



Final Report

Gloucestershire Fire and Rescue Service

28 July 2026

Service Analysis

Background and Data Collection
Demand
Availability
Response

Modelling Methodology

Model Setup
Model Validation

Initial Modelling

Location Optimisation
Appliance Contribution

Cheltenham West Scenarios

Gloucestershire Fire and Rescue Service (GFRS) asked Operational Research in Health Ltd (ORH) to undertake a Fire Cover Review to support the planning of resourcing across Gloucestershire.

The key objectives of this project were:

- To collect data and quantify the current service profile (in terms of demand, appliance availability, workload and response performance).
- Create and set up appropriate models of fire cover
- Use optimisation modelling to assess current and greenfield appliance locations.
- Assess potential options for change, in terms of resource availability, key stations and efficiency savings
- Review specialist appliance locations

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Service Analysis

Background and Data Collection



CAD Workload Data - 5 years *(April 2020 to March 2025)*

- Demand  *Apr 2020 to Mar 2025*
 - Service Time Components
 - Performance
-  *Apr 2023 to Mar 2025, unless otherwise stated, to reflect recent operations*

Analysis is completed for GFRS pump responses within the service boundary. (Multiple pump responses to the same incident is classed as one incident.)

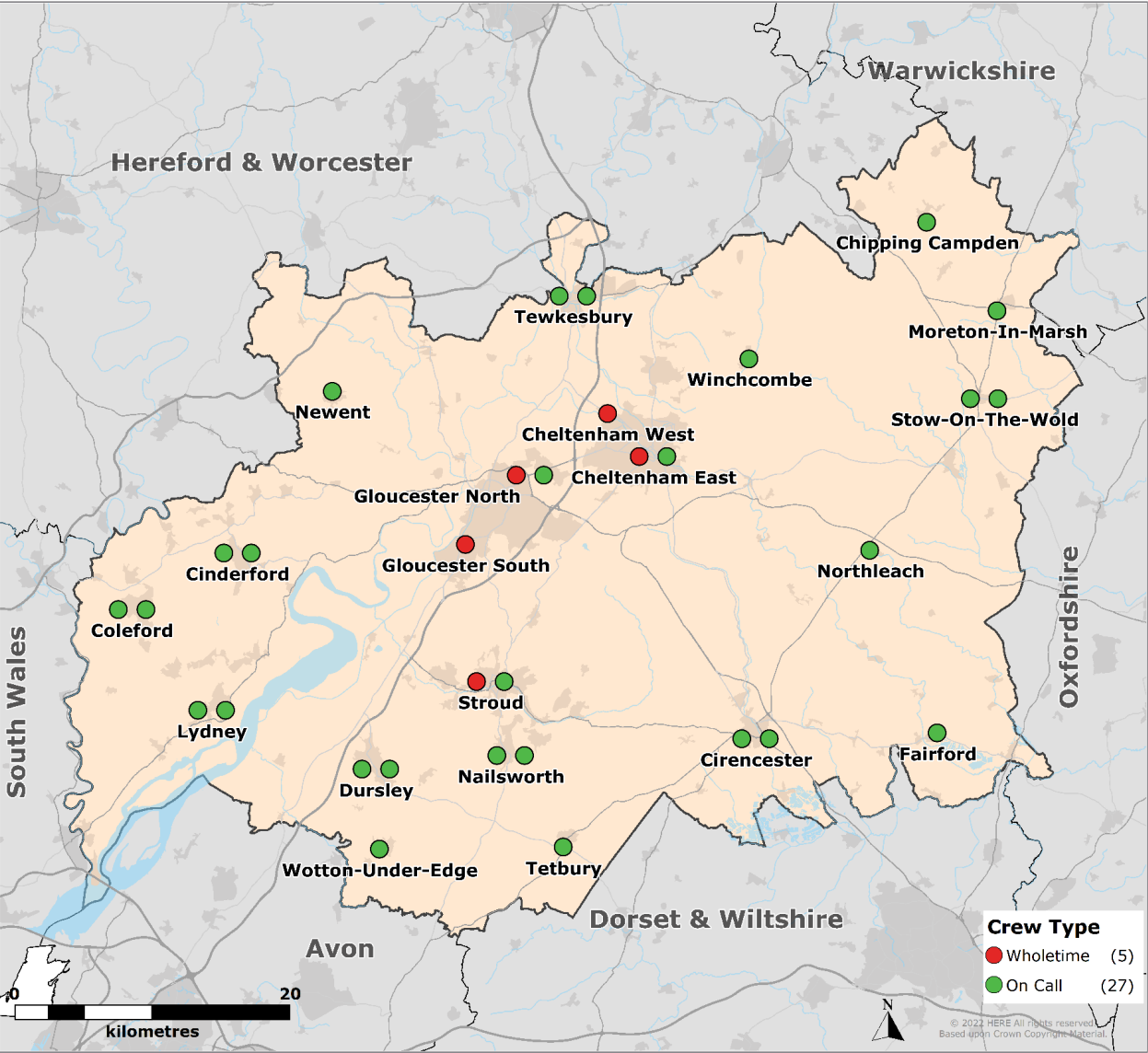
Some responses (and so incidents) were excluded as explained later.

On-Call Appliance Status Changes

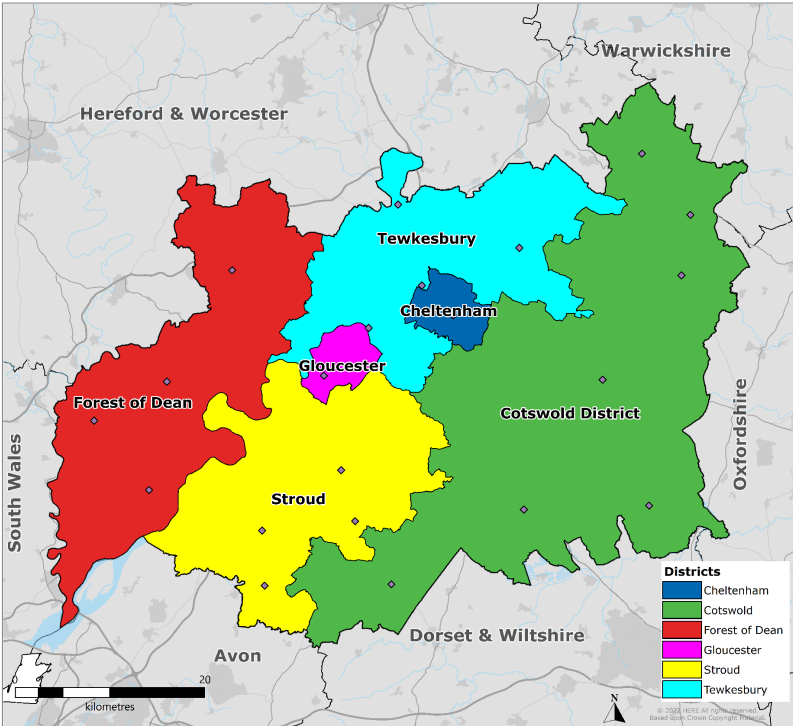
- Pump Status Changes (Gartan) - *Apr 2022 to Mar 2025, unless otherwise stated*

Pumping Appliances

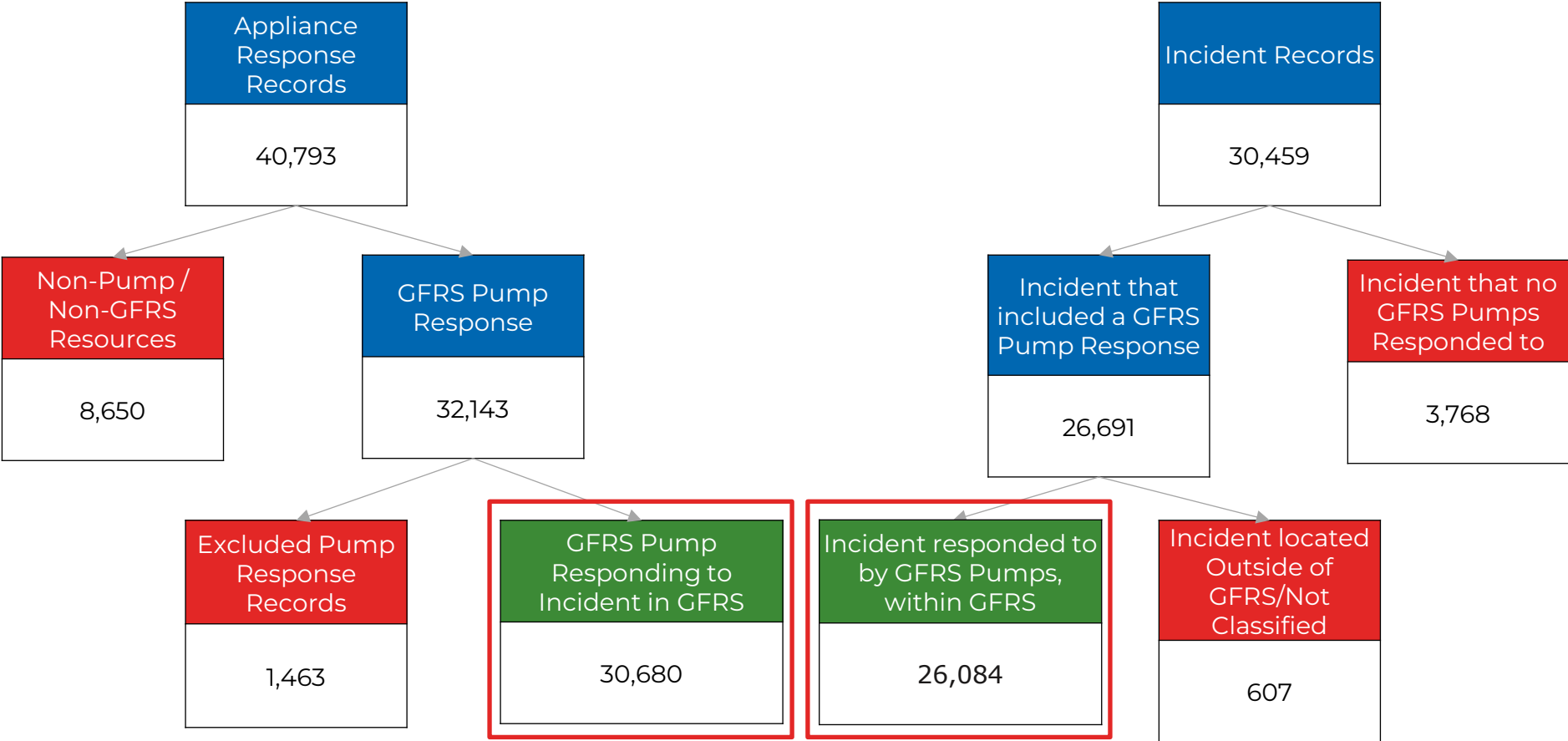
Current Deployment



Crew Type	Number of Pumps
Wholetime	5
On-Call	27
Total Pumps	32
Total Stations	21



Gloucestershire Districts



Demand Analysis

5-year sample:

Apr 2020 to Mar 2025



Two thirds of incidents took place during the day

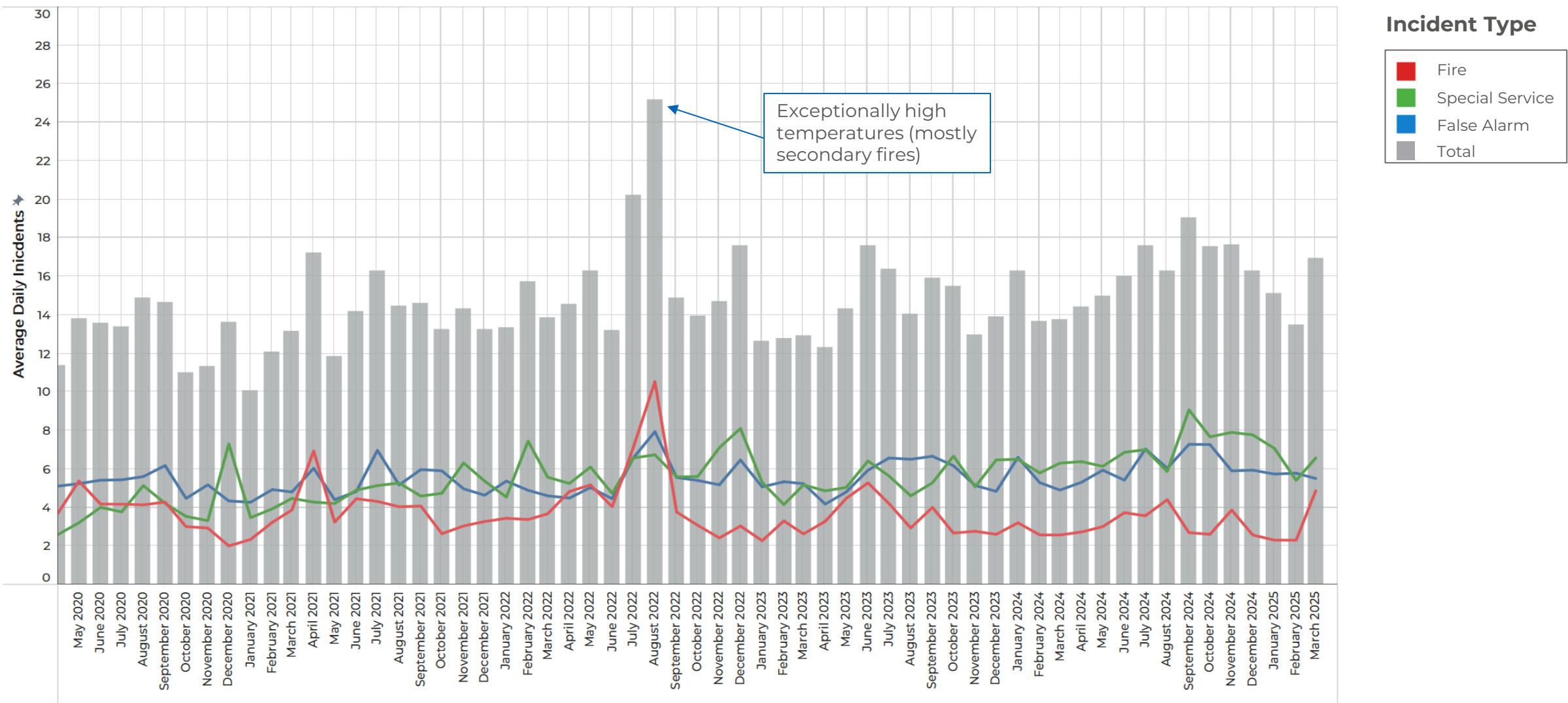
67% of incidents take place between 9am and 9pm

Chipping Campden and Nailsworth station grounds received the most support from other stations

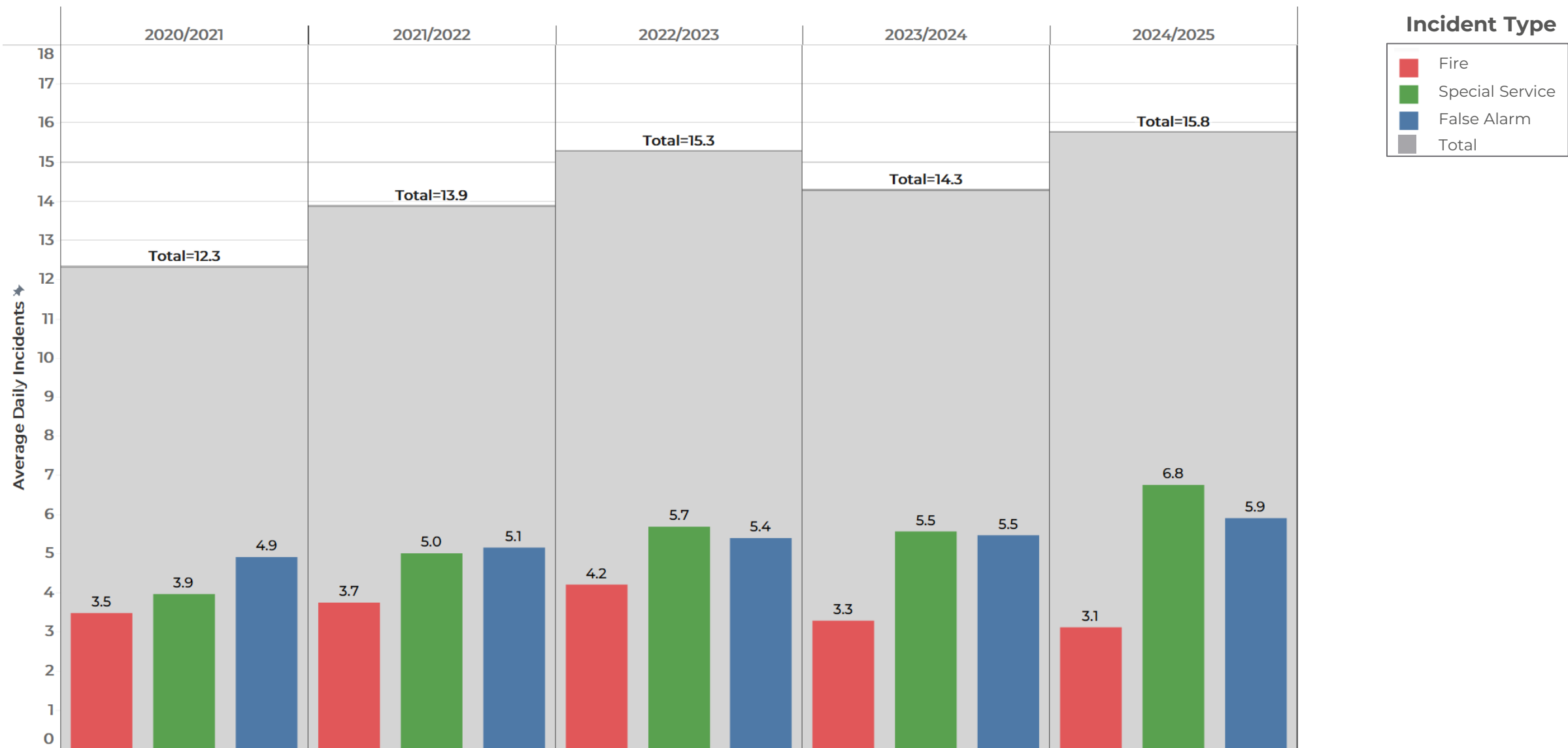
Only 63% of first responses to incidents in these Station Grounds came from the nearest station



