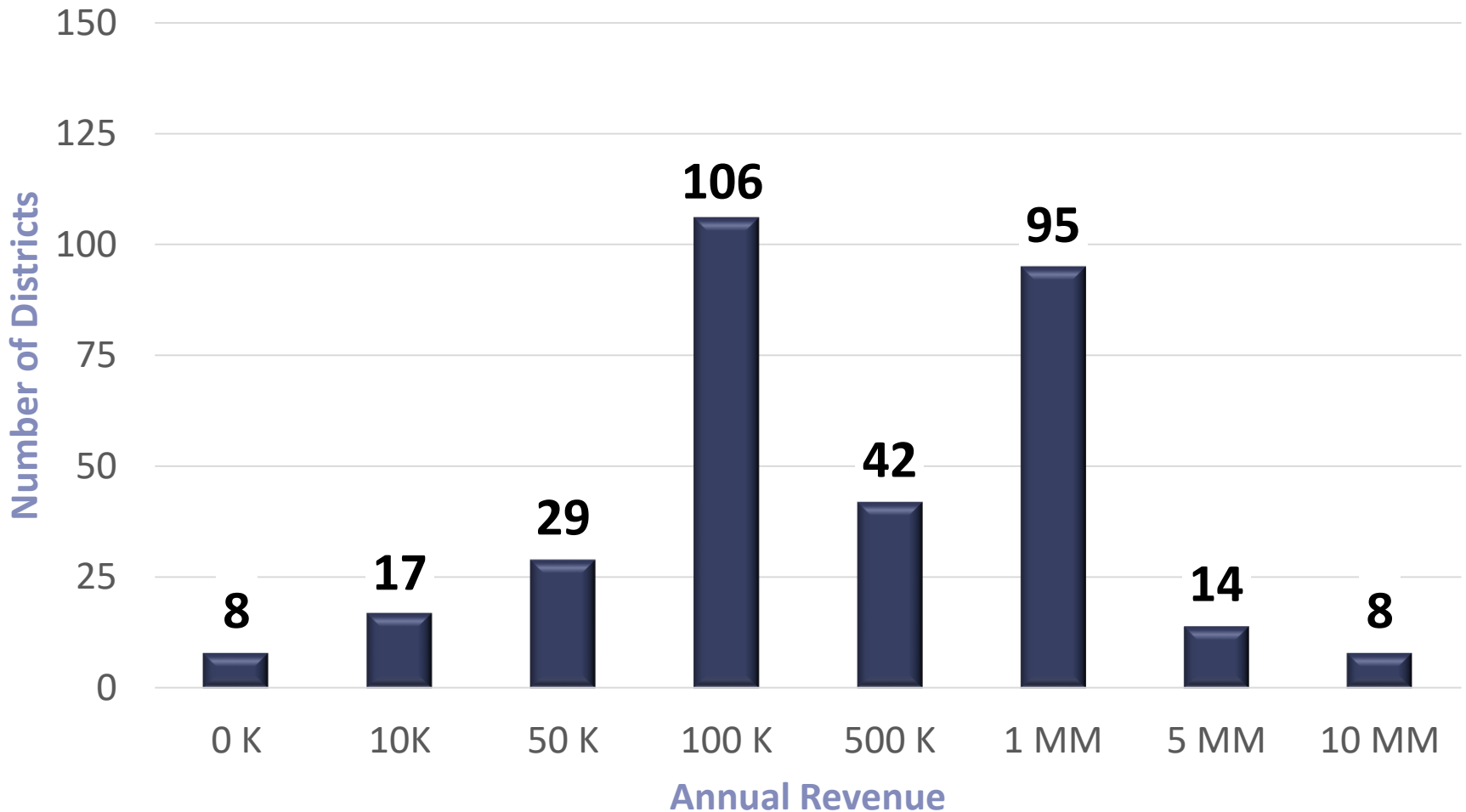




# ESD Property Tax Revenue



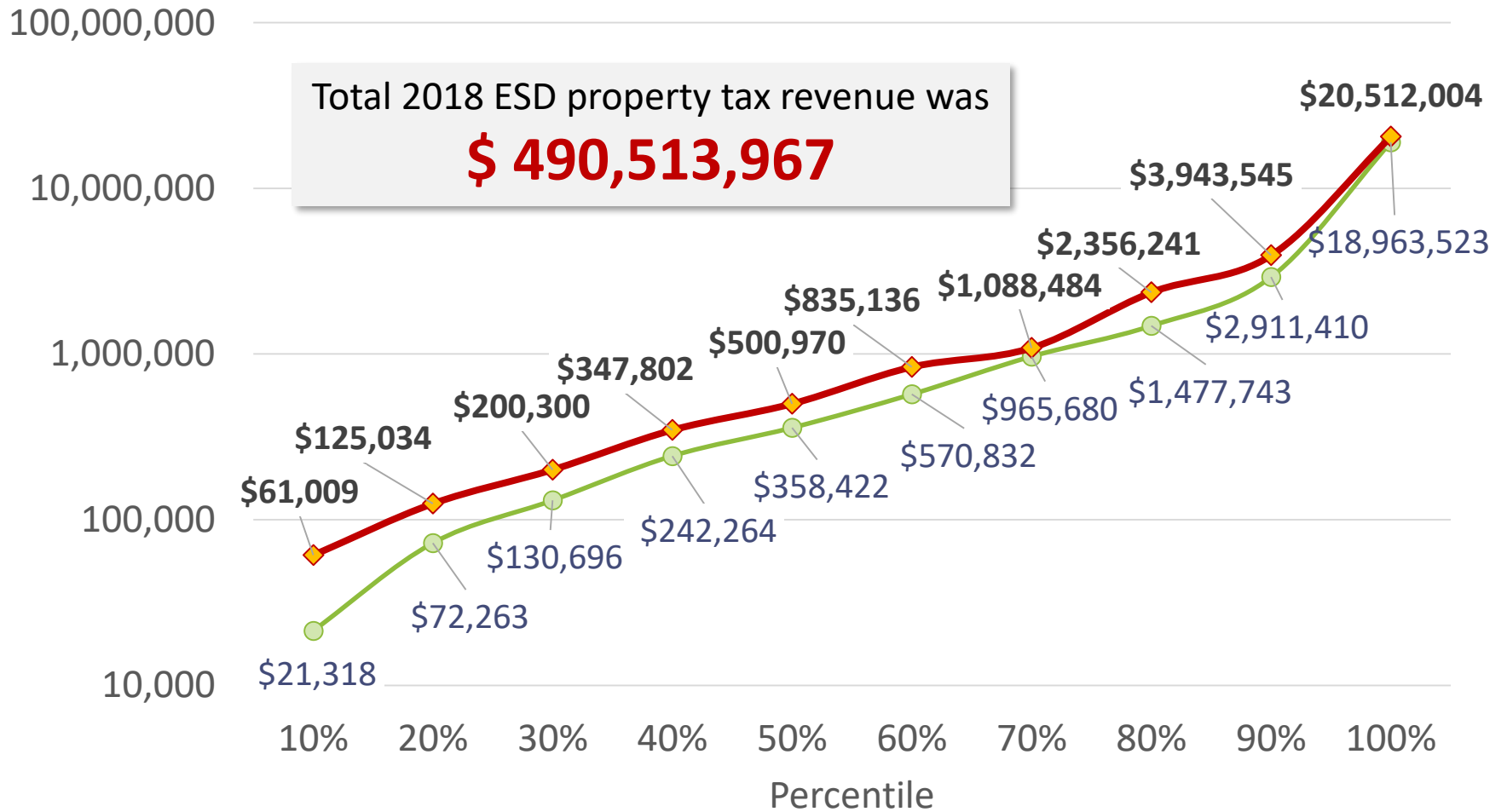
## 2018 ESD Property Tax Revenue



# ESD Property Tax Revenue



## 2018 Annual ESD Revenue, by percentile





