

Truck Parking Study

Prepared alongside the
State Freight Plan



May 2026

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Introduction

A lack of truck parking is a major problem in Iowa and across the U.S. Trucking industry sources have said that there is only one truck parking spot for every 11 trucks on the road. When drivers cannot find safe parking, they may park in unsafe or illegal places. They may also keep driving when they are tired. Not having enough parking also means drivers spend more time looking for a spot. Some stop driving early so they can get a safe place for the night. This slows down the time it takes to move goods.

Iowa rest areas offer motorists a safe place to rest and provide access to a variety of services. They also provide truck drivers a place to park and rest for their mandated Hours of Service (HOS) periods. An inventory of existing public truck parking facilities is shown in Figure 1 and Table 1. Iowa has 37 full-service rest areas, 13 parking only locations, and 9 weigh stations. Across these 59 locations, there are 902 truck parking spaces distributed across the interstate system. Most rest areas are constructed to serve one direction of traffic, but three rest areas on I-35 can be accessed by either direction.

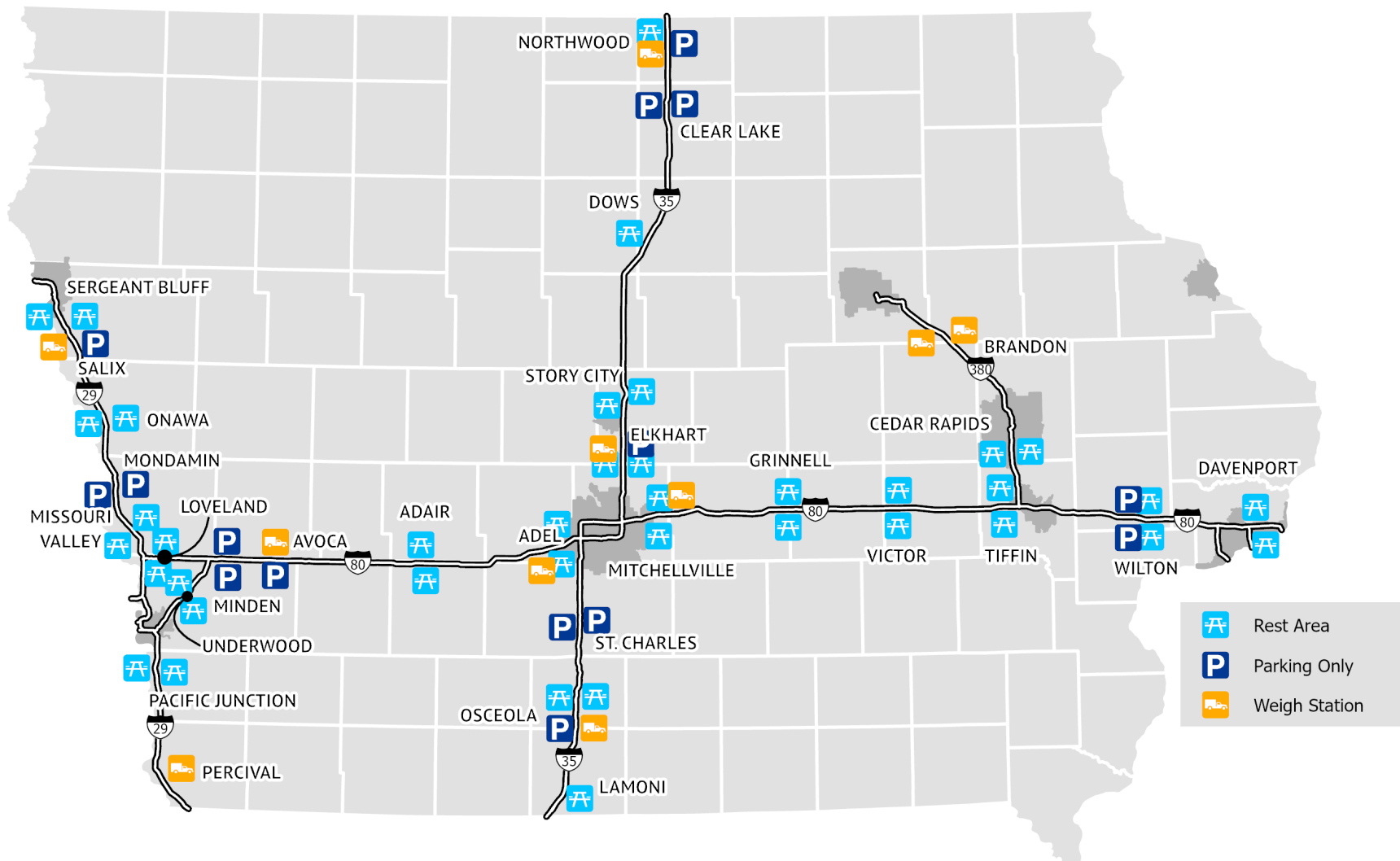
- 373 spaces along I-80
- 270 spaces along I-35
- 192 spaces along I-29
- 42 spaces along I-380
- 25 spaces along I-880

A study by the American Transportation Research Institute (ATRI)¹ shows that Iowa ranks 20th in the nation for truck parking spots at rest areas per 100 miles of National Highway System roads. Iowa also ranks 12th for the number of truck parking spots per 1 million truck miles traveled. For every public rest area truck parking spot there are eight private truck stop spots, meaning public truck parking represents approximately 11% of all truck parking in Iowa. This is lower than the national rate of one public spot for every four private spots, or about 20% of spaces.

Iowa Department of Transportation (DOT) is actively exploring ways to address the lack of truck parking in the state. This study will seek to determine the relative priority of truck parking needs at Iowa's public rest areas, parking only facilities, and weigh stations to support investment decisions. Other factors, such as pavement condition, facility needs, and funding constraints, will also be considered when determining the timing and locations of truck parking improvements. For locations selected for truck parking improvements, the existing right of way (ROW) footprint will be used to maximize the number of additional truck parking spaces. However, in some instances, additional ROW may be acquired to make geometric improvements to on/off ramps and/or add truck parking spaces beyond the existing footprint.