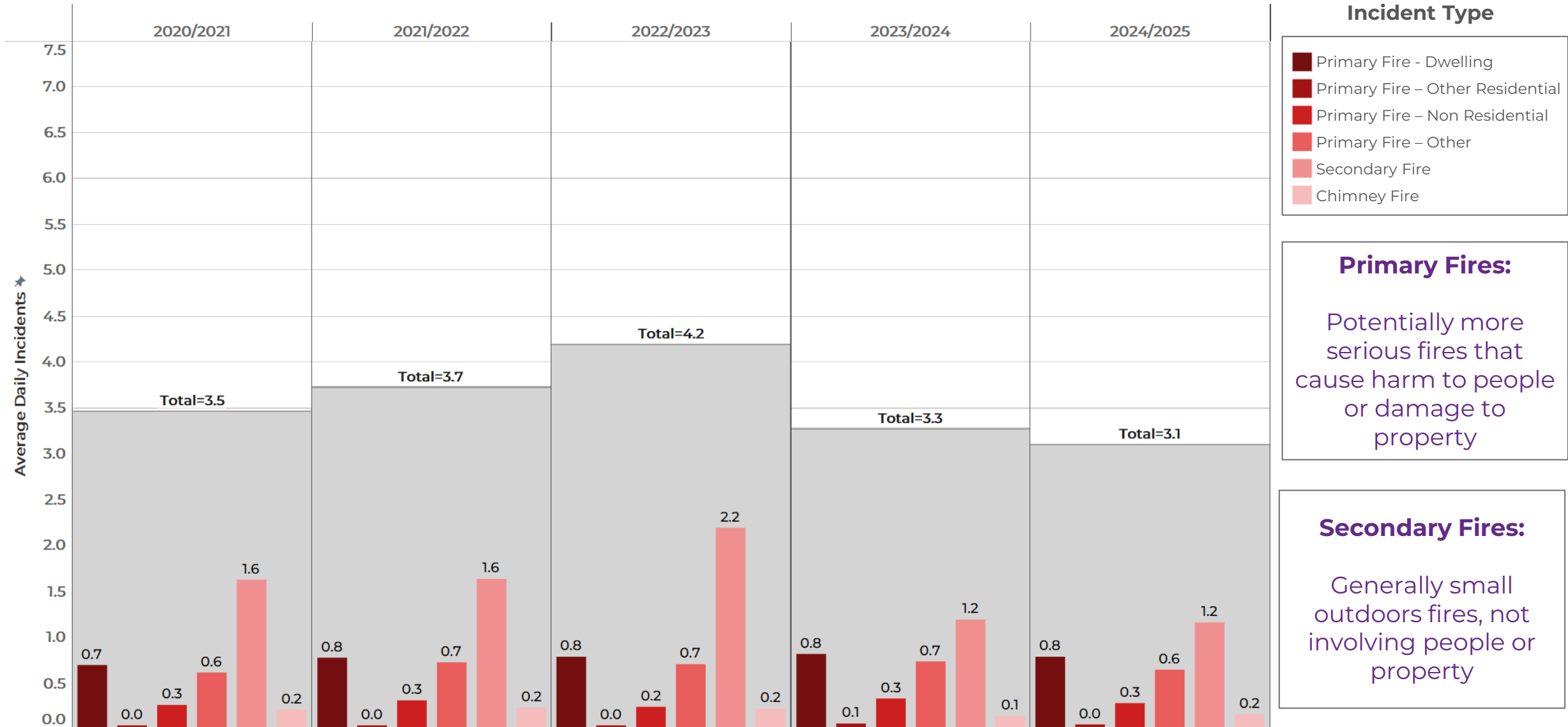
Demand by Month



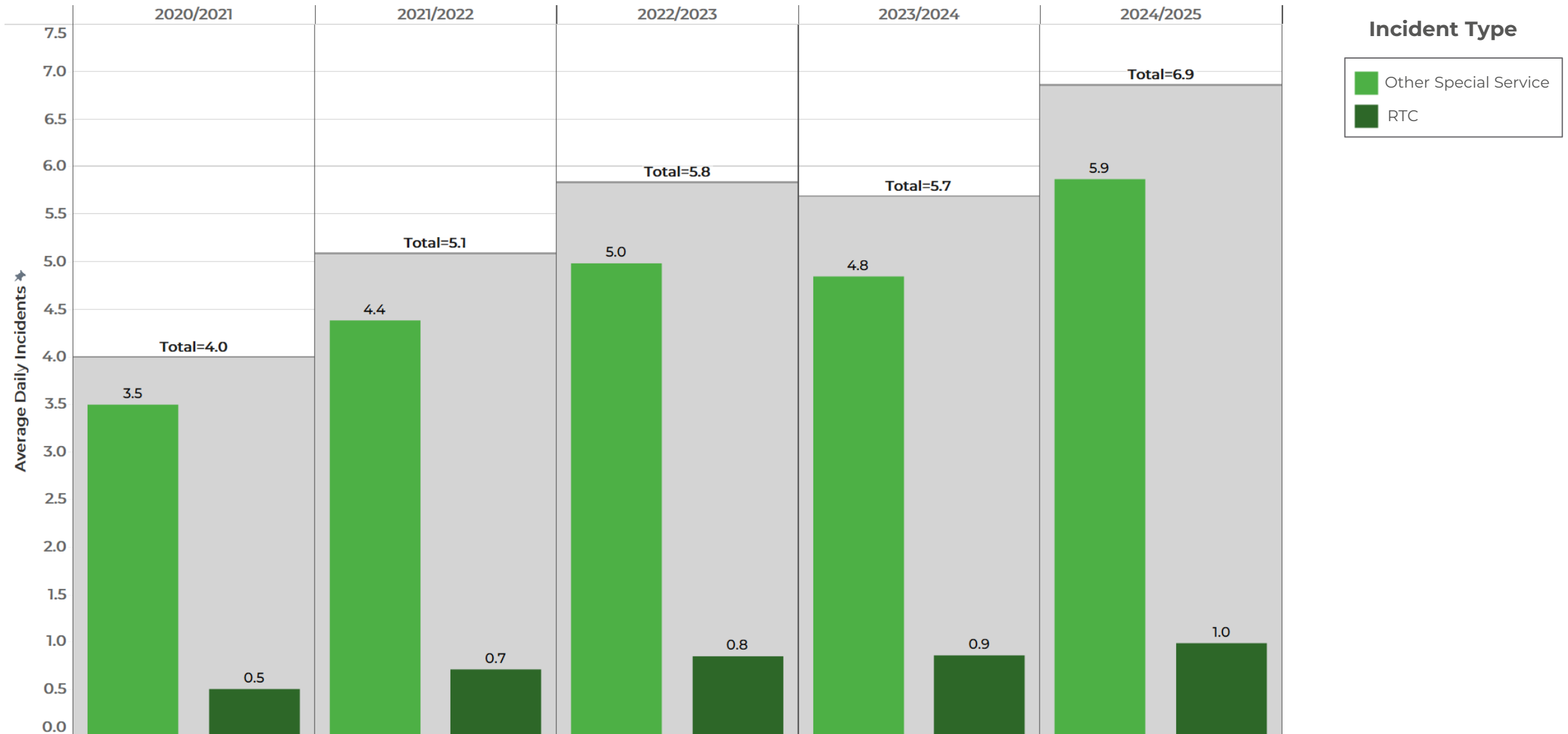
Average Daily Incidents



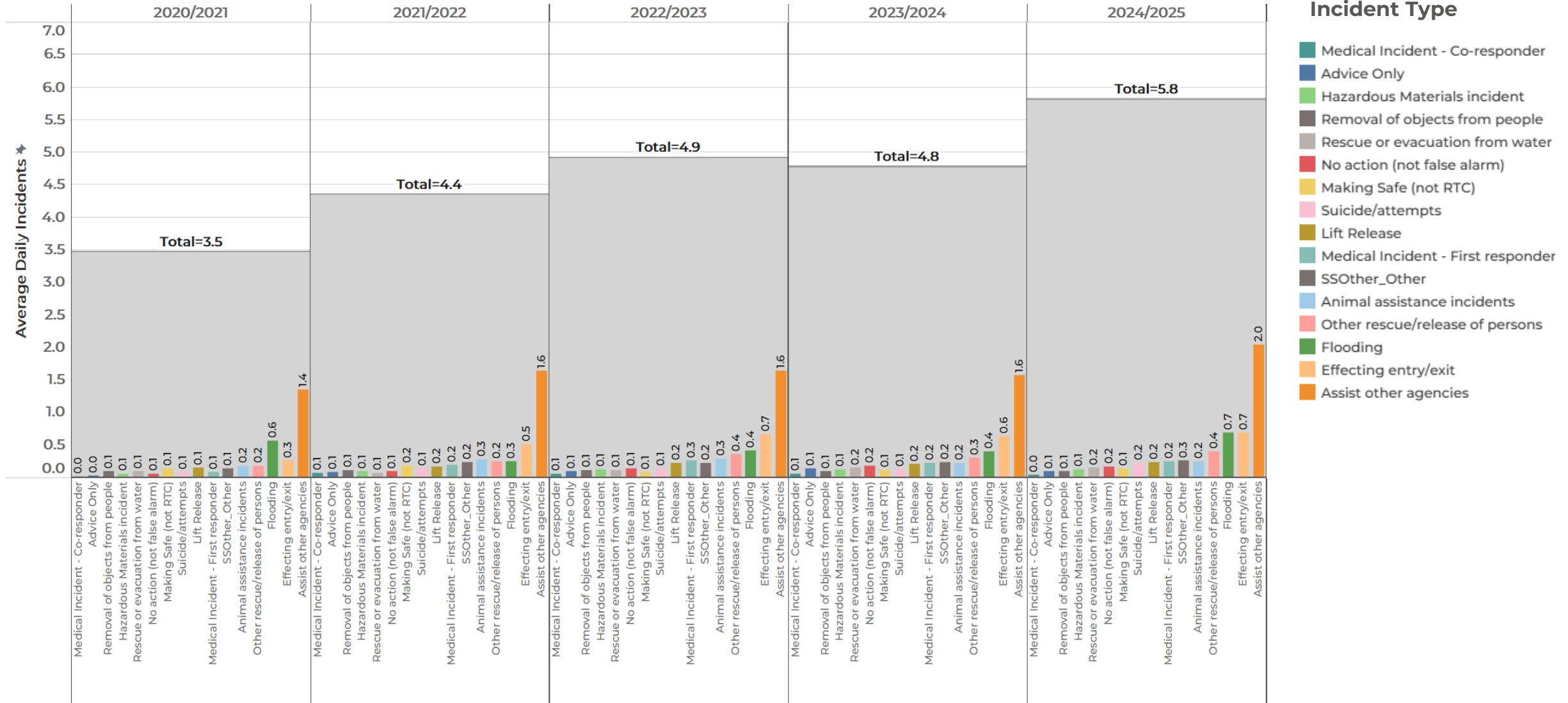
Average Daily Demand: Fire Incidents



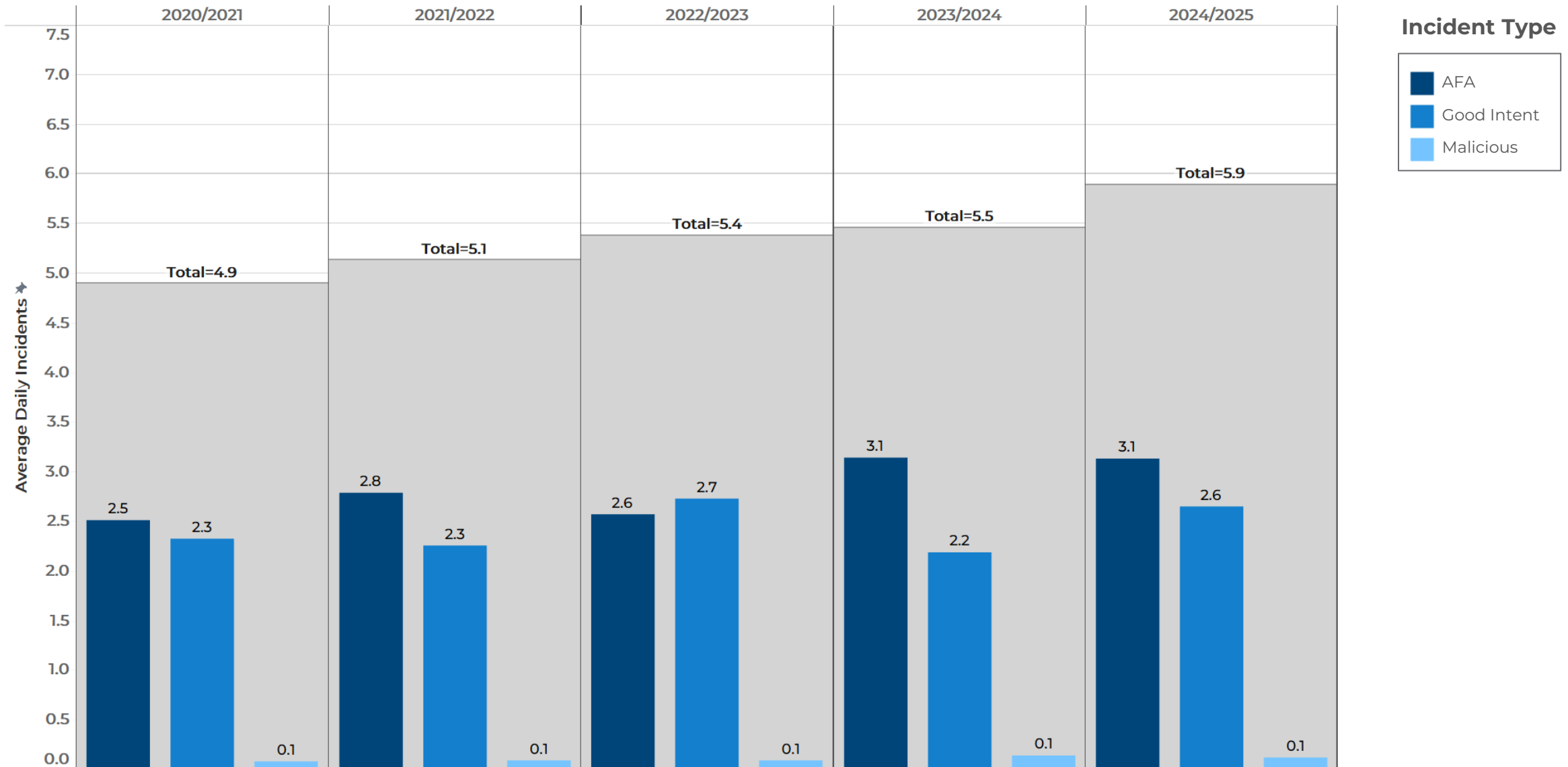
Average Daily Demand: Special Service



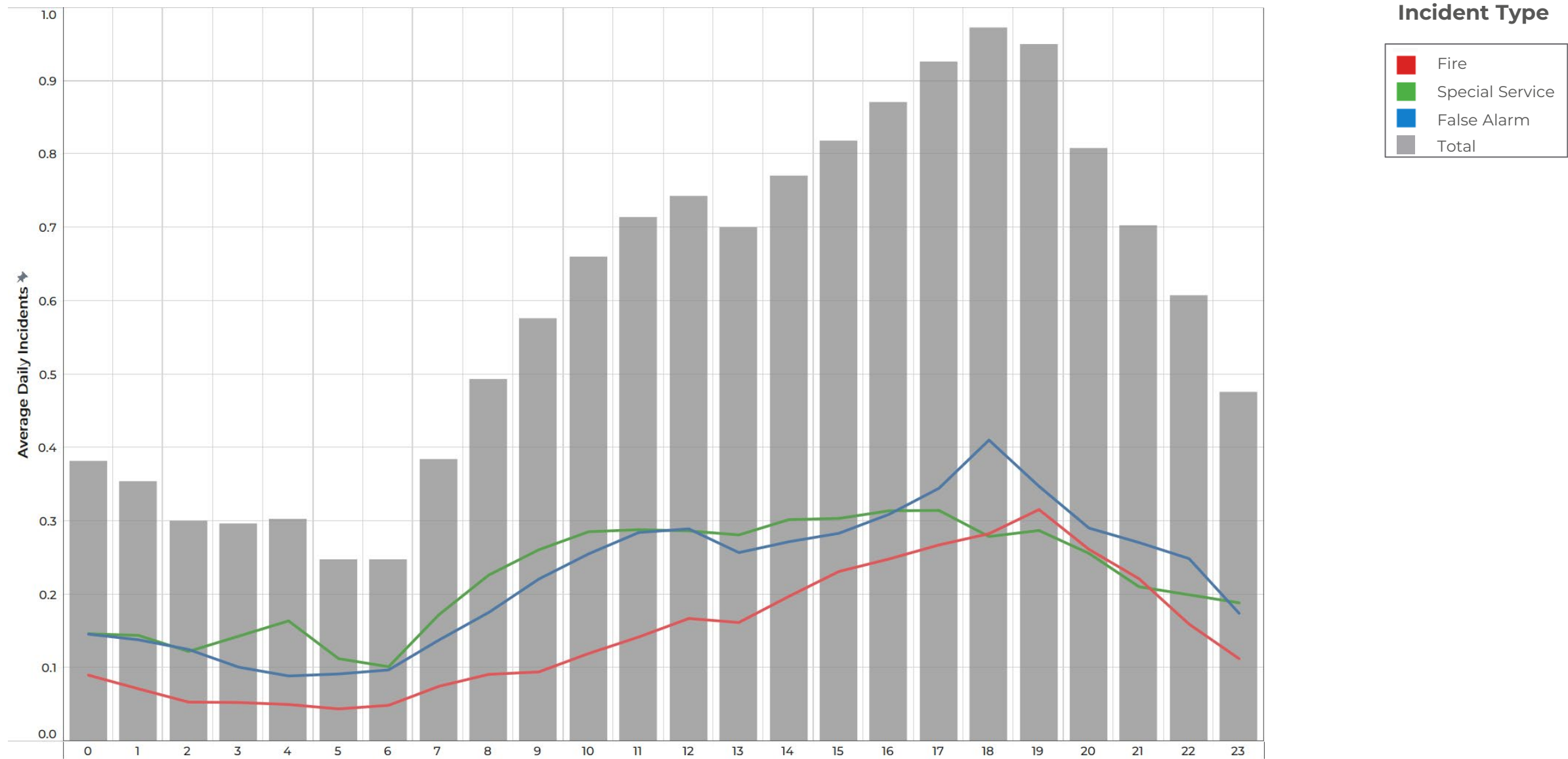
Average Daily Demand: Special Service Types



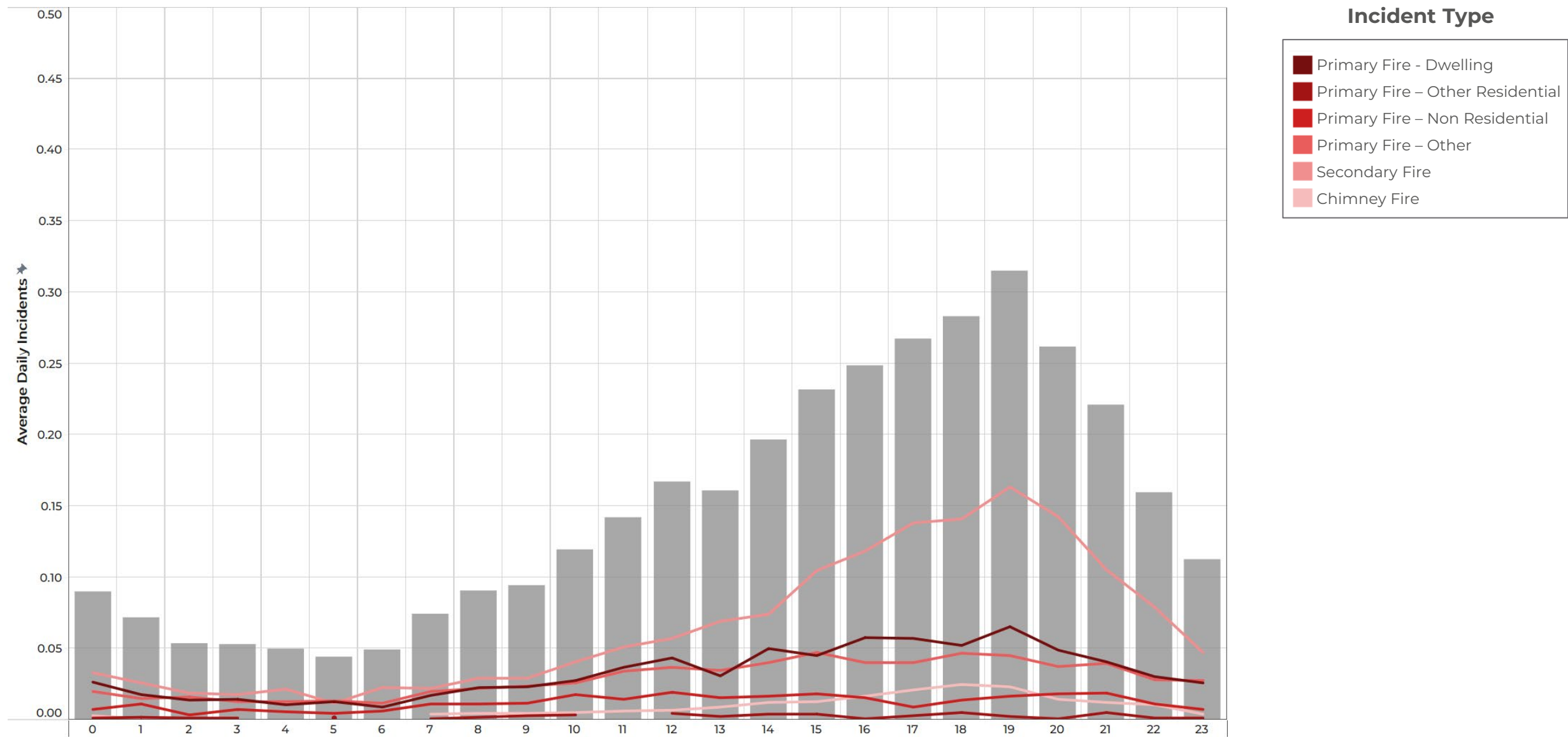
Average Daily Demand: False Alarm



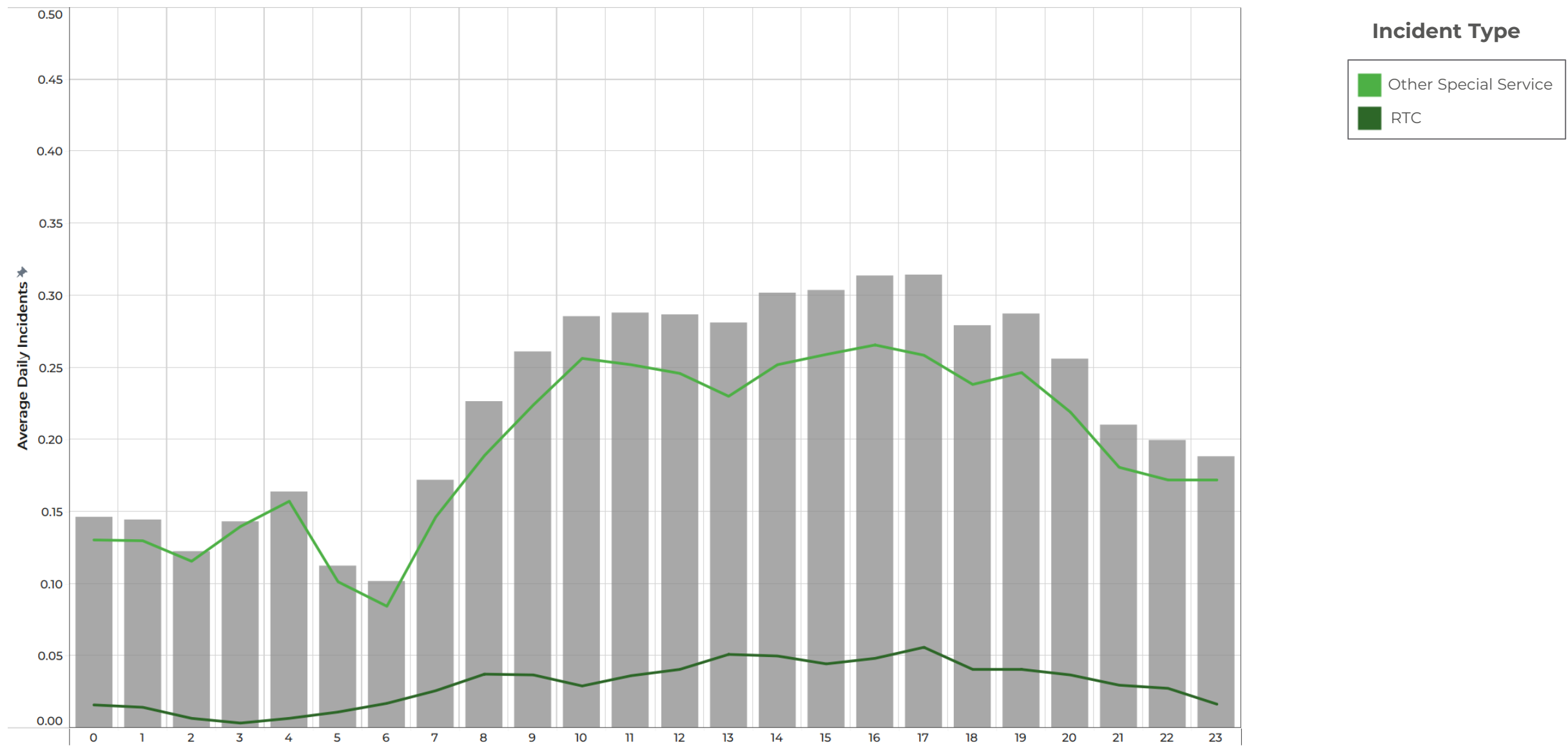
Demand by Hour: All Incidents



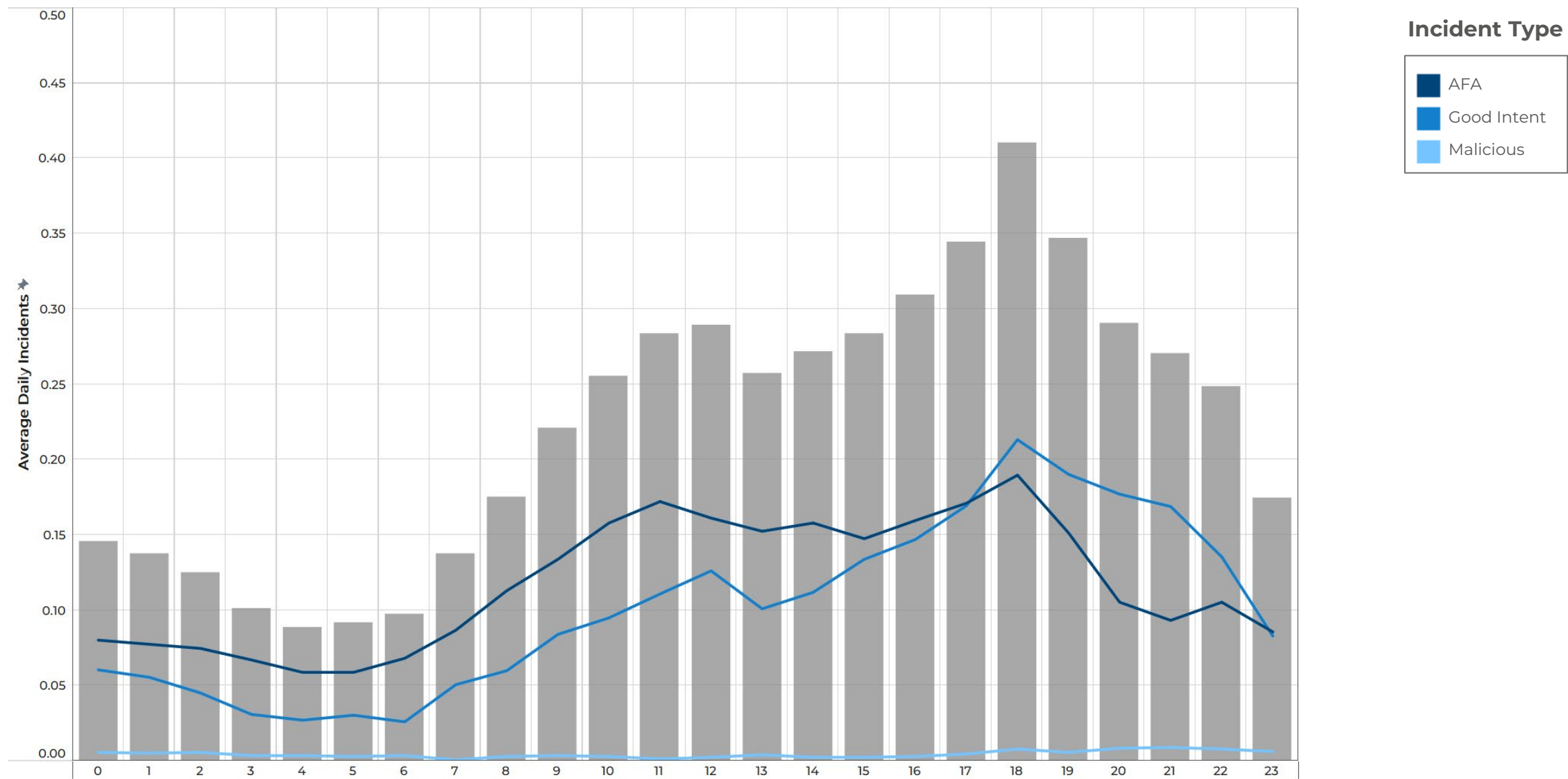
Demand by Hour: Fire Incidents



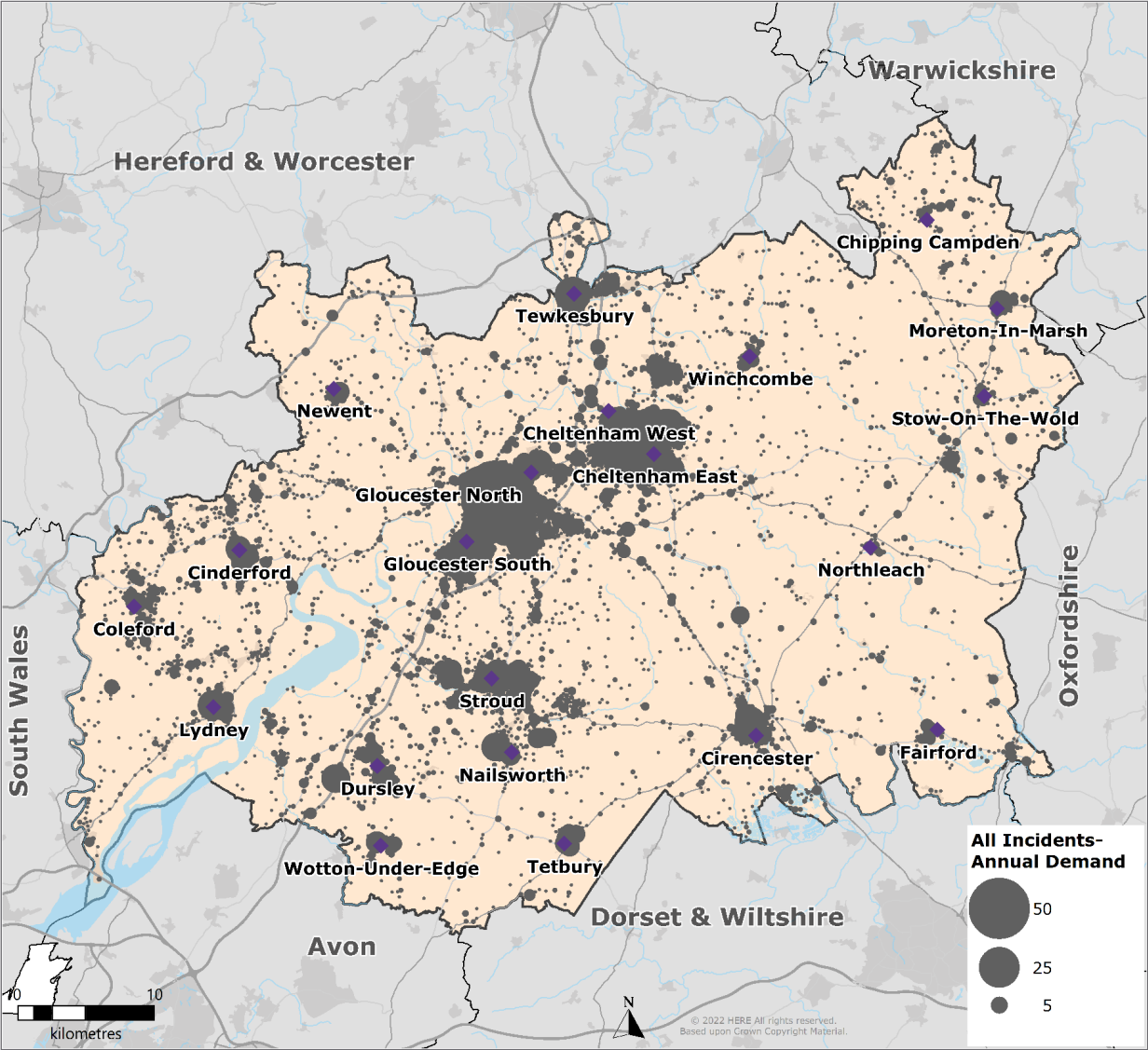
Demand by Hour: Special Service Incidents



Demand by Hour: False Alarm Incidents



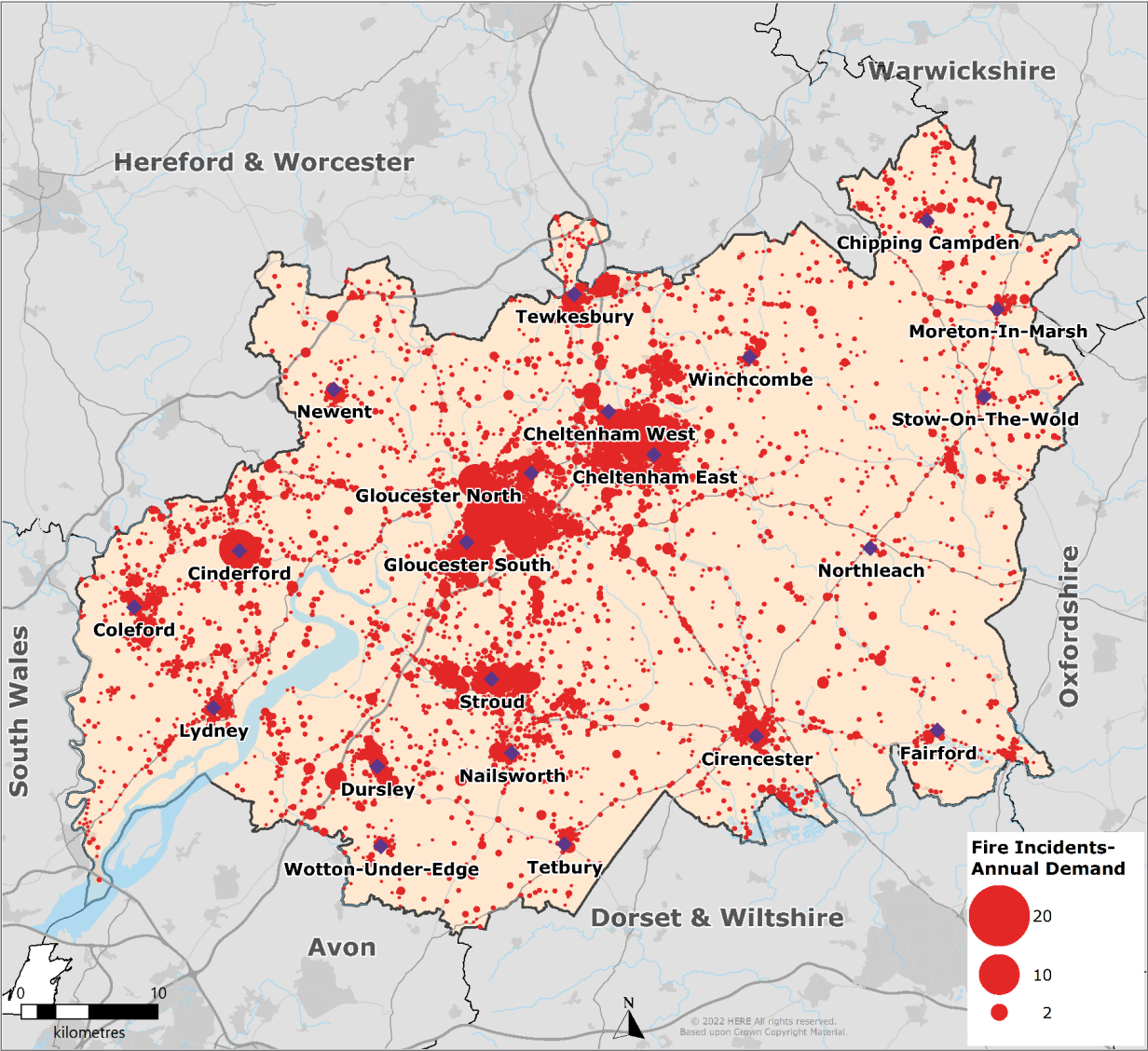
Incident Locations – All Incidents



Percentage of Incidents by Year and District

District	2020/2021	2021/2022	2022/2023	2023/2024	2024/2025	Total
Cheltenham	18.3%	19.8%	18.7%	20.4%	19.9%	19.5%
Cotswold	15.4%	14.9%	14.4%	14.3%	14.4%	14.6%
Forest of Dean	11.8%	11.5%	11.3%	10.9%	10.6%	11.2%
Gloucester	24.2%	25.4%	24.9%	24.8%	25.1%	24.9%
Stroud	17.0%	16.0%	17.4%	16.3%	16.5%	16.6%
Tewkesbury	13.2%	12.4%	13.3%	13.3%	13.5%	13.2%
Overall	100%	100%	100%	100%	100%	100%

