

*Section 5*  
*Statistical Analysis*







## SECTION 5—STATISTICAL ANALYSIS

### 5.1 HISTORICAL EFFECTIVENESS AND RELIABILITY OF RESPONSE – WHAT STATISTICS SAY ABOUT THE EXISTING SYSTEM PERFORMANCE

**SOC ELEMENT 7 OF 8**  
**RELIABILITY & HISTORICAL  
RESPONSE EFFECTIVENESS  
STUDIES**

The maps described in Section 4 show the GIS-projected response coverage given perfect conditions with no competing calls and units all in place. Examination of the actual response time data provides a picture of coverage in the real world of simultaneous calls, rush hour traffic conditions, units out of position, and delayed travel time for events such as periods of severe weather.

#### 5.1.1 Data Set Identification

The Department provided both National Fire Information Reporting System Version 5 (NFIRS 5) and CAD apparatus response data for 2018 through 2020. While CAD records are created for all apparatus responses, EMS incidents are not documented in the NFIRS 5 reporting system.

Over the three-year study period, there were 5,265,591 apparatus response records provided from the CAD system. When EMS response records were added, the total number of incident records, both NFIRS 5- and CAD-created, grew to 1,471,423, or an average of 490,474 incidents per year. The average daily incident quantity for the three-year period was 1,344, which is less than the total incident quantity since the scope of this study does not include specialty responses for aircraft operations in two airport fire stations or maritime operations for the fireboat stations.

Metropolitan fire department operations have multiple operational layers. Significant operational layers in the City of Los Angeles include:

1. Department
2. Bureau (Central, West, Valley, and South)
3. Battalions
4. Stations
5. Apparatus

Bureaus are identified by name in this analysis. While various measures are created for each operational level, the focus of this analysis is on battalions (the third level).

## 5.1.2 Analysis Measurement Categories

In general, all analysis measurements fall into two categories:

1. Demand for service
2. Performance

*Demand for Service* is measured by type and quantity of incidents over various time and space segments. These include number of incidents by battalion, number of incidents by incident type by year, number of incidents hour of the day, hourly station demand, unit-hour utilization, etc.

The following table illustrates the number of incidents by bureau by year.

**Table 13—Number of Incidents by Bureau by Year**

Bureau	2018	2019	2020	Total
Central	121,539	125,692	121,916	<b>369,147</b>
South	142,728	142,415	140,044	<b>425,187</b>
Valley	146,832	148,527	146,783	<b>442,142</b>
West	80,027	82,485	70,825	<b>233,337</b>
-Blank-	485	643	482	<b>1,610</b>
<b>Total</b>	<b>491,611</b>	<b>499,762</b>	<b>480,050</b>	<b>1,471,423</b>

The total number of incidents peaked in 2019, with the West Bureau showing the steepest decline in incident quantity from 2019 to 2020 (likely due to COVID-19). The incident quantities in the other three bureaus held steady during this same period.

*Performance* is measured by the number of minutes and seconds it takes for 90 percent of a specific set of incidents to complete a specific performance objective. For example, travel time measures the time it takes an apparatus to travel to the scene of an emergency. The measurement begins at “wheels turning” and ends as the apparatus arrives on scene. Unlike demand for service, where all incidents are counted, performance excludes all **non-emergency** responses. Since CAD data identifies approximately 92 percent of incidents as emergencies—those marked as *N*, for *non-emergency*, are eliminated from performance calculations.

The set of records used for performance calculations is also trimmed by outlier definitions. This trimming process excludes incidents that fall outside of a normal range. For example, travel times of zero seconds are eliminated as well as travel times over 20:00 minutes (1,200 seconds). Incidents requiring responses outside the City are also eliminated. The number in parenthesis is the number of incidents used for the performance calculation. These numbers will always be less than the total number of incidents used in the demand calculations.

## 5.2 SERVICE DEMAND

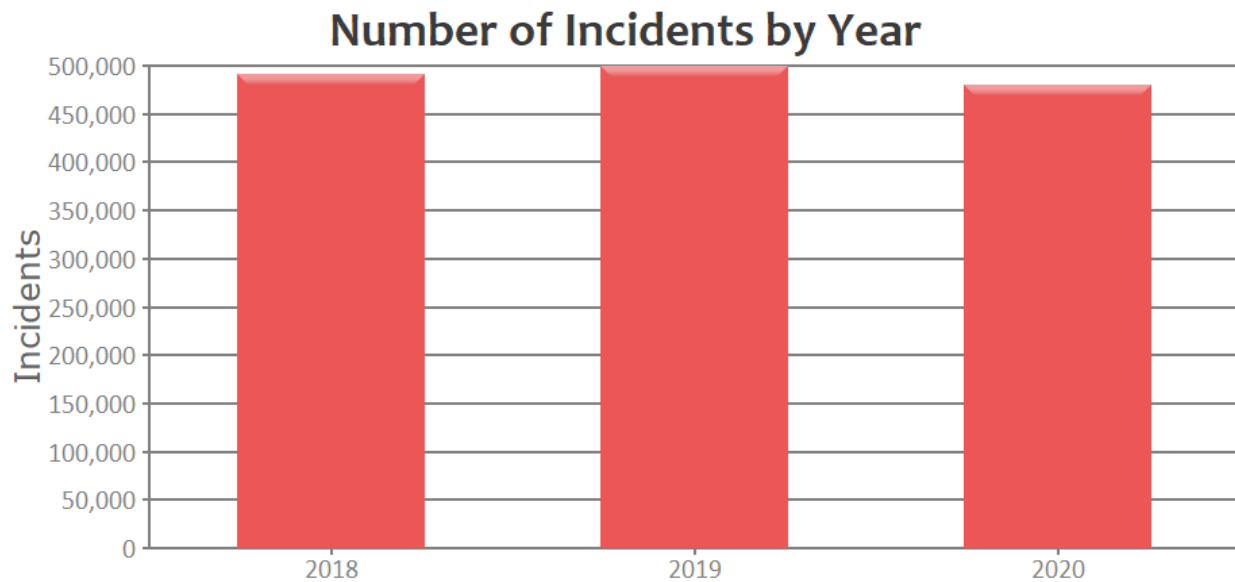
This analysis covers operations from January 1, 2018, through December 31, 2020. During this time there were 1,471,423 incidents and 5,265,590 apparatus response records.

The number of incidents in 2020 was 480,050. The average number of incidents per day was 1,315. The number of apparatus responses in 2020 was 1,420,823. In 2020 there was an average of 2.96 apparatus responses per incident.

In 2020 the percentage of fire incidents was 3.05 percent. EMS incidents accounted for **81.85 percent** (tracked as *RA* in CAD data). *Other* types of incidents were 15.1 percent.

The Department's demand for service grew from 2018 to 2019 but declined slightly from 2019 to 2020.

**Figure 2—Number of Incidents by Year**



The following table shows the number of incidents by incident type by year. Fire incidents grew year to year, while EMS and other incident types increased between 2018 and 2019, then decreased from 2019 to 2020.

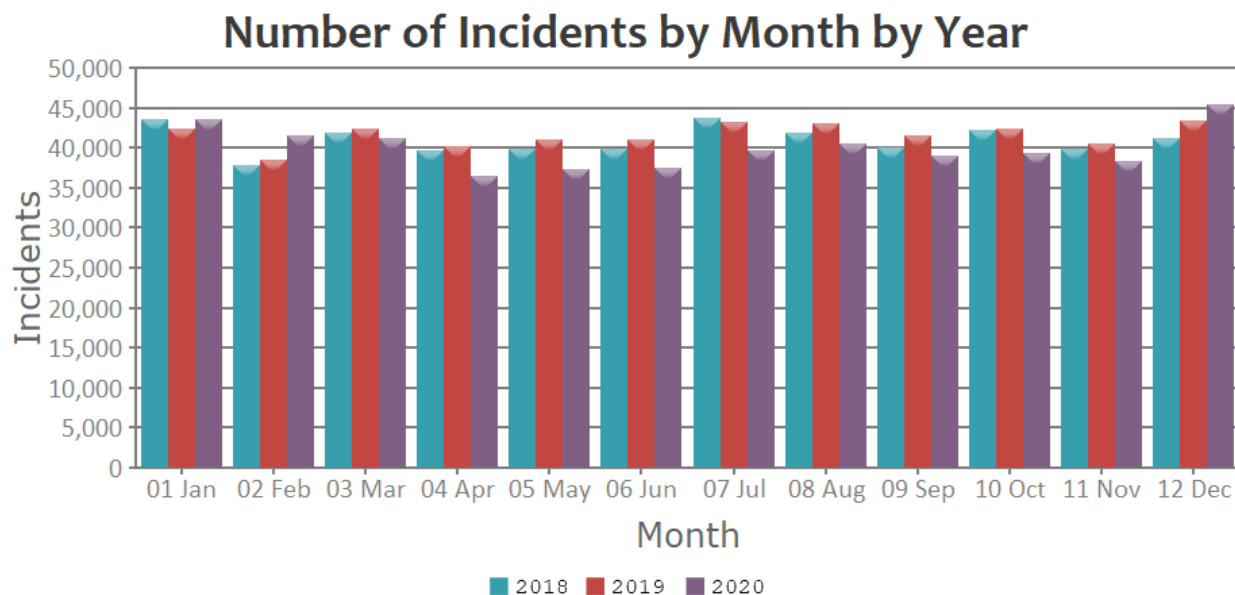
**Table 14—Number of Incidents by Incident Type by Year**

Incident Type	2018	2019	2020	Total
Fire	11,468	11,812	14,686	<b>37,966</b>
EMS	412,478	414,354	392,949	<b>1,219,781</b>
Other	67,665	73,596	72,415	<b>213,676</b>
<b>Total</b>	<b>491,611</b>	<b>499,762</b>	<b>480,050</b>	<b>1,471,423</b>

Because NFIRS 5 incident types are generally used for this calculation, Rescue Ambulance (RA) incidents were summed to determine the total number of EMS incidents. The number of fire incidents was calculated for NFIRS 5 incidents with a *1XX* incident type. The remainder were *other* incident types. The difference between the number of analyzed incidents and the number of incidents which fell within a recognized category is two incident records. These are likely two damaged incident records.

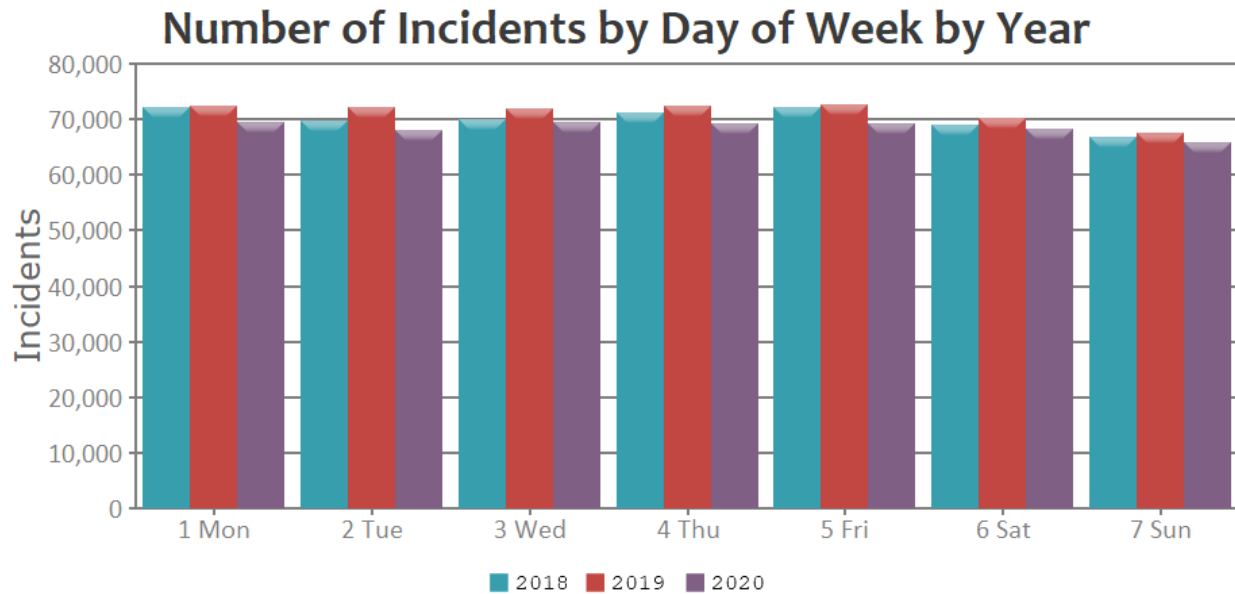
The number of incidents tends to remain consistent month to month, with December having the most activity and April having the least.

**Figure 3—Number of Incidents by Month by Year**



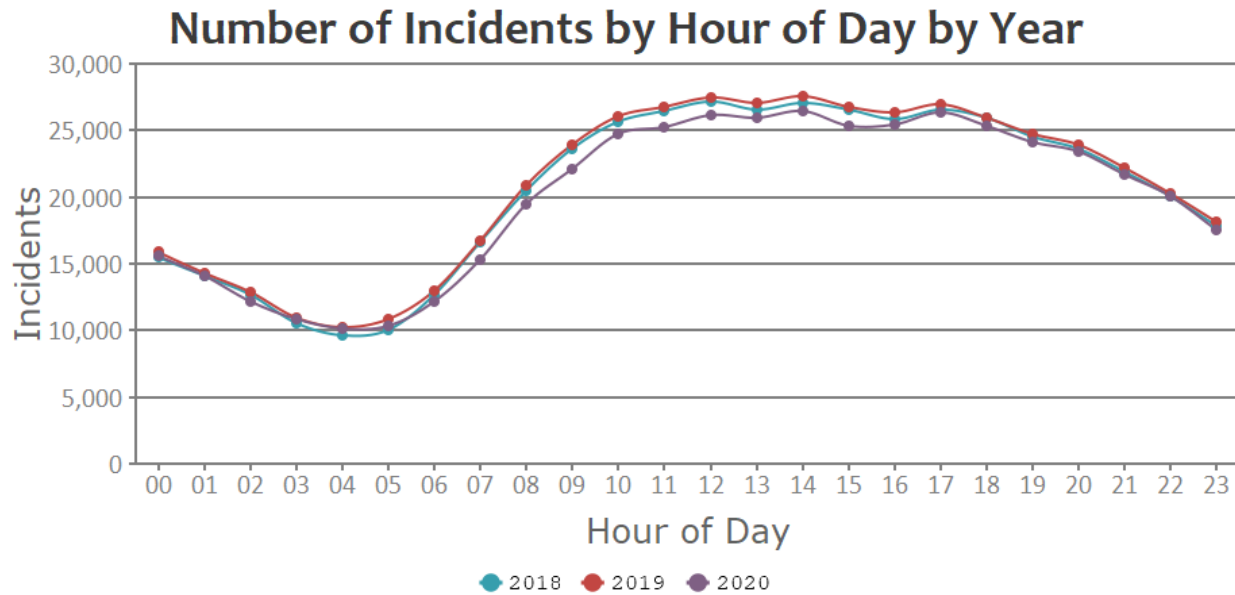
The number of incidents by day of week also tends to be steady, with a high on Friday and a low on Sunday.