¹ [Expanding Truck Parking at Public Rest Areas](#)

Figure 1: Iowa's Public Truck Parking Facilities



Source: Iowa DOT

Table 1: Inventory of Iowa's Public Truck Parking Facilities

Name	Route	Capacity
Fremont NB Weigh Station	I-29	7
Pacific Junction SB Rest Area	I-29	19
Pacific Junction NB Rest Area	I-29	19
Missouri Valley SB Rest Area	I-29	18
Missouri Valley NB Rest Area	I-29	17
Mondamin NB Parking Only	I-29	9
Onawa SB Rest Area	I-29	20
Onawa NB Rest Area	I-29	21
Salix NB Parking Only	I-29	12
Salix SB Weigh Station	I-29	8
Sergeant Bluff SB Rest Area	I-29	21
Sergeant Bluff NB Rest Area	I-29	21
Loveland EB Rest Area	I-880	10
Loveland WB Rest Area	I-880	15
Underwood EB Rest Area	I-80	19
Underwood WB Rest Area	I-80	20
Minden EB Parking Only	I-80	5
Minden WB Parking Only	I-80	5
Avoca EB Parking Only	I-80	8
Avoca WB Weigh Station	I-80	8

Name	Route	Capacity
Adair EB Rest Area	I-80	12
Adair WB Rest Area	I-80	27
Dallas EB Weigh Station	I-80	13
Mitchellville EB Rest Area	I-80	24
Mitchellville WB Rest Area	I-80	22
Jasper WB Weigh Station	I-80	11
Grinnell EB Rest Area	I-80	25
Grinnell WB Rest Area	I-80	10
Victor EB Rest Area	I-80	22
Victor WB Rest Area	I-80	19
Tiffin EB Rest Area	I-80	23
Tiffin WB Rest Area	I-80	23
Wilton EB Parking Only	I-80	8
Wilton WB Parking Only	I-80	8
Wilton EB Rest Area	I-80	12
Wilton WB Rest Area	I-80	15
Davenport EB Rest Area	I-80	14
Davenport WB Rest Area	I-80	20
Lamoni NB/SB Rest Area	I-35	16
Osceola SB Parking Only	I-35	3

Name	Route	Capacity
Clarke NB Weigh Station	I-35	3
Osceola SB Rest Area	I-35	11
Osceola NB Rest Area	I-35	11
St. Charles SB Parking Only	I-35	6
St. Charles NB Parking Only	I-35	6
Elkhart SB Rest Area	I-35	22
Elkhart NB Rest Area	I-35	22
Story City SB Rest Area	I-35	15
Dows NB/SB Rest Area	I-35	48
Story City NB Rest Area	I-35	16

Name	Route	Capacity
Clear Lake SB Parking Only	I-35	24
Clear Lake NB Parking Only	I-35	24
Worth SB Weigh Station	I-35	5
Northwood NB Parking Only	I-35	4
Northwood NB/SB Rest Area	I-35	34
Cedar Rapids SB Rest Area	I-380	16
Cedar Rapids NB Rest Area	I-380	16
Brandon SB Weigh Station	I-380	5
Brandon NB Weigh Station	I-380	5

Source: Iowa DOT

Methodology

Data Inputs

The data for this analysis came from ATRI, which collects GPS information from trucking companies showing the location of trucks at defined time intervals. It includes each truck's location, speed, date and time, and a unique ID number. The unique ID is used to distinguish which entries in the data are from the same truck. However, the data received from ATRI does not include any identifiable information regarding the truck owner, operator, or payload. The Iowa DOT received 16 weeks of this data (four weeks from each quarter). Telemetrics staff identified weeks that were "typical," meaning they did not include unusual traffic from severe weather, special events, or holidays. The weeks used were:

- January 21, 2024,
- January 28, 2024,
- February 4, 2024,
- February 18, 2024,
- April 21, 2024
- April 28, 2024,
- May 5, 2024,
- May 12, 2024,
- July 7, 2024
- July 21, 2024,
- July 28, 2024,
- August 18, 2024,
- November 3, 2024,
- November 10, 2024,
- November 17, 2024, and
- December 1, 2024.

After the Iowa DOT received the data, analysts first needed to determine how many trucks in the sample were required to follow the federal HOS rules. To do this, the ATRI data was filtered to include only trucks that weighed more than 26,000 pounds and were listed as FHWA Class 9, which means a 5-axle tractor-semitrailer.

Because ATRI's data does not show the type of truck, its weight, or what it was carrying, analysts had to estimate the sample size a different way. The ATRI GPS data was compared to weigh-in-motion (WIM) data from fixed sites around the state. WIM sites can estimate the weight of each vehicle and collect data 24 hours per day. This made it possible to compare the WIM data to the same dates in the ATRI dataset.

Using this comparison, analysts estimated that the ATRI GPS data captured the travel paths of about 10–15 percent of trucks that were likely required to follow HOS rules. The percentage varied depending on the location.