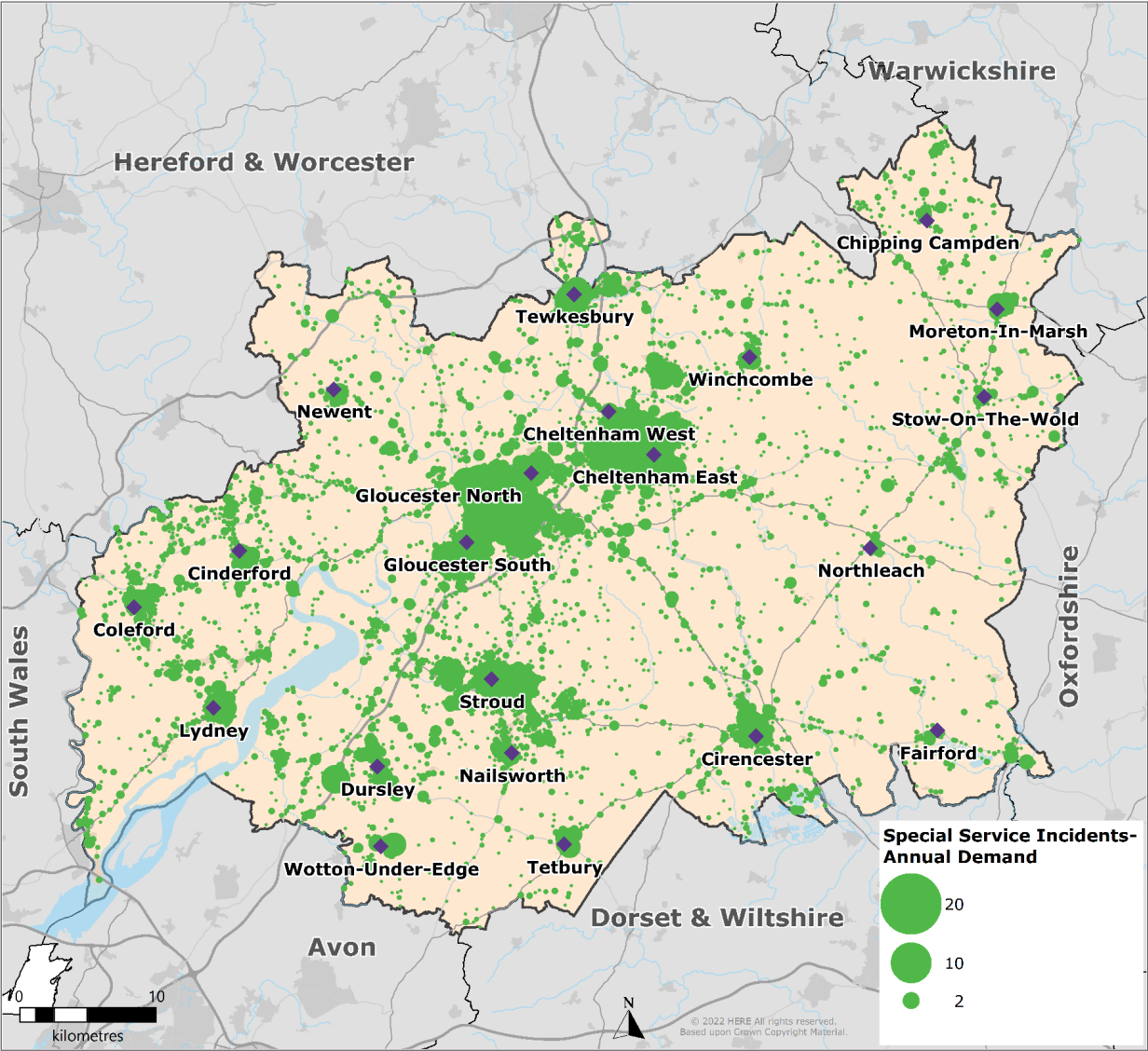
Incident Locations: Fire



Percentage of Fire Incidents by Year and District

District	2020/2021	2021/2022	2022/2023	2023/2024	2024/2025	Total
Cheltenham	17.3%	20.3%	16.8%	19.2%	18.3%	18.3%
Cotswold	17.3%	13.5%	15.0%	13.8%	14.8%	14.9%
Forest of Dean	13.7%	15.6%	15.2%	13.7%	13.0%	14.4%
Gloucester	18.6%	20.8%	21.4%	21.2%	24.0%	21.1%
Stroud	19.6%	16.6%	18.8%	18.5%	17.2%	18.2%
Tewkesbury	13.4%	13.2%	12.7%	13.5%	12.7%	13.1%
Overall	100%	100%	100%	100%	100%	100%

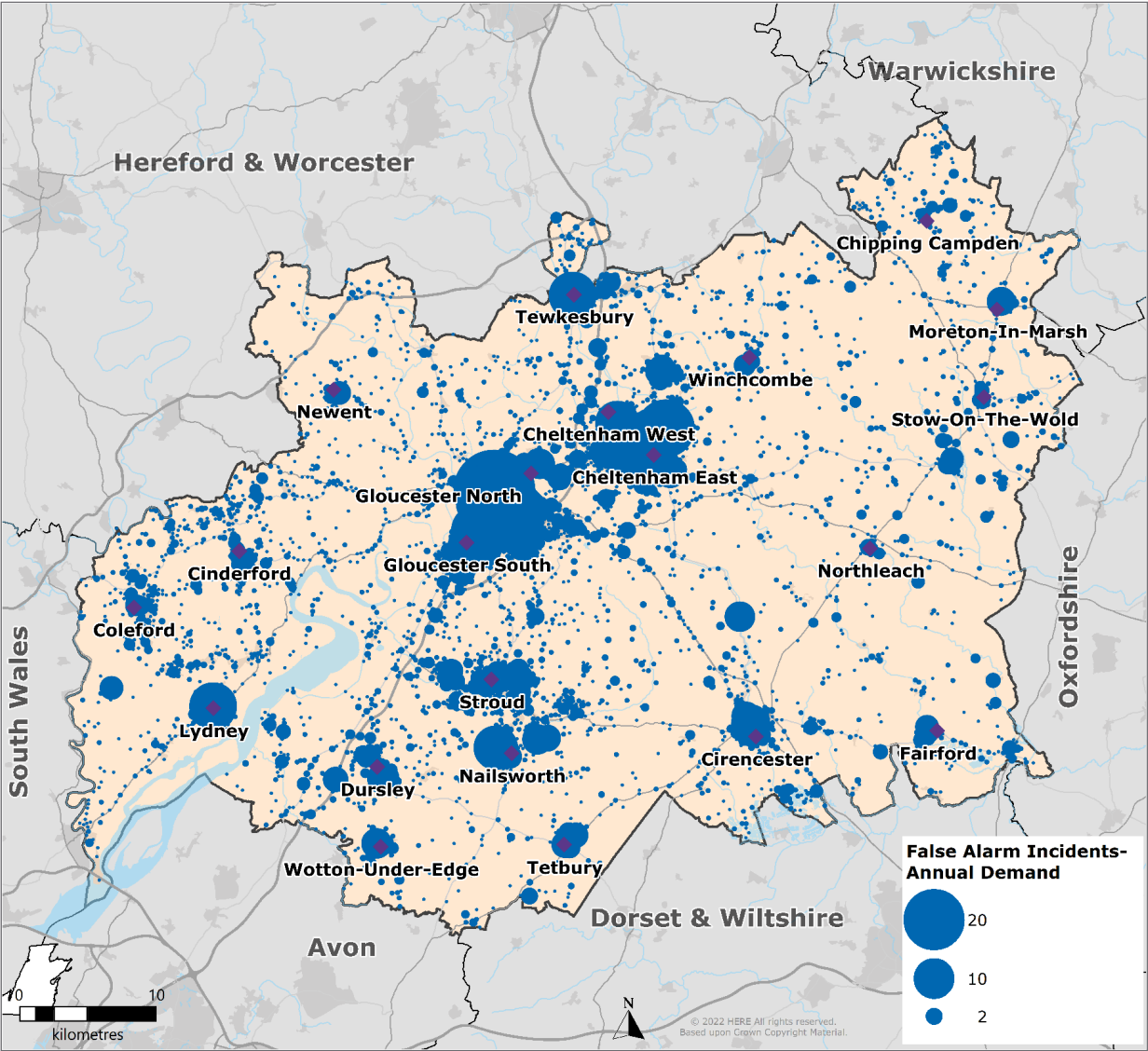
Incident Locations: Special Service



Percentage of Special Service Incidents by Year and District

District	2020/2021	2021/2022	2022/2023	2023/2024	2024/2025	Total
Cheltenham	18.6%	19.4%	19.0%	19.1%	20.5%	19.4%
Cotswold	14.4%	14.5%	13.5%	13.9%	14.5%	14.2%
Forest of Dean	13.7%	12.1%	11.8%	11.3%	12.4%	12.2%
Gloucester	22.4%	24.0%	23.1%	22.4%	22.0%	22.7%
Stroud	17.9%	17.2%	18.2%	18.7%	16.4%	17.6%
Tewkesbury	13.0%	12.7%	14.5%	14.5%	14.3%	13.9%
Overall	100%	100%	100%	100%	100%	100%

Incident Locations: False Alarm

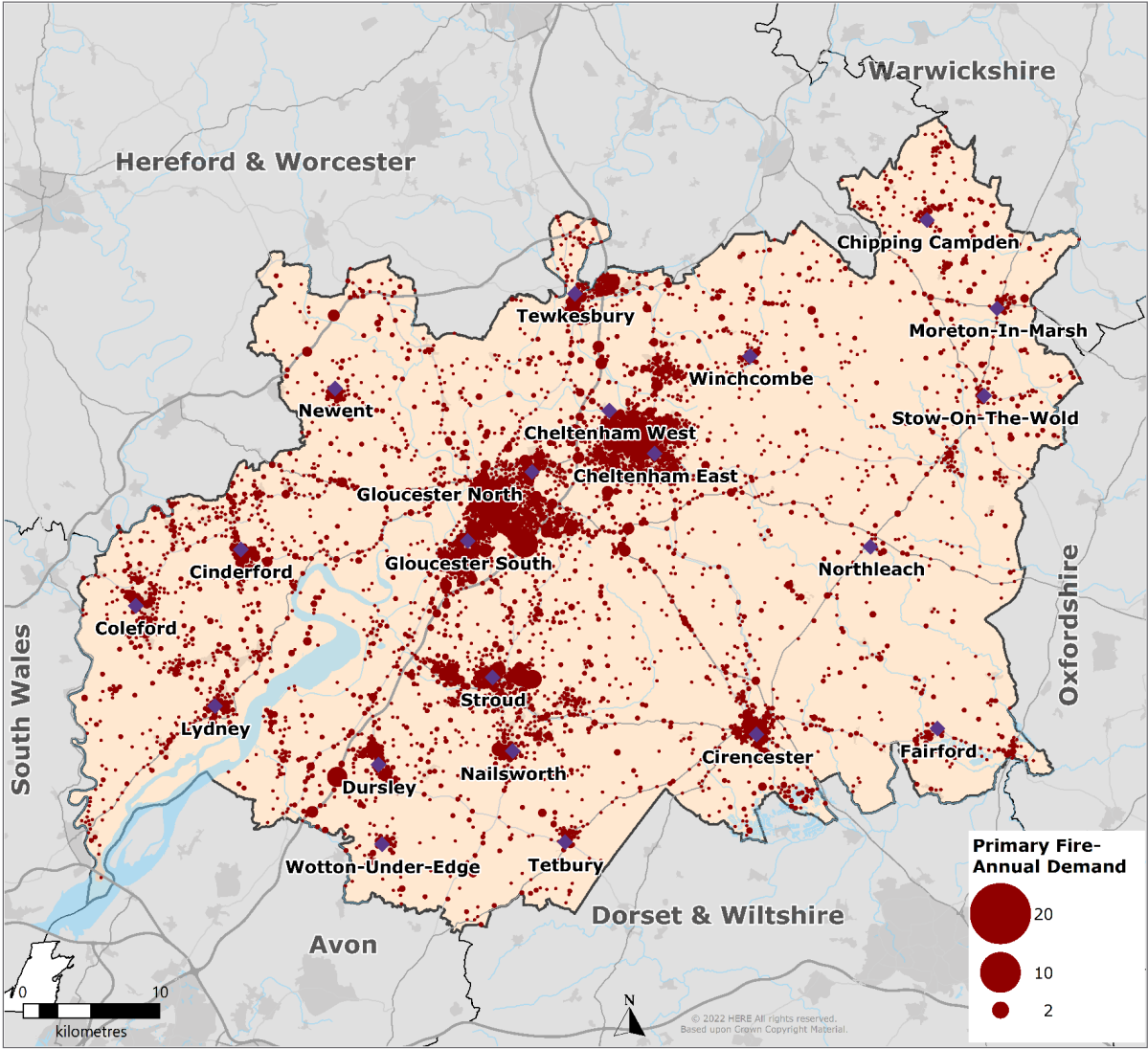


Percentage of False Alarm Incidents by Year and District

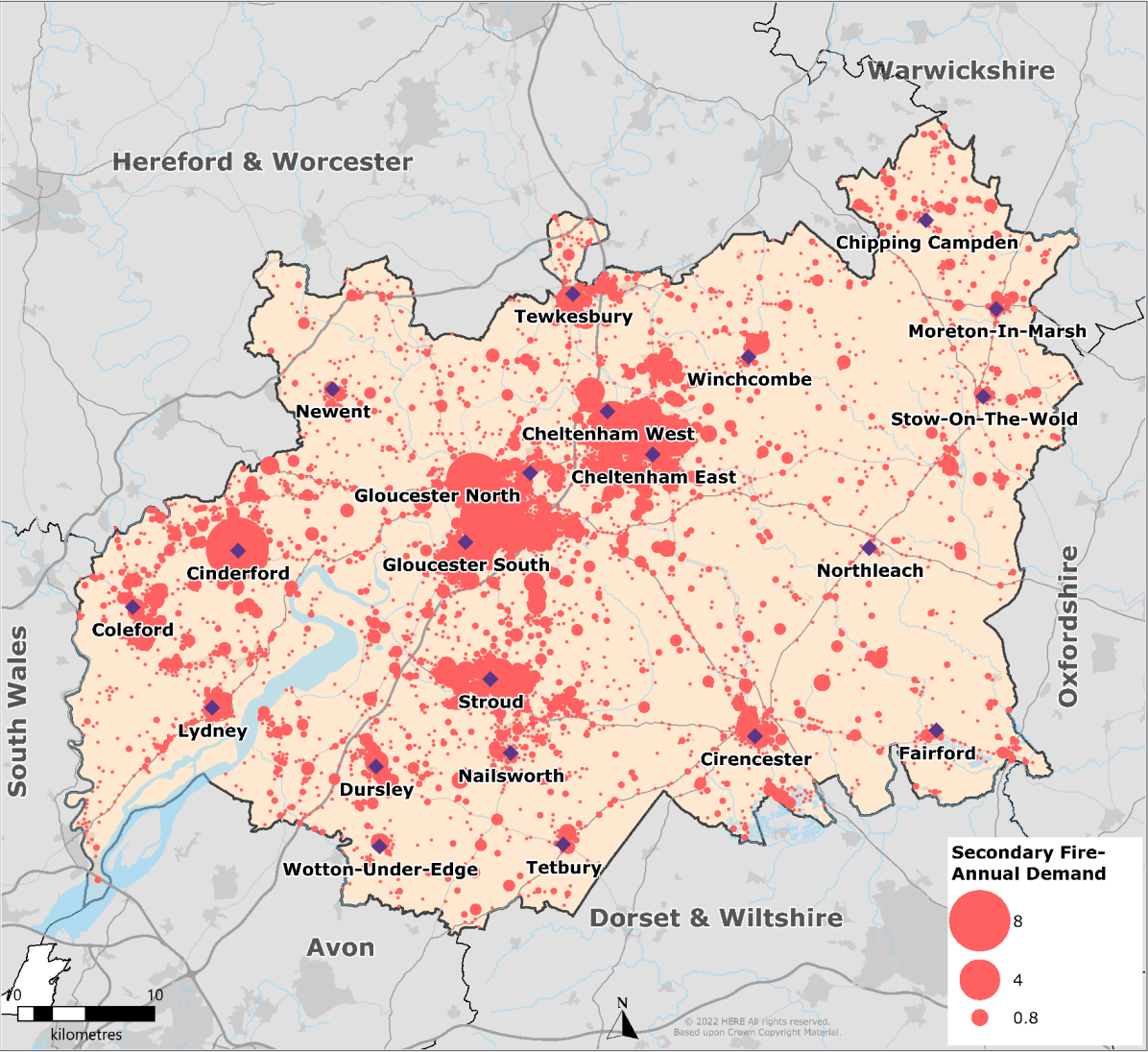
District	2020/2021	2021/2022	2022/2023	2023/2024	2024/2025	Total
Cheltenham	18.8%	19.8%	20.0%	22.5%	20.2%	20.3%
Cotswold	14.9%	16.2%	14.9%	15.0%	14.1%	15.0%
Forest of Dean	9.0%	8.0%	7.7%	8.8%	7.2%	8.1%
Gloucester	29.5%	30.1%	29.4%	29.3%	29.3%	29.5%
Stroud	14.5%	14.3%	15.4%	12.4%	16.3%	14.6%
Tewkesbury	13.2%	11.5%	12.6%	12.0%	12.9%	12.5%
Overall	100%	100%	100%	100%	100%	100%

