

# Fire rescue

Governments' primary responsibility is to serve and protect its citizens. And that means providing effective and efficient fire suppression and rescue services when incidents occur. Yet, as the urban landscape evolves and cities become more complex and congested, many are finding it increasingly difficult to maintain response times and effectiveness in the face of static (in many cases shrinking) budget allocations.

### Defining the service

Fire rescue services are generally provided by fire departments to respond to emergency and non-emergency incidents such as structural fires, vehicular accidents, medical assists, rescues and hazardous materials response. For the purposes of this report, the service does not include fire prevention activities or fire safety inspection services.

### Topline findings

- The average city spends US\$6,320 per fire rescue incident.
- However, costs range from as low as US\$116 to as high as US\$14,000 per incident.
- The average city takes just over 8.5 minutes to respond to an incident.
- The vast majority of respondents report fewer than 7 lives lost to fires in the past year.

## Efficiency

*Operating and capital costs per fire rescue incident.* This measure combines reported operating costs and capital costs for all relevant fire rescue services and divides the total by the number of reported incidents.

### Points to consider

When interpreting the graph below, being less costly may not necessarily be desirable. For example, City 3 has the lowest cost at US\$116 per incident. When we examine the components of cost/output, this raises the question: Does this city actually have more incidents than other cities while the operating and capital costs are the same? If this is the case then this is not a desirable state. Similarly, a city like City 14 where the cost per incident is US\$14,000, might suggest that this city's fire prevention service(s) are effective and incidents have been reduced.

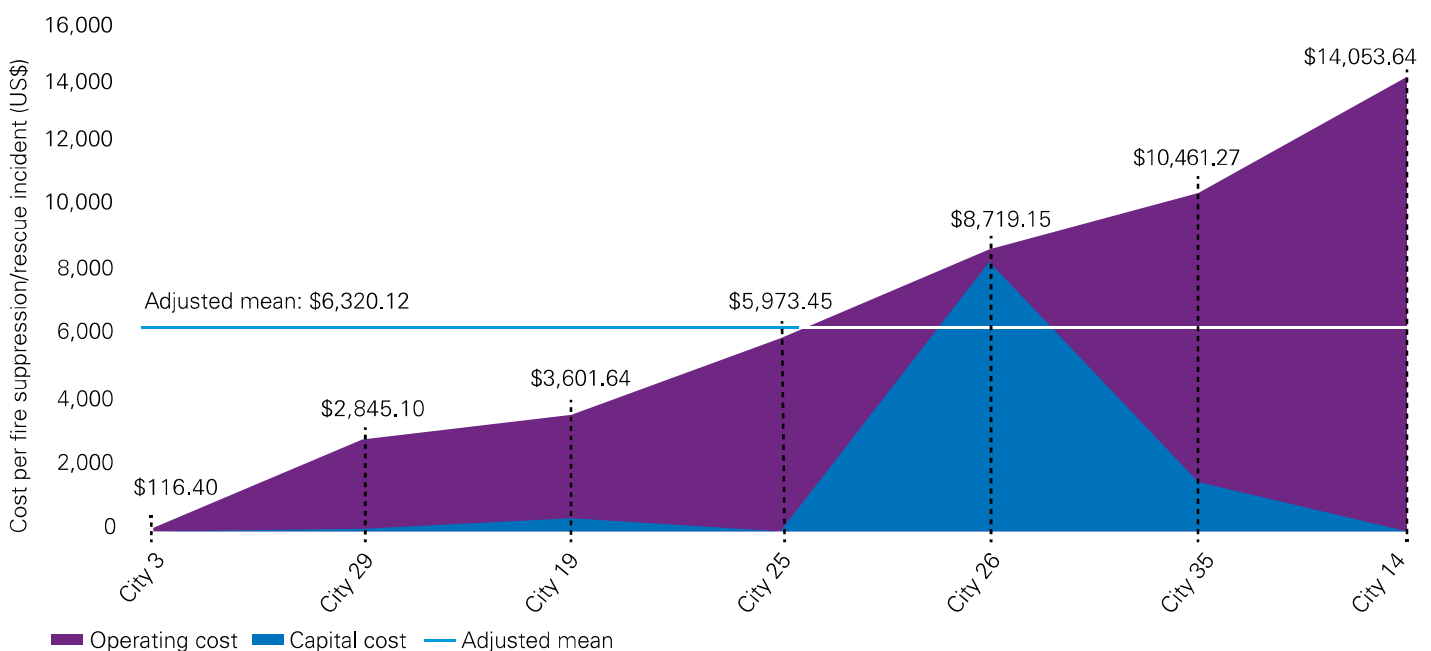
One of the surprising discoveries when we reached out to participating cities was that not all countries have transferred the mandate to deliver the fire rescue service to cities. This mandate is covered either by national or state governments in these respective countries. This is a clear example of a service that may be challenging