Geospatial Polygons

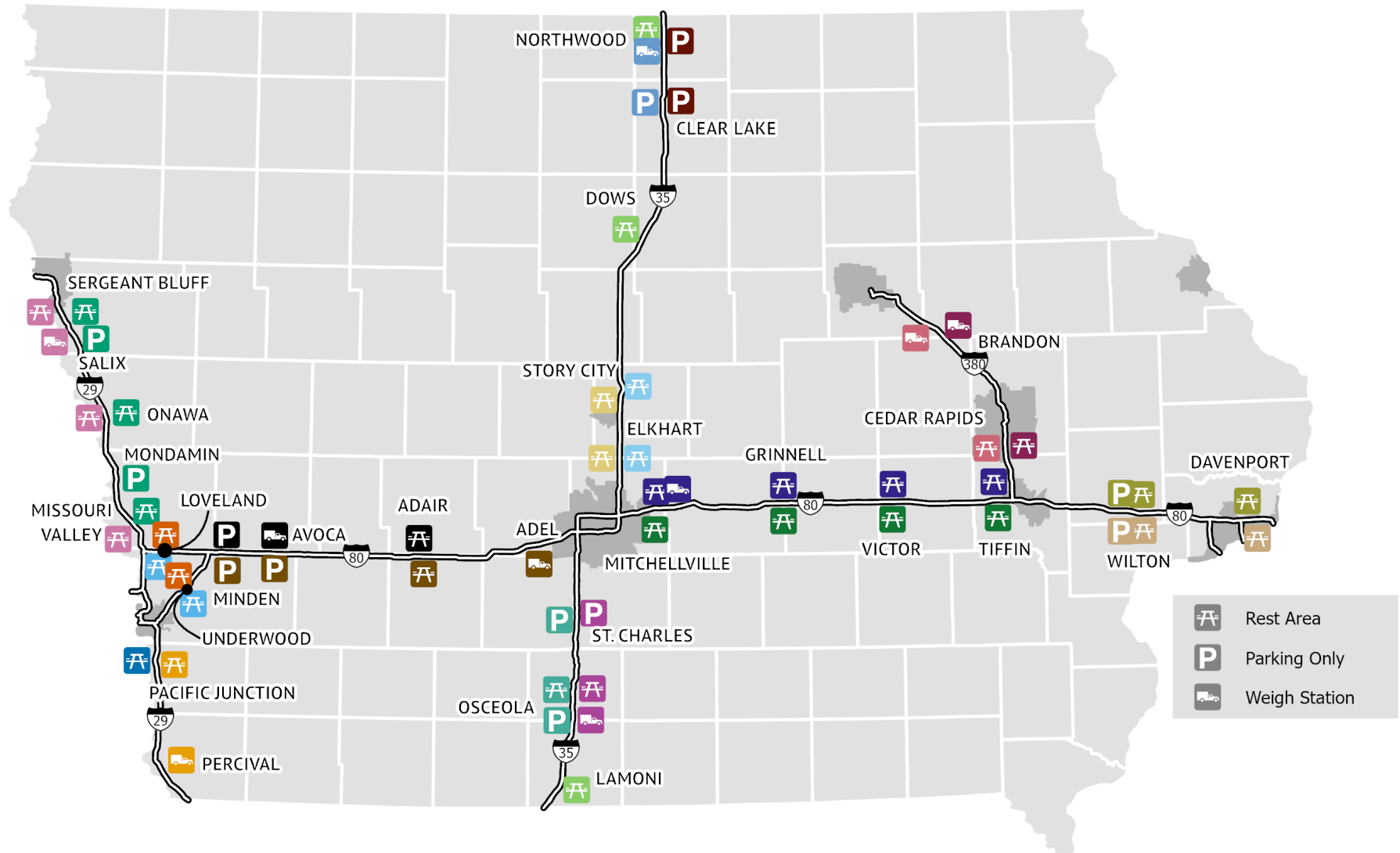
Along with the truck GPS data, analysts created map shapes (polygons) that show the boundaries of rest areas. These shapes include the entire parking area for each rest area, parking only area, and weigh station in the state. They also include the on- and off-ramps. The ramps were included so the analysis would count trucks that park on the shoulder when delineated spaces are full. Some drivers choose to park on ramps instead of searching for another place. The shapefiles also include information on the number of truck parking spaces at each site.

Service Sheds

Analysts grouped Iowa's public rest areas, parking only sites, and weigh stations into areas called "service sheds." A service shed is a group of places that share a common supply of truck parking for drivers traveling the same route between major interchanges. Each service shed includes all public parking locations on one side of an interstate highway between major interchanges, which typically represent routing decisions for interstate travelers. For example, all the parking locations on eastbound I-80 between I-35 in the Des Moines area and I-380/US 218 in the Iowa City area are grouped into one service shed.

Figure 2 shows a map of the service sheds used in this analysis. Locations within a single service shed are displayed with the same color.

Figure 2: Service Sheds



Source: Iowa DOT

Probability Analysis

To make conclusions from the sample size, analysts used probability to better understand truck parking behavior using the Poisson distribution. This is a type of probability model that predicts how likely it is for a certain number of events to happen in a set amount of time. It works when the events happen at a steady average rate and each event is independent from the others. In this case, analysts used it to predict how likely it was that trucks would park at certain locations, assuming each driver makes parking decisions on their own.

Figure 3 and Figure 4 show an example of a Poisson distribution. In this example, the horizontal axis shows the number of events, called k . The letter L (for lambda) is the expected number of events. The vertical axis shows the probability of getting k events when the expected number is L . The curve only applies to whole numbers.

In Figure 3, each point is the probability that the real number of events is equal to k , based on the expected value (L). As an example, if L (the expected number of trucks based on the sample size from ATRI) is 10 and k (capacity) is 15, the Poisson distribution estimates the probability that the real number of trucks is equal to k is 0.035 or 3.5 percent. Figure 4 plots the cumulative area under the curve for each given k value. Each point represents the probability that the actual value is less than or equal to k (the observed value). In this case, if $L=10$ and $k=15$, there is a 0.95 (95.1%) probability that the site is below capacity.

Because ATRI's GPS data is very detailed, analysts could run this calculation for every 15-minute period in the study. To summarize the results for each site, analysts counted how many 15-minute intervals had more than a 60 percent chance of being full.