Incident Locations: Fire

Primary

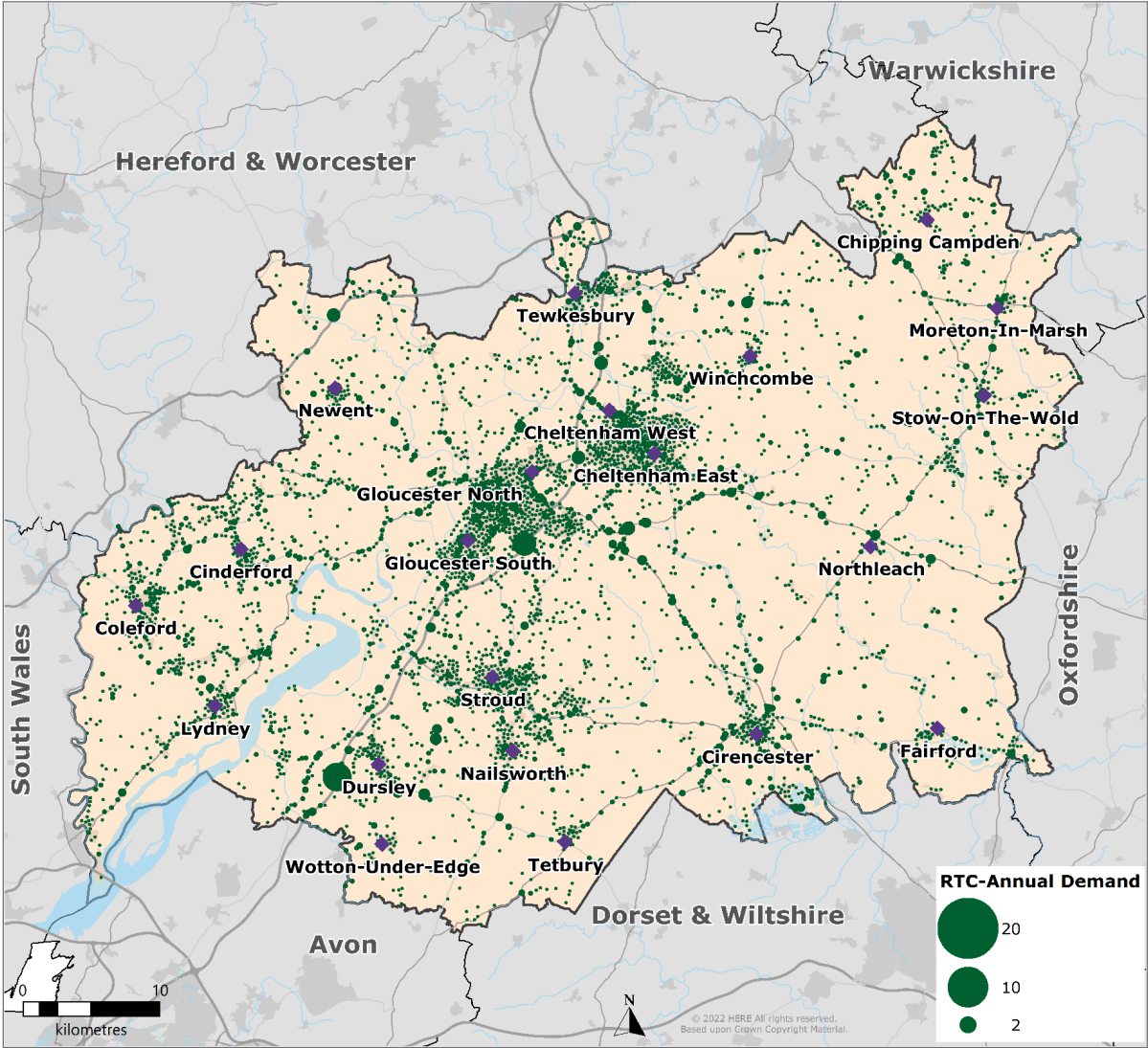


Secondary

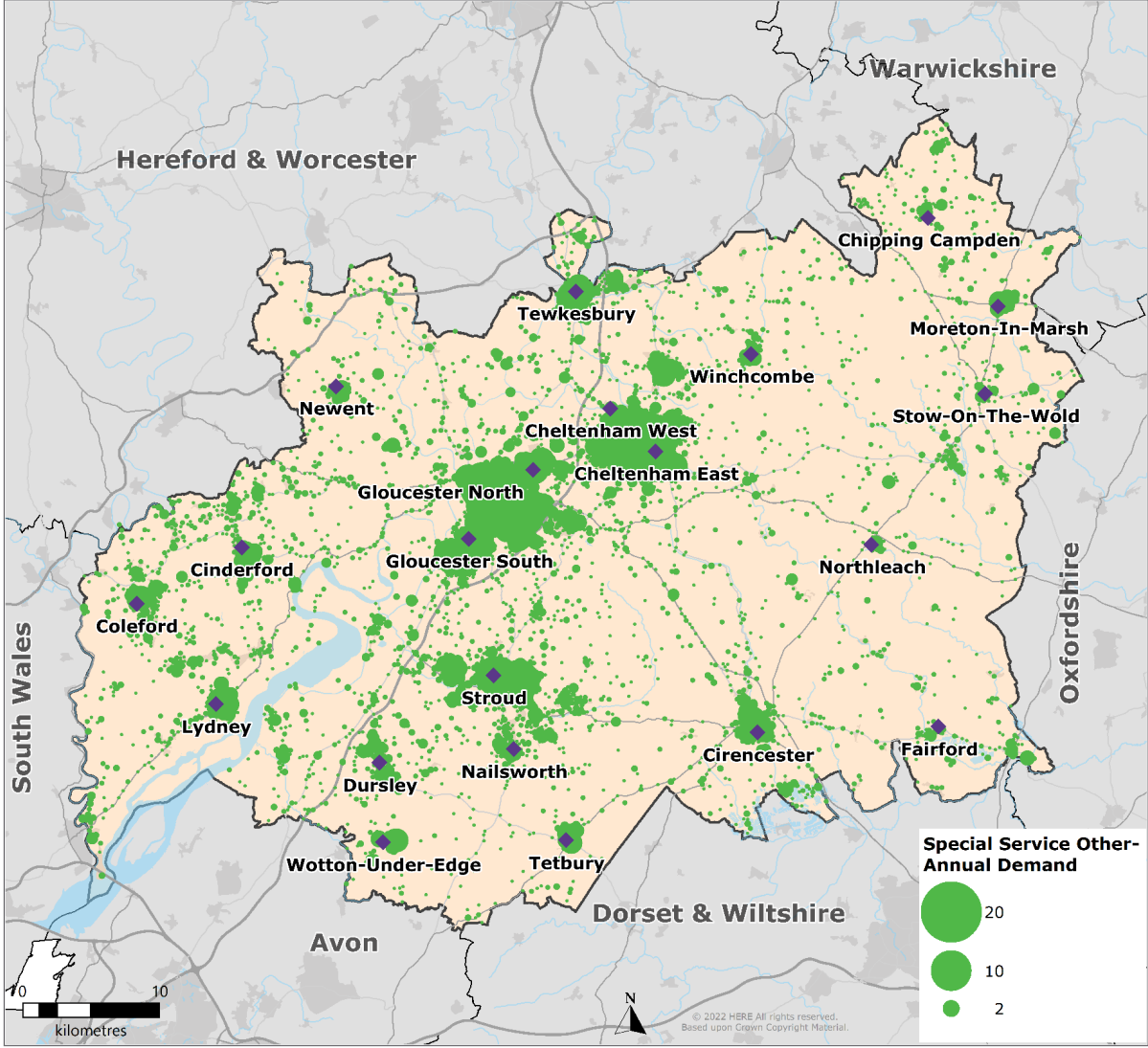


Incident Locations: Special Service

RTCs

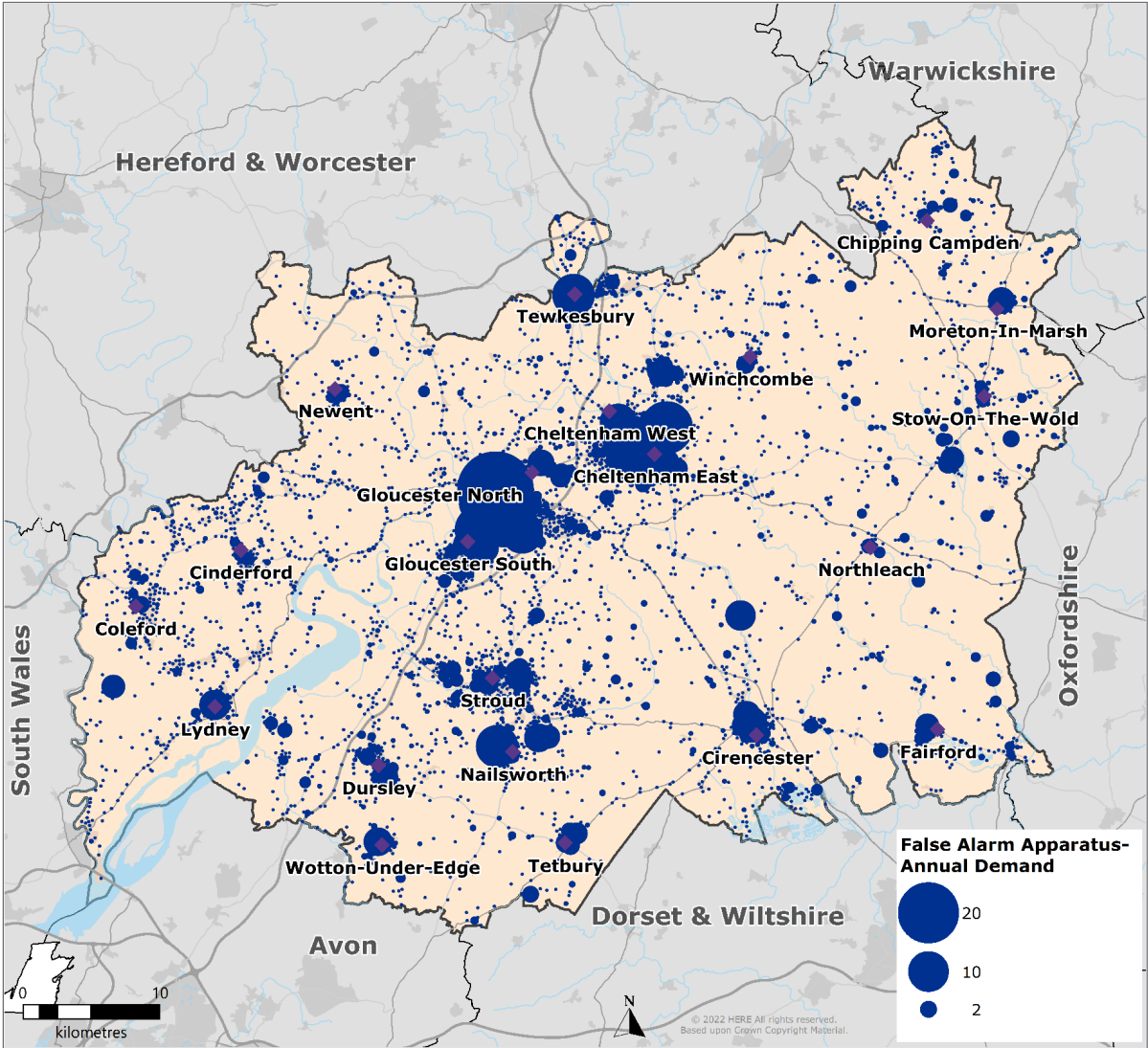


Other

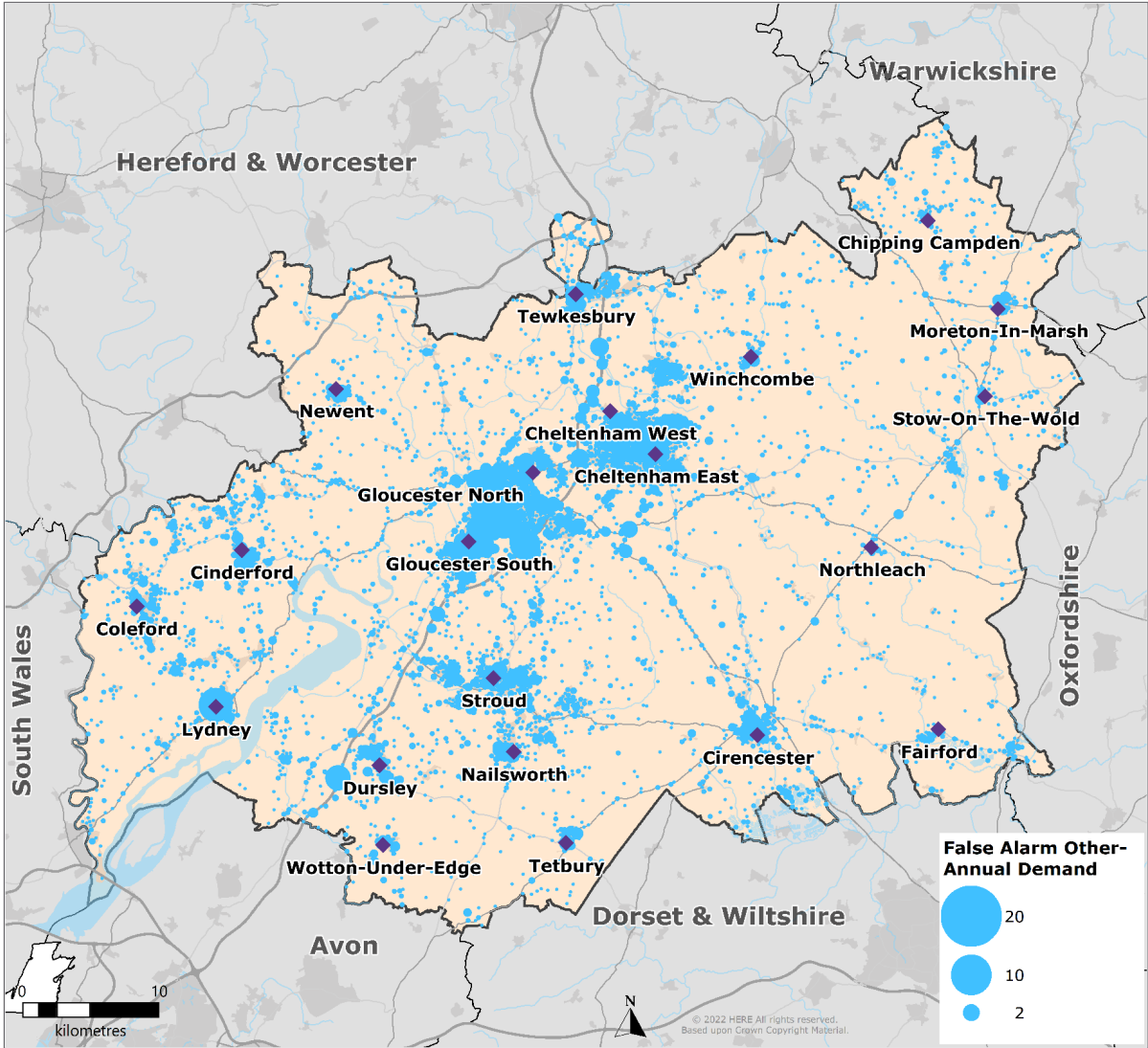


Incident Locations: False Alarms

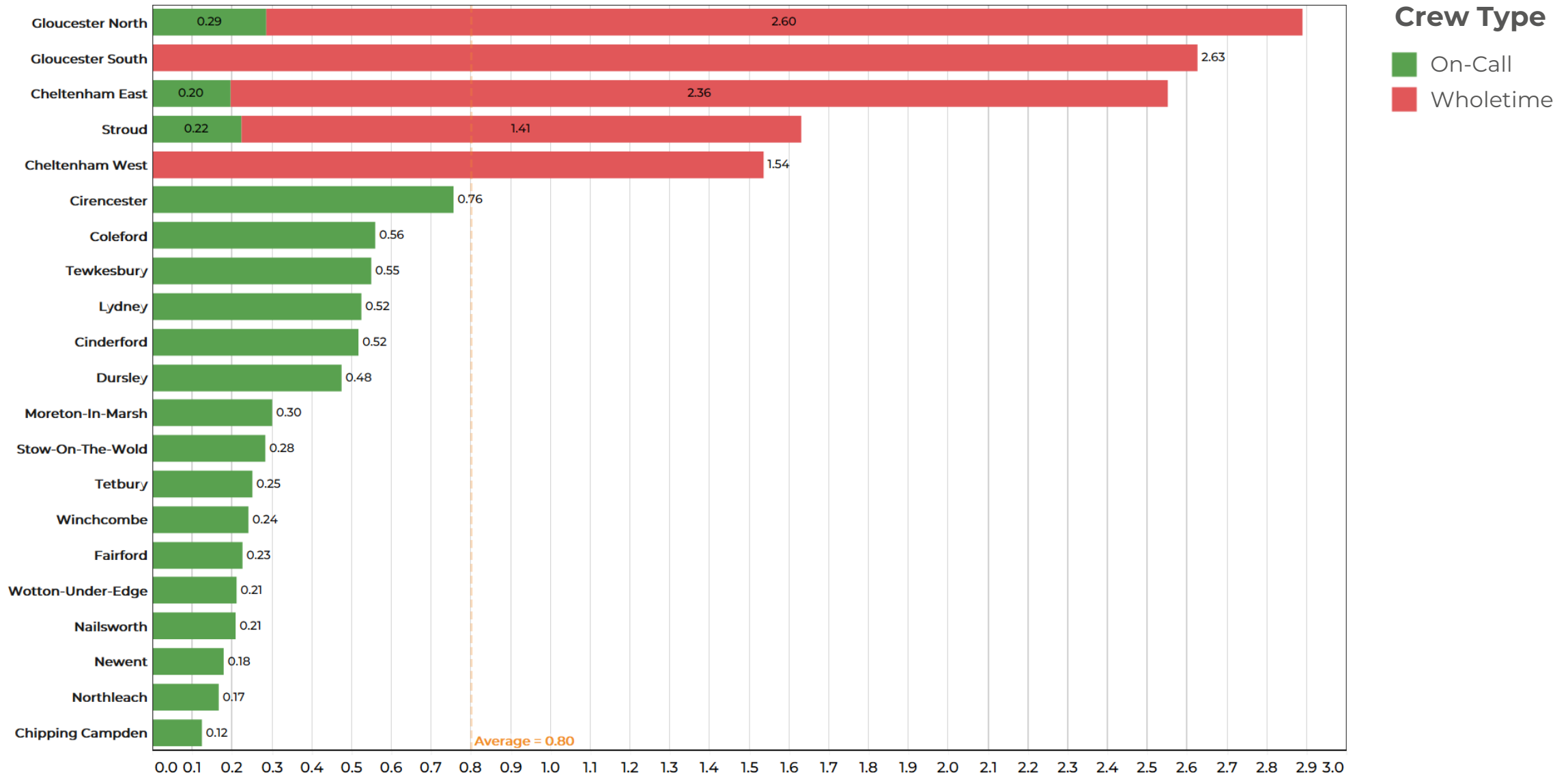
Apparatus



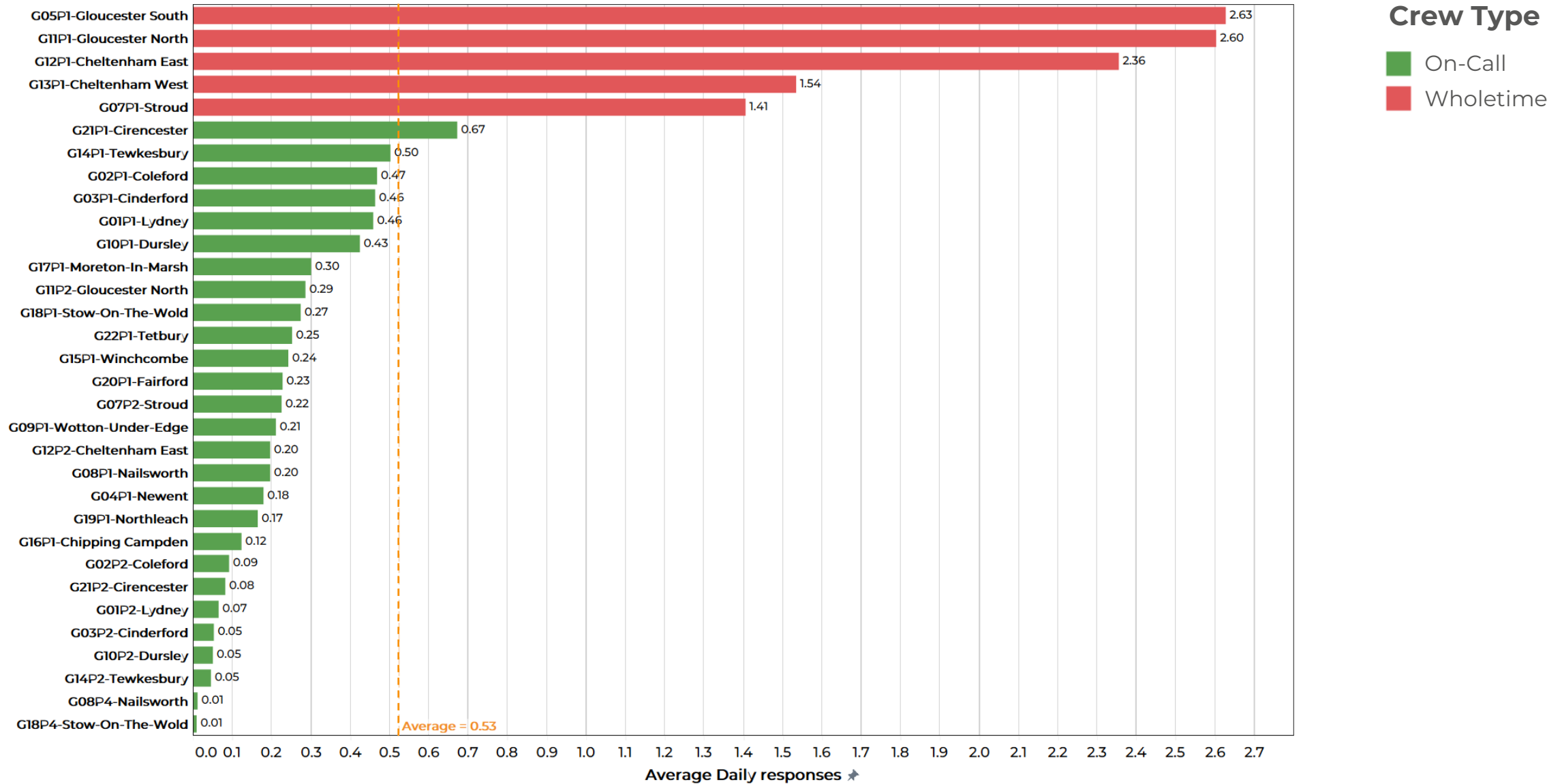
Other



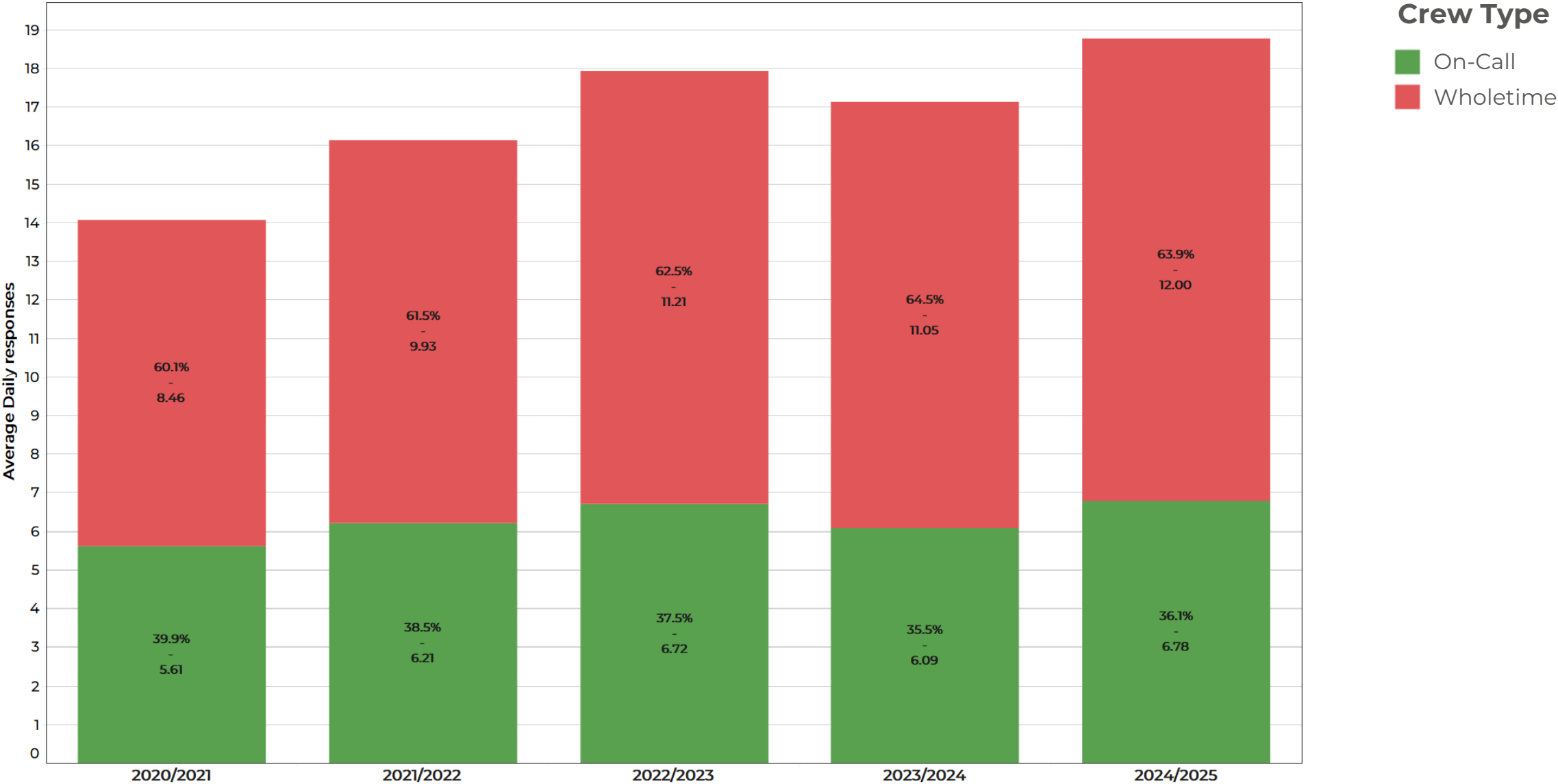
Daily Responses by Station



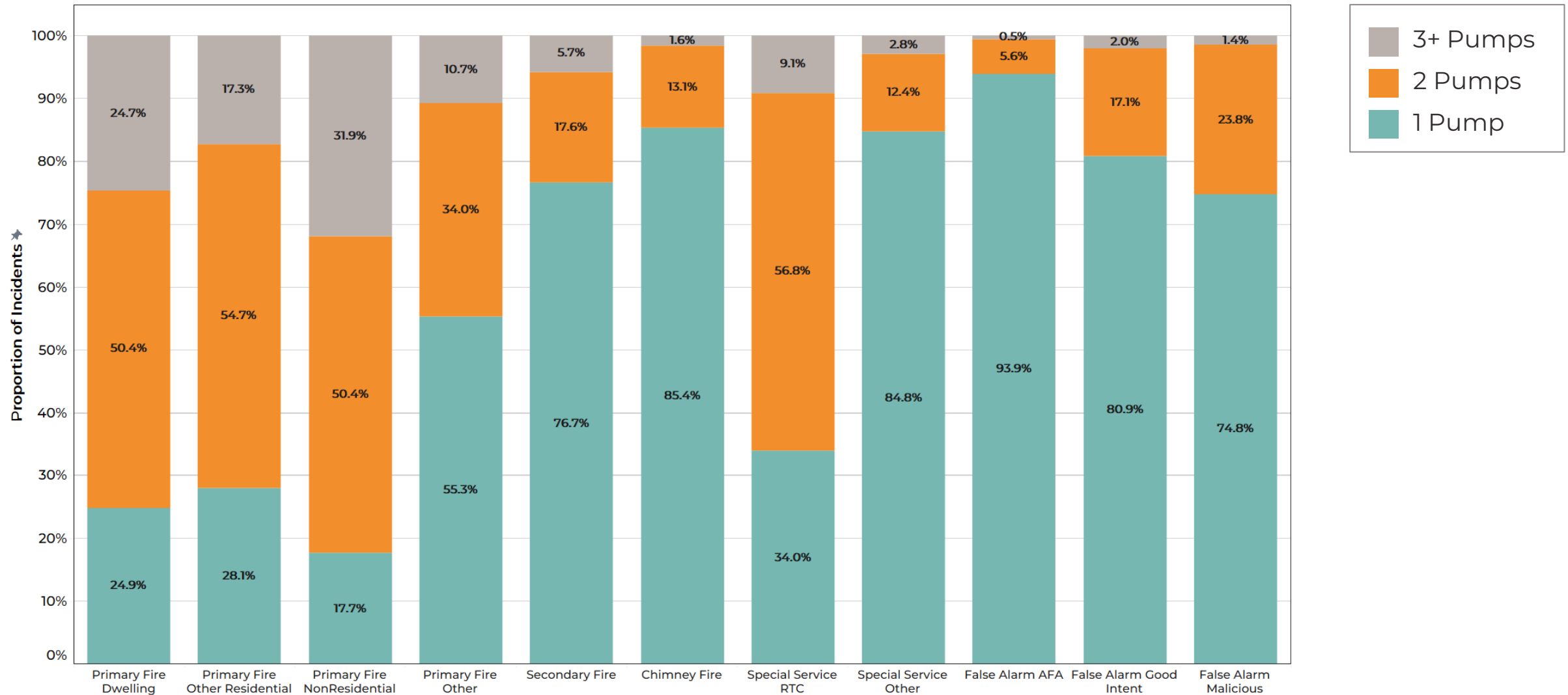
Daily Responses by Callsign



Daily Responses by Crew Type



Number of Pumps by Incident Type



Availability Analysis

3-year sample:

Apr 2022 to Mar 2025



On-Call Availability Summary

Service-wide average has dropped over the sample

In 2022/2023 the average availability was 76%, compared to 67% in 2024/2025

Availability drops off during the day

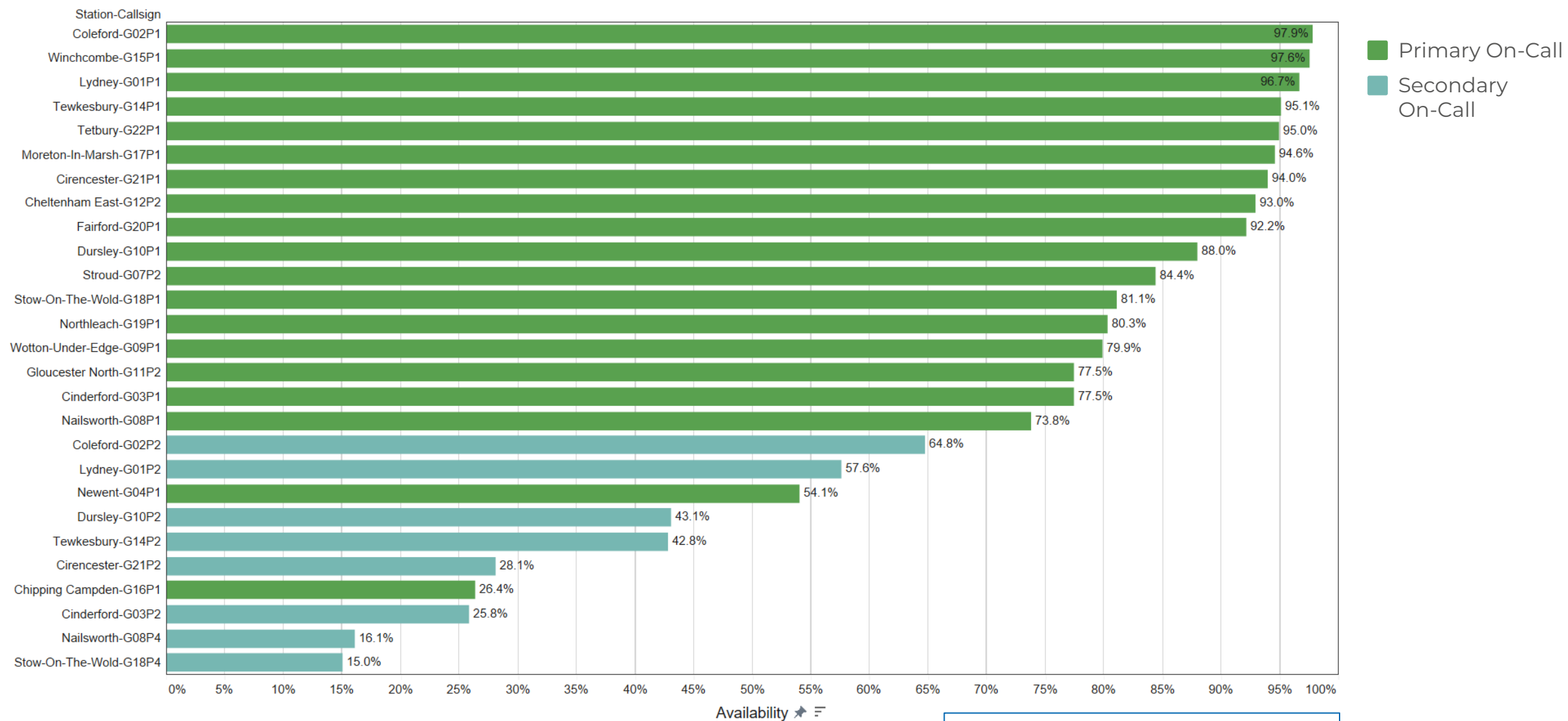
Between 6am and 6pm the average On-Call availability was 60%, compared to 80% between 6pm and 6am

Overall secondary On-Call appliance availability is less than half that of primary On-Call appliances

Primary On-Call pumps were available for 83% of the sample, compared to 37% for the second On-Call appliance at a station