to capture comparable information outside of the current jurisdiction when requesting benchmark data.

Fire officials will be quick to point out that the cost per incident is directly related to innumerable categories of incidents that are bundled into the calculation and it is very important to note that if the city in question is a low rise, suburban city, that the costs will be considerably less than those realized by large, densely populated cities with high rise buildings. In addition, some cities may be supported by volunteer fire fighting units which can have a direct impact on service costs. But even with such knowledge in hand, one has to ask the question: Is it better to have a higher cost per incident than a lower cost? This may seem counter intuitive but consider for a moment that a city that has fewer incidents (for whatever reason) will have a higher cost. Is this not the goal? Similarly, if a fire department spends more money on the fire prevention service and thereby reduces the cost of the fire rescue service, isn't this a more reasonable way to spend the city's money?

A cost comparison for the fire rescue service would be well served if the "response" service is compared with the "prevention" service, thereby providing a more fulsome overview of efficiency. Future studies will explore this question.

**Figure 22: Operating and capital cost per fire rescue incident (US\$)**



Adjusted mean = Average of indicators excluding lowest and highest values

## Effectiveness

*Average response time to fire/rescue incident.* This measure reflects the average time to respond to a fire or rescue incident, as reported by respondents.

### Points to consider

In most cases, response time reflects the time for fire services to arrive at a specific address and does not include the ‘vertical response’ time required for high-rises and office complexes.

Nine cities provided response time to fire rescue incidents. On average response times of 9 minutes are achieved across all cities, with City 29 showing the best response time at 7 minutes and City 21 double that at 14 minutes.