Figure 3: Poisson Probability Mass Functions

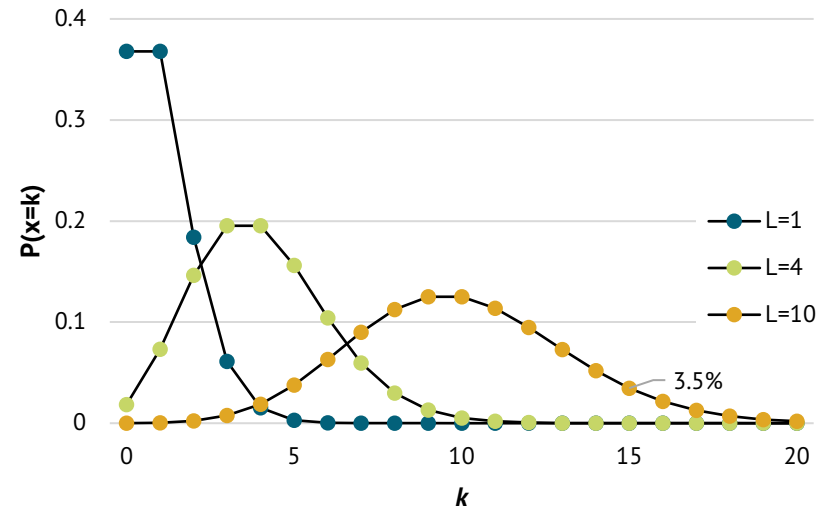
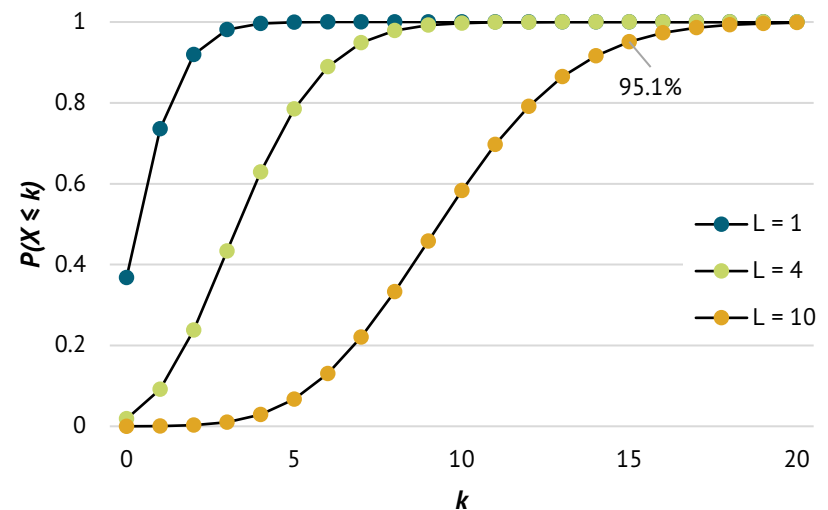


Figure 4: Poisson Cumulative Distribution Functions



Results and Conclusions

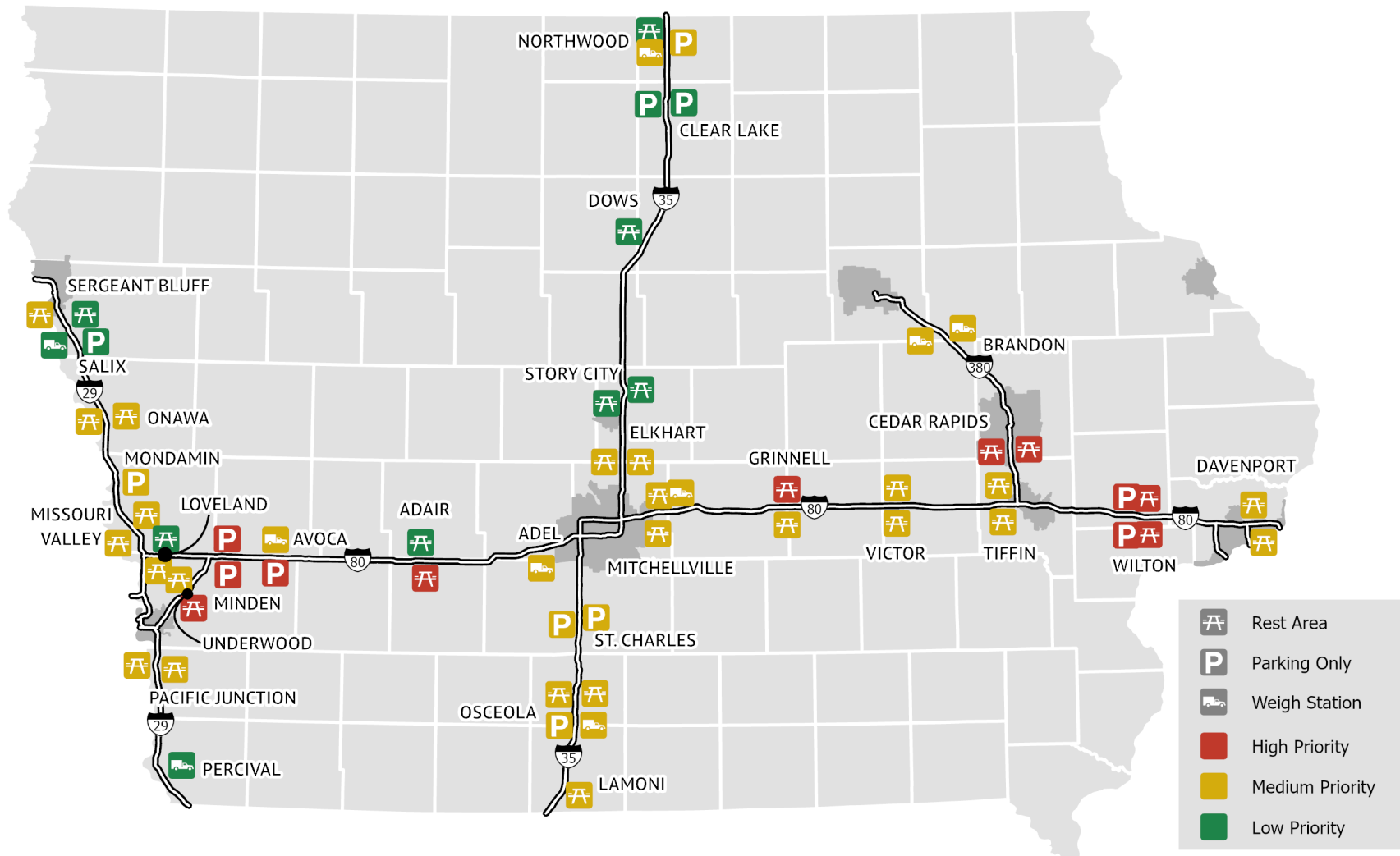
Results from this analysis are summarized in the following pages. Figure 5 and Table 2 show the results of the analysis organized by location priority. The priority ranking is not based solely on probability. Instead, priority is based on the product of the probability and the number of truck detections in the area from the data. Table 3 shows the results of the analysis organized by service shed. Graphics for each location are organized by service shed in the following section.