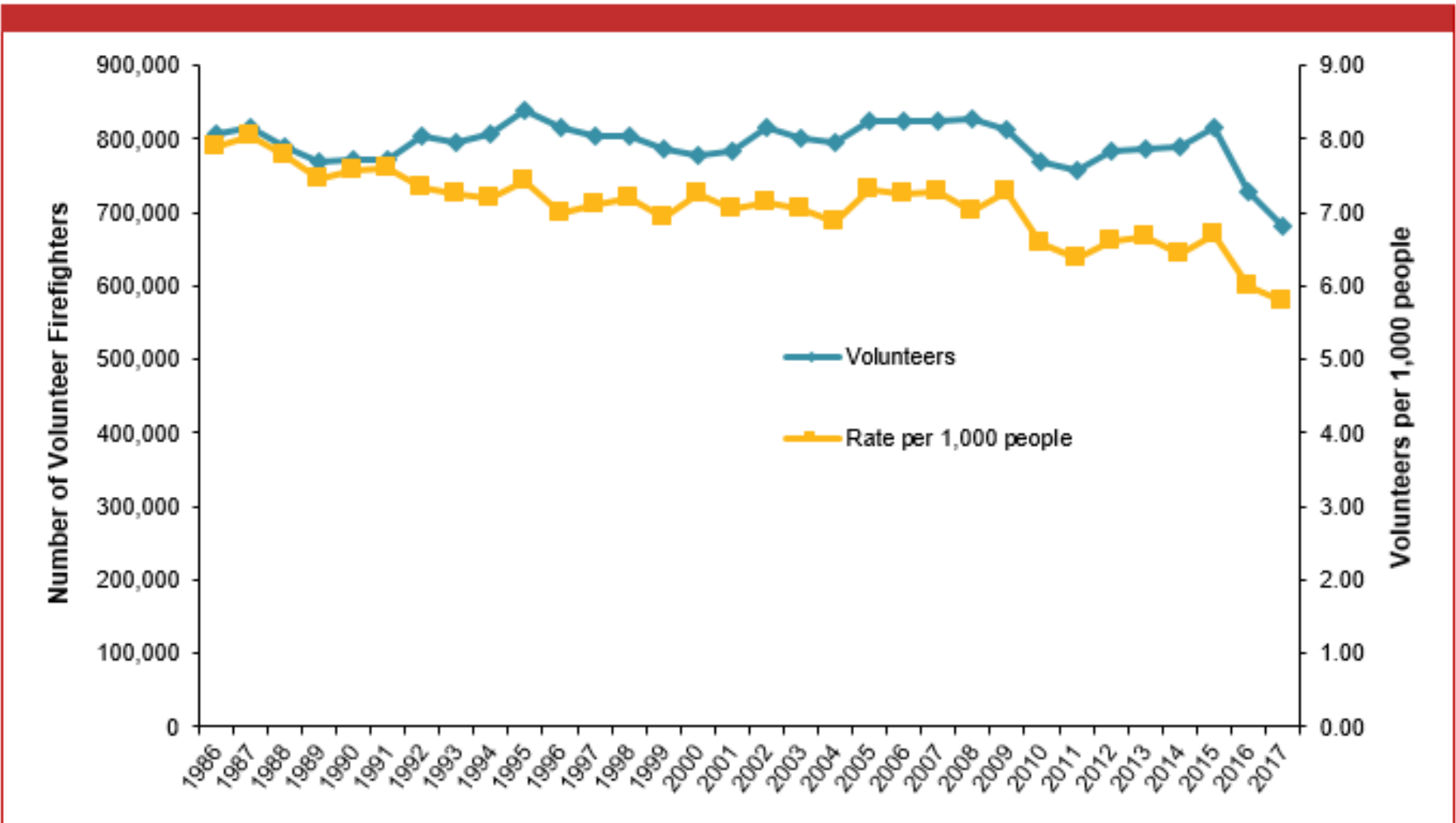
24 / 7

coverage

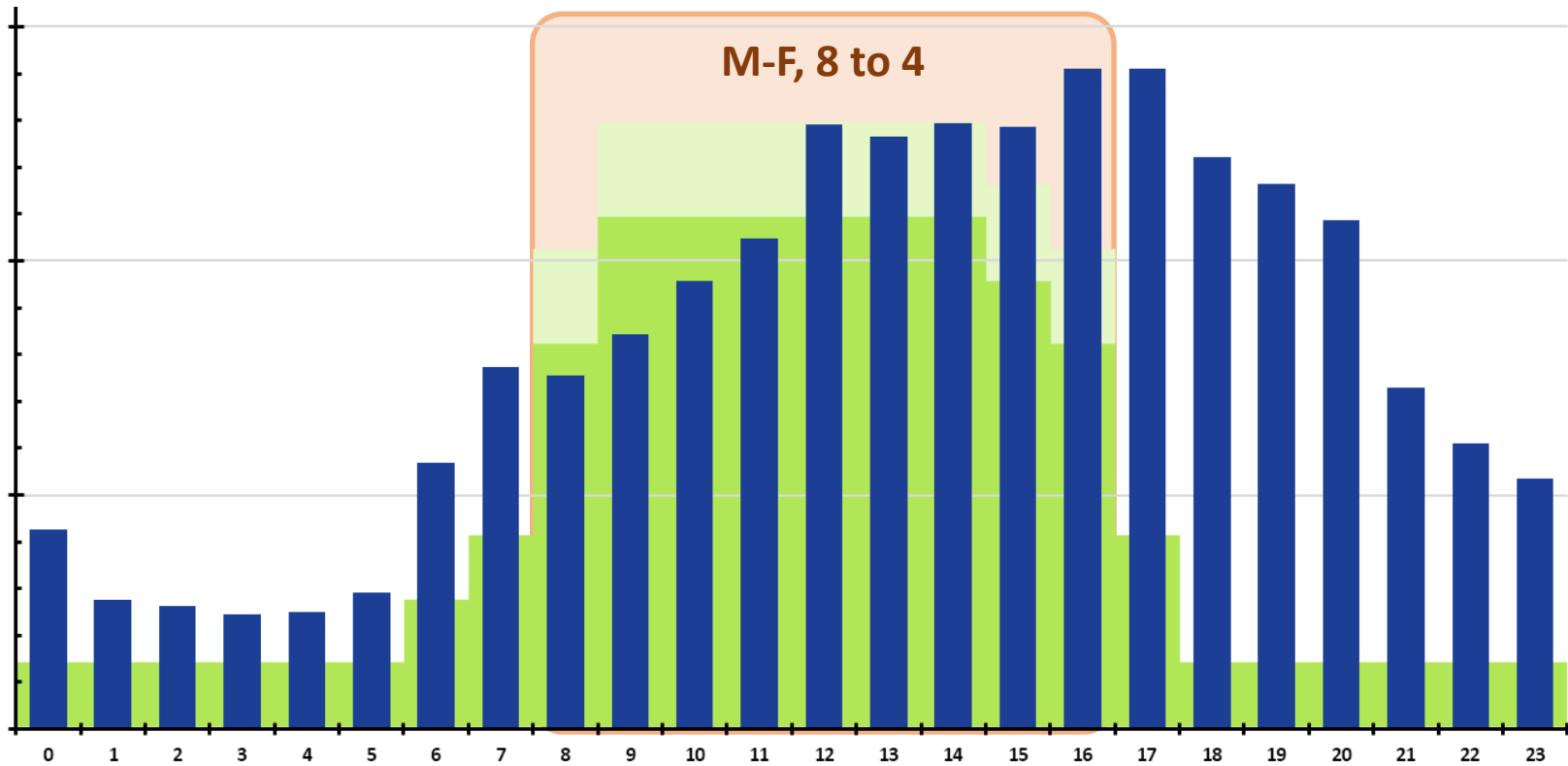
“The volunteer fire system was  
**never intended to meet the  
number of calls and the complexity  
of today’s response environment.”**