**Figure 4—Number of Incidents by Day of Week by Year**



The following figure illustrates the breakdown of incidents by hour of the day by year. There is a slight variance in annual hourly volume. The lower volume in 2020 seems focused from morning through the afternoon hours.

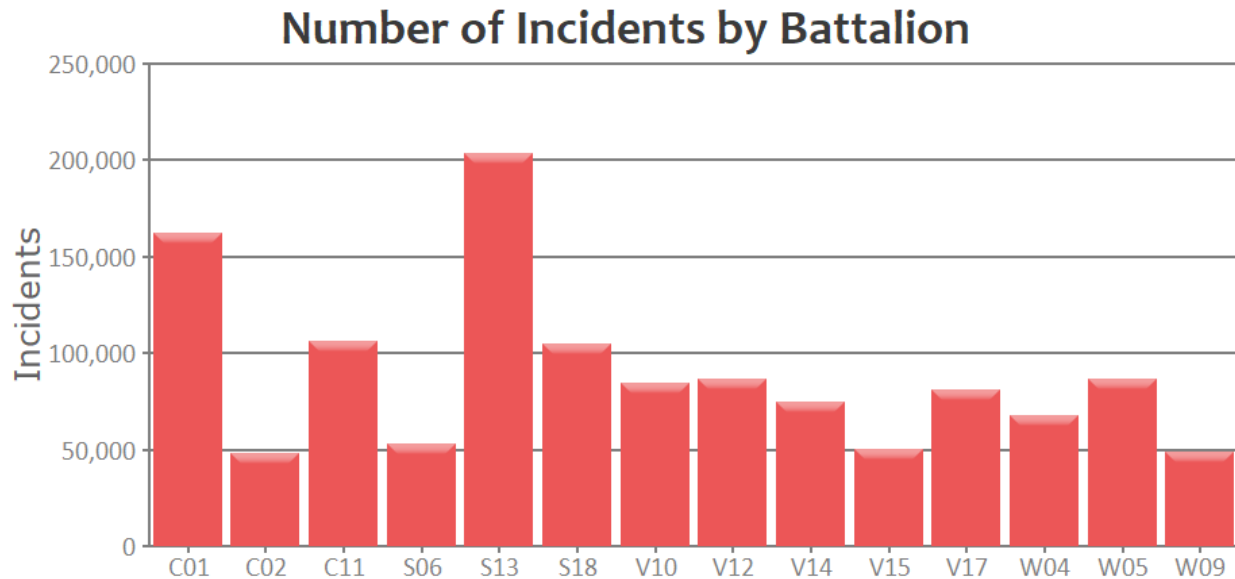
**Figure 5—Number of Incidents by Hour of Day by Year**





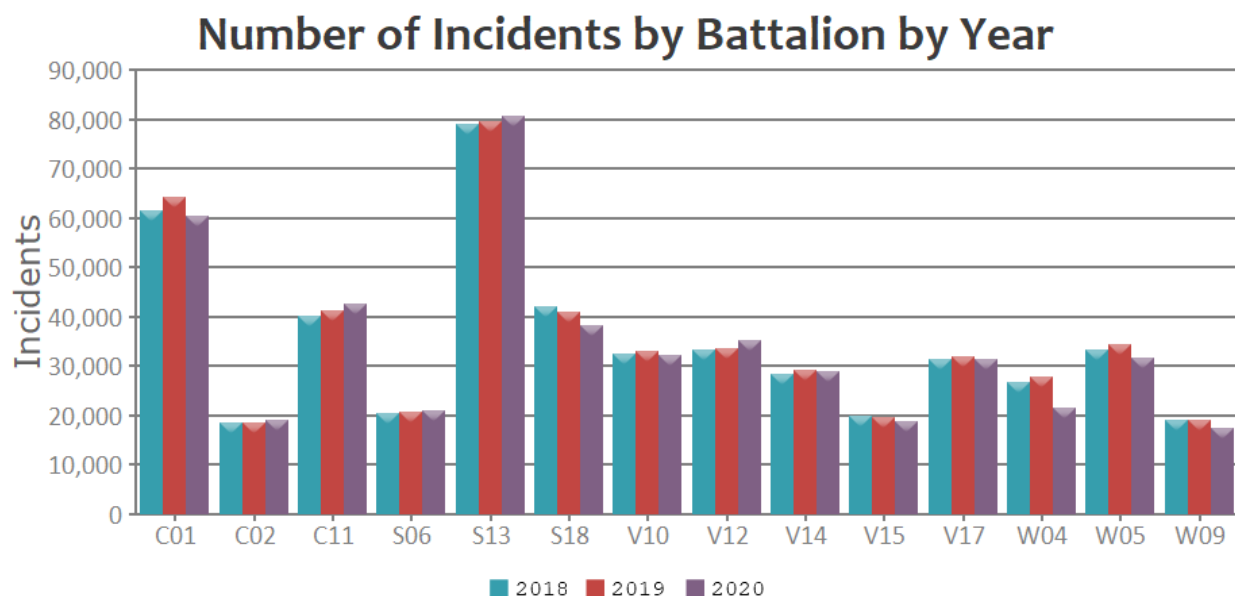
The following figure illustrates the number of incidents by battalion for the three-year study period. Battalion 13 had the highest volume of activity. Battalions 2, 15, and 9 had the lowest volume.

**Figure 6—Number of Incidents by Battalion**



The following figure breaks down the number of incidents by battalion by year. Volume in 13 continues to grow year after year. Activity in Battalion 1 peaked slightly in 2019.

**Figure 7—Number of Incidents by Battalion by Year**



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The following table illustrates the number of incidents by station by year. The station identifiers were taken from the two CAD data loads, with the last six months in 2020 coming exclusively from the second CAD data load. The data is presented as they were entered, so all incidents are included; this even applies to entries such as *Station 000*, which may not represent an actual station area.

**Table 15—Number of Incidents by Station by Year**

Station	2018	2019	2020	Total
-Blank-	3,895	4,001	52	<b>7,948</b>
000			1	<b>1</b>
001	4,020	4,236	4,584	<b>12,840</b>
002	5,577	5,674	5,752	<b>17,003</b>
003	6,670	7,112	6,788	<b>20,570</b>
004	8,617	8,856	7,929	<b>25,402</b>
005	3,112	3,293	3,054	<b>9,459</b>
006	6,237	6,474	6,683	<b>19,394</b>
007	6,149	6,229	6,870	<b>19,248</b>
008	1,052	1,097	1,063	<b>3,212</b>
009	21,658	22,810	19,986	<b>64,454</b>
010	7,760	8,161	7,626	<b>23,547</b>
011	11,383	11,901	12,422	<b>35,706</b>
012	3,512	3,278	3,270	<b>10,060</b>
013	6,721	7,147	7,439	<b>21,307</b>
014	5,422	5,708	6,325	<b>17,455</b>
015	6,506	6,275	5,235	<b>18,016</b>
016	1,804	1,679	1,648	<b>5,131</b>
017	2,657	2,824	2,643	<b>8,124</b>
018	1,857	1,969	1,867	<b>5,693</b>
019	3,483	3,601	3,306	<b>10,390</b>
020	4,189	4,400	4,222	<b>12,811</b>
021	4,600	4,477	4,777	<b>13,854</b>
023	907	921	923	<b>2,751</b>
024	1,046	1,131	1,026	<b>3,203</b>
025	3,142	3,170	3,369	<b>9,681</b>
026	5,789	5,571	6,115	<b>17,475</b>

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Station	2018	2019	2020	Total
027	8,727	9,186	7,798	25,711
028	821	874	902	2,597
029	5,965	6,014	5,769	17,748
033	9,615	10,070	10,864	30,549
034	5,675	5,804	5,751	17,230
035	5,765	5,516	5,252	16,533
036	2,207	2,088	2,087	6,382
037	6,767	6,783	6,227	19,777
038	4,723	4,997	5,181	14,901
039	8,448	8,654	8,081	25,183
040	432	359	346	1,137
041	5,608	5,773	5,118	16,499
042	1,892	1,935	1,776	5,603
043	3,713	3,525	3,394	10,632
044	1,627	1,669	1,705	5,001
046	10,793	10,683	11,020	32,496
047	2,176	2,161	2,328	6,665
048	2,827	2,967	2,971	8,765
049	722	776	716	2,214
050	1,917	1,911	1,874	5,702
051	8,281	8,625	3,833	20,739
052	4,407	4,693	4,578	13,678
055	1,756	1,832	1,859	5,447
056	2,584	2,720	2,368	7,672
057	12,618	13,104	12,952	38,674
058	6,880	6,975	6,496	20,351
059	4,832	4,810	4,151	13,793
060	7,317	7,568	7,581	22,466
061	8,292	7,943	7,151	23,386
062	3,580	3,928	3,670	11,178
063	6,258	6,344	6,238	18,840
064	15,028	14,910	15,756	45,694
065	7,270	7,127	7,438	21,835

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Station	2018	2019	2020	Total
066	12,808	13,095	12,778	38,681
067	3,510	3,460	3,016	9,986
068	6,089	5,486	5,511	17,086
069	1,351	1,402	1,383	4,136
070	3,651	3,351	3,164	10,166
071	1,744	1,712	1,514	4,970
072	5,345	5,285	5,259	15,889
073	4,689	4,892	5,110	14,691
074	3,334	3,460	3,522	10,316
075	4,268	4,116	4,097	12,481
076	1,438	1,570	1,305	4,313
077	4,311	4,256	4,516	13,083
078	3,336	3,420	3,293	10,049
079	2,826	2,967	2,801	8,594
081	5,569	5,634	5,425	16,628
082	4,784	5,056	5,261	15,101
083	3,808	3,834	3,538	11,180
084	3,985	4,160	3,973	12,118
085	3,517	3,590	3,440	10,547
086	3,496	3,424	3,462	10,382
087	4,060	4,191	3,930	12,181
088	5,149	5,244	5,138	15,531
089	8,723	9,158	9,150	27,031
090	5,070	5,019	5,400	15,489
091	6,899	6,954	7,319	21,172
092	3,519	3,447	2,907	9,873
093	6,026	6,154	5,880	18,060
094	7,941	7,800	7,032	22,773
095	2,135	2,141	1,874	6,150
096	3,247	3,166	3,228	9,641
097	746	801	776	2,323
098	7,376	7,470	7,880	22,726
099	629	564	597	1,790

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Station	2018	2019	2020	Total
100	3,077	3,349	3,321	9,747
101	1,319	1,375	1,445	4,139
102	4,514	4,503	4,268	13,285
103	3,056	2,882	2,820	8,758
104	3,671	3,623	3,332	10,626
105	4,726	4,712	4,794	14,232
106	3,161	3,125	3,097	9,383
107	2,176	2,261	1,969	6,406
108	358	441	415	1,214
109	865	951	812	2,628
110	25	29	18	72
111	128	82	64	274
112	1,868	1,831	1,994	5,693
121			7	7
122			3	3
123			3	3
124			1	1
125			2	2
<b>Total</b>	<b>491,611</b>	<b>499,762</b>	<b>480,050</b>	<b>1,471,423</b>



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The following table illustrates hourly incident quantity by day of week and hour of day for 2020. Green areas have the least activity. Red areas have the heaviest activity. There is a defined block of high activity from 10:00 am to 7:00 pm during the workweek.

**Table 16—Number of Incidents by Day of Week and Hour of Day – 2020**

Hour	1 Mon	2 Tue	3 Wed	4 Thu	5 Fri	6 Sat	7 Sun	Total
00:00	2,203	2,088	2,112	2,117	2,159	2,382	2,531	15,592
01:00	2,085	1,816	1,948	1,894	1,928	2,133	2,327	14,131
02:00	1,702	1,570	1,710	1,607	1,682	1,849	2,076	12,196
03:00	1,603	1,413	1,498	1,525	1,476	1,609	1,693	10,817
04:00	1,518	1,299	1,417	1,447	1,421	1,456	1,552	10,110
05:00	1,542	1,473	1,434	1,465	1,464	1,462	1,508	10,348
06:00	1,842	1,712	1,788	1,810	1,766	1,712	1,546	12,176
07:00	2,358	2,210	2,369	2,262	2,180	1,993	1,932	15,304
08:00	2,952	2,888	2,888	2,896	2,855	2,530	2,406	19,415
09:00	3,313	3,252	3,336	3,318	3,238	2,913	2,734	22,104
10:00	3,653	3,857	3,707	3,669	3,599	3,212	3,069	24,766
11:00	3,749	3,686	3,812	3,805	3,662	3,384	3,165	25,263
12:00	3,877	3,984	3,807	3,857	3,682	3,525	3,424	26,156
13:00	3,771	3,717	3,844	3,869	3,787	3,558	3,402	25,948
14:00	3,852	3,711	3,908	4,006	3,782	3,675	3,559	26,493
15:00	3,640	3,618	3,660	3,702	3,678	3,574	3,457	25,329
16:00	3,647	3,623	3,684	3,668	3,690	3,625	3,461	25,398
17:00	3,809	3,830	3,843	3,738	3,909	3,628	3,610	26,367
18:00	3,650	3,588	3,659	3,657	3,687	3,670	3,443	25,354
19:00	3,337	3,353	3,378	3,534	3,538	3,556	3,405	24,101
20:00	3,309	3,135	3,377	3,365	3,457	3,538	3,212	23,393
21:00	2,977	3,080	3,075	2,993	3,066	3,362	3,137	21,690
22:00	2,698	2,733	2,748	2,807	2,976	3,240	2,823	20,025
23:00	2,358	2,352	2,519	2,401	2,643	2,784	2,517	17,574
<b>Total</b>	<b>69,445</b>	<b>67,988</b>	<b>69,521</b>	<b>69,412</b>	<b>69,325</b>	<b>68,370</b>	<b>65,989</b>	<b>480,050</b>

**Finding #7:** LAFD’s time-of-day, day-of-week, and month-of-year calls for service demand occurs in consistent, predictable patterns. LAFD’s service demand is sufficiently high in all areas, 24 hours per day, to require an all-day, year-round response system.