This analysis shows that many places across the state need more truck parking. Along with information about pavement and facility needs and funding constraints, these results will help guide improvements to truck parking areas in Iowa.

To support these results and help plan future expansions, DOT staff could consider manually counting parked trucks at important locations. This would help determine how much parking space is needed. DOT staff conducts similar work at other facilities and collects manual traffic counts every summer as part of the annual traffic counting program.

This analysis can also be repeated and improved over time. For example, the DOT could work with private truck stops to include their parking areas in the study. The data could also be used to check whether truck drivers are parking in other places, such as supermarket parking lots or warehouses. Future studies could also look at unauthorized truck parking areas, such as interchange ramp shoulders. This information could help show where new or expanded truck parking is needed.

Figure 5: Truck parking priority by location



Source: Iowa DOT

Table 2: Truck parking priority by location

Rank	Name	Route	Summary Shed	Capacity	Probability	Detections	Product
1	Wilton EB Parking Only	I-80	21	8	99.5%	7,232	7,195.8
2	Grinnell WB Rest Area	I-80	14	10	78.7%	8,646	6,804.4
3	Minden WB Parking Only	I-80	8	5	98.3%	6,761	6,646.1
4	Minden EB Parking Only	I-80	7	5	98.8%	6,635	6,555.4
5	Wilton WB Parking Only	I-80	15	8	99.5%	6,557	6,524.2
6	Wilton EB Rest Area	I-80	21	12	79.4%	7,807	6,198.8
7	Wilton WB Rest Area	I-80	15	15	74.2%	8,292	6,152.7
8	Cedar Rapids NB Rest Area	I-380	16	16	75.2%	7,994	6,011.5
9	Cedar Rapids SB Rest Area	I-380	17	16	73.9%	8,125	6,004.4
10	Avoca EB Parking Only	I-80	7	8	87.5%	6,786	5,937.8
11	Adair EB Rest Area	I-80	7	12	78.2%	7,364	5,758.6
12	Underwood EB Rest Area	I-80	5	19	59.2%	9,584	5,673.7
13	Victor EB Rest Area	I-80	13	22	64.6%	8,230	5,316.6
14	Tiffin EB Rest Area	I-80	13	23	62.8%	8,247	5,179.1
15	Davenport WB Rest Area	I-80	15	20	57.3%	8,848	5,069.9
16	Tiffin WB Rest Area	I-80	14	23	61.8%	8,016	4,953.9
17	Elkhart NB Rest Area	I-35	11	22	64.6%	7,517	4,856.0
18	Avoca WB Weigh Station	I-80	8	8	87.0%	5,578	4,852.9
19	Underwood WB Rest Area	I-80	6	20	54.6%	8,887	4,852.3
20	Grinnell EB Rest Area	I-80	13	25	50.2%	9,633	4,835.8

Rank	Name	Route	Summary Shed	Capacity	Probability	Detections	Product
21	Victor WB Rest Area	I-80	14	19	68.2%	6,962	4,748.1
22	Osceola NB Rest Area	I-35	9	11	67.7%	6,750	4,569.8
23	Northwood NB Parking Only	I-35	19	4	95.5%	4,631	4,422.6
24	Dallas EB Weigh Station	I-80	7	13	67.7%	6,456	4,370.7
25	Jasper WB Weigh Station	I-80	14	11	69.1%	6,253	4,320.8
26	Lamoni NB/SB Rest Area	I-35	20	16	53.9%	7,348	3,960.6
27	Osceola SB Rest Area	I-35	10	11	61.9%	6,325	3,915.2
28	Osceola SB Parking Only	I-35	10	3	100.0%	3,835	3,835.0
29	Mitchellville WB Rest Area	I-80	14	22	51.9%	7,234	3,754.4
30	Mitchellville EB Rest Area	I-80	13	24	51.1%	7,341	3,751.3
31	St. Charles NB Parking Only	I-35	9	6	100.0%	3,697	3,697.0
32	Brandon NB Weigh Station	I-380	16	5	100.0%	3,393	3,393.0
33	Davenport EB Rest Area	I-80	21	14	49.0%	6,723	3,294.3
34	Missouri Valley SB Rest Area	I-29	4	18	45.5%	6,795	3,091.7
35	Elkhart SB Rest Area	I-35	12	22	48.1%	6,250	3,006.3
36	Brandon SB Weigh Station	I-380	17	5	100.0%	3,005	3,005.0
37	Pacific Junction SB Rest Area	I-29	1	19	41.7%	7,035	2,933.6
38	Pacific Junction NB Rest Area	I-29	2	19	41.9%	6,989	2,928.4
39	Onawa SB Rest Area	I-29	4	20	37.9%	7,546	2,859.9
40	Missouri Valley NB Rest Area	I-29	3	17	39.4%	6,765	2,665.4
41	Worth SB Weigh Station	I-35	18	5	68.8%	3,653	2,513.3