*-- Mike Montgomery, County Fire Marshal, ret.*

# Number of volunteer firefighters



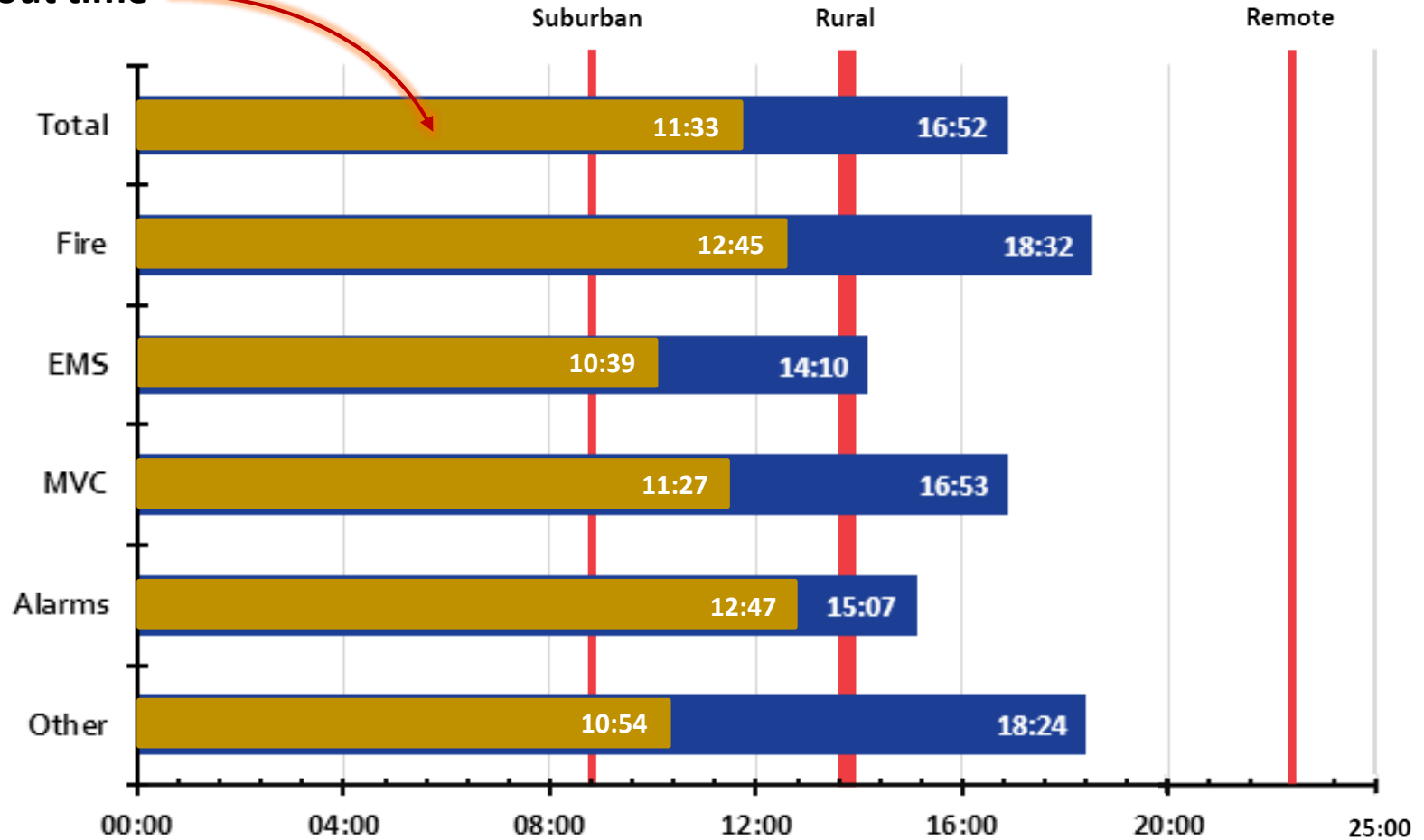
# Time of Alarm vs Staffing Level



# Response Time, First Arriving Unit



Turn-out time

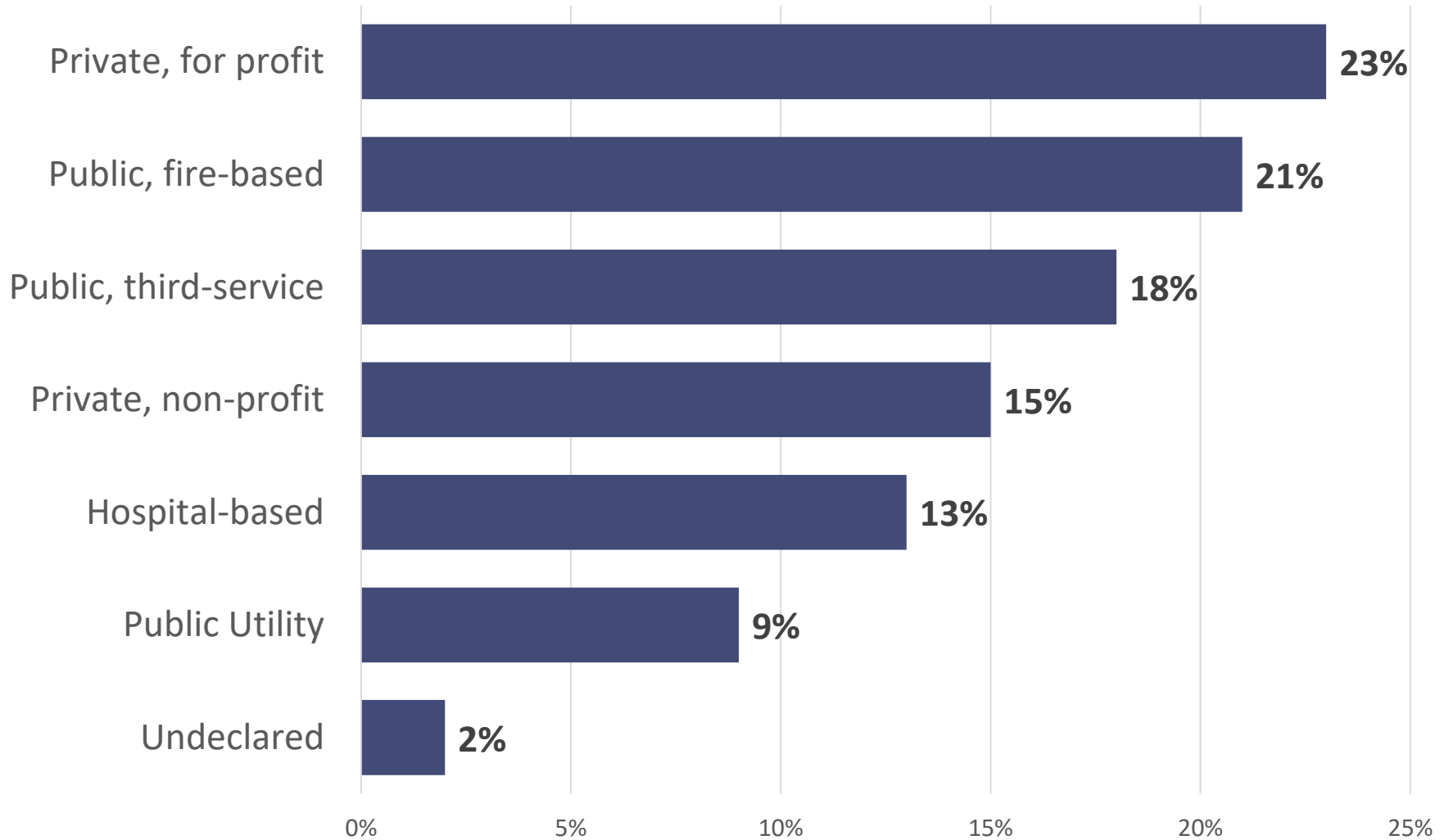


# EMTS





# EMS Service Models





- **Higher call volumes, right-sizing response**
- **Increased Use of Technology**
- **Recruitment and retention**
- **Integrated health care / paramedicine**
- **Balancing costs and payments**
- **Provider Safety and Wellness**



# Active Shooter

**TAKING  
ACTION  
FOR YOU**

**FIREFIGHTERS PREP FOR ACTIVE SHOOTER THREAT  
CREWS WILL WEAR VESTS IN DANGEROUS SITUATIONS**





# Millennials

MIND THE GAP

# Millennials



- **75 % of the workforce by 2025**
- **Have trust issues with gov't and business**
- **Support independent thinking**
- **Seek innovative solutions**
- **Seek professional development**
- **Want to make a difference**



# Key Performance Indicators

# Key Performance Indicators









- **Firefighters per 1000 population**
- **Pumpers per 1000 population**
- **Aerials per 1000 population**
- **Other suppression vehicles per 1000 pop**
- **Other vehicles per 1000 population**
- **Stations per 1000 population**
- **Level of EMS provided**



# Key Performance Indicators



## Firefighters per 1000 population

	1986	2017
Number Total	1,045,950	1,056,200 
Number Career	237,750	373,600 
Number Volunteer	808,200	682,600 
Total, Rate	1.48	3.24 
Career, Rate	1.73	1.80 
Volunteer, rate	7.88	5.80 

# Key Performance Indicators



## Units per 1000 population

Community Population	Pumpers	Aerials	Other Suppression	Stations
National Average	0.2	0.02	0.21	0.15
1,000,000 or more	0.03	0.01	0.01	0.03
500,000 – 999,999	0.05	0.01	0.02	0.05
250,000 -499,999	0.06	0.01	0.03	0.06
100,000 – 249,999	0.07	0.01	0.03	0.07
50,000 – 99,999	0.08	0.02	0.04	0.08
25,000 – 49,999	0.11	0.02	0.07	0.09
10,000 -24,999	0.18	0.03	0.14	0.13
5,000 -9,999	0.31	0.04	0.29	0.19
2500 – 4,999	0.52	0.03	0.61	0.34
Under 2,500	1.12	0.03	1.77	0.89

# Key Performance Indicators



## Level of EMS Provided, percent of departments

Community Population	No EMS	BLS	ALS
National Average	39	46	16
1,000,000 or more	0	0	100
500,000 – 999,999	0	29	71
250,000 -499,999	2	25	73
100,000 – 249,999	4	34	62
50,000 – 99,999	6	38	56
25,000 – 49,999	16	37	47
10,000 -24,999	27	42	32
5,000 -9,999	38	43	19
2500 – 4,999	41	47	12
Under 2,500	45	49	6

# Key Performance Indicators



- **Number of responses by type**
- **Number of fires per 1000 population**
- **Civilian Fire Injuries per 1 MM population**
- **Civilian Fire Deaths per 1 MM population**
- **Average \$ Loss per capita**
- **Arson rate per 1000 population**