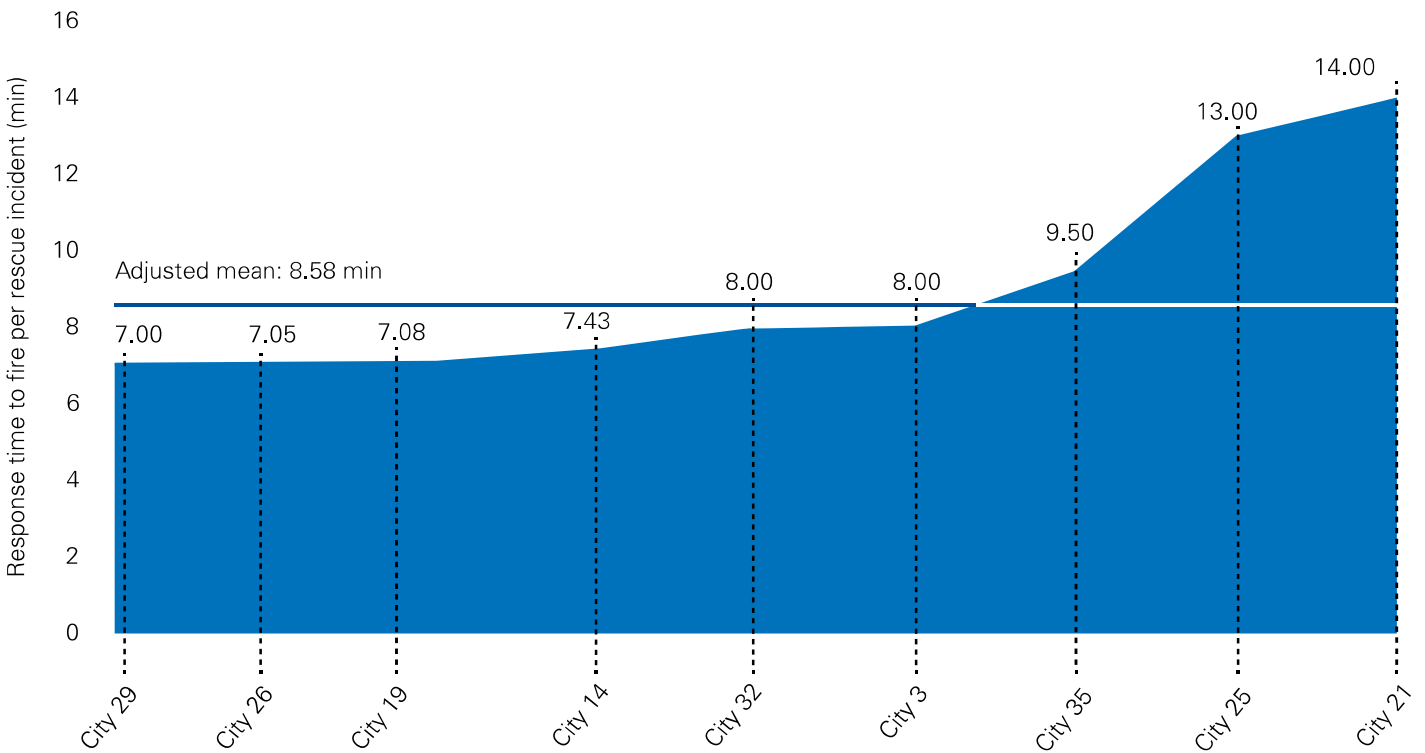
Regarding factors that may influence response time, cities that are more congested with streets that are almost impossible to traverse during the day are clearly going to challenge fire departments in their response time. Other factors might include the layout

of the city (i.e. narrow and convoluted street layouts present a challenge) and the density of fire stations. One city suggested they were considering building 1–2 person fire stations in the downtown core in order to have someone on the premise sooner and to establish whether the “alarm” was indeed valid or not.

Refinements in subsequent studies might include a focus on qualifying the density of the city, understanding how long it takes to respond with the first fire truck, and other effectiveness indicators related to the number of injuries/deaths and/or the amount of property saved from fire damage.

Clearly the faster a fire department can respond to an incident the more lives and property can be saved. Focusing on becoming more effective by responding quicker needs to be balanced with more proactive services, such as fire safety inspections and fire prevention education. Fire-fighting professionals know this and are trying to find the right balance.

**Figure 23: Response time to fire rescue incident (minutes)**



Adjusted mean = Average of indicators excluding lowest and highest values

### Persistent problems

- Responding to rapid rates of new development and urbanization
- Maintaining response rates as density increases
- Managing labor costs and resource allocation
- Sustaining service levels without new investment
- Leveraging technology to improve efficiency
- Improving collaboration with aligned functions

### Common cost factors

- Labor and benefits
- Rolling stock and equipment
- Land and asset amortization
- Shared services costs

### Innovative ideas

- In **Toronto**, countdown clocks have been installed in the bays to help crews assess their turnout times and monthly report cards are distributed across the city to encourage healthy competition between crews.
- The City of **Toronto** has also used a series of process improvements to reduce their call processing time from 1 minute 23 seconds in 2013 to just 50 seconds in 2016.
- Fire authorities in **Antwerp** have improved response times by centralizing dispatching across the city.