### 5.2.1 Service Demand by Incident Types

The following table shows the number of incidents by incident type by year. As expected, Rescue Ambulance (*RA*) incidents top the list; however, since they are not in NFIRS, they do not have an incident type identified. *False alarms* and *dispatched* and *cancelled en route* incidents also rank high on the list. Building fires rank in sixteenth place by volume.

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**Table 17—Number of Incidents by Property Use by Year – Greater Than 300**

Incident Type	2018	2019	2020	Total
"RA" and other incident categories not NFIRS 5 coded	412,656	413,984	393,811	<b>1,220,451</b>
700 False alarm or false call, other	21,235	26,222	27,437	<b>74,894</b>
611 Dispatched & canceled en route	11,396	12,092	10,933	<b>34,421</b>
622 No incident found on arrival of incident address	3,985	4,027	4,912	<b>12,924</b>
745 Alarm system sounded, no fire - unintentional	3,705	3,652	2,976	<b>10,333</b>
735 Alarm system sounded due to malfunction	3,480	3,386	2,425	<b>9,291</b>
118 Trash or rubbish fire, contained	2,777	2,867	3,408	<b>9,052</b>
151 Outside rubbish, trash, or waste fire	2,010	2,076	3,717	<b>7,803</b>
353 Removal of victim(s) from stalled elevator	2,621	2,745	2,132	<b>7,498</b>
900 Special type of incident, other	1,532	1,824	2,050	<b>5,406</b>
651 Smoke scare, odor of smoke	1,611	1,609	1,767	<b>4,987</b>
131 Passenger vehicle fire	1,492	1,491	1,569	<b>4,552</b>
440 Electrical wiring/equipment problem, other	1,362	1,420	1,289	<b>4,071</b>
113 Cooking fire, confined to container	1,173	1,235	1,136	<b>3,544</b>
520 Water problem, other	1,190	1,145	1,110	<b>3,445</b>
<b>111 Building fire</b>	<b>970</b>	<b>1,022</b>	<b>1,055</b>	<b>3,047</b>
150 Outside rubbish fire, other	783	844	1,266	<b>2,893</b>
522 Water or steam leak	1,050	876	760	<b>2,686</b>
412 Gas leak (natural gas or LPG)	930	921	824	<b>2,675</b>
743 Smoke detector activation, no fire - unintentional	919	931	701	<b>2,551</b>
511 Lock-out	861	784	580	<b>2,225</b>
553 Public service	757	758	466	<b>1,981</b>
500 Service Call, other	538	629	807	<b>1,974</b>
444 Power line down	661	619	530	<b>1,810</b>
733 Smoke detector activation due to malfunction	616	608	469	<b>1,693</b>
100 Fire, other	545	553	588	<b>1,686</b>
551 Assist police or another governmental agency	434	446	543	<b>1,423</b>
600 Good intent call, other	415	426	373	<b>1,214</b>
324 Motor vehicle accident no injuries	399	365	342	<b>1,106</b>
730 System malfunction, other	346	492	223	<b>1,061</b>
541 Animal problem	300	324	425	<b>1,049</b>
736 CO detector activation due to malfunction	260	355	427	<b>1,042</b>

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Incident Type	2018	2019	2020	Total
911 Citizen complaint	248	400	367	<b>1,015</b>
550 Public service assistance, other	280	371	364	<b>1,015</b>
740 Unintentional transmission of alarm, other	359	258	343	<b>960</b>
812 Flood assessment	304	388	253	<b>945</b>
130 Mobile property (vehicle) fire, other	276	306	312	<b>894</b>
<b>143 Grass fire</b>	327	257	297	<b>881</b>
154 Dumpster or other outside trash receptacle fire	267	246	346	<b>859</b>
322 Vehicle accident with injuries	309	251	263	<b>823</b>
445 Arcing, shorted electrical equipment	281	256	259	<b>796</b>
331 Lock-in (if lock out, use 511)	293	304	184	<b>781</b>
531 Smoke or odor removal	260	270	197	<b>727</b>
746 Carbon monoxide detector activation, no CO	156	262	278	<b>696</b>
744 Detector activation, no fire - unintentional	249	198	182	<b>629</b>
462 Aircraft standby	176	237	159	<b>572</b>
741 Sprinkler activation, no fire - unintentional	207	190	161	<b>558</b>
140 Natural vegetation fire, other	169	175	196	<b>540</b>
552 Police matter	175	157	205	<b>537</b>
<b>142 Brush, or brush and grass mixture fire</b>	144	172	176	<b>492</b>
561 Unauthorized burning	101	108	269	<b>478</b>
460 Accident, potential accident, other	113	222	141	<b>476</b>
411 Gasoline or other flammable liquid spill	162	165	136	<b>463</b>
400 Hazardous condition, other	98	121	237	<b>456</b>
320 Emergency Medical Service, other	145	132	136	<b>413</b>
711 Municipal alarm system, malicious false alarm	62	172	178	<b>412</b>
653 Barbecue, tar kettle	164	114	127	<b>405</b>
442 Overheated motor	175	124	87	<b>386</b>
112 Fires in structures other than in a building	105	127	144	<b>376</b>
555 Defective elevator, no occupants	129	123	99	<b>351</b>
710 Malicious, mischievous false call, other	124	120	93	<b>337</b>
540 Animal problem, other	82	83	155	<b>320</b>
424 Carbon monoxide incident	76	113	125	<b>314</b>
321 EMS call, excluding vehicle accident with injury	110	84	114	<b>308</b>

## 5.2.2 Service Demand by Property Use

The following table ranks incidents by property use. For those property uses coded within NFIRS 5 incidents, the highest rankings are residential dwellings.

**Table 18—Number of Incidents by Property Use by Year— Greater Than 300**

Property Use	2018	2019	2020	Total
"RA" and other incident categories not NFIRS 5 coded	412,656	413,984	393,811	1,220,451
429 Multifamily dwellings	15,901	17,826	16,260	49,987
419 1 or 2 family dwelling	10,604	11,283	11,826	33,713
UUU Undetermined	9,525	10,457	10,085	30,067
963 Street or road in commercial area	5,859	6,778	8,952	21,589
960 Street, other	4,841	5,547	7,035	17,423
962 Residential street, road, or residential driveway	4,982	5,077	6,211	16,270
961 Highway or divided highway	2,649	2,788	3,435	8,872
400 Residential, other	2,533	3,119	3,015	8,667
599 Business office	2,216	2,403	1,951	6,570
449 Hotel/motel, commercial	1,379	1,558	747	3,684
500 Mercantile, business, other	1,231	1,200	1,136	3,567
NNN None	917	1,105	1,057	3,079
215 High school/junior high school/middle school	1,029	1,064	613	2,706
931 Open land or field	790	756	969	2,515
898 Dock, marina, pier, wharf	864	846	721	2,431
965 Vehicle parking area	891	767	677	2,335
439 Boarding/rooming house, residential hotels	754	641	814	2,209
213 Elementary school, including kindergarten	683	746	478	1,907
331 Hospital - medical or psychiatric	592	670	500	1,762
171 Airport passenger terminal	688	694	357	1,739
210 Schools, non-adult	570	626	394	1,590
900 Outside or special property, other	428	482	590	1,500
161 Restaurant or cafeteria	434	456	346	1,236
936 Vacant lot	365	379	434	1,178
888 Fire station	235	239	665	1,139
891 Warehouse	369	334	358	1,061
100 Assembly, other	296	445	291	1,032



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Property Use	2018	2019	2020	Total
241 Adult education center, college classroom	307	377	299	983
882 Parking garage, general vehicle	281	359	291	931
150 Public or government, other	278	281	304	863
580 General retail, other	312	306	230	848
311 24-hour care Nursing homes, 4 or more persons	272	272	239	783
519 Food and beverage sales, grocery store	273	261	246	780
131 Church, mosque, synagogue, temple, chapel	293	243	201	737
951 Railroad right of way	179	232	241	652
200 Educational, other	186	206	142	534
700 Manufacturing, processing	186	187	147	520
460 Dormitory type residence, other	193	192	121	506
160 Eating, drinking places	189	147	142	478
972 Aircraft runway	191	179	106	476
549 Specialty shop	166	174	130	470
124 Playground	135	132	200	467
800 Storage, other	142	142	130	414
340 Clinics, Doctors' offices, hemodialysis centers	117	107	103	327
529 Textile, wearing apparel sales	114	121	90	325

### 5.2.3 Simultaneous Analysis

Simultaneous incidents occur when other incidents are underway at the time a new incident begins. During 2020, the simultaneous incident activity rate was 10 or more incidents 94.52 percent of the time.

**Table 19—Simultaneous Incident Activity – 2020**

Number of Simultaneous Incidents	Percentage
10 or more simultaneous incidents	94.52%
11 or more simultaneous incidents	93.74%
12 or more simultaneous incidents	92.74%
13 or more simultaneous incidents	91.51%
14 or more simultaneous incidents	90.08%
15 or more simultaneous incidents	88.43%
16 or more simultaneous incidents	86.62%

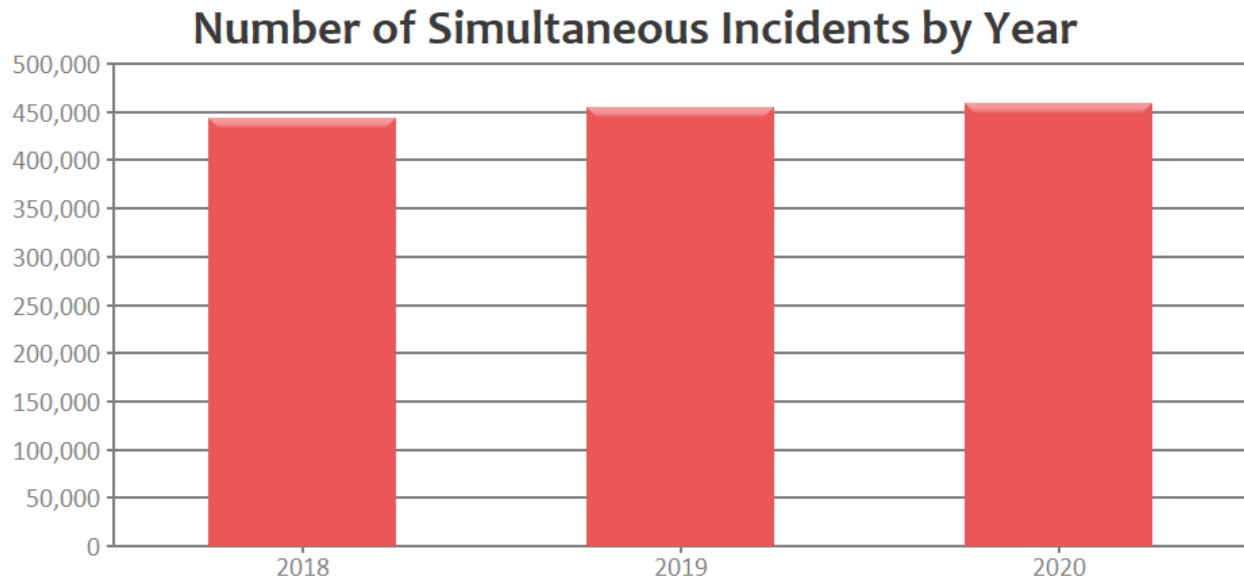
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Number of Simultaneous Incidents	Percentage
17 or more simultaneous incidents	84.69%
18 or more simultaneous incidents	82.69%
19 or more simultaneous incidents	80.67%
20 or more simultaneous incidents	78.47%
21 or more simultaneous incidents	76.21%
22 or more simultaneous incidents	73.78%
23 or more simultaneous incidents	71.23%
24 or more simultaneous incidents	68.58%
25 or more simultaneous incidents	65.78%
26 or more simultaneous incidents	62.81%
27 or more simultaneous incidents	59.63%
28 or more simultaneous incidents	56.32%
29 or more simultaneous incidents	52.85%
30 or more simultaneous incidents	49.24%
31 or more simultaneous incidents	45.52%
32 or more simultaneous incidents	41.79%
33 or more simultaneous incidents	38.09%
34 or more simultaneous incidents	34.45%
35 or more simultaneous incidents	30.94%
36 or more simultaneous incidents	27.61%
37 or more simultaneous incidents	24.40%
38 or more simultaneous incidents	21.36%
39 or more simultaneous incidents	18.57%
40 or more simultaneous incidents	16.05%
41 or more simultaneous incidents	13.80%
42 or more simultaneous incidents	11.78%
43 or more simultaneous incidents	10.00%

The following figure shows the number of simultaneous incidents is increasing year by year. This figure echoes the previous table by showing that most incidents in Los Angeles occur while other incidents are underway.

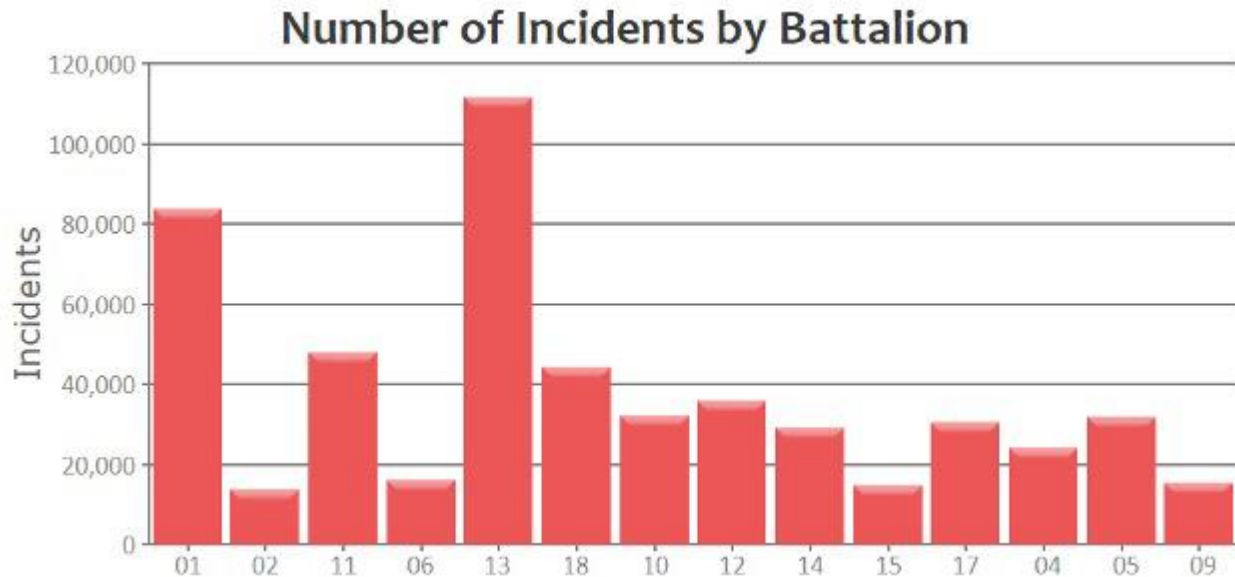
**Figure 8—Number of Simultaneous Incidents by Year**



In a larger city, simultaneous incidents in different station areas usually have very little operational consequence. However, when simultaneous incidents occur within a single station area there can be significant delays in response times.