# Key Performance Indicators



## Percent response types, by Community Size

Community Population	Fires	EMS / Rescue	False Alarm	Hazmat	Other Hazards	All Other	Mutual Aid
National Average	4	64	8	1	2	17	4
1,000,000 or more	2	59	6	1	1	30	1
500,000 – 999,999	2	72	7	1	1	16	1
250,000 -499,999	3	68	5	1	2	20	1
100,000 – 249,999	3	69	7	1	2	18	2
50,000 – 99,999	2	64	12	1	2	16	3
25,000 – 49,999	3	64	9	1	2	16	4
10,000 -24,999	4	63	9	2	2	14	5
5,000 -9,999	5	58	9	2	2	14	9
2500 – 4,999	8	58	7	1	3	13	11
Under 2,500	13	52	7	1	3	10	14

# Key Performance Indicators



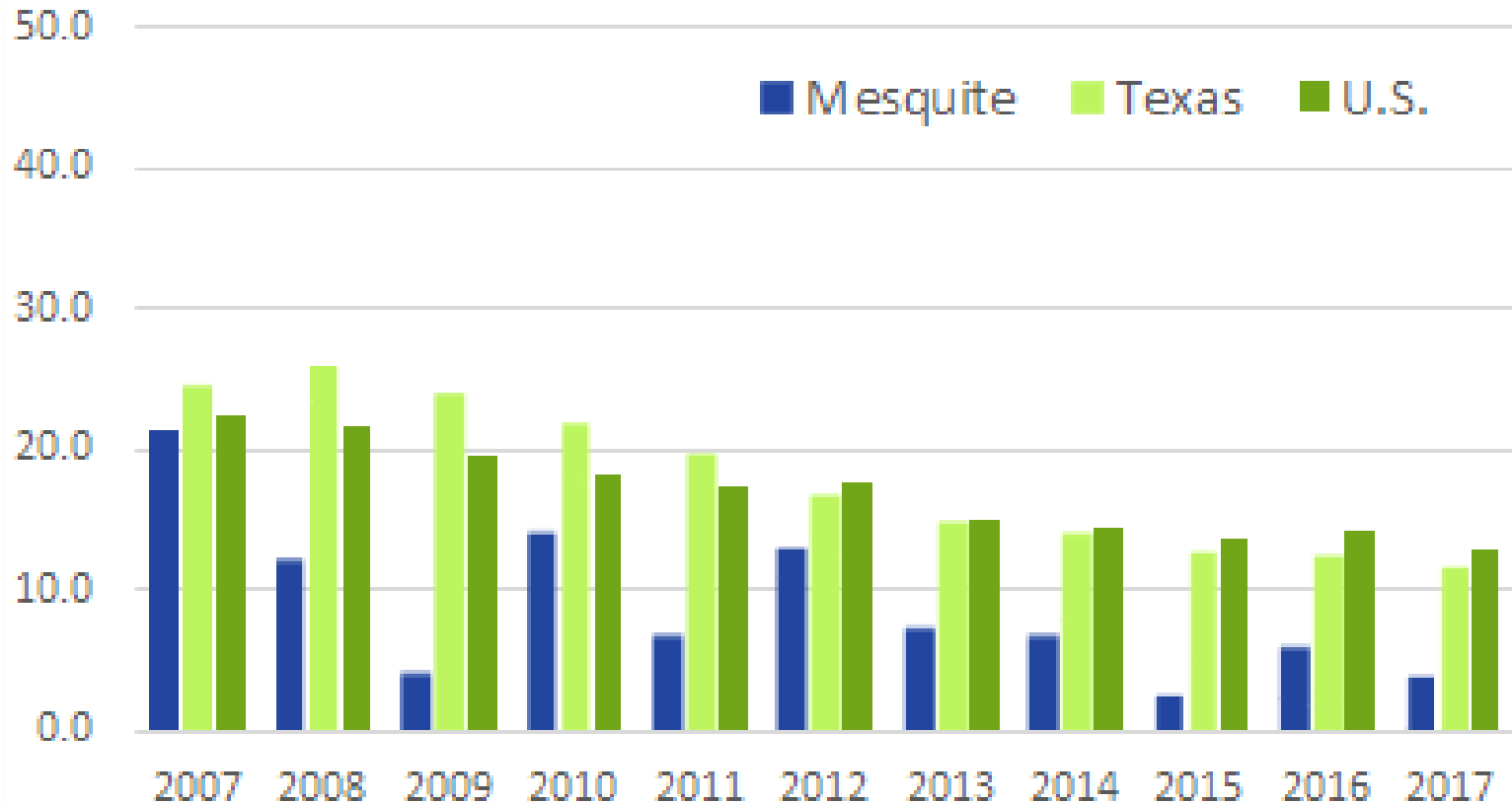
## Fire Loss Rates by Community Size

Community Population	Fires Per 1000	Civilian Injuries Per 1 MM	Civilian Fatalities Per 1 MM	\$ Loss Per capita
National Average	4.1	40.6	10.5	42.2
250,000 -499,999	3.3	27.5	5.6	31.2
100,000 – 249,999	3.1	50.5	8.5	26.3
50,000 – 99,999	2.9	47.4	7.2	45.6
25,000 – 49,999	3.1	56.0	8.5	34.3
10,000 -24,999	3.6	53.7	11.5	40.4
5,000 -9,999	4.7	35.6	17.3	52.7
2500 – 4,999	6.9	28.2	18.8	48.3
Under 2,500	9.5	28.0	21.0	93.9