Rank	Name	Route	Summary Shed	Capacity	Probability	Detections	Product
42	St. Charles SB Parking Only	I-35	10	6	100.0%	2,389	2,389.0
43	Sergeant Bluff SB Rest Area	I-29	4	21	35.1%	6,805	2,388.6
44	Loveland EB Rest Area	I-880	5	10	65.0%	3,409	2,215.9
45	Mondamin NB Parking Only	I-29	3	9	67.1%	3,281	2,201.6
46	Onawa NB Rest Area	I-29	3	21	31.6%	6,716	2,122.3
47	Clarke NB Weigh Station	I-35	9	3	100.0%	2,111	2,111.0
48	Story City NB Rest Area	I-35	11	16	23.9%	8,002	1,912.5
49	Sergeant Bluff NB Rest Area	I-29	3	21	27.1%	6,218	1,685.1
50	Loveland WB Rest Area	I-880	6	15	34.4%	4,560	1,568.6
51	Salix NB Parking Only	I-29	3	12	40.3%	3,657	1,473.8
52	Salix SB Weigh Station	I-29	4	8	84.0%	1,651	1,386.8
53	Adair WB Rest Area	I-80	8	27	27.5%	4,941	1,358.8
54	Story City SB Rest Area	I-35	12	15	18.5%	6,310	1,167.4
55	Northwood NB/SB Rest Area	I-35	20	34	9.4%	8,874	834.2
56	Fremont NB Weigh Station	I-29	2	7	28.3%	1,629	461.0
57	Clear Lake SB Parking Only	I-35	18	24	6.2%	7,182	445.3
58	Clear Lake NB Parking Only	I-35	19	24	5.6%	6,809	381.3
59	Dows NB/SB Rest Area	I-35	20	48	4.8%	7,762	372.6

Source: Iowa DOT

Table 3: Truck parking priority by service shed

Name	Route	Capacity	Probability	Rank
Shed 1	I-29	19	42%	-
Pacific Junction SB Rest Area	I-29	19	42%	37
Shed 2	I-29	26	35%	-
Fremont NB Weigh Station	I-29	7	28%	56
Pacific Junction NB Rest Area	I-29	19	42%	38
Shed 3	I-29	80	11%	-
Missouri Valley NB Rest Area	I-29	17	39%	40
Mondamin NB Parking Only	I-29	9	67%	45
Onawa NB Rest Area	I-29	21	32%	46
Salix NB Parking Only	I-29	12	40%	51
Sergeant Bluff NB Rest Area	I-29	21	27%	49
Shed 4	I-29	67	20%	-
Sergeant Bluff SB Rest Area	I-29	21	35%	43
Salix SB Weigh Station	I-29	8	84%	52
Onawa SB Rest Area	I-29	20	38%	39
Missouri Valley SB Rest Area	I-29	18	46%	34
Shed 5	I-80/I-880	29	45%	-
Underwood EB Rest Area	I-80	19	59%	12
Loveland EB Rest Area	I-880	10	65%	44
Shed 6	I-80/I-880	36	35%	-

Name	Route	Capacity	Probability	Rank
Loveland WB Rest Area	I-880	15	34%	50
Underwood WB Rest Area	I-80	20	55%	19
Shed 7	I-80	38	81%	-
Minden EB Parking Only	I-80	5	99%	4
Avoca EB Parking Only	I-80	8	88%	10
Adair EB Rest Area	I-80	12	78%	11
Dallas EB Weigh Station	I-80	13	68%	24
Shed 8	I-80	40	22%	-
Adair WB Rest Area	I-80	27	28%	53
Avoca WB Weigh Station	I-80	8	87%	18
Minden WB Parking Only	I-80	5	98%	3
Shed 9	I-35	20	54%	-
Clarke NB Weigh Station	I-35	3	100%	47
Osceola NB Rest Area	I-35	11	68%	22
St. Charles NB Parking Only	I-35	6	100%	31
Shed 10	I-35	20	50%	-
St. Charles SB Parking Only	I-35	6	100%	42
Osceola SB Rest Area	I-35	11	62%	27
Osceola SB Parking Only	I-35	3	100%	28
Shed 11	I-35	38	58%	-
Elkhart NB Rest Area	I-35	22	65%	17

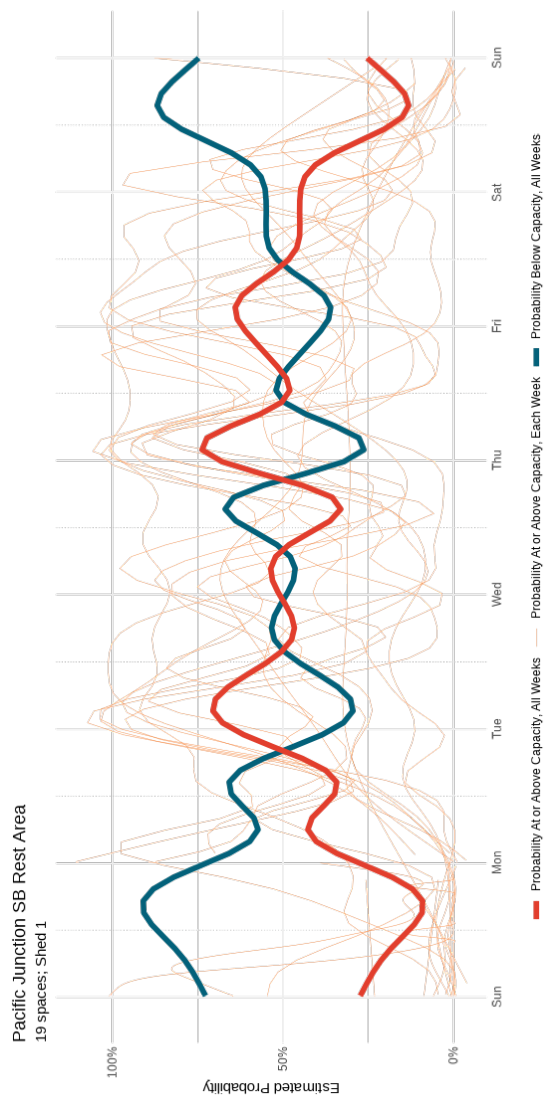
Name	Route	Capacity	Probability	Rank
Story City NB Rest Area	I-35	16	24%	48
Shed 12	I-35	38	42%	-
Story City SB Rest Area	I-35	15	19%	54
Elkhart SB Rest Area	I-35	22	48%	35
Shed 13	I-80	94	43%	-
Mitchellville EB Rest Area	I-80	24	51%	30
Grinnell EB Rest Area	I-80	25	50%	20
Victor EB Rest Area	I-80	22	65%	13
Tiffin EB Rest Area	I-80	23	63%	14
Shed 14	I-80	85	57%	-
Tiffin WB Rest Area	I-80	23	62%	16
Victor WB Rest Area	I-80	19	68%	21
Grinnell WB Rest Area	I-80	10	79%	2
Jasper WB Weigh Station	I-80	11	69%	25
Mitchellville WB Rest Area	I-80	22	52%	29
Shed 15	I-80	43	61%	-
Davenport WB Rest Area	I-80	20	57%	15
Wilton WB Rest Area	I-80	15	74%	7
Wilton WB Parking Only	I-80	8	100%	5
Shed 16	I-380	21	76%	-
Cedar Rapids NB Rest Area	I-380	16	75%	8