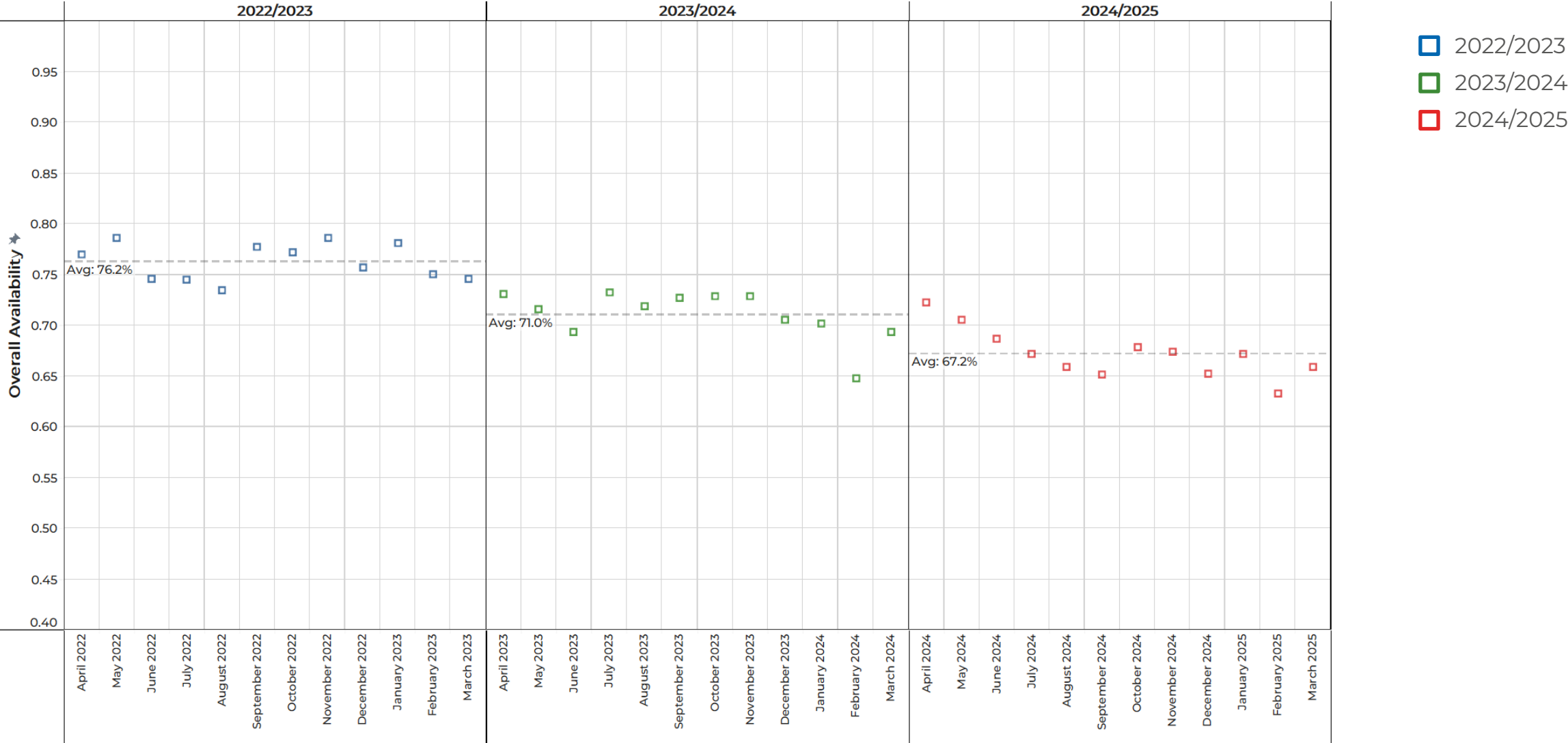


Availability by Callsign – On-Call

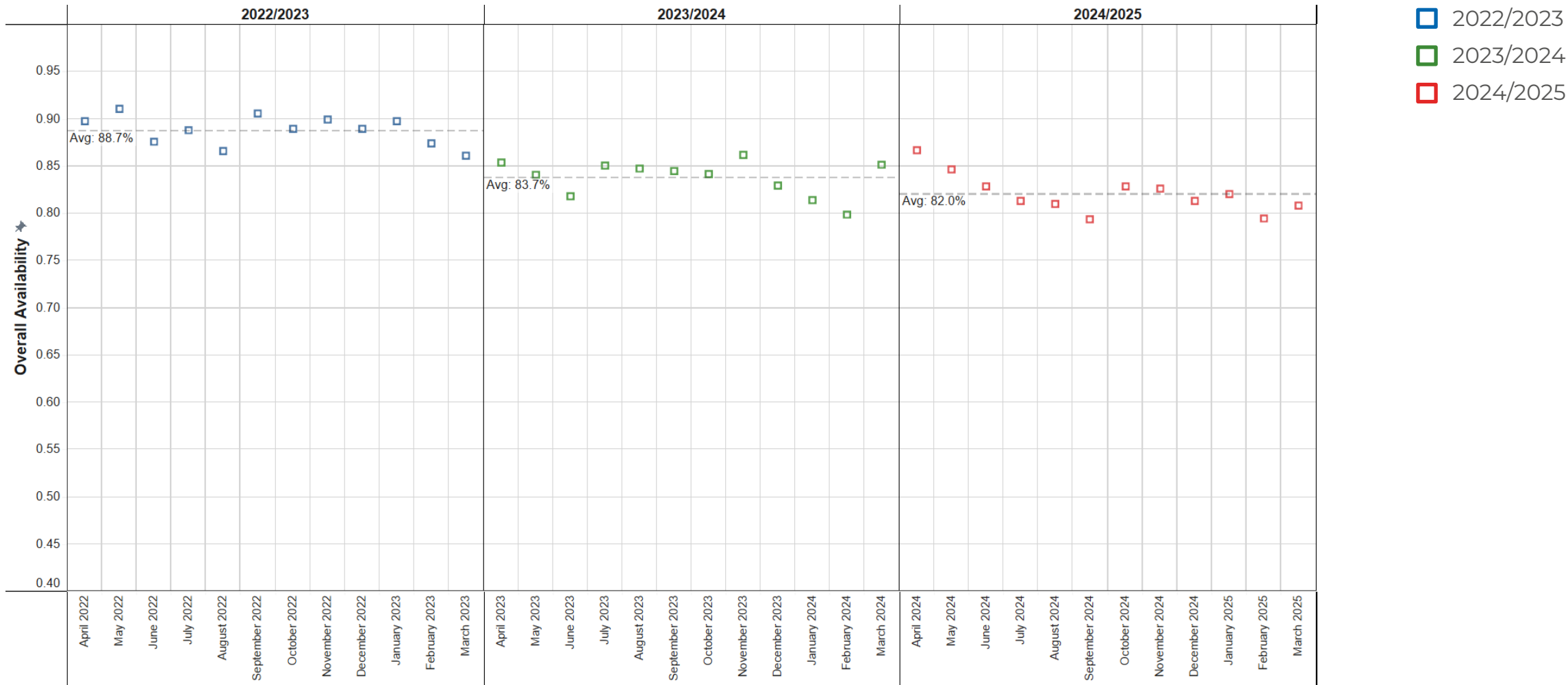


2-year sample: 2023/2024 to 2024/2025

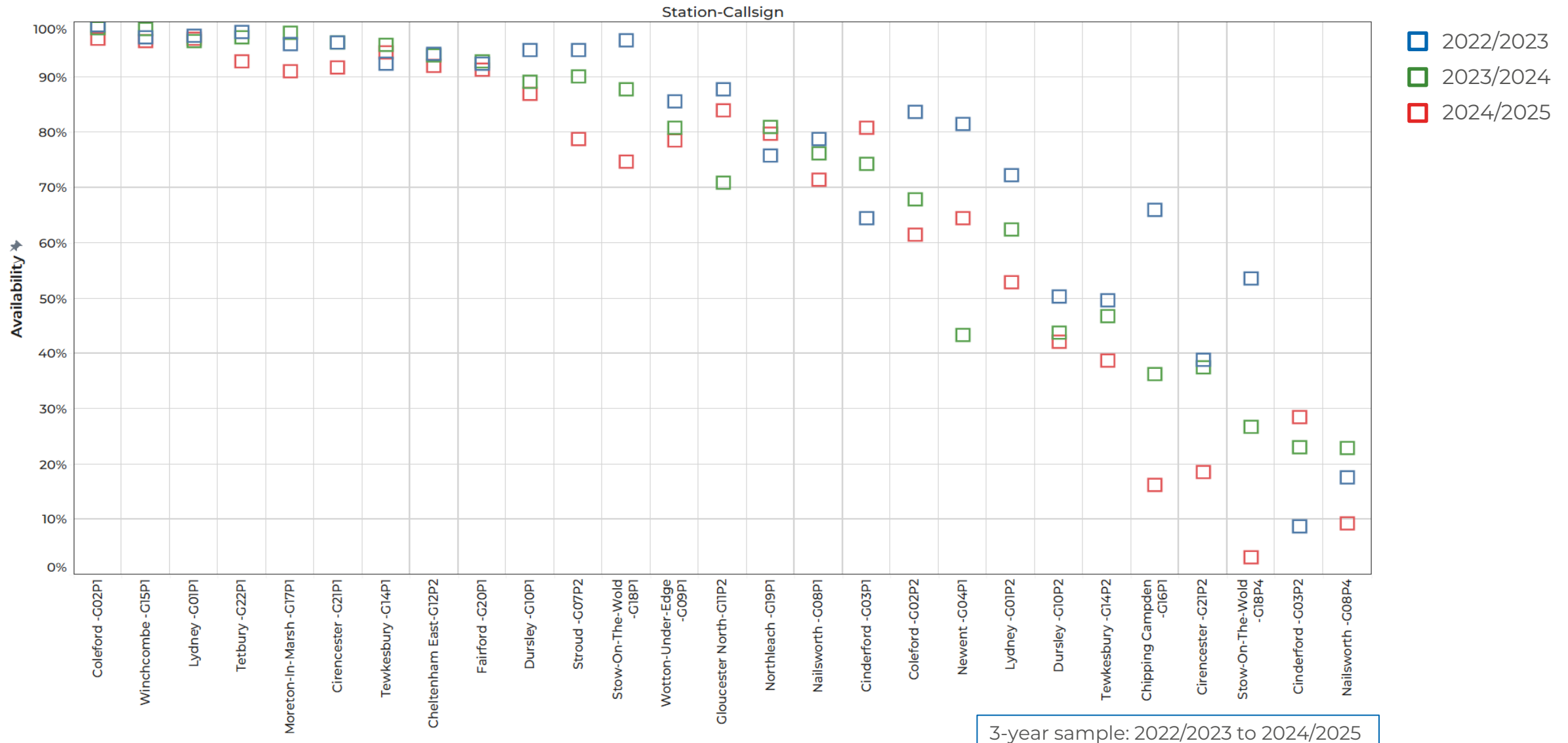
On-Call Availability by Month/Year



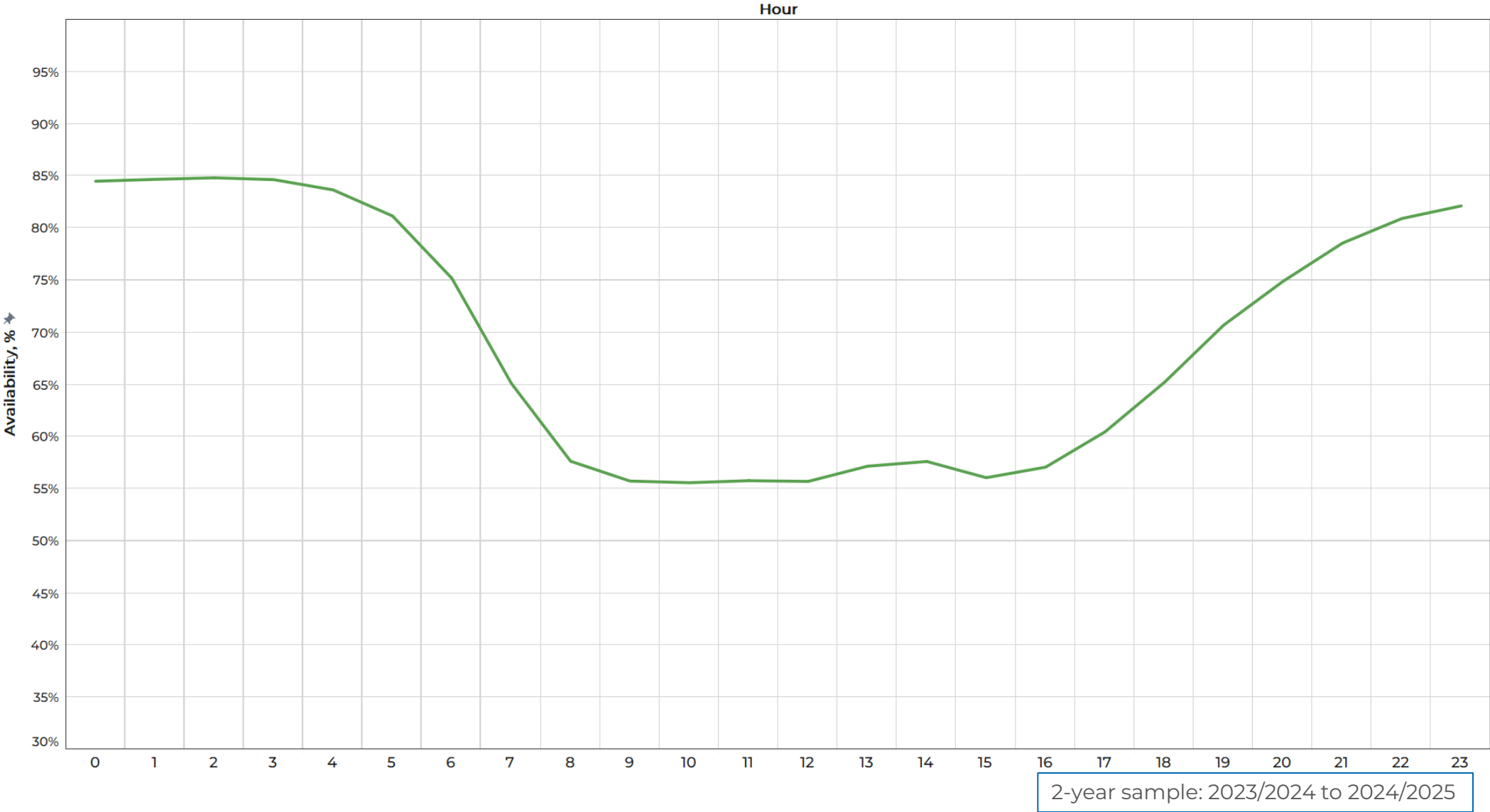
On-Call Availability by Month/Year – Primary On-Call Appliances Only



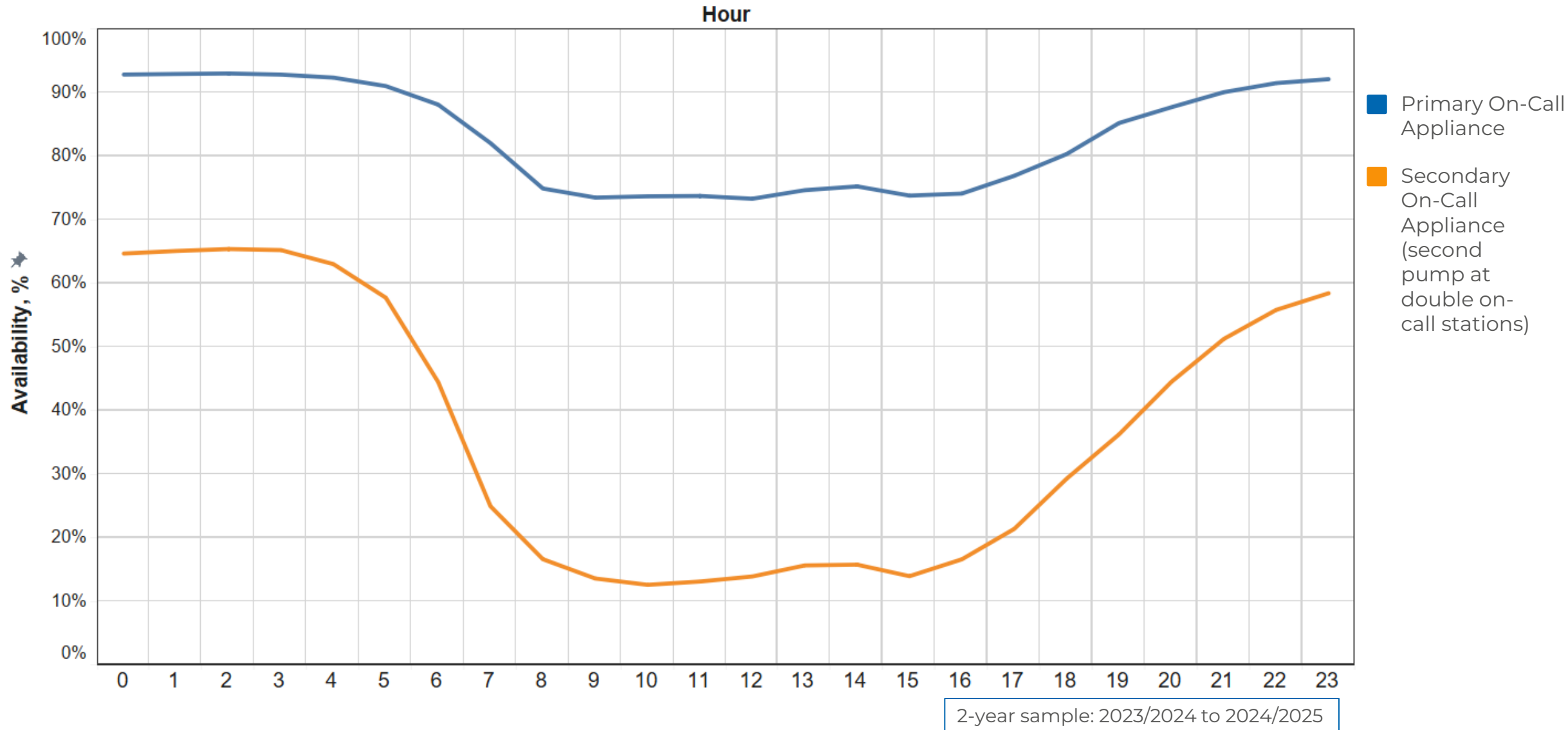
Availability by Year



Availability by Hour and Crewing



Availability by Hour and Crewing



On-Call Availability by Hour and Day of the Week

	Hour																							
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Monday	86.4%	86.4%	86.4%	86.3%	85.4%	82.0%	73.9%	63.9%	57.3%	56.4%	57.3%	58.4%	59.3%	61.0%	61.0%	59.2%	61.2%	65.3%	70.8%	76.0%	80.3%	83.7%	85.6%	86.7%
Tuesday	87.8%	87.8%	87.8%	87.5%	86.7%	83.6%	76.2%	63.4%	56.8%	56.4%	57.5%	58.8%	59.4%	60.4%	60.6%	58.2%	59.6%	66.1%	75.5%	81.6%	84.9%	85.8%	86.9%	87.5%
Wednesday	87.7%	87.8%	87.9%	87.6%	86.8%	83.8%	77.6%	66.1%	57.4%	57.1%	58.0%	58.8%	59.3%	60.4%	59.9%	56.9%	56.3%	59.2%	64.3%	71.3%	75.5%	81.0%	83.5%	84.6%
Thursday	87.1%	87.3%	87.4%	87.3%	85.8%	83.0%	76.3%	65.0%	55.6%	54.4%	56.1%	57.2%	57.4%	58.4%	59.0%	55.9%	56.9%	61.4%	68.2%	72.7%	77.3%	81.4%	83.2%	84.4%
Friday	86.2%	86.3%	86.4%	86.0%	84.8%	82.0%	75.8%	63.8%	56.4%	55.8%	55.8%	55.4%	54.1%	56.8%	56.6%	55.0%	55.1%	58.1%	59.5%	63.7%	67.0%	71.7%	75.6%	77.5%
Saturday	80.9%	81.2%	81.6%	81.5%	80.5%	79.1%	74.8%	67.6%	60.0%	55.0%	51.3%	49.6%	48.5%	49.2%	50.3%	50.2%	51.3%	51.6%	53.5%	58.7%	63.3%	67.2%	70.2%	71.6%
Sunday	75.7%	76.3%	76.7%	76.7%	76.2%	74.9%	72.2%	66.8%	60.8%	56.1%	54.0%	53.1%	52.8%	54.7%	56.6%	57.9%	59.9%	62.3%	65.2%	71.4%	76.5%	79.4%	81.8%	82.9%
Overall	84.5%	84.7%	84.8%	84.7%	83.7%	81.2%	75.2%	65.2%	57.7%	55.8%	55.6%	55.8%	55.8%	57.2%	57.7%	56.1%	57.1%	60.5%	65.3%	70.7%	74.9%	78.6%	80.9%	82.2%

2-year sample: 2023/2024 to 2024/2025

Response Analysis

2-year sample:
Apr 2023 to Mar 2025



Overall total response times have slowly increased over the sample

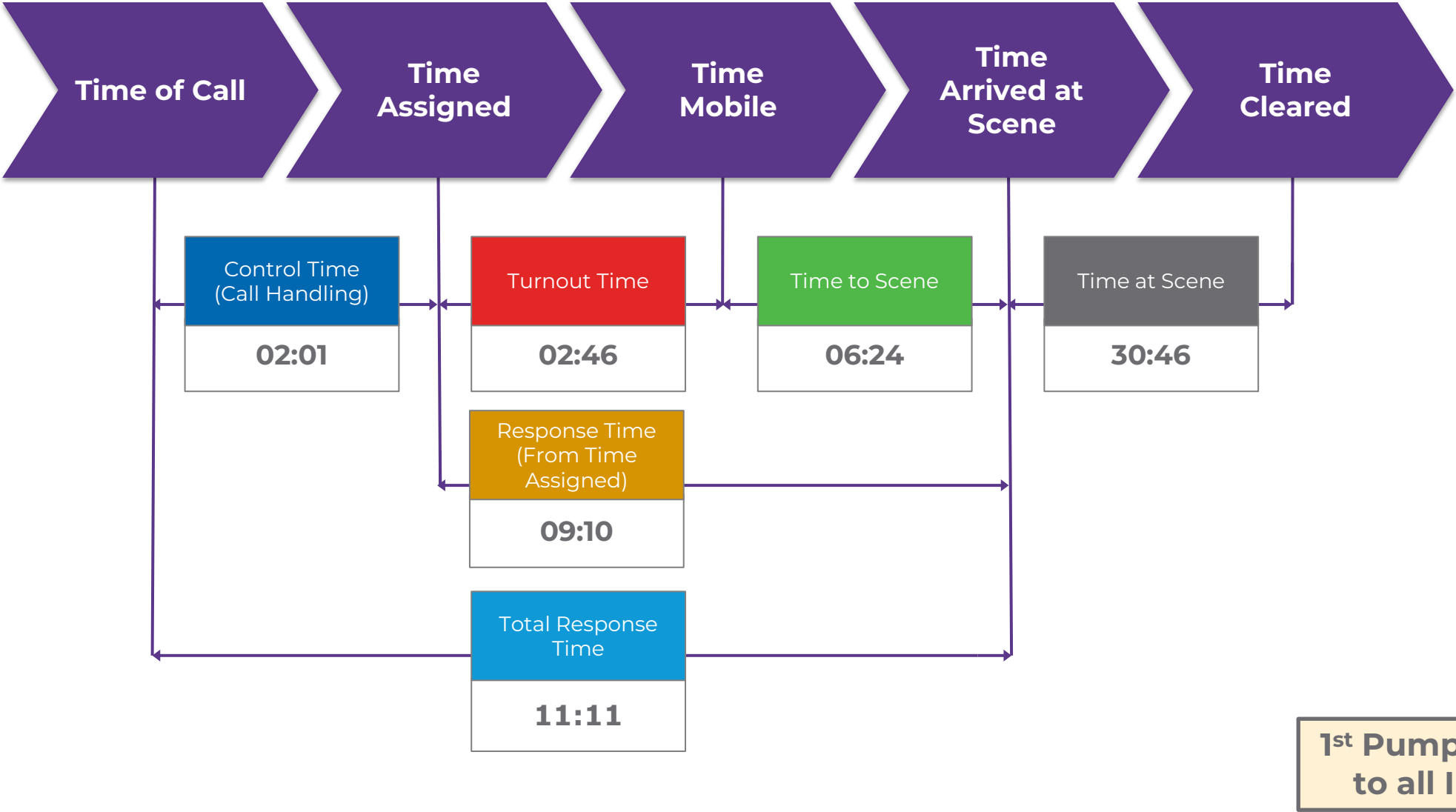
From a mean average of 10:38 in 2020/2021 to 11:00 in 2023/2024 and 11:20 in 2024/2025

Disparity in response to high-risk incidents across the service

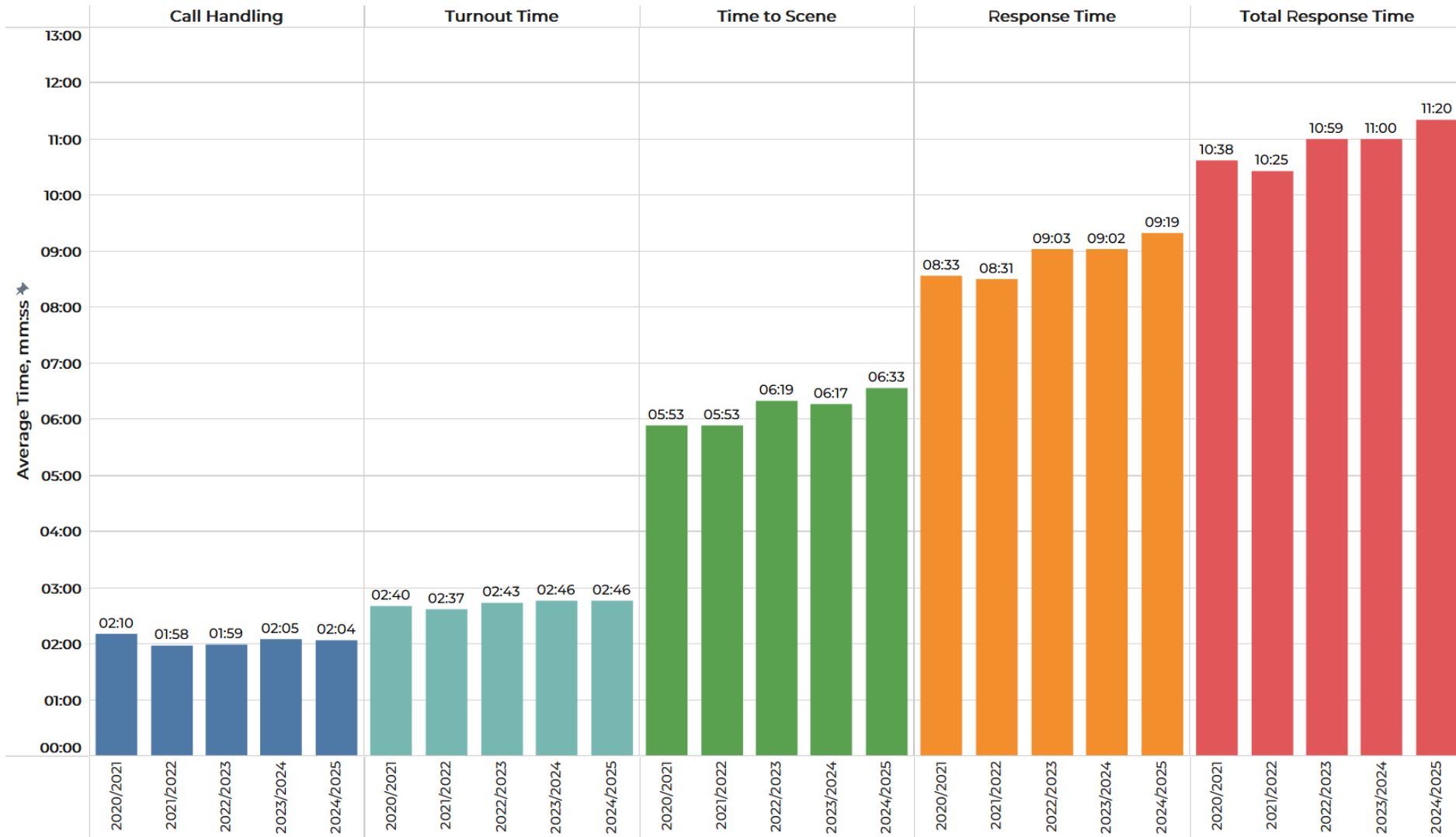
Mean average second response to Dwelling Fires in rural areas, for example Cotswold (24:46) and Forest of Dean (17:56), was significantly longer than in the urban areas of Cheltenham (09:07) and Gloucester (11:11)



Incident Cycle Times



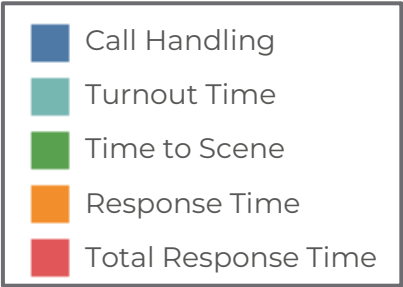
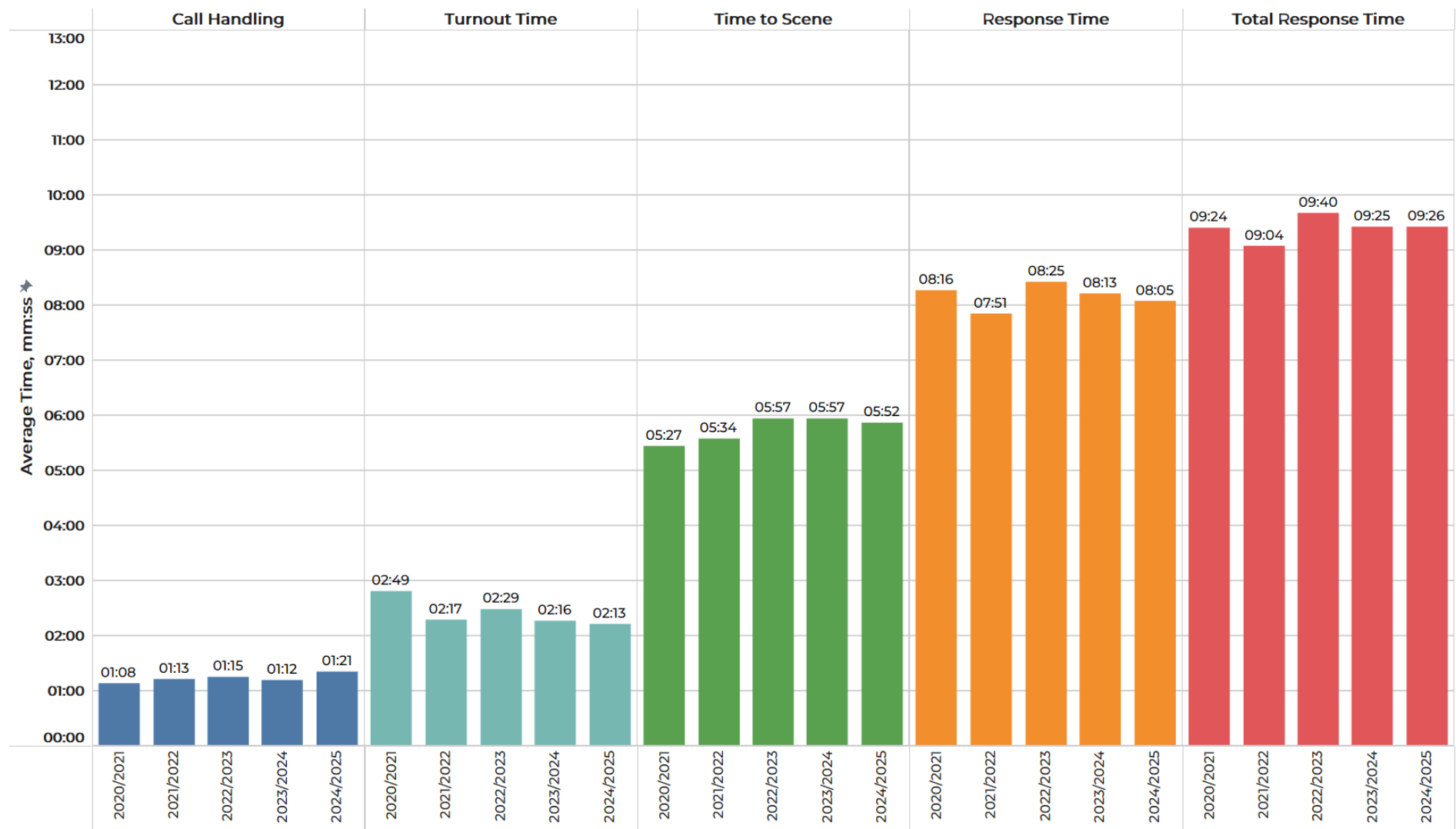
Call Components by Reporting Year



- Call Handling
- Turnout Time
- Time to Scene
- Response Time
- Total Response Time