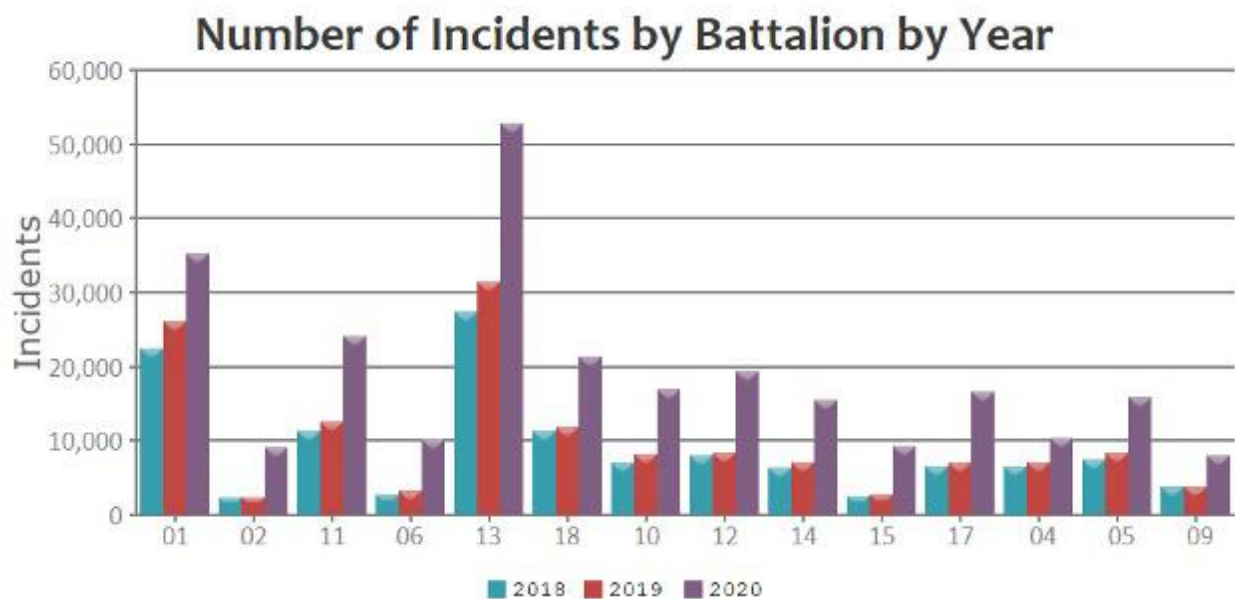
The following figure illustrates the number of single-station simultaneous incidents by battalion for the three years of this study. Stations in Battalion 13 have, by far, the greatest number of single-station simultaneous incidents. Stations in Battalions 2 and 15 have the smallest number.

**Figure 9—Number of Single-Station Simultaneous Incidents by Battalion**



The following figure illustrates single-station simultaneous incidents by battalion by year.

**Figure 10—Number of Single-Station Simultaneous Incidents by Battalion by Year**



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From 2018 through 2020 there were more than 533,000 single-station simultaneous incidents. The following table illustrates single-station simultaneous activity by hour of day and day of week over the three-year analysis. The redder the cell, the more likely there will be multiple simultaneous incidents within a single station area. Not surprisingly, high simultaneous activity tends to mirror high activity times for incidents in general.

**Table 20—Single-Station Simultaneous Incidents by Hour of Day and Day of Week – 2018–2020**

Hour	1 Mon	2 Tue	3 Wed	4 Thu	5 Fri	6 Sat	7 Sun	Total
00:00	2,037	1,928	1,865	1,977	1,978	2,490	2,724	14,999
01:00	1,957	1,577	1,626	1,665	1,697	2,105	2,523	13,150
02:00	1,447	1,271	1,374	1,399	1,385	1,862	2,196	10,934
03:00	1,280	1,143	1,184	1,190	1,142	1,480	1,581	9,000
04:00	1,239	1,003	1,008	1,152	1,104	1,259	1,332	8,097
05:00	1,206	1,145	1,093	1,197	1,173	1,180	1,256	8,250
06:00	1,563	1,500	1,499	1,532	1,486	1,421	1,293	10,294
07:00	2,366	2,222	2,254	2,280	2,095	1,793	1,638	14,648
08:00	3,198	3,040	3,123	3,204	2,945	2,428	2,314	20,252
09:00	3,922	3,869	3,958	4,006	3,725	3,028	2,835	25,343
10:00	4,527	4,526	4,529	4,511	4,355	3,618	3,469	29,535
11:00	4,817	4,642	4,756	4,865	4,452	3,869	3,600	31,001
12:00	5,017	4,952	4,770	4,837	4,596	4,149	3,935	32,256
13:00	4,758	4,751	4,773	4,800	4,602	4,147	3,777	31,608
14:00	4,841	4,707	4,858	4,835	4,662	4,302	4,025	32,230
15:00	4,696	4,570	4,679	4,701	4,606	4,161	3,903	31,316
16:00	4,519	4,442	4,486	4,476	4,585	4,156	3,842	30,506
17:00	4,669	4,608	4,746	4,574	4,836	4,226	4,132	31,791
18:00	4,370	4,366	4,353	4,395	4,594	4,278	3,885	30,241
19:00	3,937	4,039	4,057	4,162	4,303	4,009	3,833	28,340
20:00	3,810	3,587	3,770	3,800	3,907	4,043	3,700	26,617
21:00	3,369	3,315	3,423	3,418	3,564	3,670	3,377	24,136
22:00	2,803	2,827	2,844	2,869	3,257	3,512	2,946	21,058
23:00	2,304	2,332	2,444	2,431	2,849	2,968	2,486	17,814
<b>Total</b>	<b>78,652</b>	<b>76,362</b>	<b>77,472</b>	<b>78,276</b>	<b>77,898</b>	<b>74,154</b>	<b>70,602</b>	<b>533,416</b>



#### 5.2.4 Station Demand Percentage

The following table summarizes overall hourly activity percentages by station for 2020. The percentage listed is the percentage of likelihood a particular station was involved in an incident at any given hour. This number considers not only the number of incidents but also the duration of those incidents. Only the top 10 busiest stations are listed. A separate Microsoft Excel exhibit (Exhibit 1) has been provided to illustrate the activity percentage for all individual units. Multiple simultaneous incidents handled by multiple station resources can drive a station demand percentage above 100 percent.

**Table 21—Station Demand by Hour – 2020**

Hour	Station 009	Station 064	Station 057	Station 066	Station 046	Station 011	Station 004	Station 033	Station 089	Station 094
00:00	66.98%	63.93%	59.45%	56.46%	50.20%	51.80%	39.10%	44.59%	36.11%	33.89%
01:00	75.41%	64.84%	70.73%	44.18%	53.79%	45.40%	45.26%	50.20%	34.35%	33.47%
02:00	65.95%	60.45%	47.62%	45.39%	42.86%	39.16%	29.26%	34.00%	27.73%	21.65%
03:00	61.58%	51.10%	48.66%	52.46%	45.87%	37.04%	24.27%	38.17%	24.27%	25.40%
04:00	68.05%	42.47%	43.84%	42.17%	34.57%	34.62%	24.20%	28.94%	32.32%	30.58%
05:00	57.58%	57.02%	47.48%	39.26%	40.34%	40.53%	27.02%	34.41%	26.83%	26.84%
06:00	71.49%	68.58%	52.89%	44.92%	40.52%	36.61%	39.29%	35.37%	26.81%	32.22%
07:00	93.67%	70.99%	63.97%	58.08%	57.65%	46.34%	61.68%	44.06%	35.08%	37.28%
08:00	103.60%	83.33%	68.74%	80.10%	60.97%	62.10%	140.63%	48.95%	50.49%	46.01%
09:00	120.96%	84.71%	81.15%	85.01%	81.42%	70.43%	129.46%	65.83%	58.08%	61.11%
10:00	140.58%	110.81%	111.93%	99.78%	82.13%	79.00%	101.81%	69.47%	56.91%	64.51%
11:00	125.59%	104.85%	97.02%	90.75%	81.98%	90.09%	87.68%	77.69%	51.93%	65.40%
12:00	214.96%	103.38%	103.87%	89.16%	82.17%	84.21%	83.13%	74.75%	65.43%	62.94%
13:00	119.97%	99.51%	95.78%	91.74%	74.79%	82.72%	72.35%	71.28%	62.69%	60.64%
14:00	136.41%	109.66%	111.26%	97.02%	83.65%	89.47%	86.29%	78.86%	58.67%	57.93%
15:00	133.49%	103.70%	94.49%	99.56%	90.07%	80.09%	60.62%	72.87%	61.60%	60.42%
16:00	117.05%	107.11%	99.99%	94.99%	85.15%	80.13%	57.54%	77.27%	54.19%	64.59%
17:00	121.55%	111.92%	117.21%	108.30%	87.49%	84.43%	51.78%	74.64%	65.67%	62.55%
18:00	112.35%	108.47%	105.98%	96.31%	87.30%	70.69%	50.12%	71.25%	59.30%	53.29%
19:00	95.47%	108.96%	108.60%	96.67%	75.25%	65.51%	48.62%	73.54%	52.68%	43.47%
20:00	93.04%	103.78%	96.32%	84.67%	82.25%	70.06%	49.81%	66.15%	50.49%	50.29%
21:00	83.56%	93.85%	90.13%	76.87%	70.95%	69.56%	45.47%	62.20%	58.34%	41.72%
22:00	86.07%	91.29%	85.55%	63.57%	56.77%	67.08%	46.15%	57.78%	39.30%	39.59%
23:00	73.50%	74.45%	75.97%	60.17%	61.89%	51.76%	39.92%	46.19%	40.46%	36.72%
<b>Overall</b>	<b>101.62%</b>	<b>86.63%</b>	<b>82.44%</b>	<b>74.90%</b>	<b>67.08%</b>	<b>63.70%</b>	<b>60.06%</b>	<b>58.27%</b>	<b>47.07%</b>	<b>46.35%</b>
<b>Runs</b>	<b>19,986</b>	<b>15,756</b>	<b>12,952</b>	<b>12,778</b>	<b>11,020</b>	<b>12,422</b>	<b>7,929</b>	<b>10,864</b>	<b>9,150</b>	<b>7,032</b>

### 5.2.5 Unit-Hour Utilization

The unit-hour utilization (UHU) percentage for apparatus is calculated by two primary factors: the number of responses and the duration of responses.

What should the maximum utilization percentage on a firefighting unit be? When crews on a 24-hour shift must also pay attention to apparatus checkout, station duties, training, public education, paperwork, as well as required physical training and meal breaks, Citygate believes the maximum commitment UHU per hour across the normal workday should not exceed 30 percent. Beyond that, the most important duties to suffer will be training hours and employee health and wellness.

For a dedicated unit, such as an ambulance or low-acuity unit *working less than* a 24-hour shift, UHU can rise to 40 to 50 percent at a maximum. At that UHU level, Peak Activity Units (PAUs) must then have additional duty days specifically for training, during which they are not responding to incidents, to meet their annual requirements for continuing education and training hours.

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The following table summarizes UHU for the 10 busiest LAFD engine companies. The busiest engines are listed first. A separate Microsoft Excel exhibit (Exhibit 1) has been provided to illustrate the hourly UHU percentages for all truck companies.

**Table 22—Unit-Hour Utilization – Engine Companies – 2020**

Hour	E64	E57	E33	E11	E66	E46	E209	E9	E4	E7
00:00	38.43%	25.23%	32.19%	20.97%	22.29%	26.20%	17.56%	33.18%	17.47%	17.34%
01:00	21.97%	21.03%	25.52%	16.39%	17.27%	19.54%	16.63%	24.70%	15.16%	21.09%
02:00	24.21%	17.19%	18.56%	16.51%	15.53%	15.93%	15.29%	18.60%	18.19%	14.81%
03:00	20.79%	24.29%	19.14%	19.62%	20.17%	27.33%	14.80%	14.90%	11.32%	13.15%
04:00	17.91%	18.60%	15.89%	22.45%	17.51%	14.37%	19.62%	21.15%	12.31%	12.80%
05:00	23.51%	19.44%	15.25%	17.48%	13.23%	16.67%	15.45%	14.66%	13.81%	12.78%
06:00	22.79%	20.56%	21.57%	13.64%	13.93%	12.91%	18.70%	18.10%	12.54%	13.46%
07:00	18.42%	25.27%	15.11%	17.26%	14.11%	22.28%	18.00%	17.77%	17.98%	19.19%
08:00	28.35%	20.45%	16.79%	20.57%	23.51%	16.25%	19.55%	20.47%	14.63%	17.50%
09:00	19.21%	22.04%	31.41%	37.07%	24.53%	23.50%	19.95%	21.23%	27.14%	19.33%
10:00	21.03%	29.64%	20.97%	39.09%	29.27%	26.67%	23.69%	23.16%	22.50%	26.83%
11:00	36.29%	31.87%	22.63%	26.68%	26.84%	23.45%	27.73%	21.92%	23.82%	22.26%
12:00	25.58%	32.90%	23.68%	29.06%	27.75%	30.55%	45.30%	28.77%	43.80%	27.18%
13:00	26.19%	33.15%	25.80%	24.55%	24.99%	22.73%	21.86%	19.95%	23.62%	28.47%
14:00	26.79%	34.81%	35.15%	42.33%	31.86%	28.46%	31.76%	37.24%	25.46%	28.68%
15:00	29.03%	33.63%	29.73%	35.97%	30.79%	28.95%	26.07%	33.33%	22.94%	26.76%
16:00	42.15%	33.98%	30.73%	29.47%	27.56%	30.46%	33.88%	29.61%	34.06%	30.57%
17:00	31.51%	37.96%	30.58%	27.23%	37.56%	28.25%	26.32%	31.70%	22.57%	24.60%
18:00	31.98%	31.87%	28.26%	23.34%	23.15%	32.21%	49.81%	21.99%	42.17%	28.29%
19:00	32.21%	32.92%	31.33%	22.12%	36.13%	30.52%	28.04%	26.72%	23.97%	26.69%
20:00	37.65%	35.12%	30.09%	23.53%	28.20%	30.91%	27.88%	29.46%	22.61%	27.62%
21:00	42.12%	28.29%	29.02%	28.07%	28.30%	27.06%	17.66%	15.93%	21.26%	25.08%
22:00	32.47%	28.12%	28.24%	24.66%	32.75%	25.43%	19.05%	19.18%	20.25%	21.82%
23:00	24.47%	22.24%	19.05%	17.88%	20.40%	19.13%	17.89%	17.87%	15.71%	18.14%
<b>Runs</b>	<b>7,684</b>	<b>7,338</b>	<b>6,472</b>	<b>6,340</b>	<b>6,813</b>	<b>6,098</b>	<b>5,980</b>	<b>5,927</b>	<b>4,591</b>	<b>5,610</b>

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The following table shows unit-hour utilization for the 10 busiest truck companies, with the busiest trucks listed first. A separate Microsoft Excel exhibit (Exhibit 1) has been provided to illustrate the hourly UHU percentages for all truck companies.