Name	Route	Capacity	Probability	Rank
Brandon NB Weigh Station	I-380	5	100%	32
Shed 17	I-380	21	74%	-
Brandon SB Weigh Station	I-380	5	100%	36
Cedar Rapids SB Rest Area	I-380	16	74%	9
Shed 18	I-35	29	9%	-
Worth SB Weigh Station	I-35	5	69%	41
Clear Lake SB Parking Only	I-35	24	6%	57
Shed 19	I-35	28	8%	-
Northwood NB Parking Only	I-35	4	96%	23
Clear Lake NB Parking Only	I-35	24	6%	58
Shed 20	I-35	98	15%	-
Lamoni NB/SB Rest Area	I-35	16	54%	26
Dows NB/SB Rest Area	I-35	48	5%	59
Northwood NB/SB Rest Area	I-35	34	9%	55
Shed 21	I-80	34	55%	-
Wilton EB Parking Only	I-80	8	100%	1
Davenport EB Rest Area	I-80	14	49%	33
Wilton EB Rest Area	I-80	12	79%	6

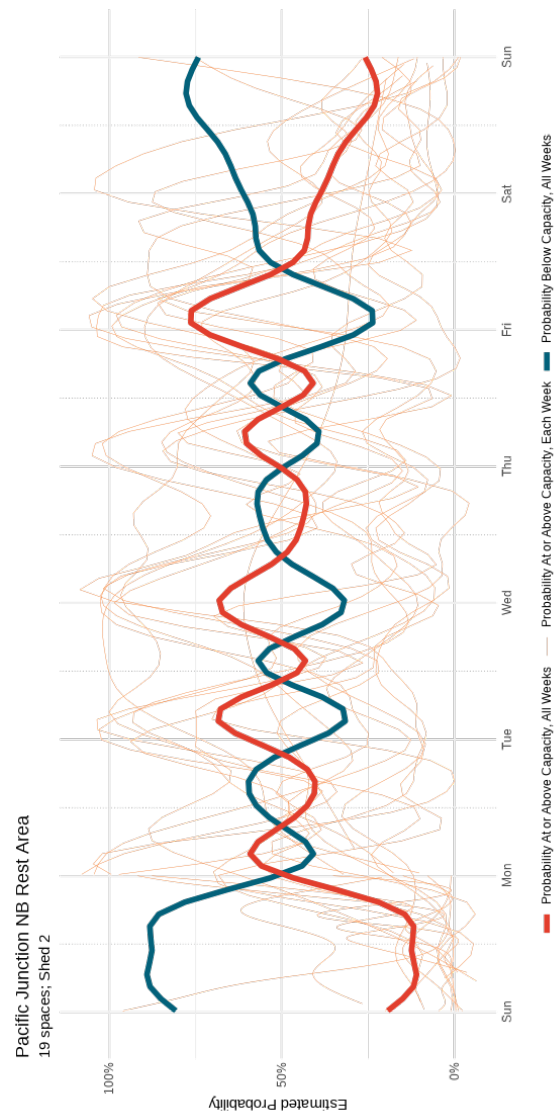
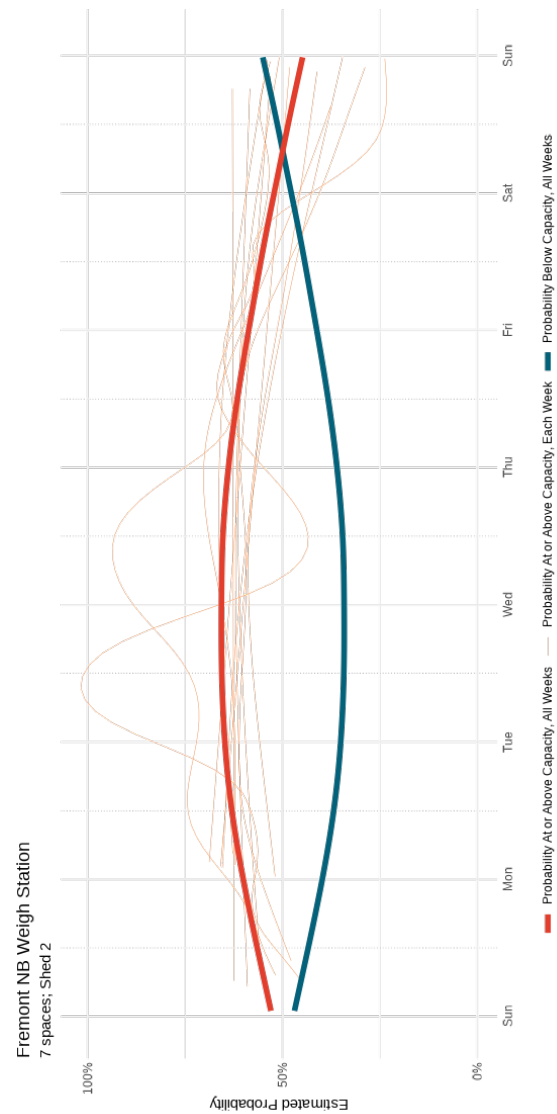
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Graphs