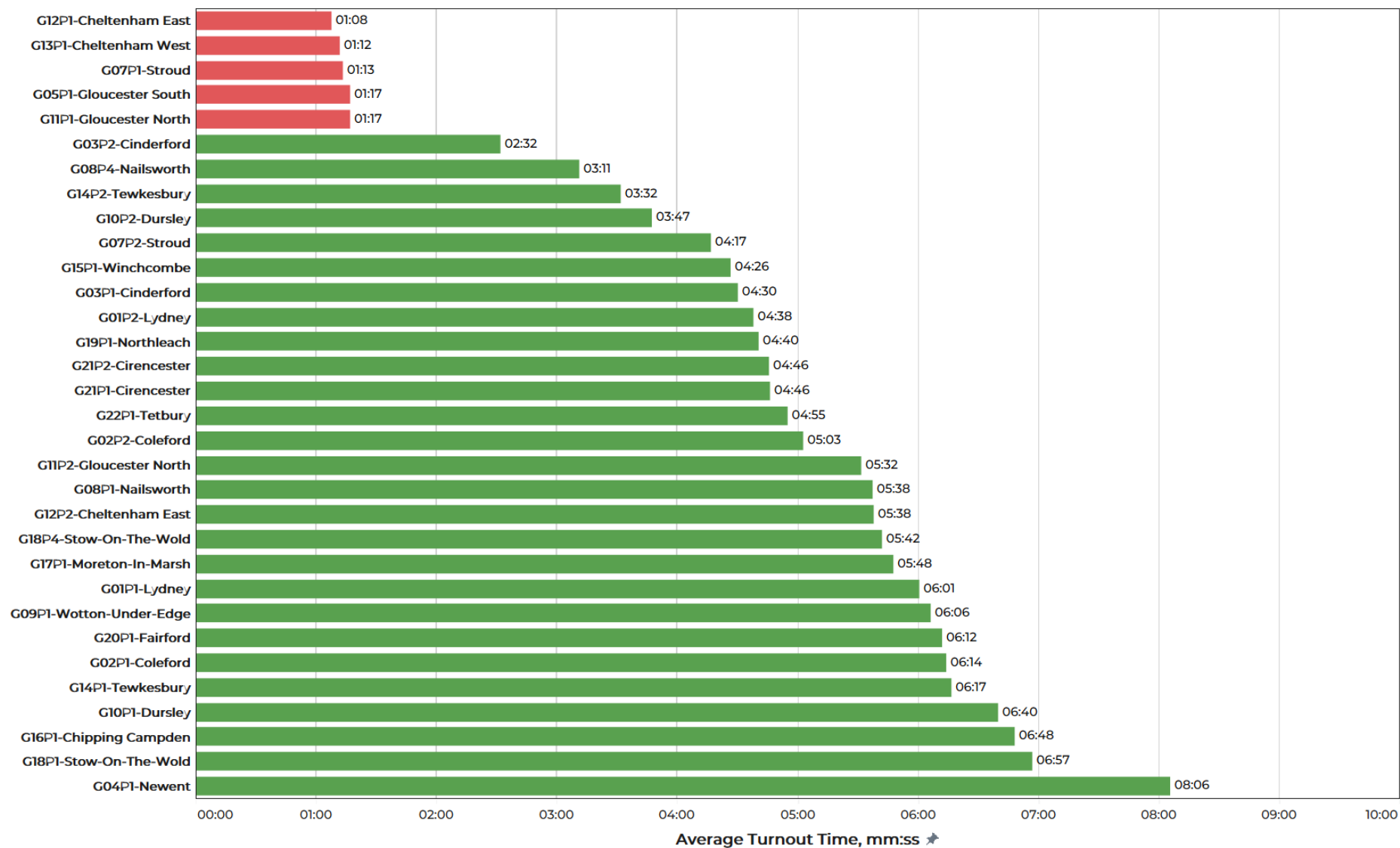
**1st Pump
Response to
all Incidents**

Call Components by Reporting Year – Dwelling Fire Incidents



**1st Pump
Response to
Dwelling Fires**

Average Turnout Time by Callsign



**1st Pump
Response to
all Incidents**

Turnout Time by Crew Type



Crew Type and Time of Day

- On-Call - Day
- On-Call - Night
- Wholetime - Night
- Wholetime - Day

1st Pump Response to all Incidents

**Day = 6 am – 6 pm
Night = 6 pm – 6 am**

Turnout Time by Callsign and Time of Day

Station	Callsign	Crew Type	Day	Night
Gloucester South	G05P1	WT	01:11	01:23
Stroud	G07P1	WT	01:09	01:19
Gloucester North	G11P1	WT	01:12	01:24
Cheltenham East	G12P1	WT	01:02	01:16
Cheltenham West	G13P1	WT	01:09	01:16
Lydney	G01P1	OC	06:15	05:46
Lydney	G01P2	OC	04:21	04:58
Coleford	G02P1	OC	06:19	06:07
Coleford	G02P2	OC	04:11	06:07
Cinderford	G03P1	OC	04:34	04:25
Cinderford	G03P2	OC	05:14	00:43
Newent	G04P1	OC	08:58	07:24
Stroud	G07P2	OC	04:52	03:43
Nailsworth	G08P1	OC	05:45	05:28
Nailsworth	G08P4	OC	03:11	
Wotton-Under-Edge	G09P1	OC	06:28	05:44
Dursley	G10P1	OC	06:25	06:59
Dursley	G10P2	OC	03:04	04:13
Gloucester North	G11P2	OC	06:08	04:31
Cheltenham East	G12P2	OC	06:18	05:03
Tewkesbury	G14P1	OC	06:40	05:48
Tewkesbury	G14P2	OC	08:28	01:53
Winchcombe	G15P1	OC	04:24	04:30
Chipping Campden	G16P1	OC	07:06	05:29
Moreton-In-Marsh	G17P1	OC	06:09	05:20
Stow-On-The-Wold	G18P1	OC	07:23	06:31
Stow-On-The-Wold	G18P4	OC	05:42	
Northleach	G19P1	OC	04:49	04:24
Fairford	G20P1	OC	06:13	06:11
Cirencester	G21P1	OC	04:56	04:34
Cirencester	G21P2	OC	05:04	04:35
Tetbury	G22P1	OC	05:18	04:21

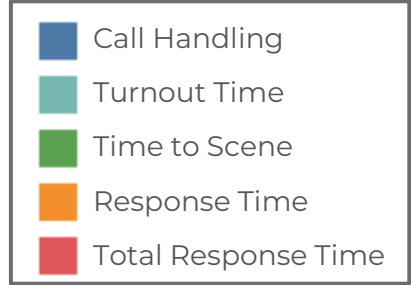
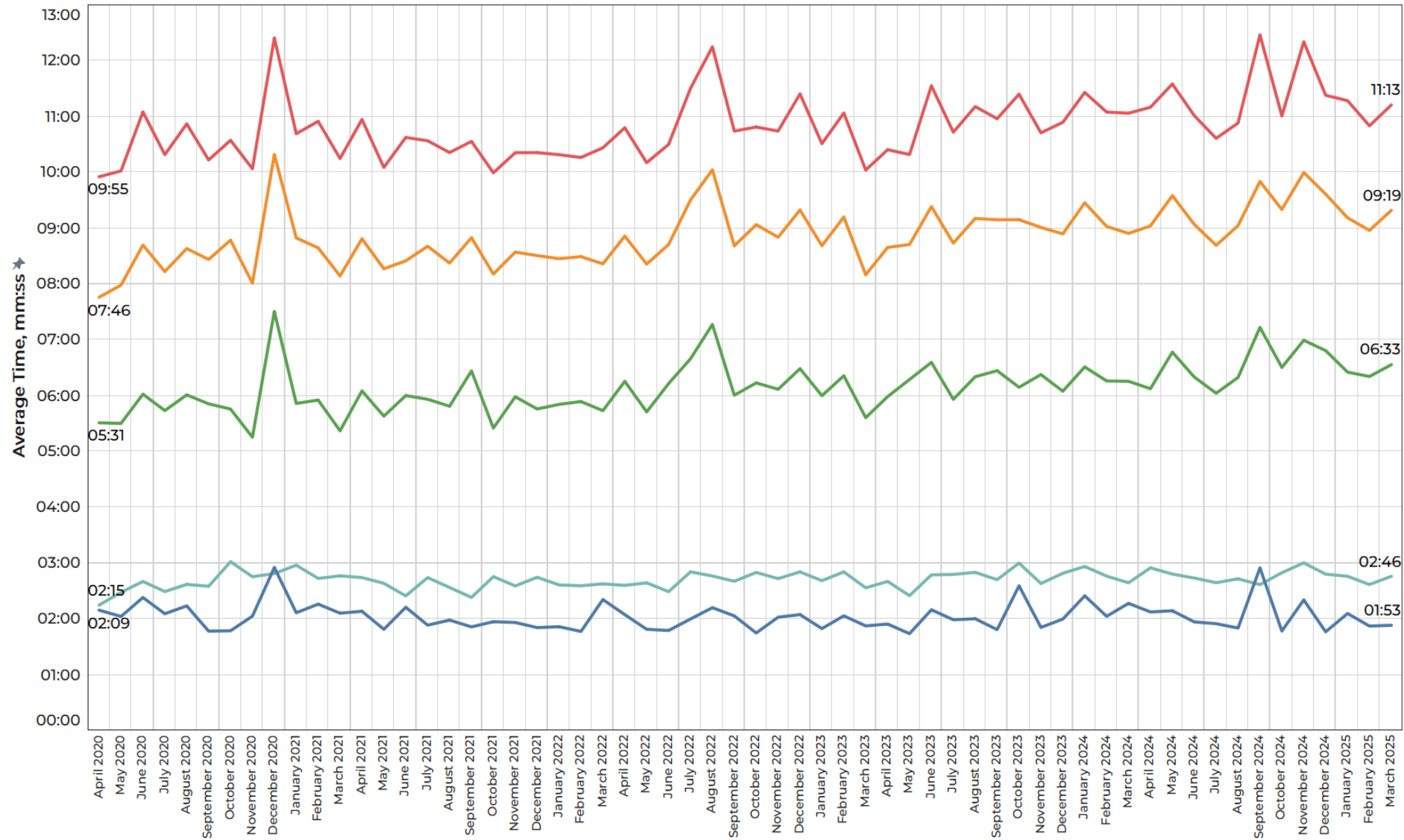
Average turnout time by crew type and time of day

Crew Type	Day	Night	Overall
Wholetime	01:09	01:20	01:13
On-Call	05:50	05:23	05:38
Overall	02:47	02:45	02:46

**1st Pump
Responses to
all Incidents**

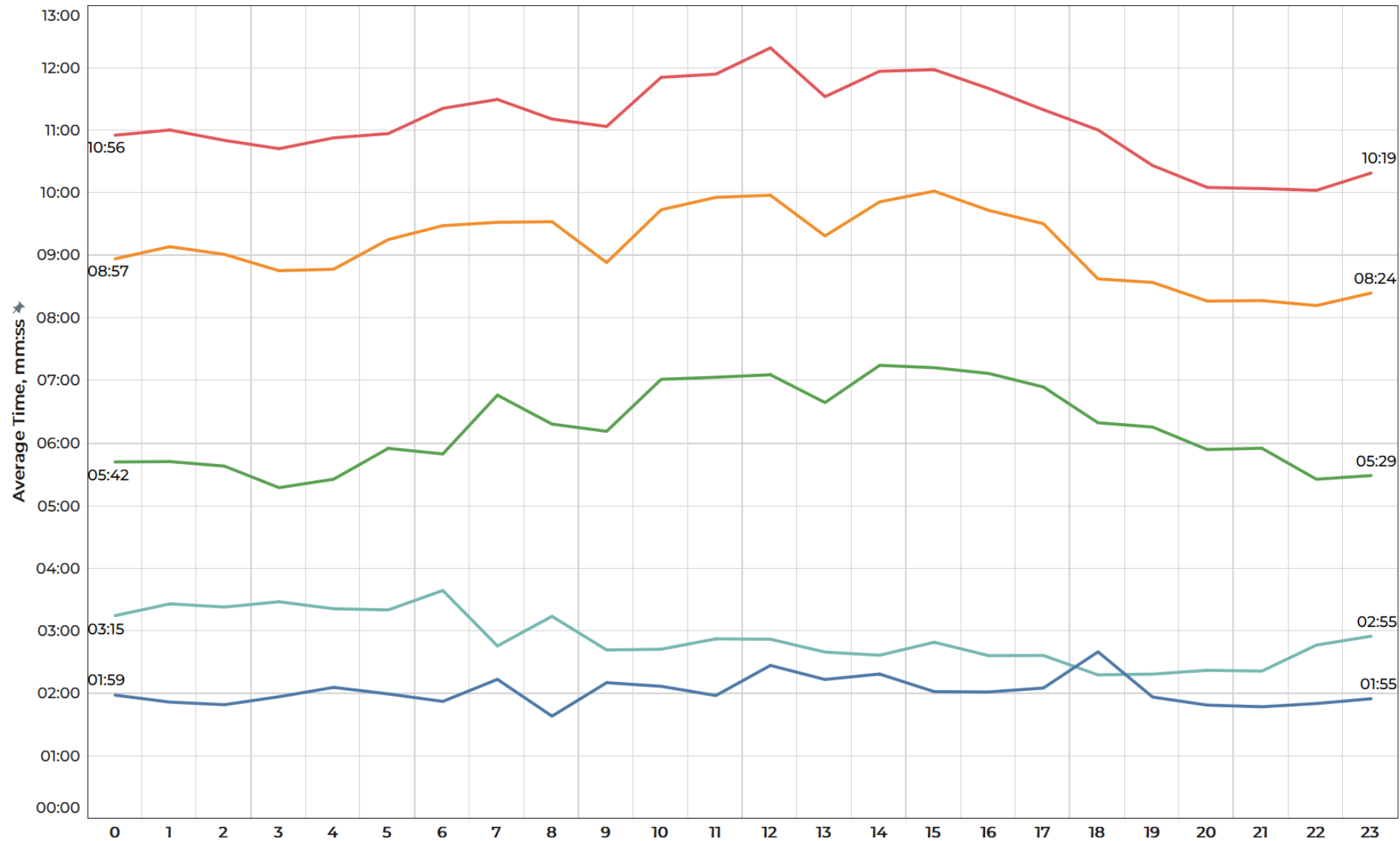
**Day = 6am – 6pm
Night = 6pm – 6am**

Call Components by Month/Year



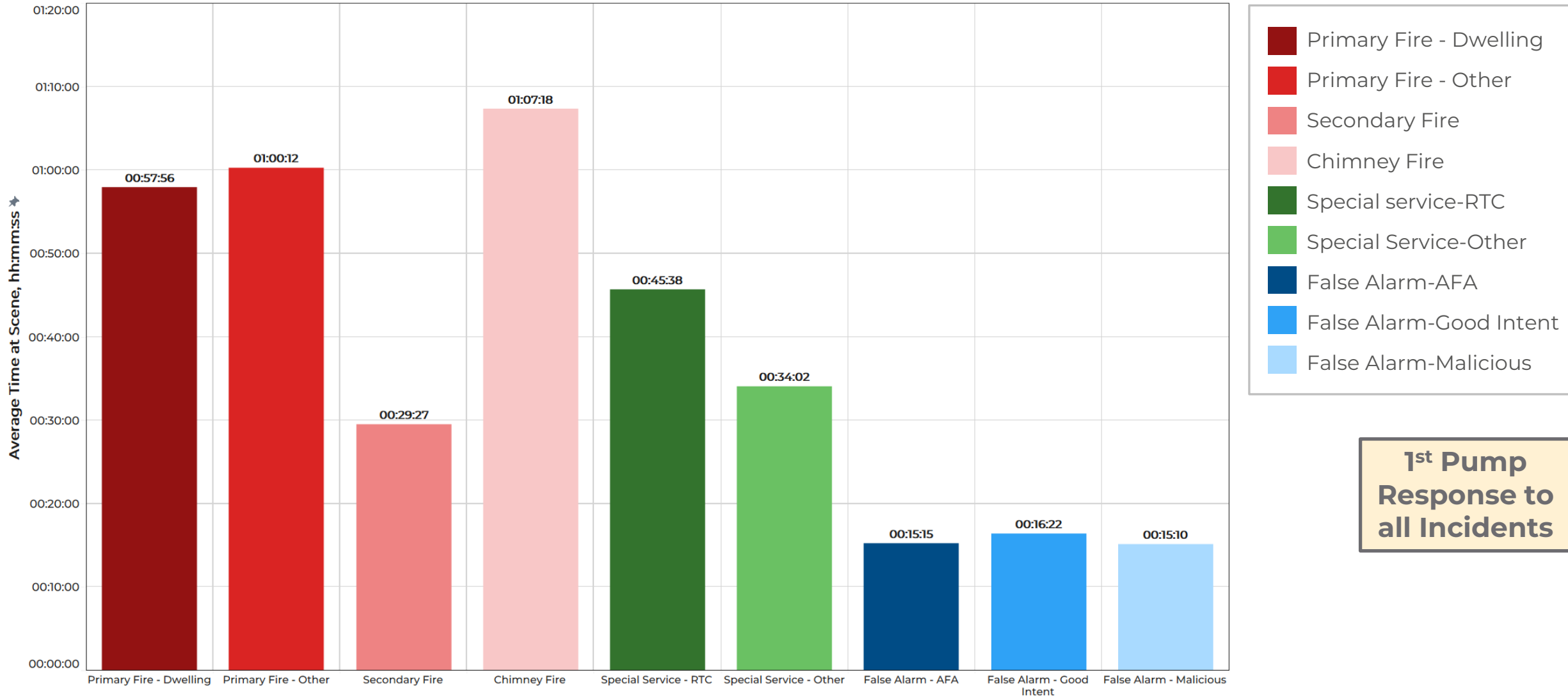
**1st Pump
Response to all
Incidents**

Call Components by Hour

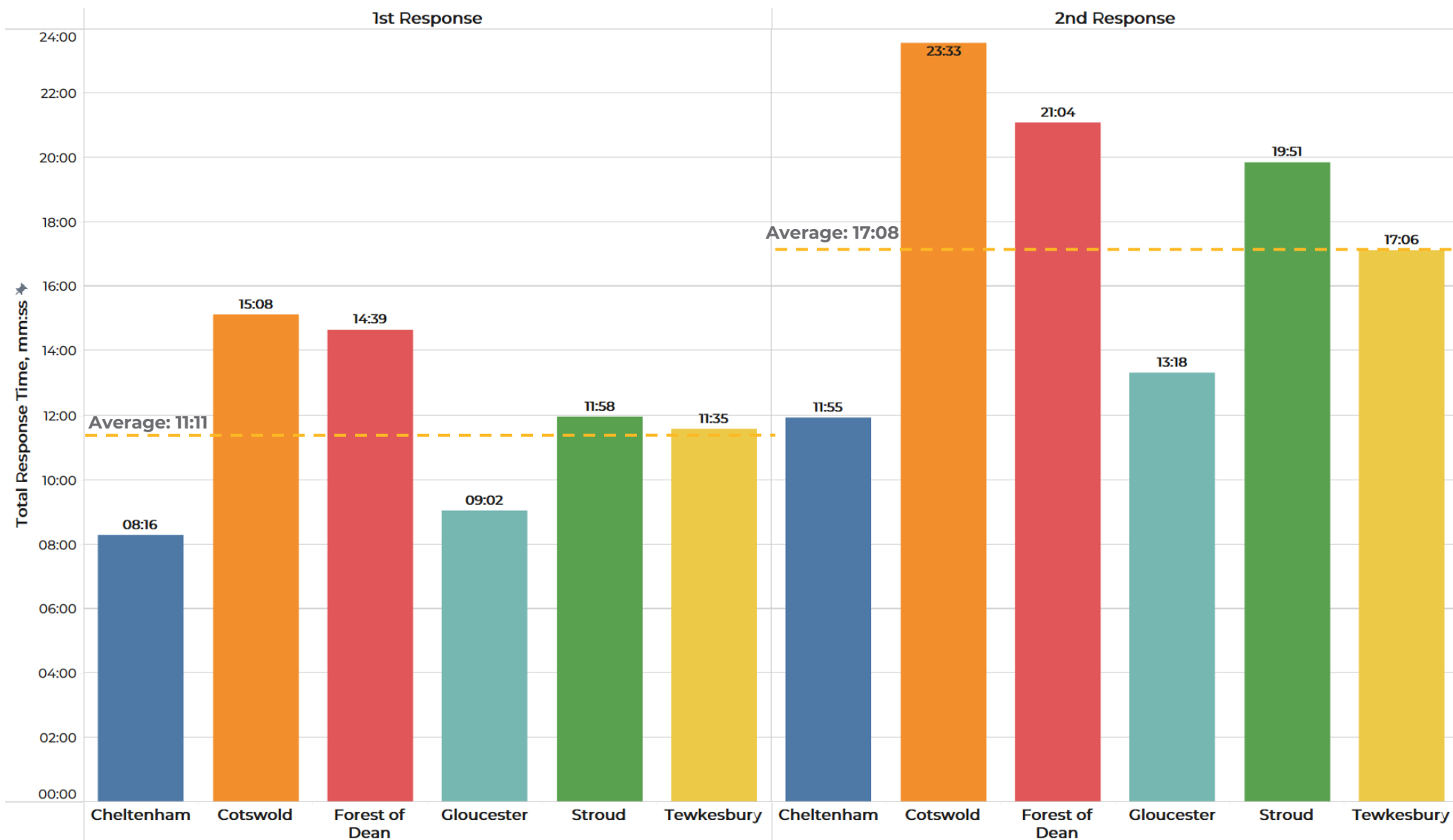


**1st Pump
Response to all
Incidents**

Time at Scene by Incident Type



Mean Response Times – All incidents

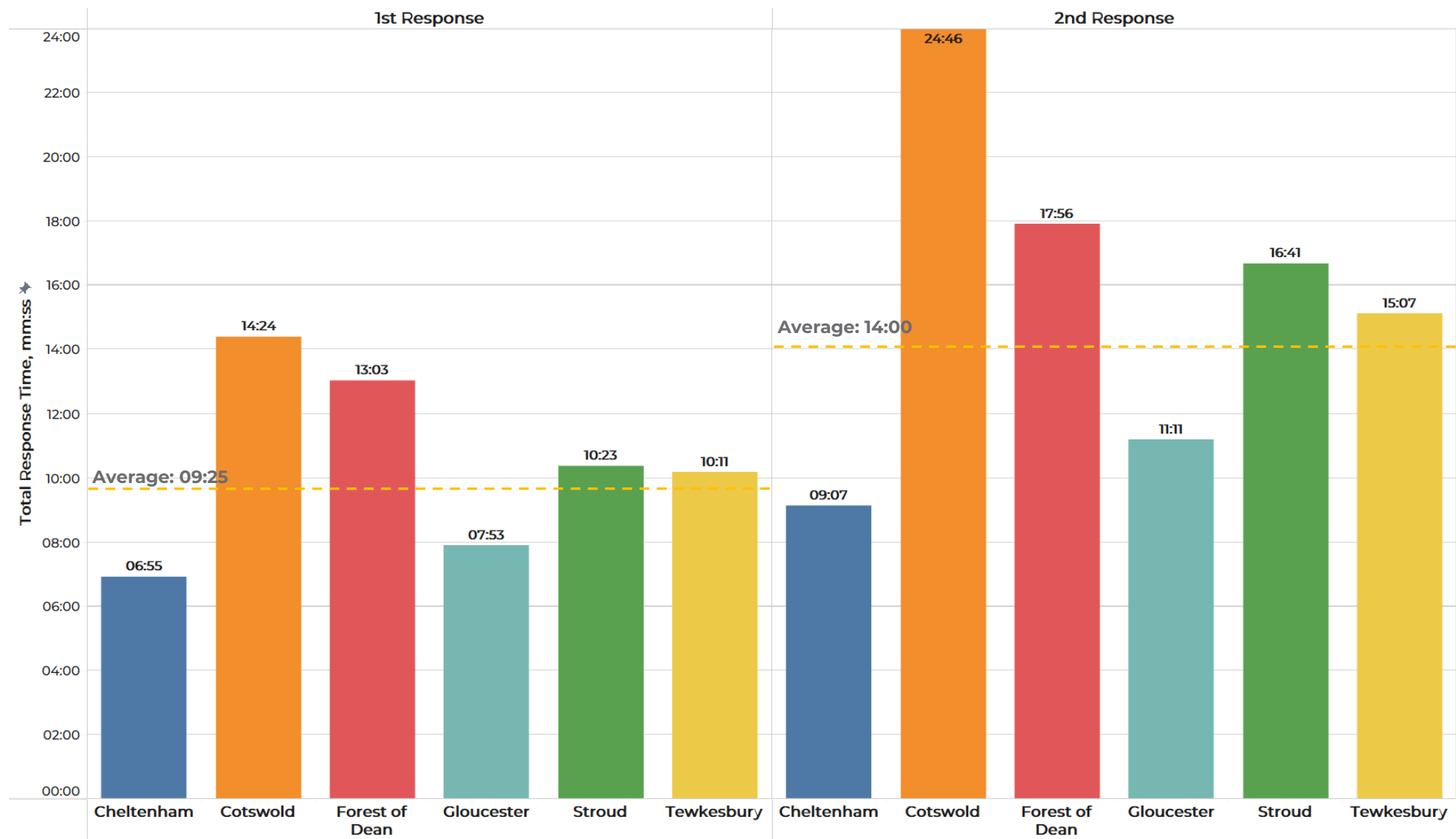


District

- Cheltenham
- Cotswold
- Forest of Dean
- Gloucester
- Stroud
- Tewkesbury

Measured from
Time of Call

Mean Response Time – Dwelling Fires



District

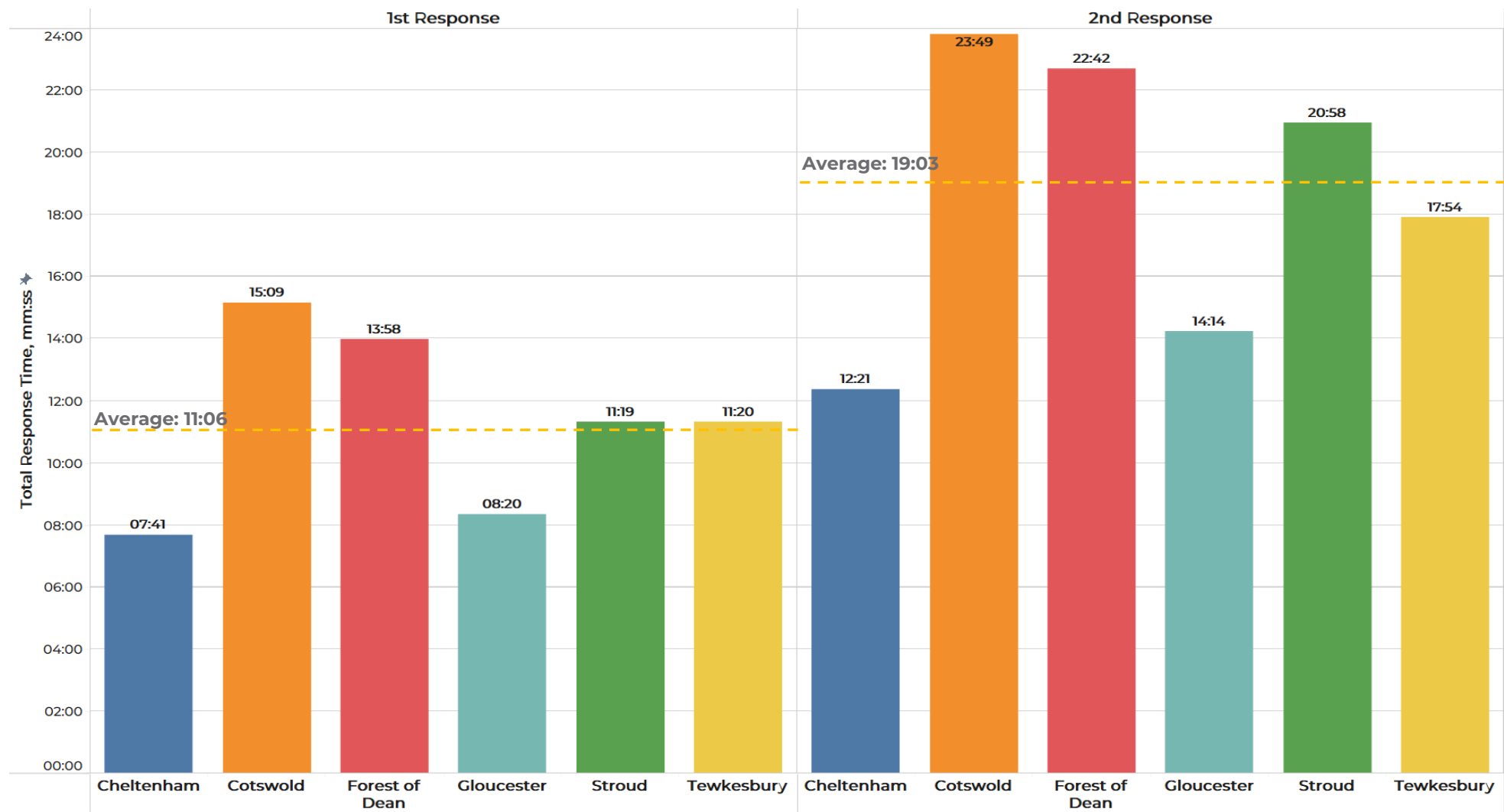
- Cheltenham
- Cotswold
- Forest of Dean
- Gloucester
- Stroud
- Tewkesbury

Measured from
Time of Call

Standards:

Incident Type	Target
Dwelling Fires	9 Minutes
Other Fires	10 Minutes

Mean Response Time – All Other Fires



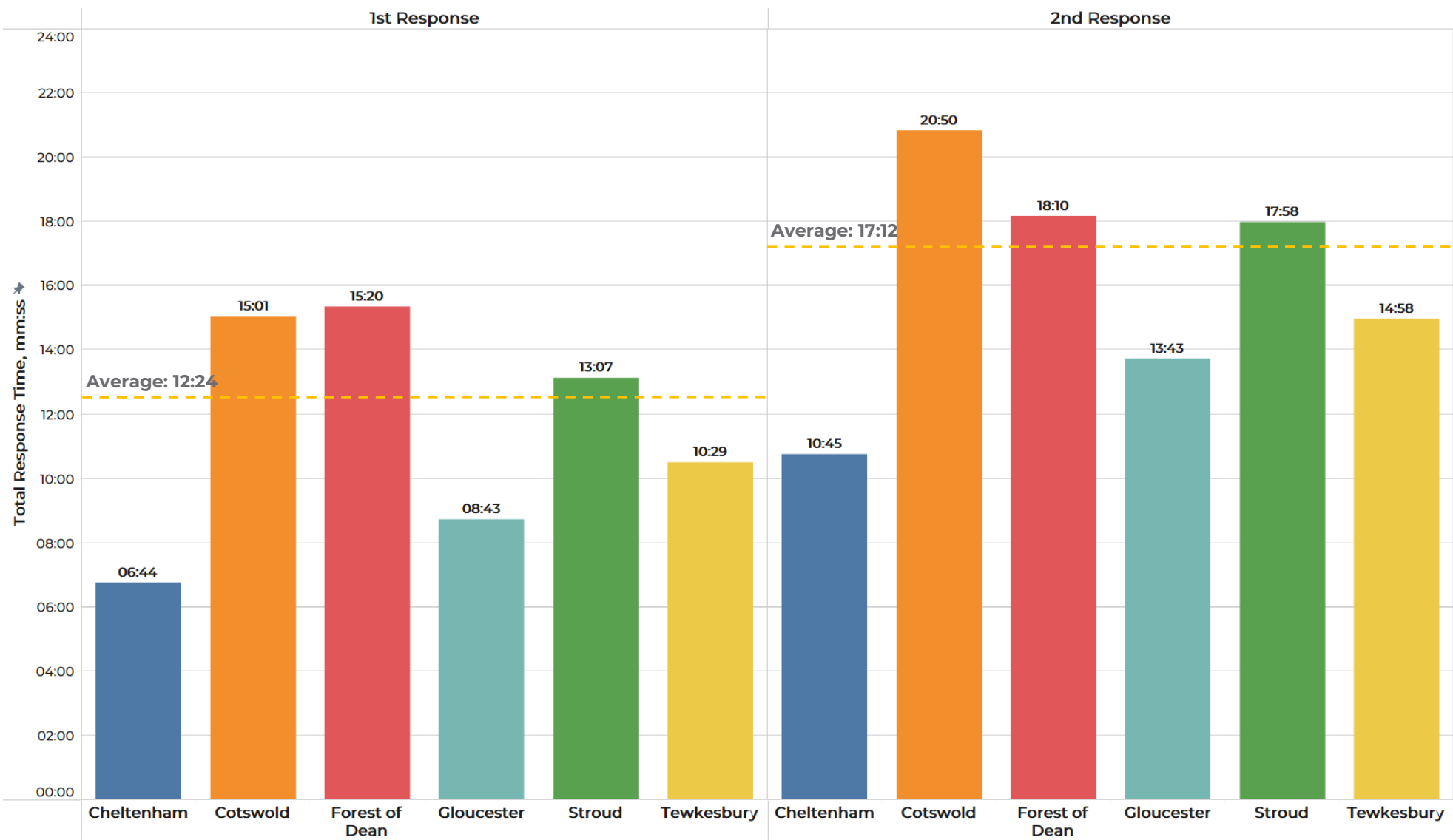
- District**
- Cheltenham
 - Cotswold
 - Forest of Dean
 - Gloucester
 - Stroud
 - Tewkesbury

Measured from
Time of Call

Standards:

Incident Type	Target
Dwelling Fires	9 Minutes
Other Fires	10 Minutes

Mean Response Time – RTCs



District

- Cheltenham
- Cotswold
- Forest of Dean
- Gloucester
- Stroud
- Tewkesbury

Measured from
Time of Call

Response Standard (from TOC)

Incident Type	Target
Dwelling Fires	9 Minutes
All Other Fire Incidents	10 Minutes

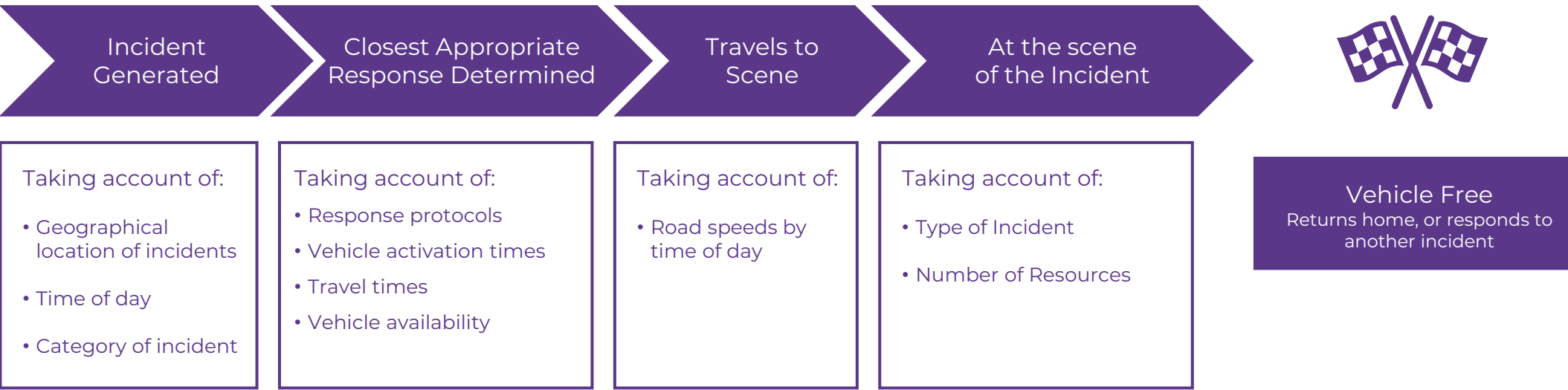
	Dwelling Fires			All Other Fire Incidents		
District	All	Within Target	Proportion	All	Within Target	Proportion
Cheltenham	149	135	90.6%	287	243	84.7%
Cotswold	57	10	17.5%	277	45	16.2%
Forest of Dean	49	11	22.4%	266	65	24.4%
Gloucester	158	112	70.9%	366	283	77.3%
Stroud	116	49	42.2%	300	137	45.7%
Tewkesbury	58	19	32.8%	247	108	43.7%
Overall	587	336	57.2%	1,743	881	50.5%

2-year sample: 2023/2024 to 2024/2025



Modelling Methodology

ORH’s simulation model simulates the entire life-cycle of emergency incidents



The simulation model was set up using the following data samples:

Incident Locations

5-year sample (Apr 20 to Mar 25) to ensure a robust geographical incident distribution in rural areas

On-Call Appliance Availability

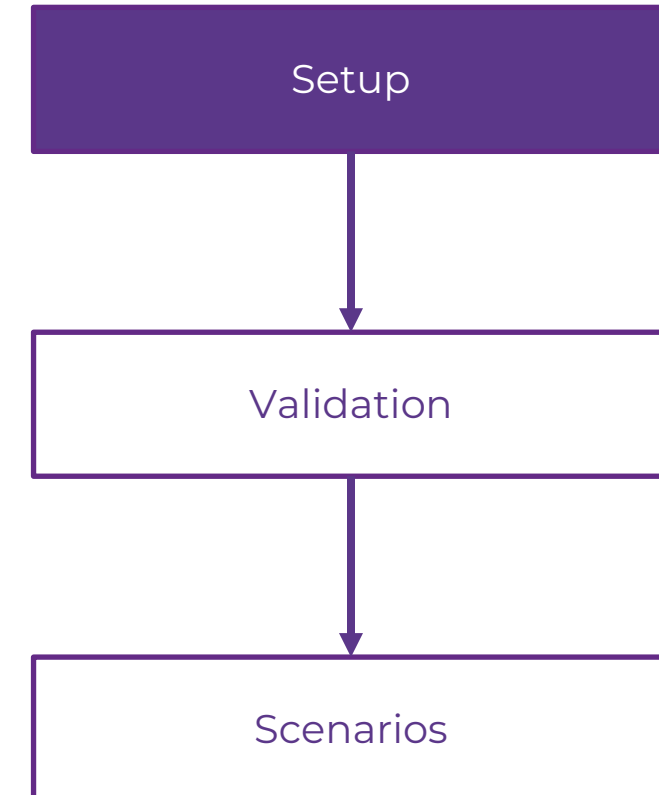
2-year sample (Apr 23 to Mar 25) to give an updated picture of GFRS On-Call availability

Operational Parameters

(Turnout time, time at scene, etc.)

2-year sample (Apr 23 to Mar 25) to give an updated picture of GFRS response procedures

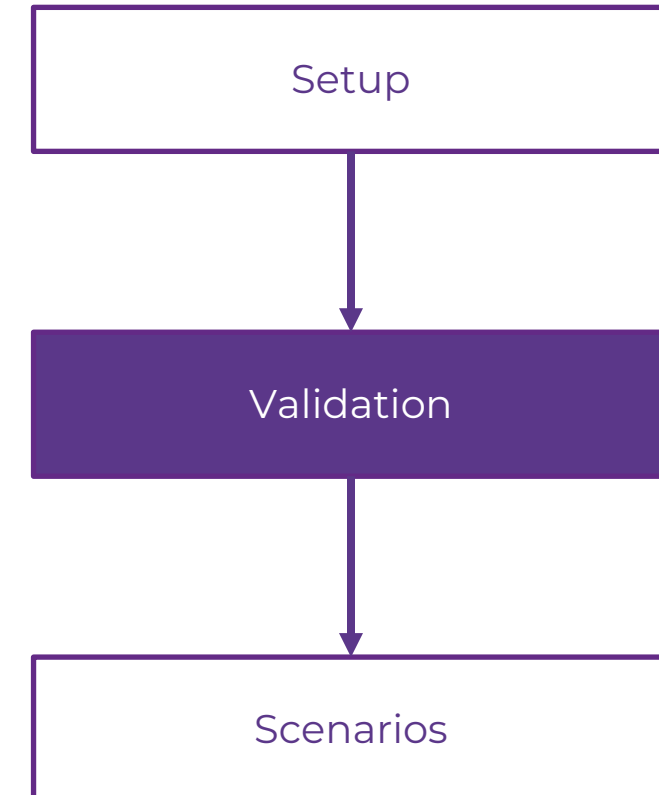
Modelling Stages



To ensure the model reflects the real-life operations of GFRS, ORH complete a model validation process.

During this process, ORH have shown that the model is a 'good predictor' of key performance metrics for a known period.

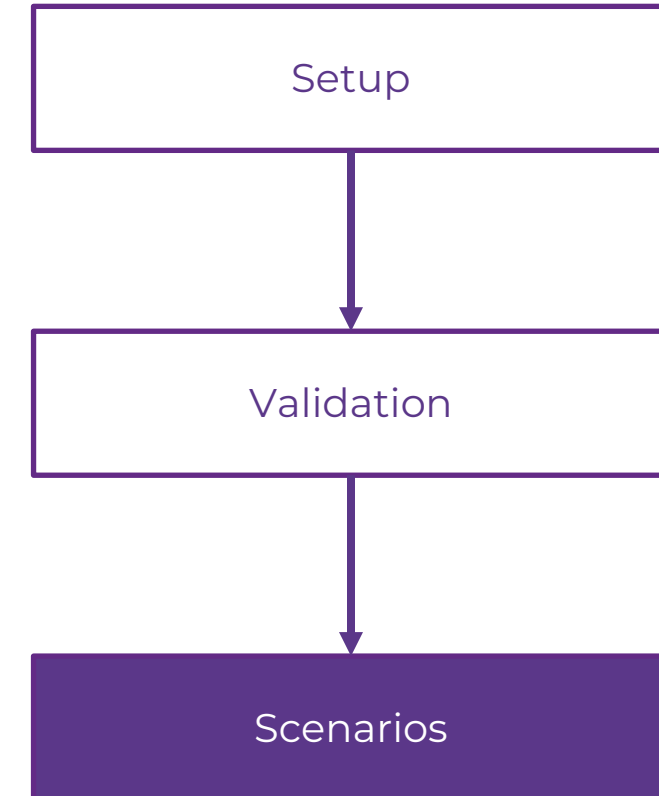
Modelling Stages



Using the validated model, ORH can test the impacts of pumping appliance location and crewing changes without affecting real-life operations.

GFRS and ORH agreed that outputs of the model would be shown at a Local Authority level.

Modelling Stages



Model Validation



The purpose of model validation is to ensure that ORH's simulation model reflects the real-life behaviour of GFRS appliances. There are several stages and considerations that are taken into account during the validation process.



A detailed understanding of the way the service functions is gathered through analysis and consultation



ORH's simulation model considers temporal and geographical variations in demand and operational parameters

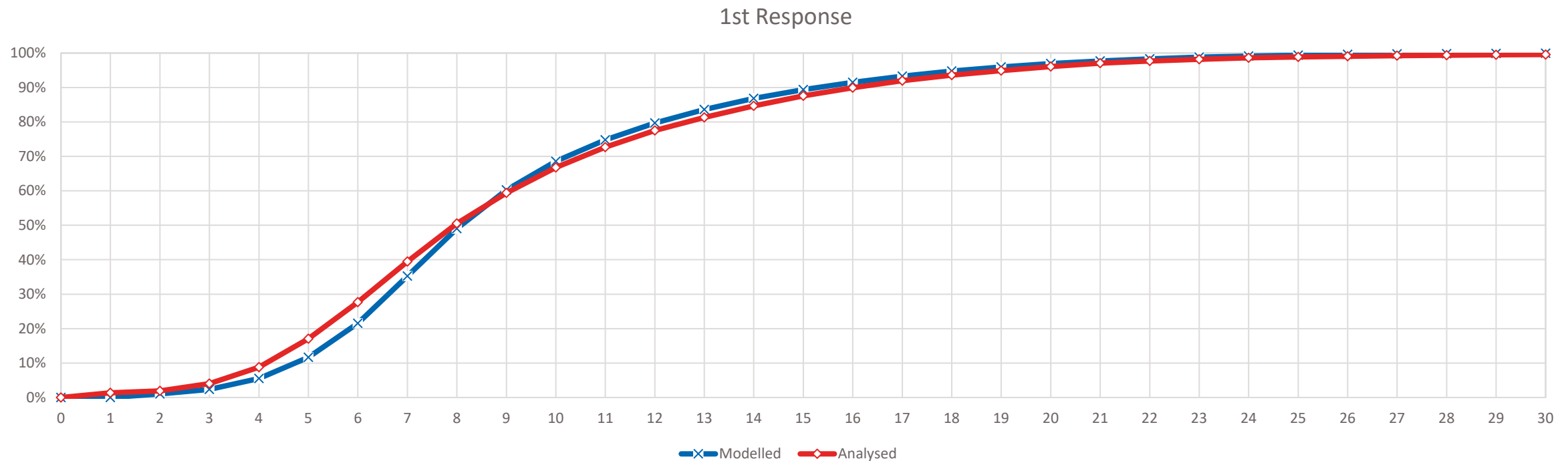


A sophisticated travel time process ensures that the effects of varying travel times are considered



Most operational parameters used the sample April 23 – Mar 25. For incident locations a longer sample (April 20 – Mar 25) was used to ensure a robust dataset

Response Time Distribution

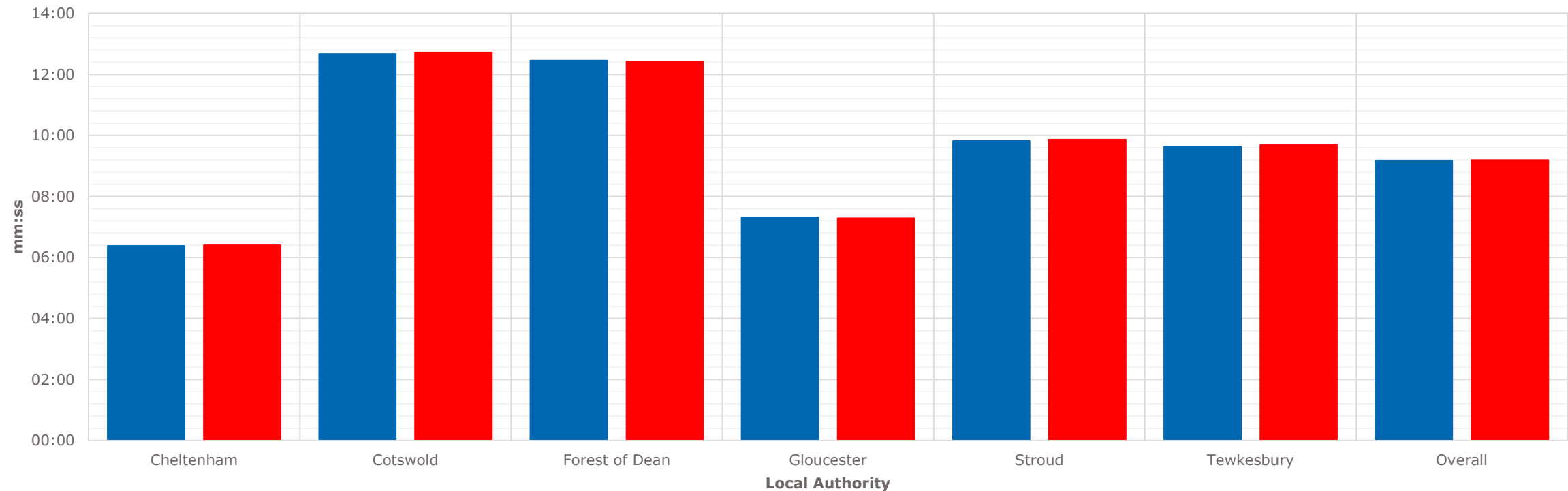


The curves above show the analysed and modelled response time distributions to all incidents in Gloucestershire. The curves are close through the distribution, showing that the model is well-aligned to reality

Performance by Area – All Incidents

First Response - Mean

■ Modelled ■ Analysed



The model has been validated using response time from time assigned, however all future modelling will consider the response time from time of call and hence will include call handling

Base Position (Measured from TOC)

District	Dwelling Fires	All Other Fires	RTCs	All Incidents		Dwelling Fires	All Other Fires
	Mean 1st	Mean 1st	Mean 1st	Mean 1st	Mean 2nd	% of 1st in 9 Minutes	% of 1st in 10 Minutes
Service-Wide	9:25	11:04	12:24	11:10	17:08	57.1%	50.5%
Cheltenham	6:55	7:40	6:44	8:16	11:55	90.6%	84.7%
Cotswold	14:24	15:06	15:01	15:07	23:32	17.5%	15.6%
Forest of Dean	13:02	13:49	15:19	14:38	21:04	22.4%	24.9%
Gloucester	7:52	8:19	8:43	9:02	13:18	70.3%	77.3%
Stroud	10:22	11:20	13:07	11:57	19:50	42.2%	45.2%
Tewkesbury	10:10	11:18	10:28	11:34	17:06	32.8%	43.7%



Initial Modelling

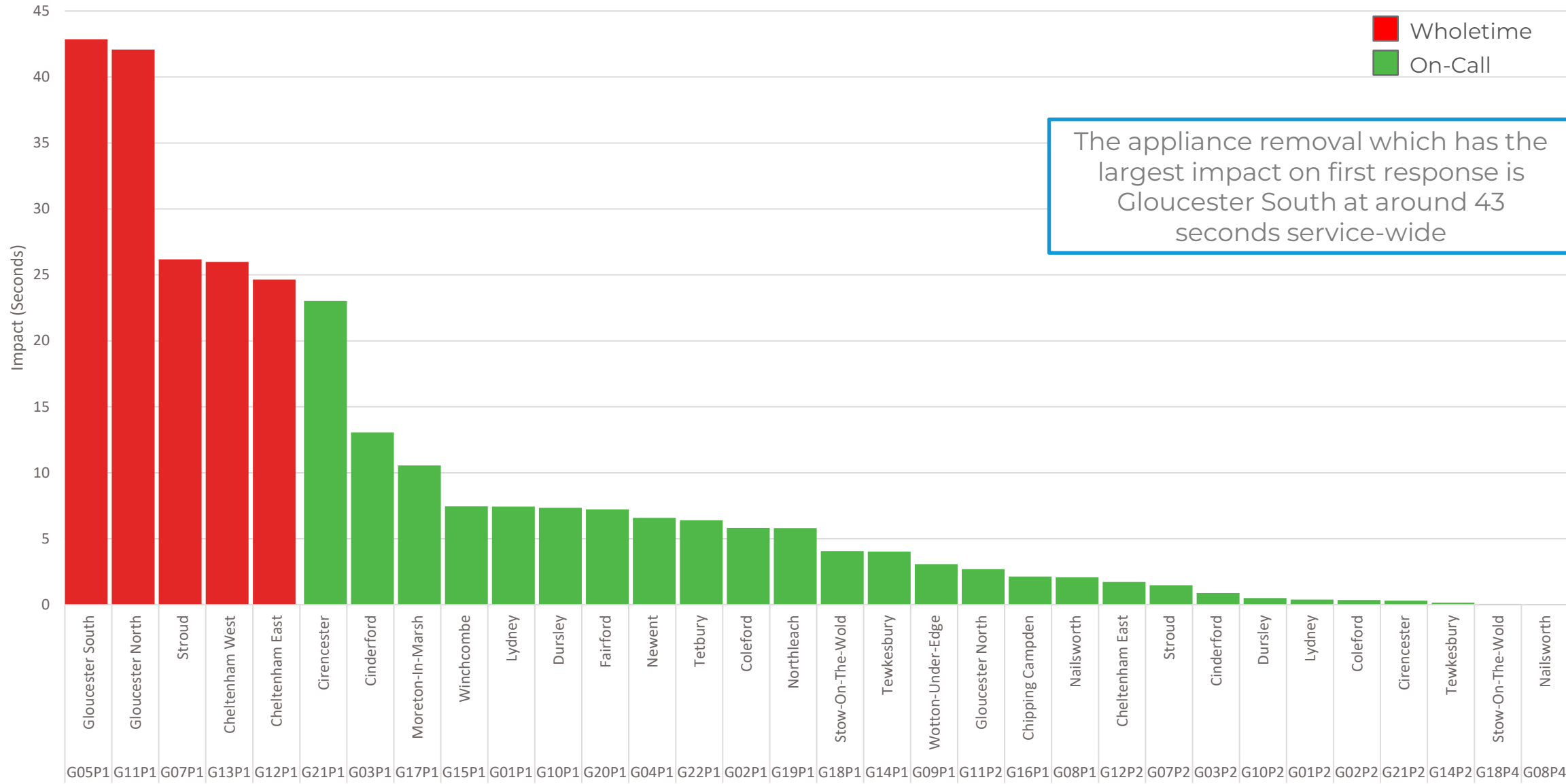
Appliance Contribution



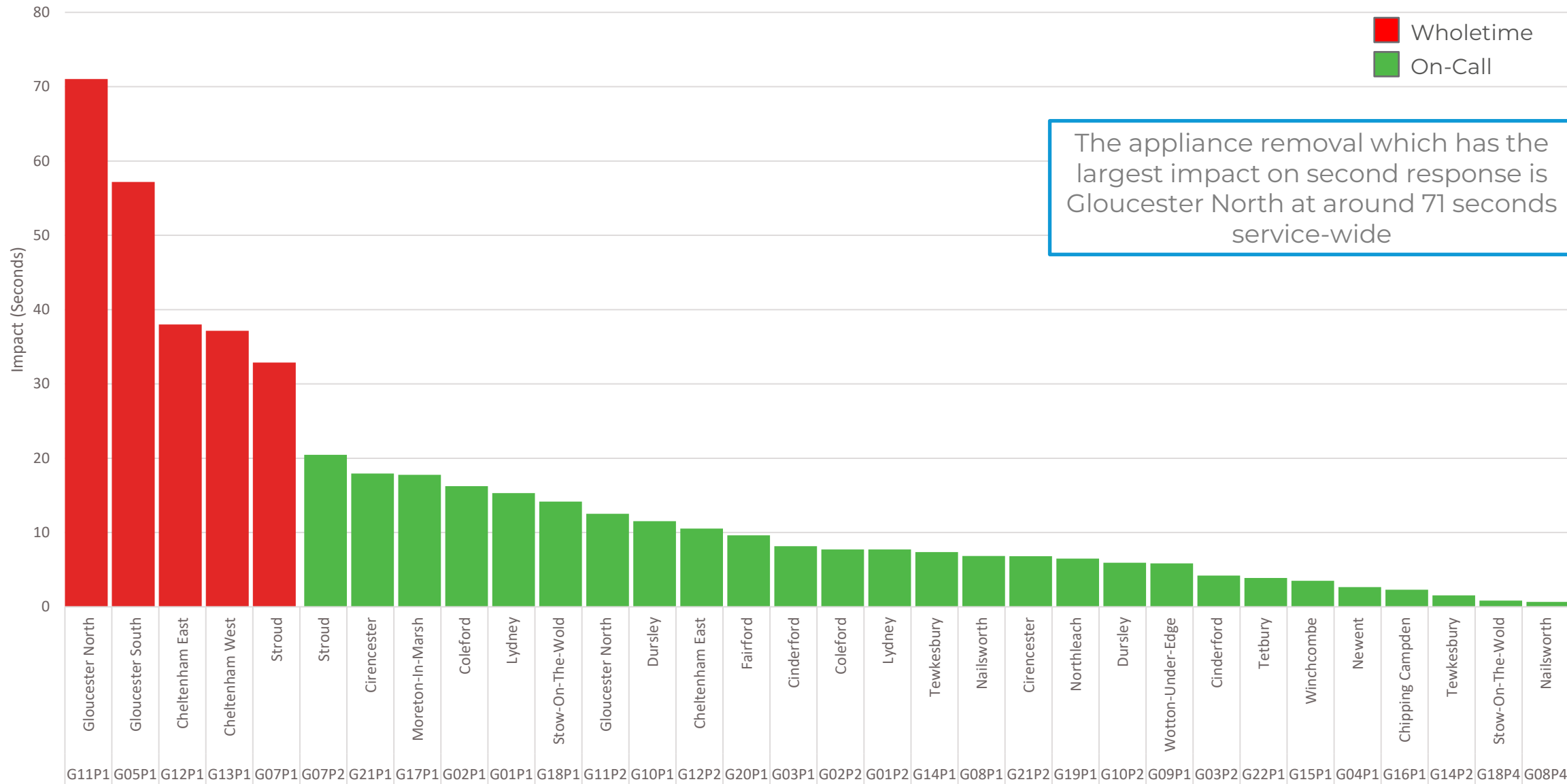
From the base position, the impact of removing each appliance in turn has been modelled; to assess the effect each appliance has on the response performance in Gloucestershire. Impacts are shown for first and second response to Fires and RTCs

These results have been collated and ranked to show county-wide impact to all incidents for both first and second response

Mean First Response Impacts



Mean Second Response Impacts



Location Optimisation



Using a bespoke optimisation model, ORH can look at the optimal locations of pumping appliances across Gloucestershire. The optimal solutions have been found by minimising the average first response time to fires and RTCs.

Two separate types of optimisation have been completed: Existing Station Optimisation and Greenfield Optimisation

Existing Station

GFRS appliances are 'lifted up' and optimally distributed across the **existing** station locations. This can help highlight potential crewing changes at existing stations

Greenfield

GFRS appliances are 'lifted up' and optimally distributed across Gloucestershire. This can help highlight potential new station locations or areas which are over/under provisioned

It is important to understand that the solutions provided here are the mathematical best solutions and do not take into account things like operational practices, political barriers or financial constraints.