# Key Performance Indicators



## Arson Rate per 1,000 population

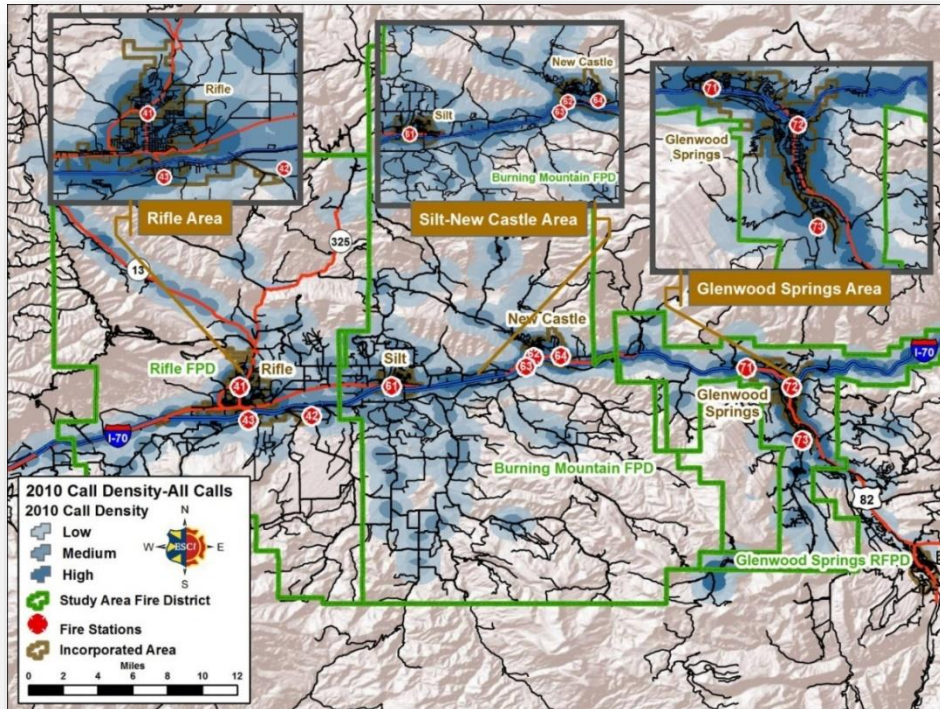


# Technology

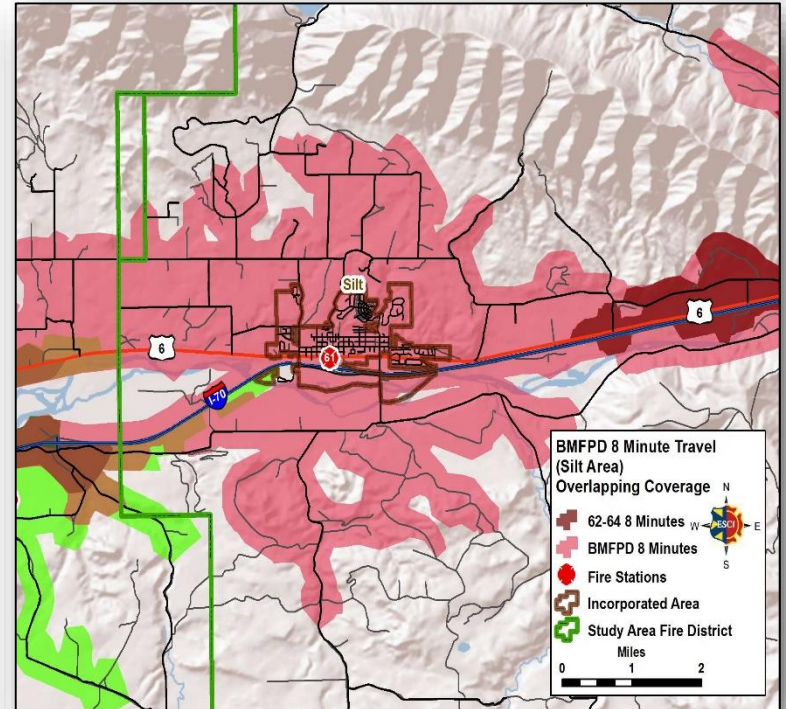


# Data Visualization

## Pre-planning and Response Analysis



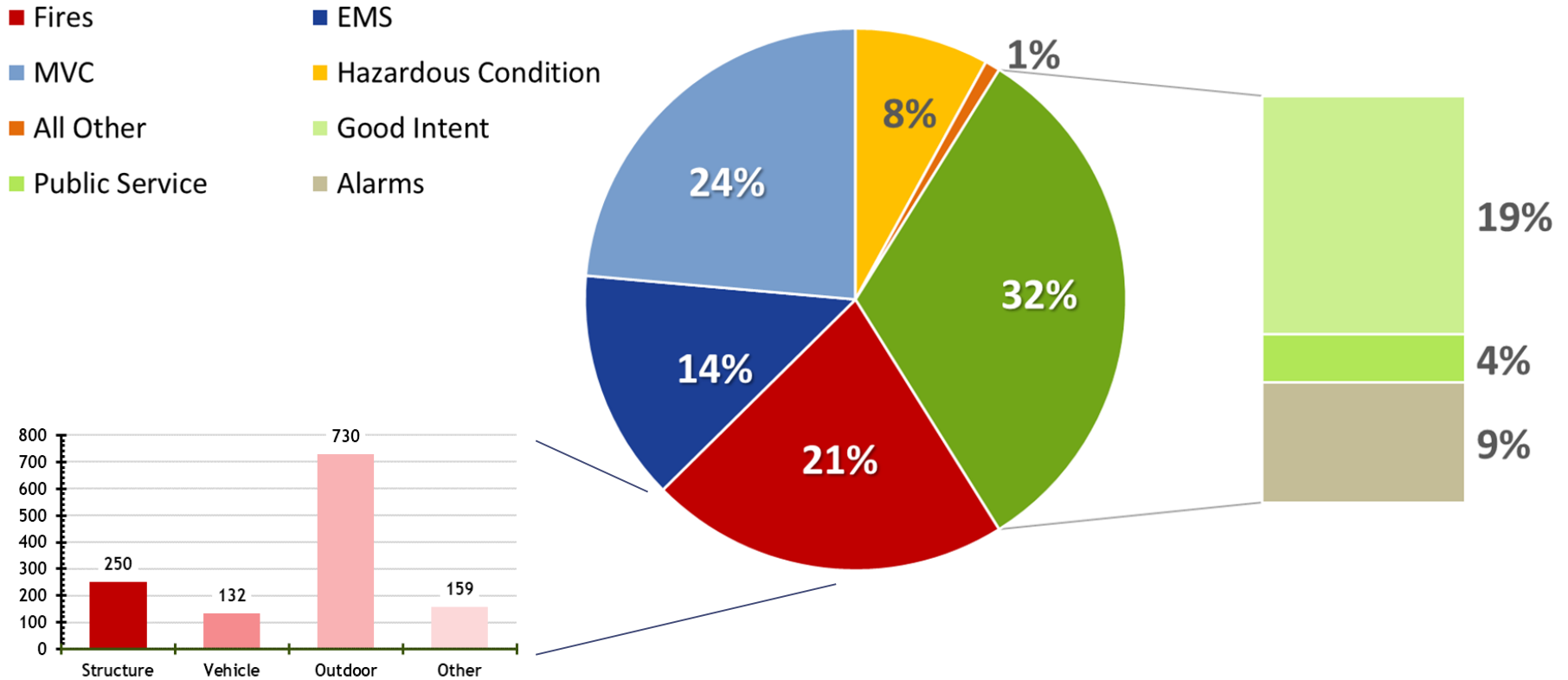
Resource Deployment and Call Volume



Resource Deployment and Travel Time

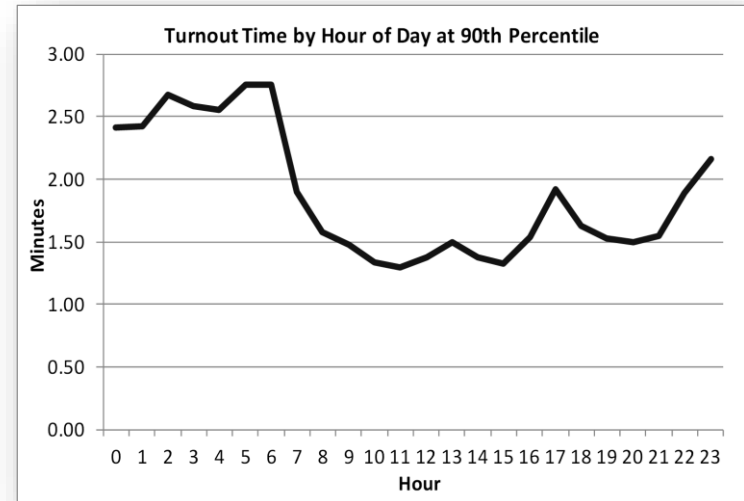
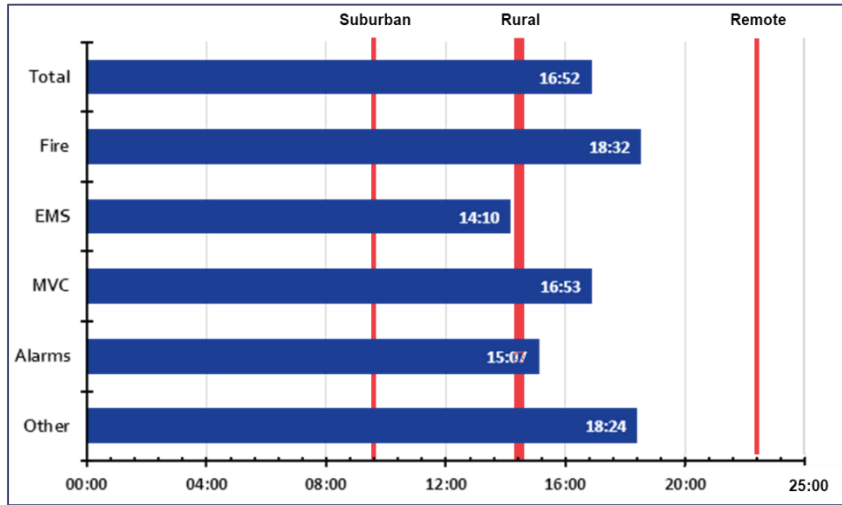
# Data Visualization