**Table 23—Unit-Hour Utilization – Truck Companies – 2020**

Hour	T9	T10	T11	T98	T64	T27	T33	T89	T3	T60
00:00	29.24%	13.23%	16.74%	10.34%	10.72%	8.22%	22.18%	11.92%	19.93%	13.88%
01:00	13.22%	18.42%	10.50%	12.01%	7.05%	19.94%	5.85%	11.01%	10.29%	9.26%
02:00	15.05%	19.32%	13.67%	8.28%	13.65%	8.87%	11.93%	6.89%	9.91%	6.76%
03:00	12.96%	17.74%	17.86%	9.86%	8.16%	8.96%	12.59%	8.47%	11.60%	7.96%
04:00	15.54%	8.04%	9.16%	4.45%	6.92%	10.47%	9.09%	4.17%	6.63%	2.80%
05:00	12.41%	12.63%	11.51%	12.24%	12.86%	6.79%	10.93%	4.92%	13.47%	5.74%
06:00	13.53%	10.95%	7.64%	11.10%	7.85%	7.32%	8.88%	5.54%	10.35%	7.44%
07:00	14.28%	9.55%	8.39%	11.51%	11.63%	13.27%	7.52%	8.96%	7.95%	6.96%
08:00	16.00%	12.98%	17.58%	12.07%	16.76%	15.50%	9.92%	18.29%	9.32%	20.52%
09:00	17.40%	13.11%	23.97%	11.49%	10.52%	18.41%	16.40%	13.56%	11.00%	13.56%
10:00	16.59%	14.34%	24.74%	17.25%	14.75%	23.16%	11.97%	18.10%	10.73%	18.95%
11:00	16.21%	15.23%	21.26%	25.22%	22.45%	13.59%	11.76%	15.71%	13.15%	18.06%
12:00	19.99%	25.09%	22.09%	21.43%	19.44%	19.07%	15.48%	22.19%	10.66%	25.38%
13:00	18.37%	13.37%	18.11%	25.62%	17.06%	14.10%	14.28%	17.60%	15.27%	15.77%
14:00	22.96%	21.79%	20.80%	24.41%	17.25%	20.29%	18.46%	18.75%	20.99%	15.68%
15:00	20.69%	23.27%	18.65%	21.73%	21.26%	16.12%	17.18%	18.93%	18.45%	22.74%
16:00	17.85%	21.89%	14.85%	23.55%	19.76%	21.11%	18.27%	17.54%	22.04%	15.76%
17:00	21.50%	22.64%	16.35%	21.52%	22.25%	17.24%	19.62%	19.33%	22.32%	17.16%
18:00	28.15%	40.09%	19.52%	20.43%	16.54%	14.71%	24.29%	20.72%	34.18%	20.86%
19:00	18.54%	18.71%	13.50%	16.79%	16.63%	16.12%	14.96%	23.06%	13.65%	17.11%
20:00	18.63%	18.59%	20.14%	15.88%	22.63%	17.07%	17.56%	13.45%	16.52%	16.08%
21:00	17.17%	17.02%	16.29%	18.50%	19.94%	14.13%	18.68%	17.57%	9.84%	17.25%
22:00	21.44%	11.46%	14.60%	11.53%	21.21%	18.36%	19.31%	10.15%	13.67%	9.68%
23:00	15.08%	11.94%	12.55%	11.11%	10.17%	10.97%	7.36%	13.83%	8.17%	11.28%
<b>Runs</b>	<b>5,186</b>	<b>3,433</b>	<b>4,322</b>	<b>3,154</b>	<b>3,967</b>	<b>3,327</b>	<b>3,414</b>	<b>3,460</b>	<b>2,932</b>	<b>3,147</b>



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The following table illustrates a unit-hour utilization summary for Rescue Ambulances (RA), with the busiest RAs listed first.

**Table 24—Unit-Hour Utilization – RA – 2020**

Hour	RA857	RA11	RA9	RA809	RA846	RA209	RA257	RA866	RA881	RA57
00:00	35.57%	29.38%	24.12%	26.05%	21.68%	24.72%	23.40%	27.98%	34.86%	28.37%
01:00	27.14%	25.98%	30.11%	30.96%	28.78%	27.45%	38.73%	33.22%	26.14%	32.03%
02:00	19.31%	19.50%	25.31%	22.86%	20.08%	24.28%	17.88%	15.38%	24.34%	19.85%
03:00	25.38%	26.24%	24.75%	21.82%	15.78%	20.84%	28.07%	19.14%	24.08%	18.50%
04:00	23.21%	21.80%	21.14%	20.64%	22.60%	18.85%	20.03%	17.40%	19.43%	18.34%
05:00	22.28%	27.67%	27.59%	24.36%	22.93%	27.43%	19.54%	12.61%	19.67%	18.94%
06:00	28.73%	30.77%	62.79%	28.52%	20.01%	46.32%	33.61%	23.27%	17.15%	27.66%
07:00	27.86%	44.98%	27.09%	38.64%	35.28%	32.26%	24.43%	28.50%	32.83%	33.68%
08:00	38.99%	39.27%	33.79%	33.31%	41.46%	35.86%	44.64%	38.63%	29.51%	27.75%
09:00	42.52%	51.41%	53.36%	49.48%	41.35%	57.17%	37.88%	45.95%	35.06%	36.66%
10:00	48.80%	46.90%	41.79%	43.99%	49.61%	46.26%	47.75%	51.29%	44.33%	40.71%
11:00	48.54%	48.46%	48.89%	47.84%	44.39%	43.11%	45.55%	43.12%	38.22%	45.36%
12:00	37.53%	54.81%	48.92%	54.69%	53.49%	45.89%	41.06%	45.89%	54.61%	44.49%
13:00	48.63%	50.70%	49.01%	49.30%	45.14%	46.66%	48.92%	52.09%	42.35%	37.67%
14:00	52.80%	49.02%	42.75%	50.27%	56.13%	48.08%	41.96%	44.42%	49.68%	46.90%
15:00	45.01%	47.56%	54.25%	57.92%	57.04%	51.95%	47.99%	48.81%	47.48%	49.62%
16:00	49.42%	53.07%	41.94%	51.37%	51.16%	49.13%	49.88%	44.91%	51.34%	51.25%
17:00	59.99%	45.65%	38.15%	52.14%	54.39%	40.53%	59.94%	52.79%	40.34%	51.14%
18:00	53.73%	52.30%	44.43%	46.76%	41.70%	43.51%	44.43%	46.71%	48.93%	44.02%
19:00	44.71%	38.64%	43.31%	37.60%	43.07%	45.26%	55.40%	47.05%	42.73%	45.26%
20:00	54.15%	41.57%	42.76%	34.06%	47.74%	36.04%	42.23%	47.89%	40.69%	49.83%
21:00	46.04%	41.38%	30.00%	28.90%	38.41%	32.25%	39.80%	41.74%	44.72%	37.72%
22:00	49.09%	36.74%	36.32%	33.98%	30.99%	35.48%	33.11%	38.70%	31.69%	34.94%
23:00	34.08%	28.82%	27.11%	29.26%	29.13%	31.47%	20.52%	28.31%	32.02%	26.90%
<b>Runs</b>	<b>5,668</b>	<b>5,159</b>	<b>5,227</b>	<b>6,522</b>	<b>4,819</b>	<b>5,070</b>	<b>4,198</b>	<b>5,644</b>	<b>5,483</b>	<b>4,263</b>

**Finding #8:** The top ten busiest engines, trucks, and rescue ambulance companies' unit-hour utilization measures significantly exceed 30 percent for several hours or more at a time. Based on this measure alone, the busiest unit crews are overworked and need relief units and/or strategies to decrease the quantity of non-urgent EMS incidents.

**Finding #9:** The volume and simultaneous demand of 10 to 28 LAFD stations is the highest Citygate has measured in a metro client to date. Given the likelihood that some of these stations are adjacent to each other—as population density zones are typically larger than a single fire station area—Citygate located the top 10 stations and then expanded the search to the top 28.

**Finding #10:** As shown in Map #18, there are three clusters in the east-central and southern City core containing 16 of the top 28 stations for workload demand, and nine of the top 10. In the northern Valley area, there are two clusters containing five of the top 28, with one of the top ten. There are seven other stations in the top 28, but they exist as individual stations without an adjacent busy station.

**Finding #11:** Battalion 1 in the east-central area of the City has three of the top 10 overworked stations; Battalion 13 in the southern area of the City has another five of the top 10.

**Finding #12:** The importance of this clustering measure is that for long, consecutive hours of the day, large numbers of fire crews are busy with only EMS calls, leaving the area underserved for an immediate need fire or rescue response, even when many of the busiest stations have multiple crews assigned to them.

### 5.3 DISTRIBUTION RESPONSE TIME PERFORMANCE

This sub-section reports performance for the first apparatus to arrive on the scene of emergency incidents. Measurements are presented two ways - the number of minutes and seconds necessary for 90 percent completion and average time for completion of 100% of all occurrences.

◆ Call processing

- ◆ Turnout
- ◆ Travel
- ◆ Dispatch to arrival
- ◆ Call to arrival

Each one of these components starts with a year-to-year comparison followed by a representation of compliance.

### 5.3.1 Call Processing

Call processing measures the time from the first incident timestamp until apparatus are notified of the request for assistance.

Call processing performance definitions vary depending on what is being measured. If the first timestamp on an incident takes place at the time the fire communication centers receive a 9-1-1 call from the police PSAP, then call processing includes the full fire dispatcher processing. Otherwise, the performance here represents only a portion of the entire call processing operation.

There is another consideration. Not all requests for assistance are received via 9-1-1 calls. Generally, there will be a mix of channels for receiving requests for assistance. Each channel will

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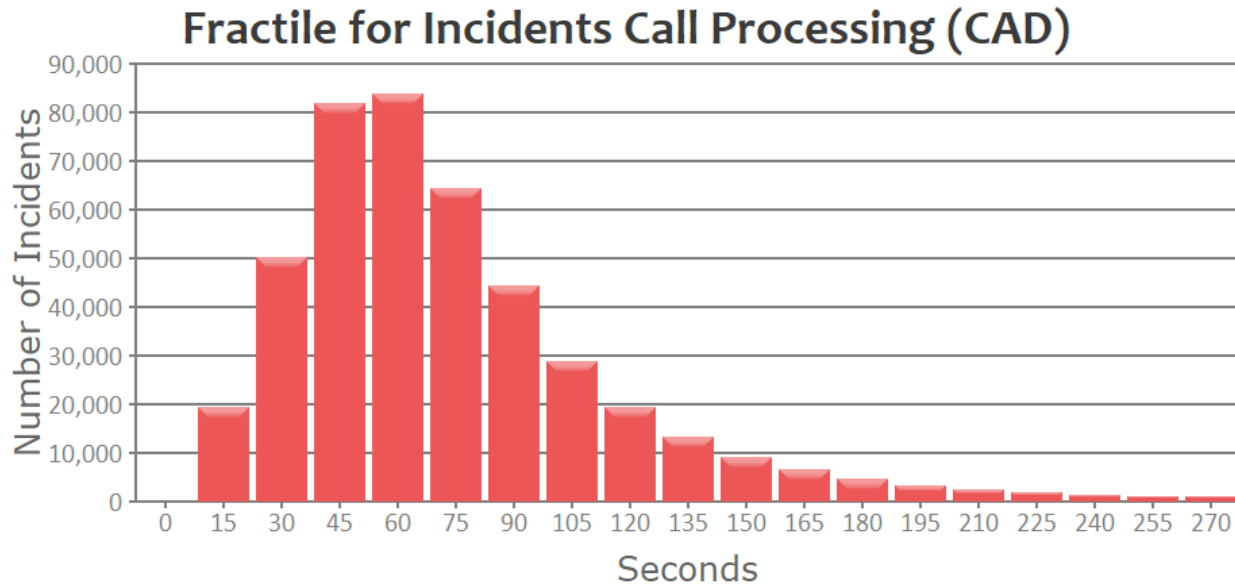
have a timestamp at a different point in the processing operation. This is not as much of a factor if most requests are received via 9-1-1 PSAP.

**Table 25—Call Processing Analysis – 90 Percent Performance**

Battalion	Overall	2018	2019	2020	2020 Average
<b>Department-Wide</b>	<b>02:04</b> (1,309,254)	<b>02:05</b> (430,872)	<b>02:03</b> (438,873)	<b>02:03</b> (439,509)	<b>1:08</b>
1	02:08 (166,290)	02:09 (54,487)	02:08 (56,740)	02:08 (55,063)	1:09
2	02:03 (49,805)	02:05 (16,338)	02:04 (16,244)	02:01 (17,223)	1:07
11	02:08 (112,166)	02:10 (35,714)	02:07 (37,229)	02:08 (39,223)	1:10
6	02:06 (53,777)	02:08 (17,350)	02:05 (17,772)	02:06 (18,655)	1:10
13	02:02 (215,142)	02:02 (70,011)	02:01 (70,906)	02:04 (74,225)	1:07
18	02:00 (108,646)	02:01 (37,282)	01:59 (36,314)	01:59 (35,050)	1:06
10	02:02 (87,696)	02:02 (28,901)	02:01 (29,385)	02:01 (29,410)	1:07
12	02:05 (91,366)	02:07 (29,394)	02:04 (29,689)	02:05 (32,283)	1:09
14	01:59 (78,261)	02:01 (25,405)	01:58 (26,167)	01:57 (26,689)	1:05
15	01:54 (52,525)	01:55 (17,599)	01:54 (17,479)	01:54 (17,447)	1:05
17	01:59 (85,120)	01:59 (27,851)	01:58 (28,298)	01:59 (28,971)	1:06
4	02:10 (68,705)	02:15 (23,969)	02:09 (24,785)	02:06 (19,951)	1:10
5	02:04 (89,622)	02:06 (29,685)	02:03 (30,749)	02:04 (29,188)	1:08
9	02:02 (50,133)	02:02 (16,886)	02:03 (17,116)	02:02 (16,131)	1:08

The following figure illustrates that many calls are being processed between 45 and 60 seconds. There are, however, some calls that require longer processing times, typically due to language barriers or difficult locations such as a freeways or open space areas.