## Transformative trends

- *Dissecting risks:* As the urban landscape changes and fire suppression and rescue needs change, cities are beginning to get more 'granular' in their understanding and assessment of risks, particularly at the industrial and commercial level.
- *Distributing the footprint:* Some cities are considering how they might move services closer to demand by placing 'storefront' locations within specific hotspots such as office complexes and housing developments.
- *Shifting to prevention:* Recognizing that fire prevention is more cost effective than fire suppression, cities are exploring how they might shift resources towards encouraging prevention services without impacting the effectiveness of suppression services.
- *Improving resource value:* In response to the shift towards prevention and the need to do more with less, some cities are

looking for opportunities to improve the value of their existing assets (both human and capital) by, for example, adding more personnel to each piece of equipment.

- *Measuring real response times:* As developments become increasingly vertical, fire authorities are looking for ways to better measure their time of response to the scene of the incident rather than the street location.

### What else did we measure?

For our benchmarking exercise, we collected a wide variety of data on the effectiveness and efficiency of this service area. The following indicators lacked sufficient data or respondents to illustrate in this report:

- lost lives due to fire
- cost of lost lives/property lost due to fire and other incidents
- cost of lives/property saved from fire or other incidents.

## Q&A with Debbie Higgins, Deputy Fire Chief, Toronto Fire Services, City of Toronto



**As deputy fire chief for Toronto Fire Services, Debbie is currently responsible for employee training, emergency planning, health and safety and the department's fleet and equipment. Prior to assuming the role in 2010, Debbie had spent 10 years serving as executive officer at the Toronto Fire Services.**

### **Q: Why might two cities report widely different costs per incident?**

**A:** At one level, it really depends on what is included in the costs and what is not. Some cities may include big capital projects while others may only be thinking of ongoing equipment costs. But the urban landscape also has a major influence on cost per incident. And that makes it really difficult to find true comparator cities to benchmark against.

### **Q: How is the changing urban landscape influencing fire service effectiveness?**

**A:** We're seeing a growing disparity between the time our trucks arrive at an address and the time they actually arrive at the incident. And that means that we need to think differently about how we measure our arrival times. In Toronto, we have started to measure the 'A2' — the arrival time at the scene — so that we can not only find ways to improve our effectiveness, but also better manage people's expectations about realistic response times in certain scenarios.

### **Q: How has this influenced strategic planning for fire services?**

**A:** Most cities recognize that there is not an endless supply of money. And that has

led to some pretty new thinking about how fire services need to be organized and delivered in the future. Right now, we tend to locate fire halls based on road response times. But wouldn't it make more sense to put the resources as close as possible to where the emergencies are more likely to be? We're thinking about how we might create 'storefront' fire response services at the bottom of large office complexes, for example.

### **Q: How has the shift in focus from suppression to prevention impacted service and demand?**

**A:** The challenge here is that investments into prevention take time to deliver value. So you can't just start pulling investment away from suppression and putting it into prevention. I think we all recognize that we want to be moving towards a balance that is much more heavily weighted towards prevention, but I also think it will take time to get there. In Toronto, we have recently started to train firefighters in basic fire prevention and public education techniques. Down the road, we hope this allows them to take on more of a prevention focus as demand evolves.

### **Q: How is the Toronto Fire Services using technology to improve efficiency and effectiveness?**

**A:** We've made a lot of improvements across the service to improve dispatch times, turn out times, cost efficiency and effectiveness. But we've found that the biggest improvements often come when we share data. We installed turn out clocks in our firehalls so that employees can actually visualize their data. We share results across fire halls so that everyone can compare their effectiveness. And that drives a significant amount of improvement on its own.

### **Q: What can policy makers do in order to help improve the efficiency and effectiveness of fire services?**

**A:** At the top level, I think the biggest value will come from improving coordination between the various departments that support fire services. We work very closely with EMT professionals, for example, but they report up to the Ministry of Health while we report up to the Ministry of Correctional Services. Reducing the red tape between different departments might unlock unexpected value ■