## Response Analysis

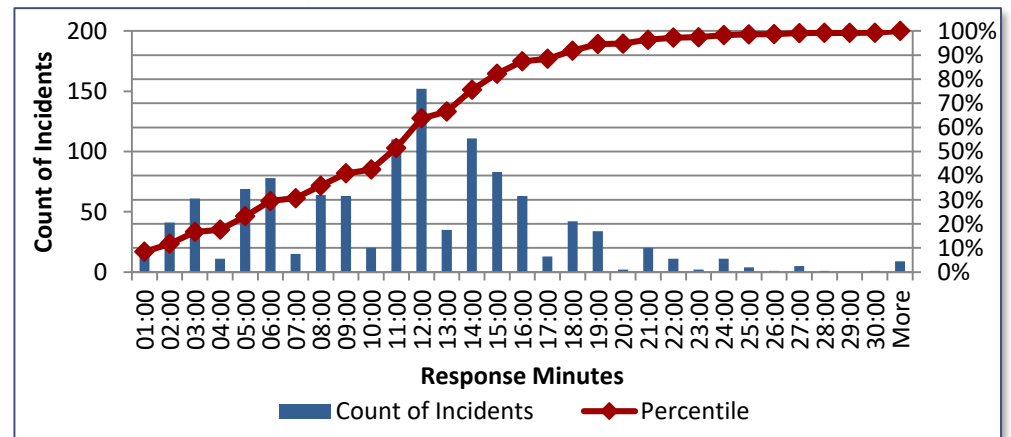


# Data Visualization

## Response Analysis

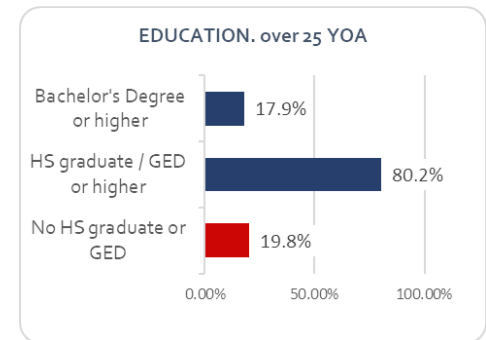
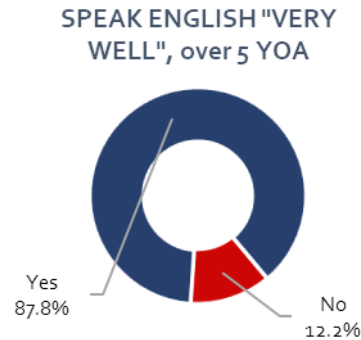
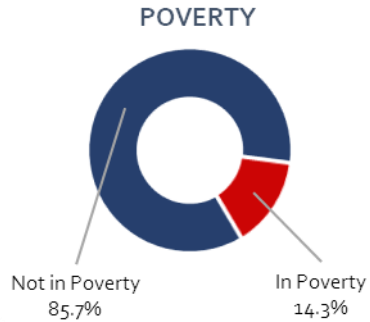
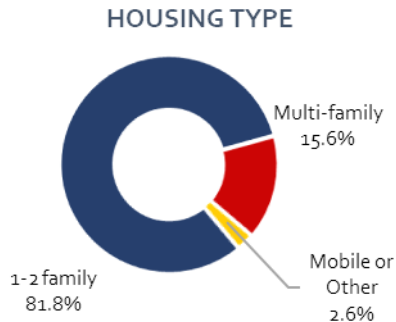
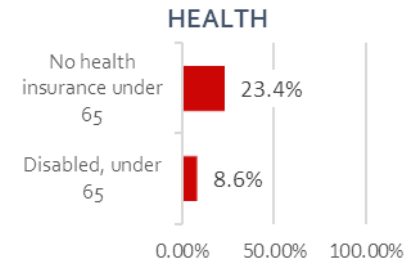
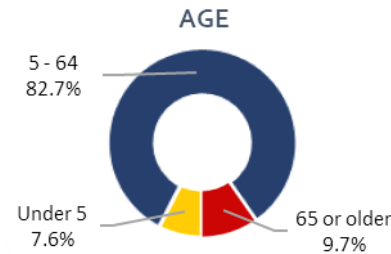
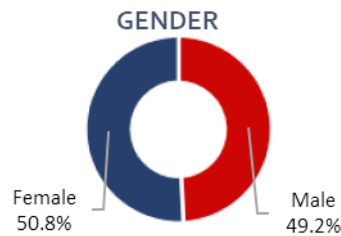
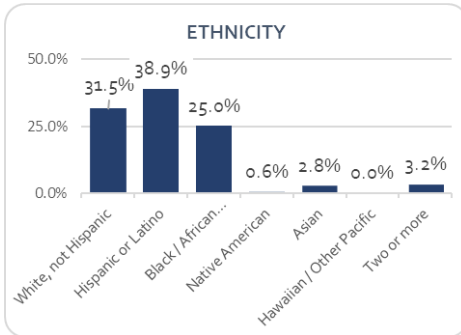


2013-2014 Response Time Performance	
Average	80 <sup>th</sup> Percentile
10:05	15:00



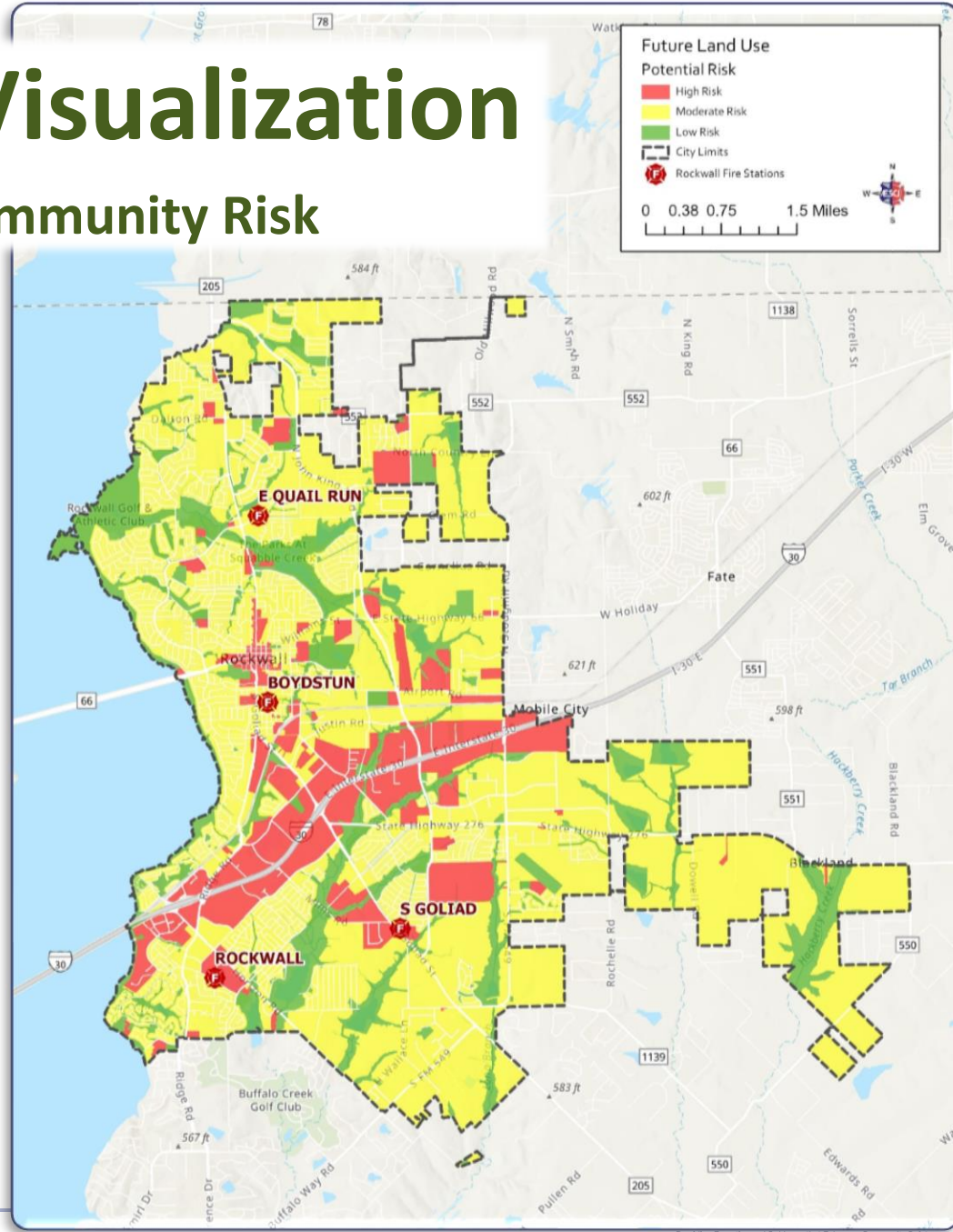
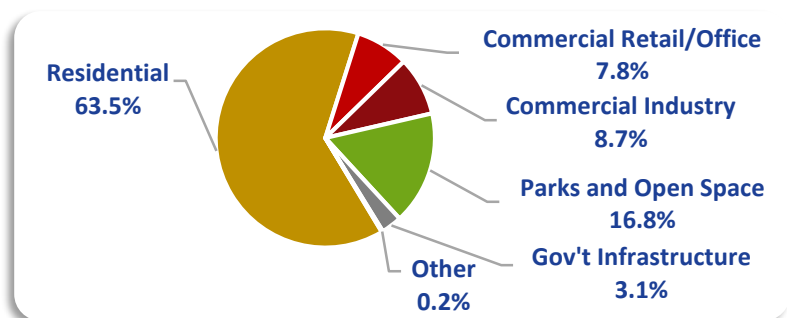
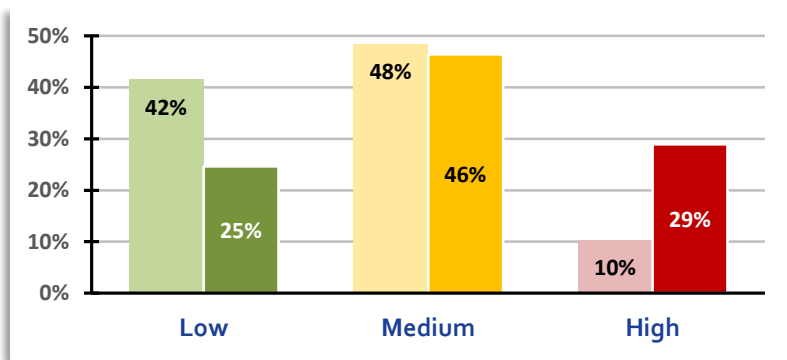
# Data Visualization