**Figure 11—Fractile for Incidents Call Processing**



**Finding #13:** At 2:03 minutes in 2020, call-processing performance to 90 percent of fire and EMS incidents is only 33 seconds longer than Citygate’s and the National Fire Protection Association’s 1:30-minute recommendation where no language or location identification barriers exist. In light of the size of the City and the typical barriers to a short 9-1-1 call, the LAFD’s average processing time of 1:08 minutes is very good as 235,855 incidents are processed faster than best practice guidelines.

### 5.3.2 Turnout

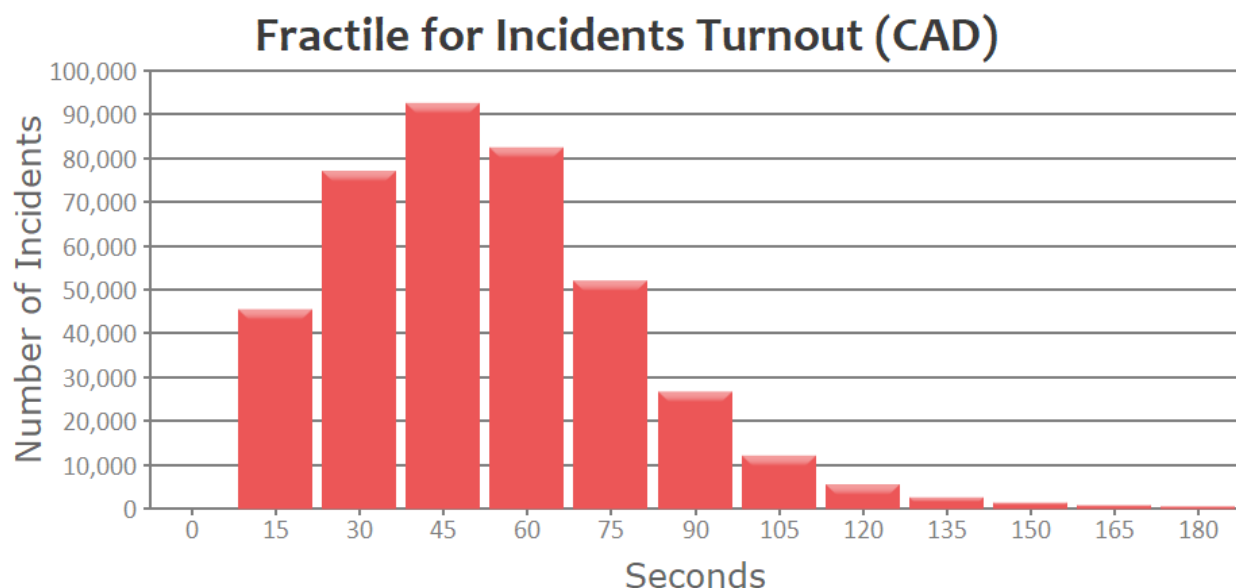
Turnout measures the time from apparatus notification until apparatus start traveling to the scene. A maximum 2:00-minute goal across a 24-hour day is used for measurement. This goal is consistently met by more than 30 seconds.

**Table 26—Turnout Analysis – 90 Percent Performance**

Battalion	Overall	2018	2019	2020	2020 Average
Department-Wide	<b>01:23</b> (1,275,702)	<b>01:24</b> (424,973)	<b>01:22</b> (433,503)	<b>01:21</b> (417,226)	<b>0:47</b>
1	01:29 (160,125)	01:31 (52,932)	01:29 (55,536)	01:28 (51,657)	0:49
2	01:21 (48,847)	01:21 (16,347)	01:20 (16,140)	01:23 (16,360)	0:50
11	01:22 (109,540)	01:25 (35,094)	01:21 (36,696)	01:20 (37,750)	0:46
6	01:27 (52,858)	01:29 (17,264)	01:29 (17,759)	01:24 (17,835)	0:51
13	01:20 (213,017)	01:23 (70,349)	01:20 (71,066)	01:18 (71,602)	0:45
18	01:20 (105,606)	01:21 (36,624)	01:20 (35,786)	01:19 (33,196)	0:46
10	01:22 (85,725)	01:25 (28,583)	01:21 (29,159)	01:20 (27,983)	0:47
12	01:18 (88,926)	01:21 (28,983)	01:18 (29,276)	01:15 (30,667)	0:43
14	01:19 (75,745)	01:24 (24,695)	01:18 (25,721)	01:17 (25,329)	0:46
15	01:18 (51,649)	01:20 (17,572)	01:18 (17,405)	01:18 (16,672)	0:49
17	01:18 (83,007)	01:18 (27,455)	01:17 (27,991)	01:18 (27,561)	0:45
4	01:27 (66,895)	01:25 (23,802)	01:27 (24,619)	01:27 (18,474)	0:52
5	01:25 (85,939)	01:26 (28,824)	01:25 (29,814)	01:23 (27,301)	0:49
9	01:29 (47,823)	01:27 (16,449)	01:29 (16,535)	01:32 (14,839)	0:55

The following figure illustrates fractile turnout performance. Most turnout times fall between 30 seconds and 75 seconds.

**Figure 12—Turnout Performance in 15-Second Increments**



While the CFAI and the NFPA best practice advice recommends 60 to 80 seconds (fire or EMS) for turnout, it is a standard rarely met in practical experience. Crews hear the dispatch message and don the appropriate personal protective clothing mandated by the Occupational Safety and Health Administration for the type of emergency. Due to this and the floorplan design of some stations, Citygate has long recommended that agencies can reasonably achieve a 2:00-minute crew turnout to 90 percent of emergency incidents.

**Finding #14:** At 1:21 minutes, crew turnout performance to 90 percent of fire and EMS incidents, with an average of 47 seconds, is excellent, and shows a rare attention to the importance of delivering prompt turnout times.

### 5.3.3 Travel

Travel measures time to travel to the scene of the emergency. For effective outcomes at critical emergencies in urban fire departments and as recommended by NFPA #1710, a 4:00-minute travel performance 90 percent of the time is a desirable goal. The Department's overall travel time was



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at 7:00 minutes in 2020. Battalion 11 had the best travel-time performance while Battalion 4 took approximately 1:30 minutes longer to reach 90 percent compliance.

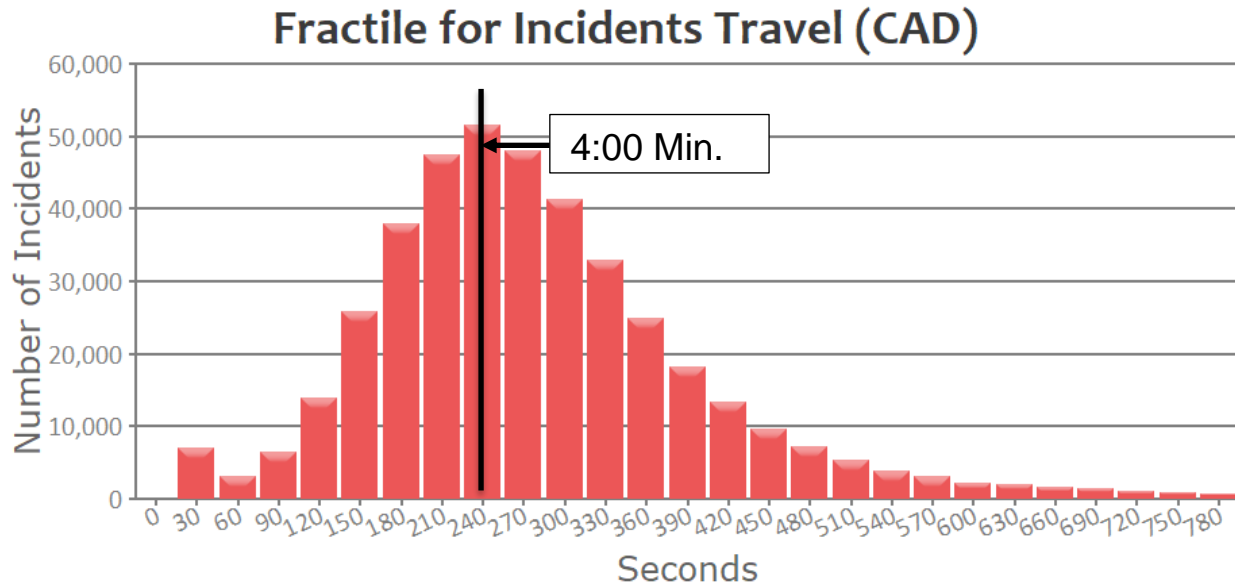
**Table 27—Travel Analysis by Battalion – 90 Percent Performance**

Battalion	Overall	2018	2019	2020	2020 Average
Department-Wide	06:55 (1,267,347)	06:50 (422,361)	06:54 (430,882)	07:00 (414,104)	4:27
1	06:21 (159,346)	06:18 (52,716)	06:21 (55,298)	06:25 (51,332)	4:03
2	07:20 (48,388)	07:11 (16,208)	07:23 (15,988)	07:24 (16,192)	4:36
11	06:06 (108,956)	06:07 (34,877)	06:06 (36,528)	06:06 (37,551)	3:51
6	06:57 (52,498)	06:46 (17,156)	06:54 (17,645)	07:07 (17,697)	4:25
13	06:54 (211,818)	06:50 (70,019)	06:51 (70,714)	07:01 (71,085)	4:29
18	07:02 (104,962)	07:01 (36,404)	07:02 (35,598)	07:03 (32,960)	4:36
10	06:43 (85,245)	06:36 (28,448)	06:41 (28,990)	06:52 (27,807)	4:34
12	07:33 (88,248)	07:27 (28,747)	07:27 (29,106)	07:44 (30,395)	4:55
14	06:42 (75,304)	06:35 (24,542)	06:43 (25,577)	06:48 (25,185)	4:24
15	06:30 (51,327)	06:25 (17,468)	06:25 (17,327)	06:41 (16,532)	4:24
17	07:05 (82,493)	06:54 (27,298)	07:03 (27,848)	07:16 (27,347)	4:44
4	07:35 (66,205)	07:26 (23,580)	07:44 (24,327)	07:38 (18,298)	4:47
5	07:05 (85,171)	06:59 (28,599)	07:08 (29,536)	07:07 (27,036)	4:24
9	07:33 (47,386)	07:28 (16,299)	07:35 (16,400)	07:37 (14,687)	4:47

The following figure illustrates fractile travel-time performance. The peak segment for travel performance is 240 seconds, or 4:00 minutes. This data is slightly right shifted, though, which indicates that while many incidents can be reached within the first 4:00 minutes, there are still

many incidents that require longer response times. Also suggestive of a travel time reaching many incidents promptly is the citywide average travel time of 4:27 minutes in 2020.

**Figure 13—Fractile for Incidents Travel in 30-Second Increments**



While NFPA Standard 1710 recommends a 4:00-minute travel time goal in urban areas, given the topography and traffic congestion in LAFD’s service area as shown in the GIS mapping analysis section of this report, this goal is not cost-effectively achievable to 90 percent of the incidents. Just over 70 percent of the incidents are reached in 4:00 minutes.

**Finding #15:** At 7:00 minutes, LAFD’s fire unit travel times to 90 percent of fire and EMS incidents is slower than the National Fire Protection Association’s urban best practice recommendation of 4:00 minutes, due in part to LAFD’s difficult topography in some areas, traffic congestion, and simultaneous incidents. The average travel time of 4:27 minutes does reach 193,743 incidents promptly.

### 5.3.4 Call to Arrival

Call to arrival measures time from receipt of the request for assistance until the apparatus arrives on the scene. A call processing of 1:30 minutes in addition to 2:00 minutes for turnout and 4:00

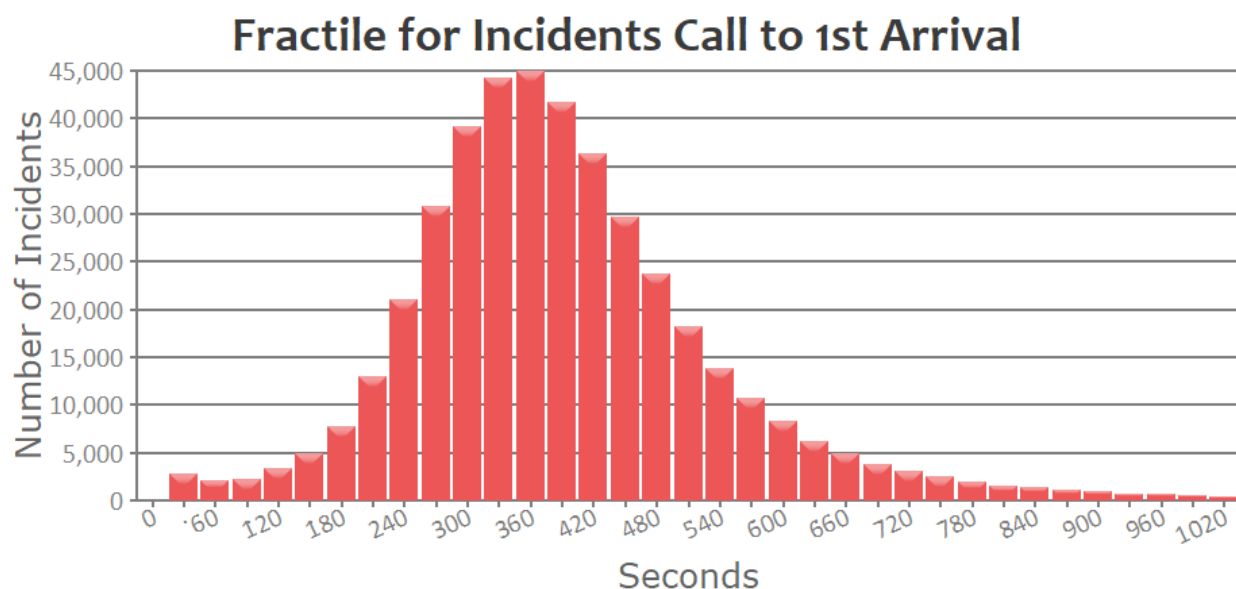
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minutes for travel equates to 7:30 minutes or 450 seconds. The Department comes within 1:45 minutes of meeting the 7.30-minute call-to-arrival goal.