Existing Station Optimisation Results

ORH used its optimisation model to determine the 5 optimal wholetime stations. These align to those currently operating a wholetime pump:

1. Gloucester North
2. Cheltenham East
3. Gloucester South
4. Stroud
5. Cheltenham West

It can therefore be concluded that when 5x24/7 wholetime pumps are used, they are already optimally positioned in the base position

An alternative to using 5x24/7 wholetime pumps is to use day crew appliances (wholetime during the day, on-call at night). ORH were keen to explore whether performance could be improved using day crew appliances without increasing the overall number of wholetime shifts

GFRS currently operate 10 wholetime, 12 hours shifts, so ORH first used its optimisation model to determine which additional five stations would have a wholetime presence over and above the existing five:

1. Cirencester
2. Cinderford
3. Dursley
4. Lydney
5. Tewkesbury

Base – 6 locations with wholetime presence

Modelled Option

District	Dwelling Fires	All Other Fires	RTCs	All Incidents		Dwelling Fires	All Other Fires
	Mean 1st	Mean 1st	Mean 1st	Mean 1st	Mean 2nd	% of 1st in 9 Minutes	% of 1st in 10 Minutes
Service-Wide	9:24	11:03	12:08	11:05	17:11	56.8%	50.7%
Cheltenham	7:17	8:09	7:05	8:34	12:17	85.9%	81.9%
Cotswold	13:08	14:09	13:47	13:52	23:08	27.7%	22.1%
Forest of Dean	13:02	13:49	15:19	14:38	21:04	22.4%	24.9%
Gloucester	7:52	8:19	8:43	9:02	13:19	70.2%	77.3%
Stroud	10:22	11:19	13:07	11:56	19:48	42.2%	45.2%
Tewkesbury	10:21	11:39	10:44	11:49	17:21	32.2%	40.9%

Impact

District	Dwelling Fires	All Other Fires	RTCs	All Incidents		Dwelling Fires	All Other Fires
	Mean 1st	Mean 1st	Mean 1st	Mean 1st	Mean 2nd	% of 1st in 9 Minutes	% of 1st in 10 Minutes
Service-Wide	-0:01	-0:01	-0:16	-0:05	0:03	-0.3%	0.1%
Cheltenham	0:22	0:29	0:21	0:18	0:22	-4.7%	-2.7%
Cotswold	-1:16	-0:57	-1:14	-1:15	-0:24	10.2%	6.5%
Forest of Dean	0:00	0:00	0:00	0:00	0:00	0.0%	0.0%
Gloucester	0:00	0:00	0:00	0:00	0:01	-0.1%	-0.1%
Stroud	0:00	-0:01	0:00	-0:01	-0:02	0.0%	0.0%
Tewkesbury	0:11	0:21	0:16	0:15	0:15	-0.6%	-2.8%

Changes

Cirencester upgraded to DC

Cheltenham West downgraded to DC

Assumptions

Assumptions have been made around the availability of new DC pumps:

- For pumps upgraded to DC these are the first pumps at stations and their availability at night is as per the base position
- For pumps downgraded to DC these have the same availability as the wholetime pumps in the base position (fully available at night)

Base – 7 locations with wholetime presence

Modelled Option

District	Dwelling Fires	All Other Fires	RTCs	All Incidents		Dwelling Fires	All Other Fires
	Mean 1st	Mean 1st	Mean 1st	Mean 1st	Mean 2nd	% of 1st in 9 Minutes	% of 1st in 10 Minutes
Service-Wide	9:27	10:57	12:00	11:04	17:08	55.8%	50.8%
Cheltenham	7:17	8:09	7:05	8:34	12:17	85.9%	81.9%
Cotswold	13:08	14:10	13:47	13:52	23:08	27.7%	22.1%
Forest of Dean	11:50	12:19	14:08	13:20	20:30	29.7%	33.8%
Gloucester	7:53	8:20	8:44	9:02	13:20	70.1%	77.3%
Stroud	11:08	12:05	13:29	12:43	19:59	33.7%	37.6%
Tewkesbury	10:21	11:39	10:44	11:48	17:21	32.3%	40.9%

Impact

District	Dwelling Fires	All Other Fires	RTCs	All Incidents		Dwelling Fires	All Other Fires
	Mean 1st	Mean 1st	Mean 1st	Mean 1st	Mean 2nd	% of 1st in 9 Minutes	% of 1st in 10 Minutes
Service-Wide	0:02	-0:07	-0:24	-0:06	0:00	-1.3%	0.2%
Cheltenham	0:22	0:29	0:21	0:18	0:22	-4.7%	-2.7%
Cotswold	-1:16	-0:56	-1:14	-1:15	-0:24	10.2%	6.5%
Forest of Dean	-1:12	-1:30	-1:11	-1:18	-0:34	7.3%	8.9%
Gloucester	0:01	0:01	0:01	0:00	0:02	-0.1%	-0.1%
Stroud	0:46	0:45	0:22	0:46	0:09	-8.5%	-7.6%
Tewkesbury	0:11	0:21	0:16	0:14	0:15	-0.5%	-2.8%

Changes

Cirencester upgraded to DC

Cinderford upgraded to DC

Cheltenham West downgraded to DC

Stroud downgraded to DC

Base – 8 locations with wholetime presence

Modelled Option

District	Dwelling Fires	All Other Fires	RTCs	All Incidents		Dwelling Fires	All Other Fires
	Mean 1st	Mean 1st	Mean 1st	Mean 1st	Mean 2nd	% of 1st in 9 Minutes	% of 1st in 10 Minutes
Service-Wide	9:30	11:03	11:52	11:07	17:17	53.8%	49.7%
Cheltenham	7:17	8:09	7:06	8:34	12:17	85.9%	81.9%
Cotswold	13:08	14:08	13:46	13:52	23:07	27.7%	22.4%
Forest of Dean	11:50	12:19	14:08	13:21	20:32	29.7%	33.8%
Gloucester	8:26	9:01	9:09	9:35	13:56	61.0%	71.4%
Stroud	10:41	11:46	12:21	12:12	19:50	35.9%	38.8%
Tewkesbury	10:22	11:40	10:45	11:50	17:25	32.0%	40.7%

Impact

District	Dwelling Fires	All Other Fires	RTCs	All Incidents		Dwelling Fires	All Other Fires
	Mean 1st	Mean 1st	Mean 1st	Mean 1st	Mean 2nd	% of 1st in 9 Minutes	% of 1st in 10 Minutes
Service-Wide	0:05	-0:01	-0:32	-0:03	0:09	-3.2%	-0.8%
Cheltenham	0:22	0:29	0:22	0:18	0:22	-4.7%	-2.7%
Cotswold	-1:16	-0:58	-1:15	-1:15	-0:25	10.2%	6.7%
Forest of Dean	-1:12	-1:30	-1:11	-1:17	-0:32	7.3%	8.9%
Gloucester	0:34	0:42	0:26	0:33	0:38	-9.3%	-5.9%
Stroud	0:19	0:26	-0:46	0:15	0:00	-6.3%	-6.3%
Tewkesbury	0:12	0:22	0:17	0:16	0:19	-0.8%	-3.0%

Changes

Cirencester upgraded to DC

Cinderford upgraded to DC

Dursley upgraded to DC

Cheltenham West downgraded to DC

Stroud downgraded to DC

Gloucester South downgraded to DC

Base – 9 locations with wholetime presence

Modelled Option

District	Dwelling Fires	All Other Fires	RTCs	All Incidents		Dwelling Fires	All Other Fires
	Mean 1st	Mean 1st	Mean 1st	Mean 1st	Mean 2nd	% of 1st in 9 Minutes	% of 1st in 10 Minutes
Service-Wide	9:42	11:10	11:47	11:17	17:19	50.0%	48.0%
Cheltenham	8:13	9:10	7:47	9:43	12:32	68.6%	67.6%
Cotswold	13:10	14:13	13:52	13:55	23:11	27.4%	21.9%
Forest of Dean	11:09	11:42	13:10	12:26	20:01	35.5%	39.9%
Gloucester	8:27	9:02	9:10	9:36	13:59	60.9%	71.2%
Stroud	10:41	11:46	12:21	12:13	19:50	35.9%	38.8%
Tewkesbury	10:32	11:50	10:49	11:58	17:40	31.6%	39.4%

Impact

District	Dwelling Fires	All Other Fires	RTCs	All Incidents		Dwelling Fires	All Other Fires
	Mean 1st	Mean 1st	Mean 1st	Mean 1st	Mean 2nd	% of 1st in 9 Minutes	% of 1st in 10 Minutes
Service-Wide	0:17	0:06	-0:37	0:07	0:11	-7.1%	-2.6%
Cheltenham	1:18	1:30	1:03	1:27	0:37	-22.0%	-17.1%
Cotswold	-1:14	-0:53	-1:09	-1:12	-0:21	9.8%	6.3%
Forest of Dean	-1:53	-2:07	-2:09	-2:12	-1:03	13.0%	15.0%
Gloucester	0:35	0:43	0:27	0:34	0:41	-9.4%	-6.1%
Stroud	0:19	0:26	-0:46	0:16	0:00	-6.3%	-6.3%
Tewkesbury	0:22	0:32	0:21	0:24	0:34	-1.1%	-4.3%

Changes

Cirencester upgraded to DC

Cinderford upgraded to DC

Dursley upgraded to DC

Lydney upgraded to DC

Cheltenham West downgraded to DC

Stroud downgraded to DC

Gloucester South downgraded to DC

Cheltenham East downgraded to DC

Base – 10 locations with wholetime presence

Modelled Option

District	Dwelling Fires	All Other Fires	RTCs	All Incidents		Dwelling Fires	All Other Fires
	Mean 1st	Mean 1st	Mean 1st	Mean 1st	Mean 2nd	% of 1st in 9 Minutes	% of 1st in 10 Minutes
Service-Wide	9:59	11:26	11:52	11:33	17:27	44.3%	43.0%
Cheltenham	8:23	9:20	7:55	9:52	12:43	65.6%	64.0%
Cotswold	13:12	14:19	13:58	13:58	23:12	27.4%	21.1%
Forest of Dean	11:06	11:42	13:02	12:26	20:04	35.5%	39.8%
Gloucester	9:23	9:58	9:51	10:37	14:24	42.1%	53.7%
Stroud	10:44	11:54	12:24	12:16	19:57	35.6%	38.3%
Tewkesbury	10:29	11:52	10:37	11:43	17:28	30.9%	36.7%

Impact

District	Dwelling Fires	All Other Fires	RTCs	All Incidents		Dwelling Fires	All Other Fires
	Mean 1st	Mean 1st	Mean 1st	Mean 1st	Mean 2nd	% of 1st in 9 Minutes	% of 1st in 10 Minutes
Service-Wide	0:34	0:22	-0:32	0:23	0:19	-12.8%	-7.6%
Cheltenham	1:28	1:40	1:11	1:36	0:48	-25.0%	-20.6%
Cotswold	-1:12	-0:47	-1:03	-1:09	-0:20	9.8%	5.5%
Forest of Dean	-1:56	-2:07	-2:17	-2:12	-1:00	13.0%	14.9%
Gloucester	1:31	1:39	1:08	1:35	1:06	-28.2%	-23.6%
Stroud	0:22	0:34	-0:43	0:19	0:07	-6.6%	-6.9%
Tewkesbury	0:19	0:34	0:09	0:09	0:22	-1.8%	-7.0%

Changes

Cirencester upgraded to DC

Cinderford upgraded to DC

Dursley upgraded to DC

Lydney upgraded to DC

Tewkesbury upgraded to DC

Cheltenham West downgraded to DC

Stroud downgraded to DC

Gloucester South downgraded to DC

Cheltenham East downgraded to DC

Gloucester North downgraded to DC

Service-Wide Response Performance Summary

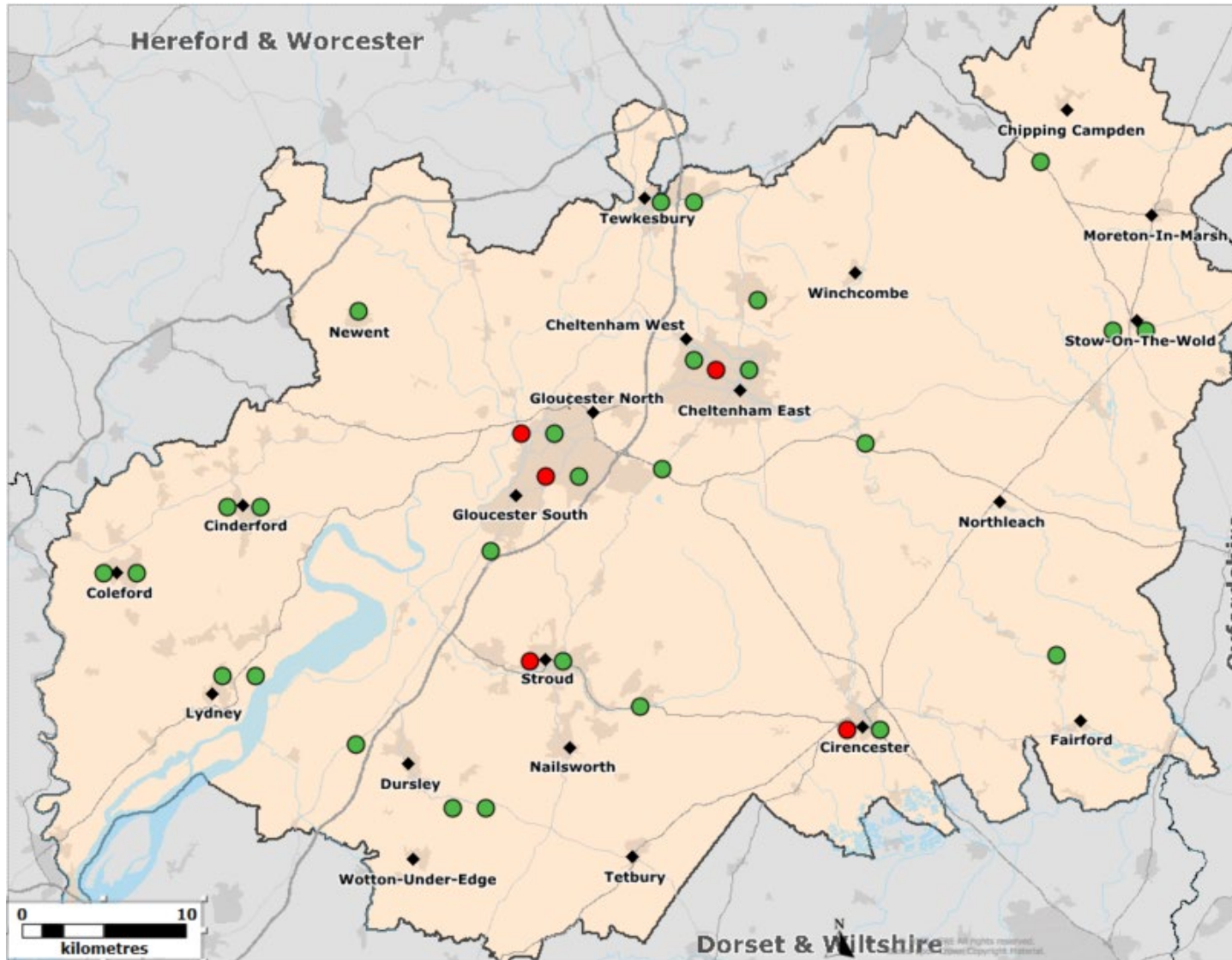
Scenario	Mean 1st	
	Dwelling Fires	All Other Fires
Base	9:25	11:04

6 Locations with WT Presence	9:24	11:03
7 Locations with WT Presence	9:27	10:57
8 Locations with WT Presence	9:30	11:03
9 Locations with WT Presence	9:42	11:10
10 Locations with WT Presence	9:59	11:26

Impact:

-0:01	-0:01
0:02	-0:07
0:05	-0:01
0:17	0:06
0:34	0:22

Greenfield Optimisation



Key Observations

Gloucester area maintains two wholetime pumps

Cheltenham area loses a wholetime pump to Cirencester

In the north Cotswold area, the overall number of sites is reduced

Even when given complete greenfield choice of sites across the county, the existing sites at Stroud, Cinderford and Cirencester are chosen, showing their existing locations are very good

Greenfield Optimisation – Modelled Performance

Modelled Option

District	Dwelling Fires	All Other Fires	RTCs	All Incidents		Dwelling Fires	All Other Fires
	Mean 1st	Mean 1st	Mean 1st	Mean 1st	Mean 2nd	% of 1st in 9 Minutes	% of 1st in 10 Minutes
Service-Wide	9:02	10:29	11:46	10:43	16:15	53.6%	52.7%
Cheltenham	7:16	7:53	7:51	8:37	13:06	82.7%	78.1%
Cotswold	13:53	13:51	13:19	14:15	21:28	17.7%	23.1%
Forest of Dean	12:14	13:12	14:21	14:14	21:32	26.6%	30.3%
Gloucester	5:58	6:39	7:10	6:49	10:03	75.4%	83.1%
Stroud	10:31	10:52	12:18	11:47	19:19	29.5%	46.7%
Tewkesbury	11:04	12:06	11:45	13:14	17:20	26.3%	42.3%

Impact

District	Dwelling Fires	All Other Fires	RTCs	All Incidents		Dwelling Fires	All Other Fires
	Mean 1st	Mean 1st	Mean 1st	Mean 1st	Mean 2nd	% of 1st in 9 Minutes	% of 1st in 10 Minutes
Service-Wide	-0:23	-0:35	-0:38	-0:27	-0:53	-3.5%	2.2%
Cheltenham	+0:21	+0:13	+1:07	+0:21	+1:11	-7.9%	-6.6%
Cotswold	-0:31	-1:15	-1:42	-0:52	-2:04	0.2%	7.4%
Forest of Dean	-0:48	-0:37	-0:58	-0:24	+0:28	4.2%	5.4%
Gloucester	-1:54	-1:40	-1:33	-2:13	-3:15	5.1%	5.8%
Stroud	+0:09	-0:28	-0:49	-0:10	-0:31	-12.7%	1.6%
Tewkesbury	+0:54	+0:48	+1:17	+1:40	+0:14	-6.5%	-1.4%

Assumptions

Assumptions have been made around the on-call availability of greenfield locations:

- For stations with one OC appliance the average of existing single OC appliances has been used
- For stations with two OC appliances the average of existing second OC appliances has been used



A firefighter in full protective gear, including a helmet with 'ALTON' written on the back, is shown from the side, holding a hose and spraying water. The background is a large fire with bright orange and yellow flames. The entire image has a purple color overlay.

Cheltenham West Scenarios

GFRS asked ORH to model the following scenarios

1. Cheltenham West to Day Crew
2. Cheltenham West to Day Only
3. Cheltenham West to Day Crew, Cirencester to Day Crew
4. Cheltenham West to Day Only, Cirencester to Day Crew
5. Cheltenham West to Day Crew, Cinderford to Day Crew
6. Cheltenham West to Day Only, Cinderford to Day Crew
7. Cheltenham West to Day Only, and introduce two-watch Day-staffing (two Mon-Fri 10:30 – 18:30 watches) at Chipping Campden and Nailsworth

Note: Day Crew appliances operate as Wholetime during the day and On-Call at night. Day Only appliances operate only as Wholetime during the day and are off the run at night.

Cheltenham West to Day Crew

District	Dwelling Fires	All Other Fires	RTCs	All Incidents		Dwelling Fires	All Other Fires
	Mean 1st	Mean 1st	Mean 1st	Mean 1st	Mean 2nd	% of 1st in 9 Minutes	% of 1st in 10 Minutes
Cheltenham	6:55	7:40	6:44	8:16	11:55	90.6%	84.7%
Cotswold	14:24	15:06	15:01	15:07	23:32	17.5%	15.6%
Forest of Dean	13:02	13:49	15:19	14:38	21:04	22.4%	24.9%
Gloucester	7:52	8:19	8:43	9:02	13:18	70.3%	77.3%
Stroud	10:22	11:20	13:07	11:57	19:50	42.2%	45.2%
Tewkesbury	10:10	11:18	10:28	11:34	17:06	32.8%	43.7%
Service-Wide	9:25	11:04	12:24	11:10	17:08	57.1%	50.5%

Impacts

District	Dwelling Fires	All Other Fires	RTCs	All Incidents		Dwelling Fires	All Other Fires
	Mean 1st	Mean 1st	Mean 1st	Mean 1st	Mean 2nd	% of 1st in 9 Minutes	% of 1st in 10 Minutes
Cheltenham	00:22	00:29	00:21	00:18	00:22	-4.7%	-2.8%
Cotswold	00:00	00:00	00:00	00:00	00:00	0.0%	0.0%
Forest of Dean	00:00	00:00	00:00	00:00	00:00	0.0%	0.0%
Gloucester	00:00	00:01	00:00	00:00	00:01	-0.1%	-0.1%
Stroud	00:00	00:00	00:00	00:00	00:00	0.0%	0.0%
Tewkesbury	00:11	00:21	00:16	00:15	00:15	-0.6%	-2.9%
Service-Wide	00:07	00:08	00:05	00:06	00:06	-1.3%	-0.9%

Note: Cheltenham West operates as Wholetime during the day and On-Call at night

Cheltenham West to Day Only

District	Dwelling Fires	All Other Fires	RTCs	All Incidents		Dwelling Fires	All Other Fires
	Mean 1st	Mean 1st	Mean 1st	Mean 1st	Mean 2nd	% of 1st in 9 Minutes	% of 1st in 10 Minutes
Cheltenham	6:55	7:40	6:44	8:16	11:55	90.6%	84.7%
Cotswold	14:24	15:06	15:01	15:07	23:32	17.5%	15.6%
Forest of Dean	13:02	13:49	15:19	14:38	21:04	22.4%	24.9%
Gloucester	7:52	8:19	8:43	9:02	13:18	70.3%	77.3%
Stroud	10:22	11:20	13:07	11:57	19:50	42.2%	45.2%
Tewkesbury	10:10	11:18	10:28	11:34	17:06	32.8%	43.7%
Service-Wide	9:25	11:04	12:24	11:10	17:08	57.1%	50.5%

Impacts

District	Dwelling Fires	All Other Fires	RTCs	All Incidents		Dwelling Fires	All Other Fires
	Mean 1st	Mean 1st	Mean 1st	Mean 1st	Mean 2nd	% of 1st in 9 Minutes	% of 1st in 10 Minutes
Cheltenham	00:26	00:37	00:29	00:24	00:38	-5.9%	-5.6%
Cotswold	00:00	00:00	00:00	00:00	00:00	0.0%	0.0%
Forest of Dean	00:00	00:00	00:00	00:00	00:00	0.0%	0.0%
Gloucester	00:01	00:01	00:01	00:01	00:03	-0.2%	-0.2%
Stroud	00:00	00:00	00:00	00:00	00:00	0.0%	0.0%
Tewkesbury	00:13	00:27	00:23	00:19	00:27	-0.8%	-4.0%
Service-Wide	00:08	00:10	00:07	00:08	00:11	-1.6%	-1.5%

Note: Cheltenham West operates as Wholetime during the day and is off the run during the night

Cheltenham West to Day Crew, Cirencester to Day Crew

District	Dwelling Fires	All Other Fires	RTCs	All Incidents		Dwelling Fires	All Other Fires
	Mean 1st	Mean 1st	Mean 1st	Mean 1st	Mean 2nd	% of 1st in 9 Minutes	% of 1st in 10 Minutes
Cheltenham	6:55	7:40	6:44	8:16	11:55	90.6%	84.7%
Cotswold	14:24	15:06	15:01	15:07	23:32	17.5%	15.6%
Forest of Dean	13:02	13:49	15:19	14:38	21:04	22.4%	24.9%
Gloucester	7:52	8:19	8:43	9:02	13:18	70.3%	77.3%
Stroud	10:22	11:20	13:07	11:57	19:50	42.2%	45.2%
Tewkesbury	10:10	11:18	10:28	11:34	17:06	32.8%	43.7%
Service-Wide	9:25	11:04	12:24	11:10	17:08	57.1%	50.5%

Impacts

District	Dwelling Fires	All Other Fires	RTCs	All Incidents		Dwelling Fires	All Other Fires
	Mean 1st	Mean 1st	Mean 1st	Mean 1st	Mean 2nd	% of 1st in 9 Minutes	% of 1st in 10 Minutes
Cheltenham	00:24	00:30	00:25	00:19	00:23	-5.0%	-2.9%
Cotswold	-01:19	-00:57	-01:14	-01:16	-01:58	10.2%	6.4%
Forest of Dean	00:00	00:00	00:00	00:00	00:00	0.0%	0.0%
Gloucester	00:00	00:00	00:00	00:00	00:01	-0.1%	-0.1%
Stroud	00:00	-00:01	00:00	-00:01	-00:02	0.0%	0.1%
Tewkesbury	00:12	00:23	00:19	00:16	00:17	-0.6%	-3.1%
Service-Wide	00:00	-00:01	-00:15	-00:05	-00:09	-0.4%	0.1%

Note: Cheltenham West and Cirencester operate as Wholetime during the day and On-Call at night

Cheltenham West to Day Crew, Cinderford to Day Crew

District	Dwelling Fires	All Other Fires	RTCs	All Incidents		Dwelling Fires	All Other Fires
	Mean 1st	Mean 1st	Mean 1st	Mean 1st	Mean 2nd	% of 1st in 9 Minutes	% of 1st in 10 Minutes
Cheltenham	6:55	7:40	6:44	8:16	11:55	90.6%	84.7%
Cotswold	14:24	15:06	15:01	15:07	23:32	17.5%	15.6%
Forest of Dean	13:02	13:49	15:19	14:38	21:04	22.4%	24.9%
Gloucester	7:52	8:19	8:43	9:02	13:18	70.3%	77.3%
Stroud	10:22	11:20	13:07	11:57	19:50	42.2%	45.2%
Tewkesbury	10:10	11:18	10:28	11:34	17:06	32.8%	43.7%
Service-Wide	9:25	11:04	12:24	11:10	17:08	57.1%	50.5%

Impacts

District	Dwelling Fires	All Other Fires	RTCs	All Incidents		Dwelling Fires	All Other Fires
	Mean 1st	Mean 1st	Mean 1st	Mean 1st	Mean 2nd	% of 1st in 9 Minutes	% of 1st in 10 Minutes
Cheltenham	00:24	00:30	00:25	00:19	00:23	-5.1%	-2.9%
Cotswold	00:00	00:00	00:00	00:00	00:00	0.0%	0.0%
Forest of Dean	-01:11	-01:29	-01:07	-01:16	-01:22	7.0%	8.9%
Gloucester	00:00	00:00	00:00	00:00	00:01	-0.1%	-0.1%
Stroud	00:00	00:00	00:00	00:00	00:00	0.0%	0.0%
Tewkesbury	00:12	00:23	00:19	00:16	00:17	-0.5%	-3.1%
Service-Wide	00:01	-00:05	-00:06	-00:02	-00:04	-0.7%	0.4%

Note: Cheltenham West and Cinderford operate as Wholetime during the day and On-Call at night

Cheltenham West to Day Only, Cinderford to Day Crew

District	Dwelling Fires	All Other Fires	RTCs	All Incidents		Dwelling Fires	All Other Fires
	Mean 1st	Mean 1st	Mean 1st	Mean 1st	Mean 2nd	% of 1st in 9 Minutes	% of 1st in 10 Minutes
Cheltenham	6:55	7:40	6:44	8:16	11:55	90.6%	84.7%
Cotswold	14:24	15:06	15:01	15:07	23:32	17.5%	15.6%
Forest of Dean	13:02	13:49	15:19	14:38	21:04	22.4%	24.9%
Gloucester	7:52	8:19	8:43	9:02	13:18	70.3%	77.3%
Stroud	10:22	11:20	13:07	11:57	19:50	42.2%	45.2%
Tewkesbury	10:10	11:18	10:28	11:34	17:06	32.8%	43.7%
Service-Wide	9:25	11:04	12:24	11:10	17:08	57.1%	50.5%

Impacts

District	Dwelling Fires	All Other Fires	RTCs	All Incidents		Dwelling Fires	All Other Fires
	Mean 1st	Mean 1st	Mean 1st	Mean 1st	Mean 2nd	% of 1st in 9 Minutes	% of 1st in 10 Minutes
Cheltenham	00:28	00:39	00:33	00:25	00:40	-6.3%	-5.8%
Cotswold	00:00	00:00	00:00	00:00	00:00	0.0%	0.0%
Forest of Dean	-01:11	-01:29	-01:07	-01:16	-01:22	7.0%	8.9%
Gloucester	00:00	00:01	00:00	00:00	00:02	-0.1%	-0.1%
Stroud	00:00	00:00	00:00	00:00	00:00	0.0%	0.0%
Tewkesbury	00:14	00:29	00:27	00:20	00:30	-0.7%	-4.2%
Service-Wide	00:02	-00:03	-00:04	00:00	00:01	-1.0%	-0.3%

Note: Cheltenham West operates as Wholetime during the day and is off the run during the night. Cinderford operates as Wholetime during the day and On-Call at night



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