## Demographics and At-Risk Populations



# Data Visualization

## Community Risk



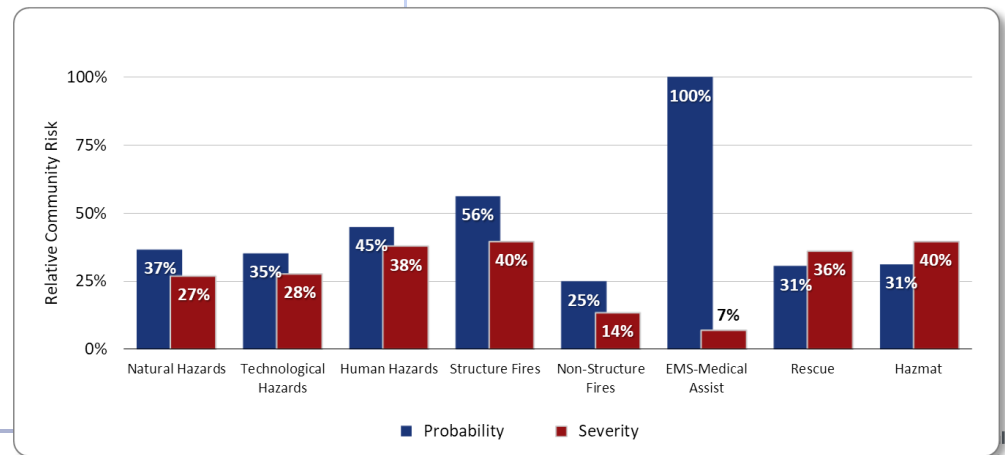
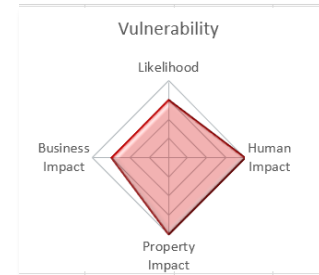
# Data Visualization

## Community Risk

ESCI HAZARD AND VULNERABILITY ASSESSMENT TOOL								
STRUCTURE FIRES								
EVENT	PROBABILITY	SEVERITY = IMPACT - MITIGATION)						RISK
	Likelihood this will occur	COMMUNITY IMPACT			MITIGATION CAPACITY			Relative threat*
		HUMAN IMPACT	PROPERTY IMPACT	BUSINESS IMPACT	PREPAREDNESS	INTERNAL RESPONSE	EXTERNAL RESPONSE	
SCORE	0 = N/A 1 = < 1% annual 2 = < 25% annual 3 = < 50% annual 4 = < 75% annual	0 = N/A 1 = Low 2 = Moderate 3 = High 4 = Catastrophic	0 = N/A 1 = Low 2 = Moderate 3 = High 4 = Catastrophic	0 = N/A 1 = Low 2 = Moderate 3 = High 4 = Catastrophic	0 = Very High 1 = High 2 = Moderate 3 = Low 4 = None	0 = Very High 1 = High 2 = Moderate 3 = Low 4 = None	0 = Very High 1 = High 2 = Moderate 3 = Low 4 = None	0 - 100%
High Risk	1	2	3	3	2	2	3	16%
Moderate Risk	3	2	2	3	0	1	1	28%
Low Risk	4	1	1	1	0	1	1	21%
Wildland/Urban Interface	1	1	2	2	2	1	1	9%
<b>AVERAGE SCORE</b>	<b>2.25</b>	<b>1.50</b>	<b>2.00</b>	<b>2.25</b>	<b>1.00</b>	<b>1.25</b>	<b>1.50</b>	<b>22%</b>

\*Threat increases with percentage.

<b>RISK = PROBABILITY * SEVERITY</b>		
<b>22%</b>	<b>56%</b>	<b>40%</b>



# Data Visualization

## Community Risk Benchmarking

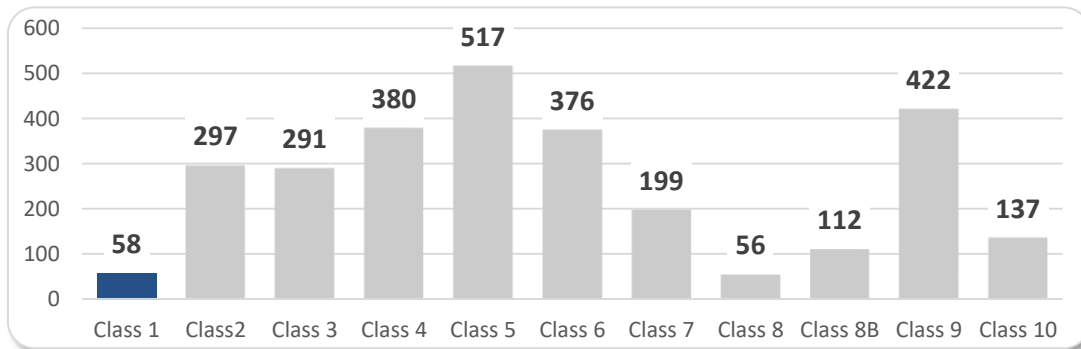
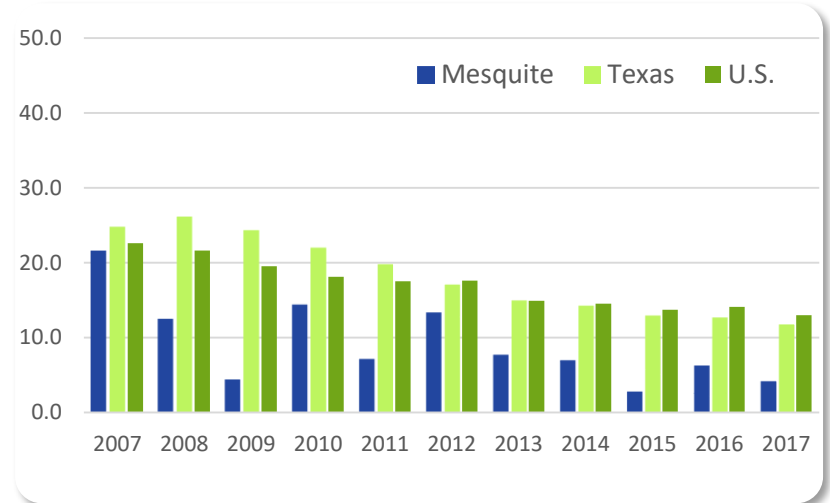
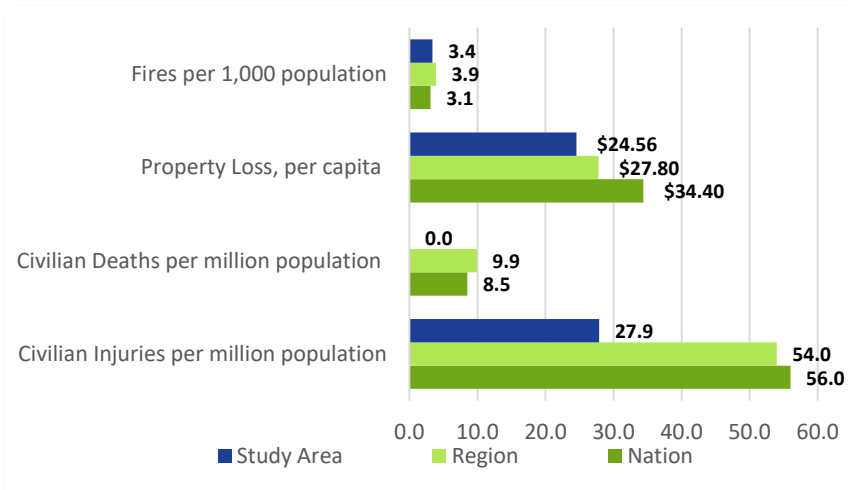
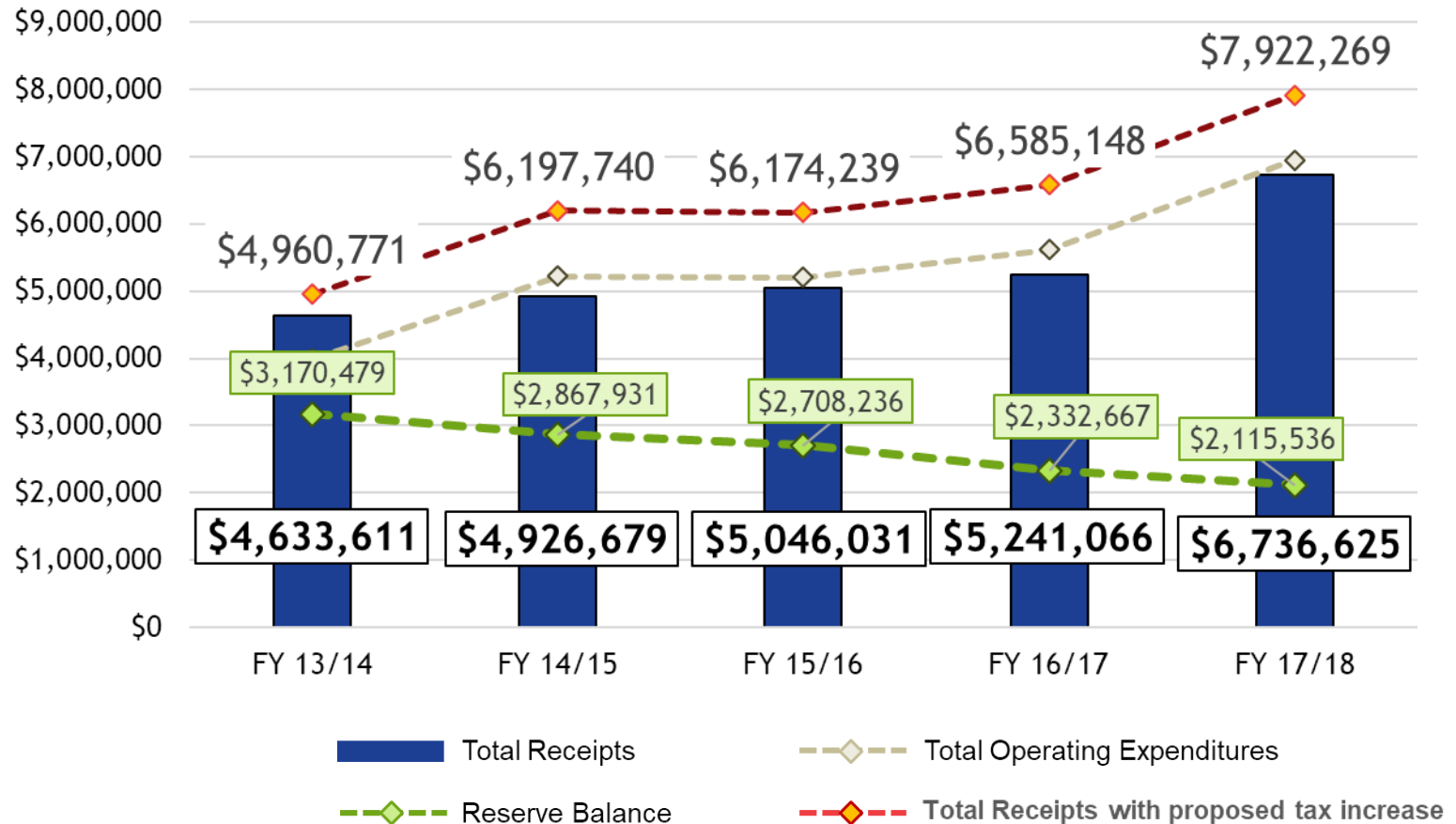