**Table 28—Call to Arrival Analysis – 90 Percent Performance**

Battalion	Overall	2018	2019	2020	2020 Average
Department-Wide	09:17 (1,313,151)	09:14 (436,193)	09:16 (445,565)	09:21 (431,393)	6:20
1	08:53 (167,181)	08:52 (55,299)	08:52 (57,715)	08:54 (54,167)	5:57
2	09:45 (50,257)	09:38 (16,685)	09:47 (16,653)	09:48 (16,919)	6:32
11	08:33 (112,528)	08:37 (36,105)	08:31 (37,695)	08:32 (38,728)	5:47
6	09:23 (53,942)	09:19 (17,571)	09:19 (18,119)	09:30 (18,252)	6:25
13	09:15 (216,263)	09:09 (71,080)	09:13 (72,080)	09:22 (73,103)	6:21
18	09:20 (108,955)	09:18 (37,713)	09:20 (36,930)	09:22 (34,312)	6:26
10	09:03 (88,147)	08:59 (29,273)	09:01 (29,936)	09:10 (28,938)	6:25
12	09:51 (91,371)	09:51 (29,693)	09:42 (30,059)	10:00 (31,619)	6:45
14	08:59 (78,079)	08:56 (25,415)	08:57 (26,437)	09:04 (26,227)	6:13
15	08:46 (52,789)	08:42 (17,912)	08:41 (17,779)	08:57 (17,098)	6:15
17	09:18 (85,291)	09:10 (28,166)	09:15 (28,761)	09:29 (28,364)	6:33
4	10:04 (68,869)	09:57 (24,294)	10:12 (25,162)	10:04 (19,413)	6:43
5	09:31 (89,579)	09:28 (29,939)	09:33 (31,093)	09:31 (28,547)	6:18
9	10:01 (49,900)	09:55 (17,048)	10:05 (17,146)	10:02 (15,706)	6:43

**Figure 14—Call to First-Arrival Performance in 30-Second Increments**

**Finding #16:** First-due unit call-to-arrival performance to 90 percent of fire and EMS incidents Citywide, at 9:21 minutes, is longer than a best practice goal of 7:30 minutes. However, the average measure of 6:20 minutes means 216,937 incidents received a first responder *faster* than a best practice goal, or 594 times per day in 2020.

### 5.3.5 Distribution and Concentration Measurements for Building Fires

Moving from first-due unit analysis to multiple units for building fires, an agency should not spread its stations so far apart that it cannot mass an ERF, or First Alarm, to serious, emerging building fires. National best practices recommendations for the ERF in urban areas is that all the needed units arrive within an 8:00-minute travel time. When 1:30 minutes for dispatch and 2:00 minutes for turnout are added, the call receipt to ERF arrival becomes 11:30 minutes.

For a typical house fire in an urban area, a minimum national best practice recommendation is for a force of 15 or more firefighters, plus at least one chief officer for command/safety functions. LAFD serves a metropolitan area consisting of many diverse risk types. The current LAFD Category A ERF for a low-risk residential building fire is three Engines, one Light Force, one Paramedic Rescue Ambulance, one Basic Rescue Ambulances, and one Battalion Command Team for a total of **24** personnel. A more serious risk building fire receives a Category B response of is four Engines, two Light Forces (ladders), one Paramedic Rescue Ambulance, one Basic Rescue Ambulances, one EMS Captain, and one Battalion Command Team for a total of **35** personnel.

Delivering a multi-unit force of eight to eleven units anywhere in the vast city, in an 8:00-minute travel time or less to 90 percent of the service area is very challenging. Again, the ERF measure is primarily a concern of station spacing.

For this analysis, Citygate models travel times for LAFD’s Category A and B ERFs using engines and light forces only. Given the larger spacing distances Citywide for rescue ambulances and Battalion Command Teams, those units are not reflected in the following tables to avoid distorting the arrival time capacity of the firefighting units themselves. Given that LAFD staffs engines and ladder trucks with four personnel, the Department delivers a substantial number of firefighters so that critical tasks can be performed simultaneously and effectively until one or more command chiefs can arrive.

The following tables illustrates the time-over-distance travel time challenges of multiple-unit responses. The number of ERF incidents, where all units arrive on-scene in any one year is small in some areas, so the table shows the incident quantity in parenthesis alongside the time to show when a small sample size might lead to statistical volatility.

A *dispatch delay* filter is used to identify and exclude *escalated alarms* from ERF analysis. An escalated alarm is, for example, a single engine company dispatched to a report of an automatic interior alarm. Upon arrival the engine company sees smoke showing and requests an ERF response. Because this incident was not originally dispatched as an ERF incident, it should not be included in the analysis of ERF performance. This analysis uses a 120-second dispatch delay to eliminate escalated alarms.

There are a total of 3,664 building fire incidents to be evaluated for Effective Response Force (ERF). Data for each ERF Response Team is reported in its own following subsection. Incidents beyond the following outlier limits were eliminated from the calculations.

- ◆ Dispatch delay less than or equal to 2:00 minutes
- ◆ Travel limit of 25:00 minutes
- ◆ Call-to-arrival limit of 30:00 minutes

#### 4.1.1 Low-ERF Response Team – LAFD Category A

**Table 29—Distribution – First Arrival Travel – 90 Percent Performance**

Area	Overall	2018	2019	2020
<b>Department-Wide</b>	04:18 (1,914)	04:17 (601)	04:11 (642)	04:24 (671)
Central Bureau	03:29 (431)	03:34 (137)	03:21 (155)	03:39 (139)
South Bureau	03:55 (582)	04:01 (197)	03:50 (194)	03:50 (191)
Valley Bureau	04:39 (598)	04:35 (177)	04:39 (198)	04:47 (223)
West Bureau	04:41 (303)	04:56 (90)	04:56 (95)	04:25 (118)

**Table—Low-ERF Response Team – LAFD Category A – Travel – 90 Percent Performance  
& Average**

Area	Overall	2018	2019	2020	2020 Average
<b>Department-Wide</b>	10:10 (1,931)	10:17 (603)	10:04 (650)	10:14 (678)	8:15
Central Bureau	08:27 (434)	09:14 (137)	07:14 (157)	07:51 (140)	8:39
South Bureau	08:40 (589)	08:33 (198)	07:48 (198)	09:34 (193)	9:53
Valley Bureau	10:47 (602)	10:58 (177)	10:45 (198)	10:22 (227)	9:52
West Bureau	12:04 (306)	12:15 (91)	12:29 (97)	10:59 (118)	8:15

**Table 30—Low-ERF Response Team – LAFD Category A – Call-to-Arrival – 90 Percent  
Performance**

Area	Overall	2018	2019	2020
<b>Department-Wide</b>	11:50 (1,931)	11:51 (603)	11:47 (650)	11:49 (678)
Central Bureau	09:53 (434)	10:27 (137)	09:11 (157)	09:23 (140)
South Bureau	09:57 (589)	09:48 (198)	09:04 (198)	11:12 (193)
Valley Bureau	12:29 (602)	12:29 (177)	12:39 (198)	12:12 (227)
West Bureau	13:24 (306)	13:46 (91)	14:05 (97)	11:56 (118)

### 4.1.3 High-ERF Response Team – LAFD Category B

**Table 31—Distribution – First Arrival Travel – 90 Percent Performance**

Area	Overall	2018	2019	2020
<b>Department-Wide</b>	04:13 (1,268)	04:11 (393)	04:05 (436)	04:18 (439)
Central Bureau	03:29 (288)	03:25 (91)	03:21 (106)	03:58 (91)
South Bureau	03:54 (385)	04:22 (135)	03:46 (129)	03:41 (121)
Valley Bureau	04:37 (395)	04:38 (113)	04:21 (133)	04:37 (149)
West Bureau	04:30 (200)	04:29 (54)	04:23 (68)	04:30 (78)

**Table 32—High-ERF Response Team – LAFD Category B – Travel – 90 Percent Performance & Average**

Area	Overall	2018	2019	2020	2020 Average
<b>Department-Wide</b>	14:11 (1,276)	13:37 (393)	14:29 (440)	14:35 (443)	7:41
Central Bureau	13:49 (289)	12:27 (91)	13:54 (106)	14:07 (92)	8:01
South Bureau	13:25 (389)	13:37 (135)	12:29 (132)	13:25 (122)	9:18
Valley Bureau	14:54 (397)	14:54 (113)	16:07 (133)	14:39 (151)	9:28
West Bureau	14:35 (201)	13:10 (54)	14:29 (69)	15:58 (78)	7:41

**Table 33—High-ERF Response Team – LAFD Category B – Call-to-Arrival – 90 Percent Performance**

Area	Overall	2018	2019	2020
<b>Department-Wide</b>	15:49 (1,276)	14:49 (393)	16:07 (440)	15:52 (443)
Central Bureau	14:57 (289)	13:37 (91)	16:02 (106)	15:04 (92)
South Bureau	14:49 (389)	15:07 (135)	14:04 (132)	15:08 (122)
Valley Bureau	16:15 (397)	16:06 (113)	17:24 (133)	15:52 (151)
West Bureau	16:10 (201)	14:39 (54)	16:07 (69)	17:24 (78)



**Finding #17:** Category A first arrival and ERF call-to-arrival times to 90 percent of all occurrences are better than, or very close to, best practices in all but the most geographically challenged areas. This ERF performance is stronger than what Citygate has observed in other metropolitan clients. It is understandable that the Category B response times are longer as more units travel farther to an incident, as with all metropolitan departments.

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*Section 6*

*Firefighting and Rescue  
Ambulance Deployment  
Evaluation and  
Recommendations*



## SECTION 6—FIREFIGHTING AND RESCUE AMBULANCE DEPLOYMENT EVALUATION

### 6.1 OVERALL DEPLOYMENT EVALUATION

#### **SOC ELEMENT 8 OF 8** **OVERALL EVALUATION**

LAFD’s service area is marked by diverse populations, land uses, hilly topography in some areas, and a public road pattern that, in certain areas, is geographically challenged with rivers, open spaces, and/or a lack of major cross-connecting roadways, limiting LAFD’s response times. Population drives EMS service demand, and infill development increases population. As different areas continue to redevelop and add population density, LAFD’s services will need adjustment just to *maintain*, much less *improve*, response times across the City’s geography—more so when simultaneous incidents occur at peak hours of the day.

In the most densely developed sections of the City, while the substantial growth in EMS incidents over the past decade seems all-consuming, there is still a need for both a first-due firefighting unit and multiple-unit Effective Response Force (ERF) deployment (First Alarm) consistent with current best practices to limit the risk of fire to only part of an affected building and keep wildland fires small and within the initial attack force’s capabilities. In other words, *all communities need a standby and readily available firefighting force* that can respond when fires break out, regardless of peak-hour EMS workload.

As shown in this report, Citygate analyzed response times, station locations, and incident workload on the primary types of responding apparatus. This analysis is based on GIS mapping and incident statistics, which combine to formulate Citygate’s opinions and overall deployment findings and recommendations in this section.

The LAFD has response time goals and reports its operational metrics via a public website. The LAFD uses an *average* measure of response time, and the CFAI and NFPA communities use a 90-percent-of-goal (*fractile*) measure. Both are effective measures, and both are utilized in this study. All response time measures point to a strong and effective response system, especially in light of the geographic terrain challenges across the City. Overall, LAFD deployment represents the strongest metropolitan area coverage Citygate has ever studied. While field crew deployment needs some adjustment and improvement in key areas, it is not—by any measure—significantly insufficient or in need of major change or fire station relocation.

The ongoing effective deployment of fire and EMS first responder units throughout the City is constrained by one critical issue and a small need to add two resources, which will stabilize current response times and increase firefighting unit availability.

### 6.1.1 Challenge #1: High-Volume EMS Incident Demands

As the response unit workloads by time of day show, EMS incidents in 2020 comprised 81.9 percent of total incident demand. The peak of this demand occurs during daylight to mid-evening hours and in clusters of high population and simultaneous incidents. Accordingly, even if fire stations are appropriately located and contain multiple staffed apparatus, peak service demand frequently results in all units assigned to a station simultaneously committed to one or more incidents, thus driving some simultaneous service demand to adjoining stations which results in cascading delays on unit travel times and overall response performance.

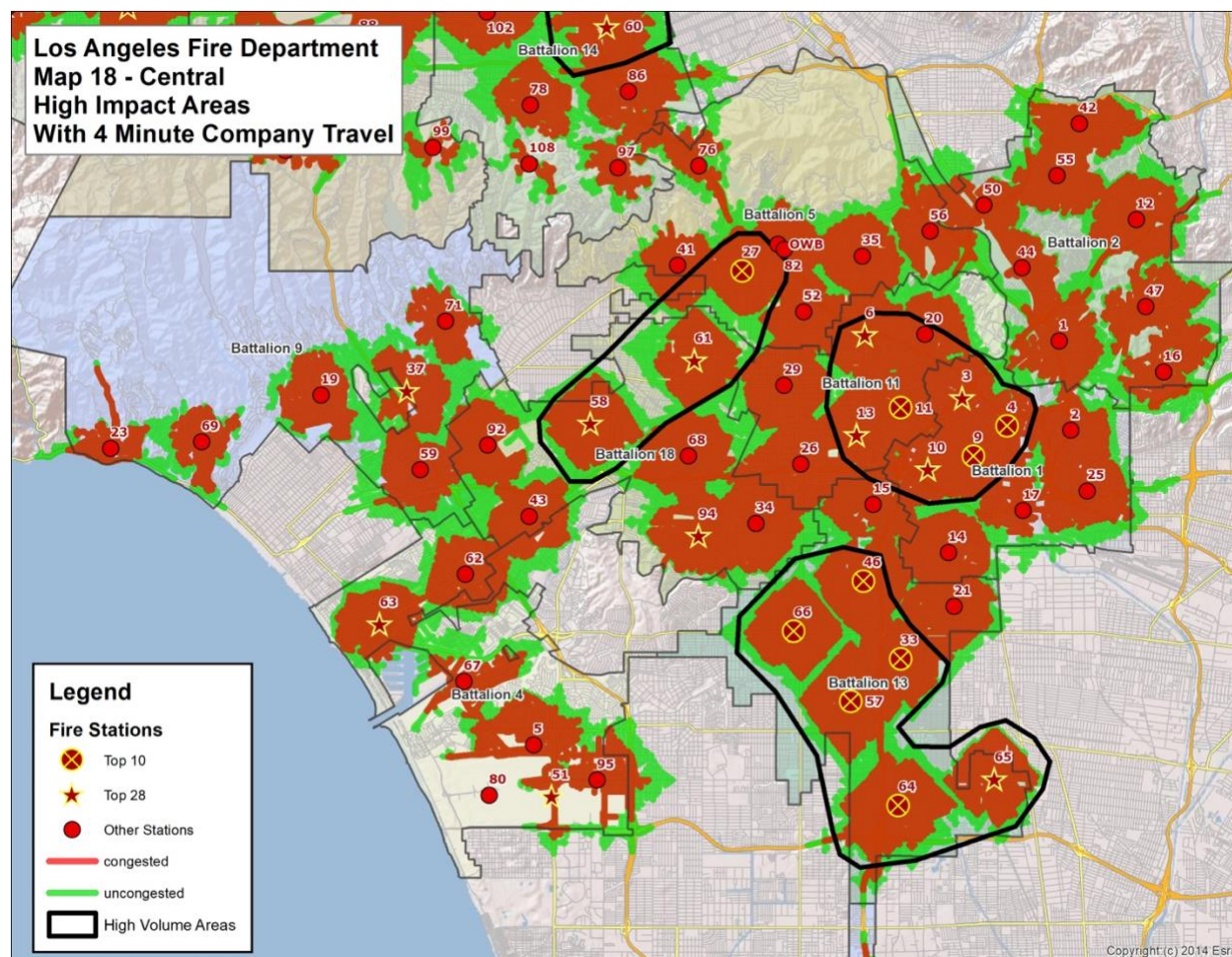
These high workload areas need either (1) more response units or (2) a reduction in non-acute EMS workload, which would be more cost-effective, to stabilize and likely improve response times and availability for serious fire, acute EMS, and technical incidents.