Figure 1. ISO Classification Scores

Category	Apr 2018
Communications	10.00
Max score = 10.00	
Percent max score	100%
Fire Department	43.77
Max score = 50.00	
Percent max score	87.54%
Water Supply	37.90
Max score = 40.00	
Percent max score	97.15.8%
Texas Addendum	4.85
Max score = 6.50	
Percent max score	74.6%
Divergence factor	1.92
Total Score	95.56
ISO Classification	1

# Data Visualization

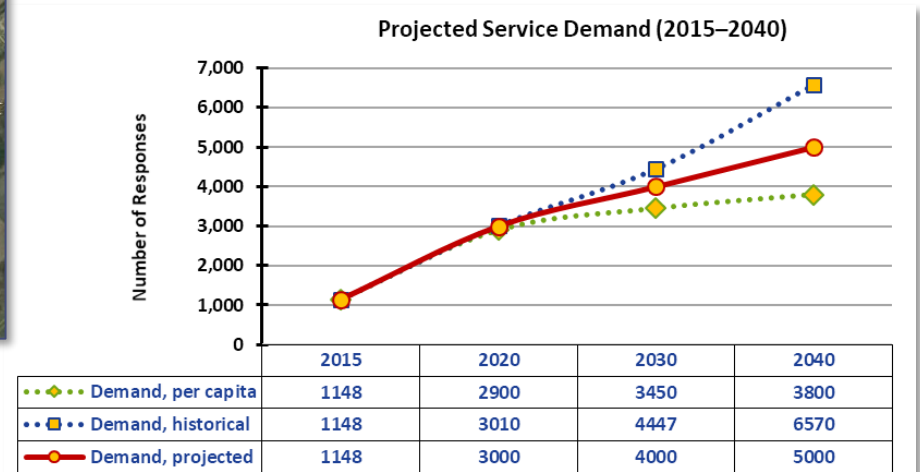
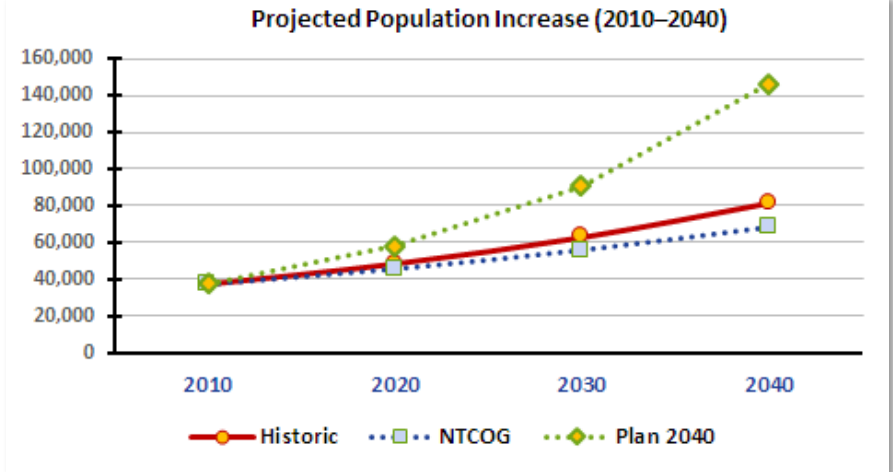
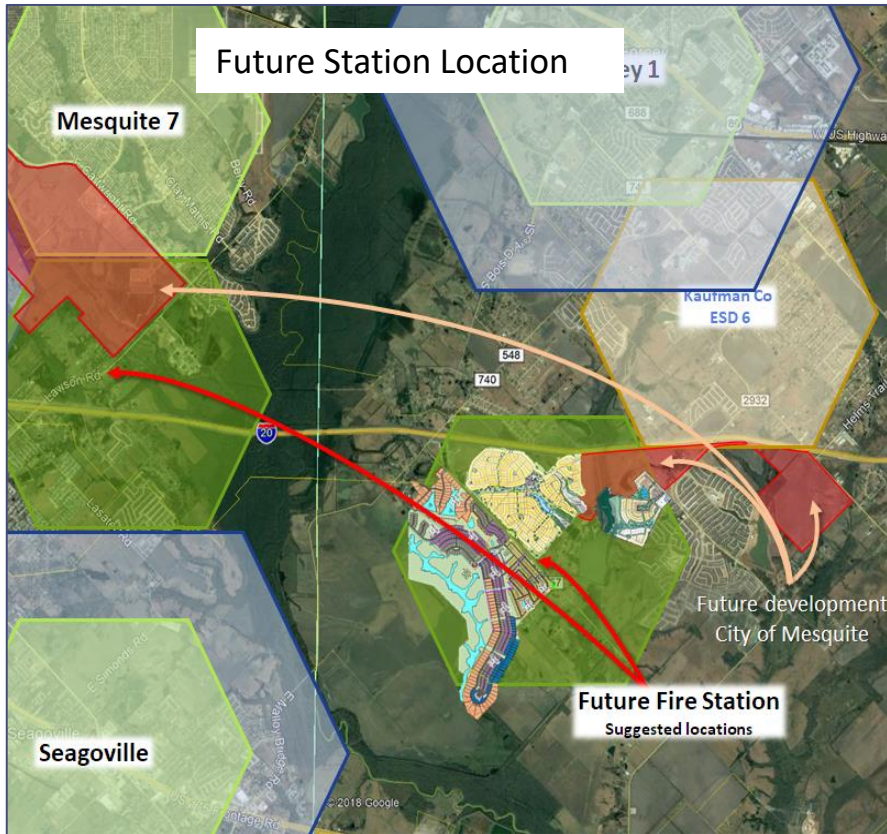
## Financial Analysis





# Data Visualization

## Projections



# Conclusions



- **Expectations are changing**
- **Volunteers are changing**
- **Information and technology is changing**
- **You need a compelling story to:**
  - visualize your information
  - improve understanding
  - build community support



**SAFE-D**

**Texas State Association of Fire and Emergency Districts**

**2020**

# Thank You



## **Mike Montgomery**

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**ESCI** Emergency Services  
Consulting International

*Providing Expertise and Guidance that Enhances Community Safety*

- Long Range Master Planning
- Strategic Planning
- Cooperative Efforts / Shared Services Feasibility
- Standards of Cover
- Agency Evaluations
- Executive Recruitment
- Promotional Testing
- ISO Benchmarking