To put the EMS demand in perspective, in 2020, the LAFD responded to 392,949 EMS incidents, some of which had more than one patient. It is not an exaggeration to say the LAFD sees almost half a million patients per year. In 2020, the busiest emergency room in the United States was Parkland Health and Hospital in Dallas, Texas, which saw 210,152 patients. Los Angeles County / USC Medical center was seventh in the nation with 136,161 patients.

In other words, the LAFD is in the human care business, but not all these incidents require traditional emergency medical skills. All incidents do not need the response of a paramedic firefighter engine, truck company, and/or a two-person paramedic or EMT ambulance for a ride to an emergency room. LAFD is well-suited to be an alternative human crisis response agency with specialized responders in addition to LAFD's firefighters. While such an alternative response system is needed Citywide, it is *critically* needed now in core eastern and southern City areas. Although constructing such a system represents a new expense, overall, it will be more cost-effective than adding fire units. The City "*needs its fire department capacity back.*"

The highest incident volume in central Los Angeles is in the areas identified by Map #18 (**Volume 2—Map Atlas**). The top ten busiest engine, truck, and rescue ambulance companies are adjacent to each other, predominantly in two clusters.



**Figure 15—Central Los Angeles High-Impact Areas**

The individual unit-hour utilization (UHU) measures for these units significantly exceed 30 percent for long, consecutive hours at a time. Based on this measure alone, the busiest unit crews are overworked and in need of relief units and/or strategies to decrease the quantity of non-urgent EMS incidents. The volume and simultaneous demand on the top 10 to top 28 LAFD stations is the highest Citygate has ever measured in a metro client.

The busiest fire stations already have three to six primary units assigned (not chiefs or support units). Some units are placed outdoors on front aprons or in rear lot areas. Many sites are now at their physical limit for adding response units and/or personnel.

Over the course of late 2021 and into 2022, the City and County rolled out a pilot project for the delivery of alternative, non-urgent patient care—including mental health and homeless program diversion; however, this is not enough. The alternative response program needs to *scale massively and quickly* to lower the workload placed on fire units back down to moderate and serious emergencies.



As an illustration of volume, in 2020, Fire Station 9 in the east downtown area responded to 18,986 incidents—an average of 52 per day, or two per hour. If 30 percent of those incidents were managed by an alternative response team, that amounts to approximately 16 incidents per day. If the seven busiest stations in just the east-central area of the City had this low-acuity volume, that total would be 112 incidents per day over the busiest 16 hours.

If the alternative response team spent only 30 minutes per patient contact on average, that would be two contacts per hour per team. The east-central area alone could consume two to three units during daylight and early evening hours. If all six high-workload areas needed three units each, that would amount to 18 units per day, seven days per week, for at least 16 hours per day. Additionally, the other battalions could each use at least one alternative unit, representing another eight units, for a total of 26 units Citywide. On eight-hour shifts at two personnel per unit, that equates to 52 personnel per day just to cover five days per week, not including earned leave time. Therefore, well over 100 new non-firefighter personnel must be hired and trained for alternative response measures to meet the service needs of the City.

In light of the large personnel and unit count needed for alternative care teams, even as a “rapid” program, implementation could take two to three fiscal years. In the meantime, the busiest fire units need relief now. Citygate recommends the LAFD add at least 14 additional rescue ambulances (both ALS And BLS to relieve the busiest types), one engine company at a new station in the northern area of the City, and one Battalion Command Team in the north at an existing fire station.

Further, there are currently at least 25 rescue ambulances on 24-hour shift staffing that are overworked for excessively long periods of a 24-hour day. Citygate does not believe that critical patient care, much less safe firefighting, is always possible when a crew has gone from call to call for 12 or more hours. The LAFD should find a way to “split shift” these busiest 24-hour ambulances by either rotating crews to slower companies (though there are none close by in East and South Los Angeles) or placing these units on an alternative staffing workweek with 12-hour days.

Citygate does not recommend this lightly. This change will require collective bargaining with the represented workforce and will require more firefighters be hired in the near term. However, outside of the traditional 24-hour fire service staffing model, where in America do critical health care professionals, airline pilots, or railroad engineers preform critical work well past 12 consecutive hours without a mandated rest break? Citygate does not believe the LAFD can wait years for an alternative response program to be established, during which time EMS incident volume will likely further *increase*.

### 6.1.2 Challenge #2: Small Gaps in Coverage

This study identified the need for one additional Battalion Command Team to serve the northern area of the City near Fire Station 100. In addition, a large enough gap in first-due engine travel-time coverage exists in the eastern section of the northern area of the City (Map #17, **Volume 2—Map Atlas**) that one additional fire station is required.

Given the significant Battalion Command Team coverage gap in the north between Stations 73, 100, and 90, the study maps show the significant benefit of adding a Battalion Command Team at Station 100, located at 6751 Louise Avenue in Van Nuys. Almost 100 percent of the underserved road miles at a travel time of 8:00 minutes are included in this area southeast of the Van Nuys Airport.

The addition of an engine on the east side of the northern area, near the intersection of Woodman and Roscoe in Panorama City, would also be beneficial. This location is west of SR-170, a little south of the SR-170/I-5 interchange, at the intersection of two prime arterials, which will allow an added engine to route into far-away neighborhoods more quickly. As such, this location test did the best job of filling in the engine travel time gap at both 4:00 minutes' and 5:00 minutes' travel time. The added engine would increase public road coverage by 51.7 miles at 4:00 minutes, or up to 55.23 more miles at 5:00 minutes of travel time. The remaining underserved gap is between the fifth and sixth minute of coverage from adjoining stations 77 and 98.

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*Section 7*

*Next Steps and List of  
Findings and  
Recommendations*







## SECTION 7—FINDINGS AND RECOMMENDATIONS AND NEXT STEPS

Overall, there are 17 key findings and 6 specific action item recommendations contained in the body of the report. These are now presented in a comprehensive list for ease of reference.

The following lists Citygate’s findings in report order and then the resultant actionable recommendations related to deployment improvements.

### 7.1 LIST OF FINDINGS

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- Finding #1:** LAFD is a leader in response time reporting with its FireStatLA section, measuring from 9-1-1 answer to first-unit arrival.
- Finding #2:** The physical spacing of LAFD stations is sufficient, apart from small areas in the northern section of the City.
- Finding #3:** Effective Response Force (multiple-unit responses to more serious emergencies) travel-time coverage is sufficient in areas that are the most populated and carry the highest incident demand.
- Finding #4:** Given that the current fire station plan provides 5:00-minute travel time coverage to 88.7 percent of public streets City wide, using a 5:00-minute travel time goal to physically space fire stations across the City’s very diverse geography is effective. The incident workload assessment in this study evaluates the needed units per station.
- Finding #5:** The northern service area needs one additional Battalion Command Team at Station 100 to improve command coverage for more serious incidents.
- Finding #6:** One additional fire station with an engine is needed northeast of Station 81, as modeled in Scenario Map 1a and 1b (**Volume 2—Map Atlas**).
- Finding #7:** LAFD’s time-of-day, day-of-week, and month-of-year calls for service demand occurs in consistent, predictable patterns. LAFD’s service demand is sufficiently high in all areas, 24 hours per day, to require an all-day, year-round response system.
- Finding #8:** The top ten busiest engines, trucks, and rescue ambulance companies’ unit-hour utilization measures significantly exceed 30 percent for several hours or more at a time. Based on this measure alone, the busiest unit crews are overworked and need relief units and/or strategies to decrease the quantity of non-urgent EMS incidents.

- Finding #9:** The volume and simultaneous demand of 10 to 28 LAFD stations is the highest Citygate has measured in a metro client to date. Given the likelihood that some of these stations are adjacent to each other—as population density zones are typically larger than a single fire station area—Citygate located the top 10 stations and then expanded the search to the top 28.
- Finding #10:** As shown in Map #18, there are three clusters in the east-central and southern City core containing 16 of the top 28 stations for workload demand, and nine of the top 10. In the northern Valley area, there are two clusters containing five of the top 28, with one of the top ten. There are seven other stations in the top 28, but they exist as individual stations without an adjacent busy station.
- Finding #11:** Battalion 1 in the east-central area of the City has three of the top 10 overworked stations; Battalion 13 in the southern area of the City has another five of the top 10.
- Finding #12:** The importance of this clustering measure is that for long, consecutive hours of the day, large numbers of fire crews are busy with only EMS calls, leaving the area underserved for an immediate need fire or rescue response, even when many of the busiest stations have multiple crews assigned to them.
- Finding #13:** At 2:03 minutes in 2020, call-processing performance to 90 percent of fire and EMS incidents is only 33 seconds longer than Citygate’s and the National Fire Protection Association’s 1:30-minute recommendation where no language or location identification barriers exist. In light of the size of the City and the typical barriers to a short 9-1-1 call, the LAFD’s average processing time of 1:08 minutes is very good as 235,855 incidents are processed faster than best practice guidelines.
- Finding #14:** At 1:21 minutes, crew turnout performance to 90 percent of fire and EMS incidents, with an average of 47 seconds, is excellent, and shows a rare attention to the importance of delivering prompt turnout times.
- Finding #15:** At 7:00 minutes, LAFD’s fire unit travel times to 90 percent of fire and EMS incidents is slower than the National Fire Protection Association’s urban best practice recommendation of 4:00 minutes, due in part to LAFD’s difficult topography in some areas, traffic congestion, and simultaneous incidents. The average travel time of 4:27 minutes does reach 193,743 incidents promptly.
- Finding #16:** First-due unit call-to-arrival performance to 90 percent of fire and EMS incidents Citywide, at 9:21 minutes, is longer than a best practice goal of 7:30 minutes. However, the average measure of 6:20 minutes means 216,937 incidents received a first responder *faster* than a best practice goal, or 594 times per day in 2020.



**Finding #17:** Category A first arrival and ERF call-to-arrival times to 90 percent of all occurrences are better than, or very close to, best practices in all but the most geographically challenged areas. This ERF performance is stronger than what Citygate has observed in other metropolitan clients. It is understandable that the Category B response times are longer as more units travel farther to an incident, as with all metropolitan departments.

## **7.2 DEPLOYMENT RECOMMENDATIONS**

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Based on the technical analysis and findings contained in this study, Citygate offers the following near-term deployment recommendations:

- Recommendation #1:** Maintain current response time goals and reporting.
- Recommendation #2:** Plan for an added Battalion Command Team at an existing station, and one new fire station with engine company, in the northern area of the City.
- Recommendation #3:** Shift or rotate crews differently every 12 hours on an agreed-upon number of the highest-workload, 24-hour rescue ambulances.
- Recommendation #4:** Refine and build the case to shift low-acuity EMS incidents from firefighter-staffed rescue ambulances in very high-incident-demand areas to non-firefighter-staffed, low-acuity units to include medical, mental health care, and homeless resources.
- Recommendation #5:** Maintain the current mix of single-unit and Effective Response Force deployment units and personnel staffing as they meet the risks to be protected in the City.
- Recommendation #6:** In the following focus areas, plan to change staffing methods and add additional rescue ambulances as this study's data indicates. Note that the first two focus areas contained 29 percent of Citywide incidents in 2020.

### **Focus Area 1 – Battalions 1 and 11**

*Total: seven stations, 14.3 percent of Citywide incident volume in 2020.*

- ◆ Station 3 – Needs split shift crews on both rescue ambulances
- ◆ Station 4 – Add third rescue ambulance
- ◆ Station 6 – Needs split shift crews on both rescue ambulances

- ◆ Station 10 – Needs split shift crews on both rescue ambulances
- ◆ Station 11 – Add third rescue ambulance
- ◆ Station 13 – Split shift crew rescue ambulance 13

### ***Focus Area 2 – Battalion 13***

*Total: six stations, 14.8 percent of Citywide incident volume in 2020.*

- ◆ Station 33 – Add third rescue ambulance
- ◆ Station 46 – Add third rescue ambulance
- ◆ Station 57 – Add fourth rescue ambulance, split shift crews on the three current rescue ambulances
- ◆ Station 64 – Add fourth rescue ambulance, split shift crews on the three current rescue ambulances
- ◆ Station 65 – Monitor need for split shift crews and/or fourth rescue ambulance
- ◆ Station 66 – Add fourth rescue ambulance

### ***Focus Area 3 – Battalions 5 and 18***

- ◆ Station 27 – Add third rescue ambulance, split shift crews on two rescue ambulances
- ◆ Station 58 – Add fourth rescue ambulance, split shift crews on three rescue ambulances
- ◆ Station 61 – Add third rescue ambulance, split shift crews on two rescue ambulances

### ***Focus Area 4 – Northern Areas***

- ◆ Station 39 – Split shift the rescue ambulance
- ◆ Station 60 – Split shift the two rescue ambulances
- ◆ Station 89 – Add third rescue ambulance, split shift crews on two rescue ambulances

### ***Focus Area 5 – Northern Area – Battalion 12***

- ◆ Station 7 – Add second rescue ambulance
- ◆ Station 98 – Split shift the two rescue ambulances

## 7.3 NEXT STEPS

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### 7.3.1 Near-Term

- ◆ Review and absorb the findings and recommendations provided in this report.
- ◆ Develop a methodology for how to split shift the overloaded rescue ambulances.
- ◆ Direct staff to return with costs and timing to make near-term staffing changes.

### 7.3.2 Longer-Term

- ◆ Plan for an added Battalion Command Team at an existing station, and one new fire station with engine company, in the northern area of the City.
- ◆ If central City, high-impact stations cannot physically add rescue ambulances, locate and implement ambulance-only hub stations in existing commercial properties in the high-workload areas.
- ◆ Monitor response time performance against adopted goals.