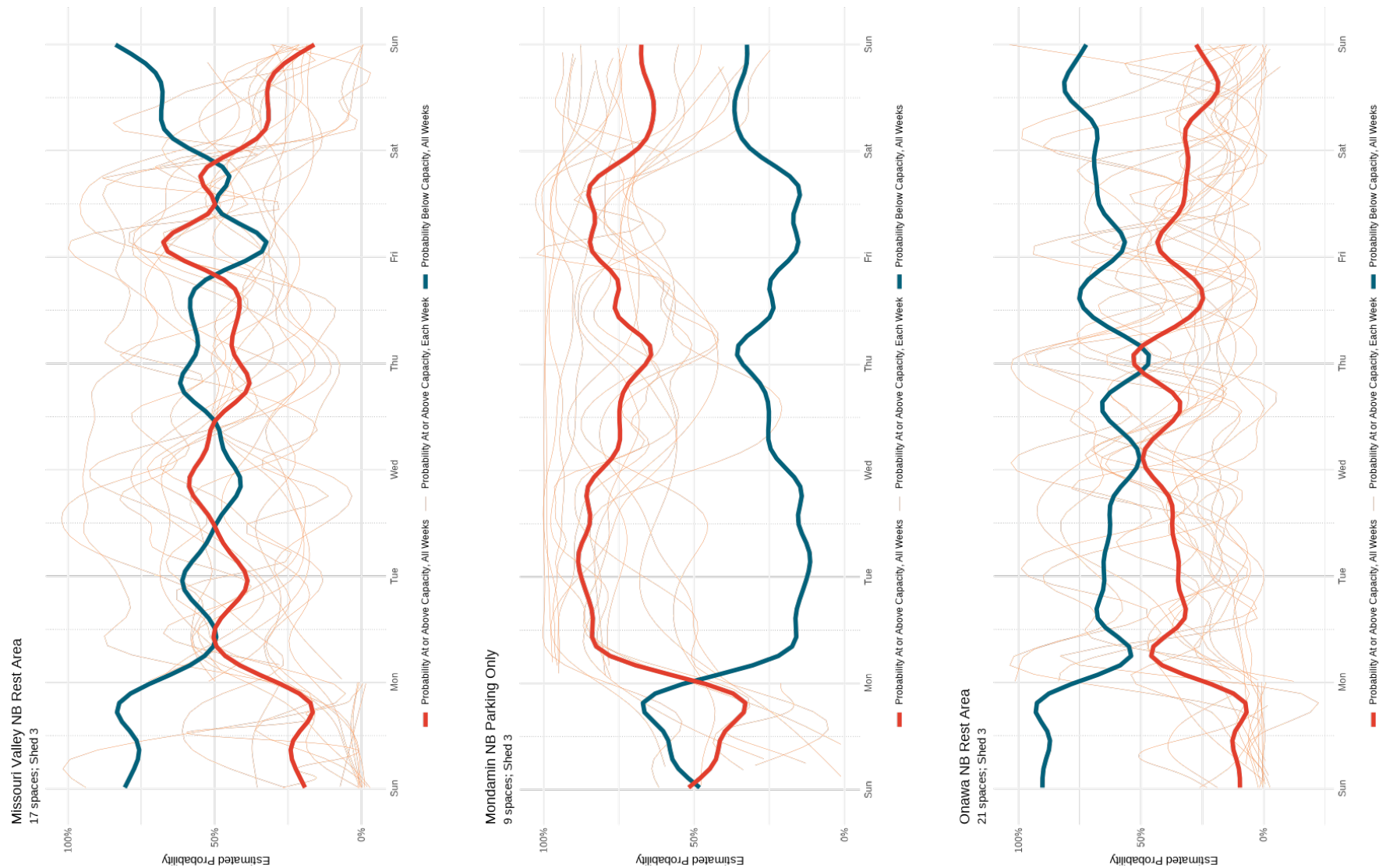
Service Shed 1



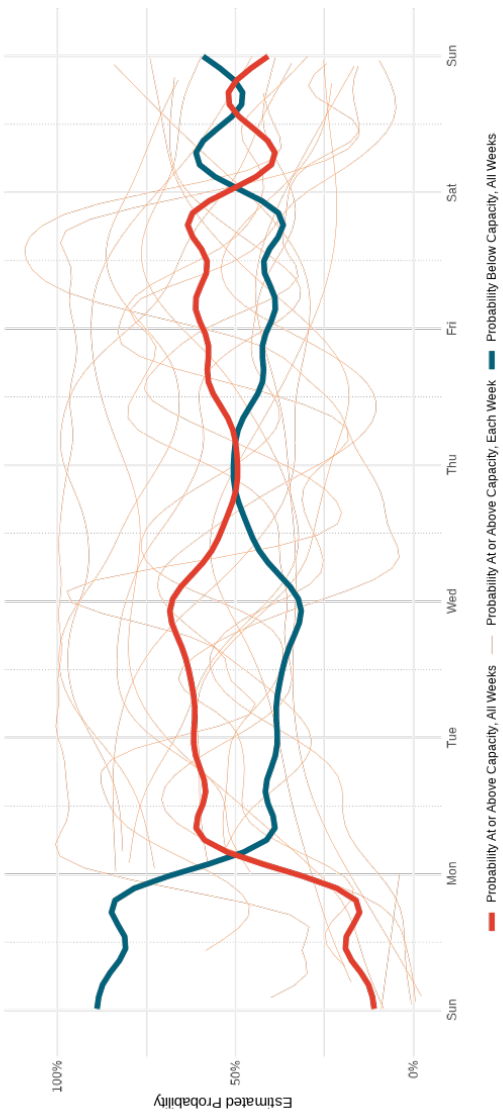
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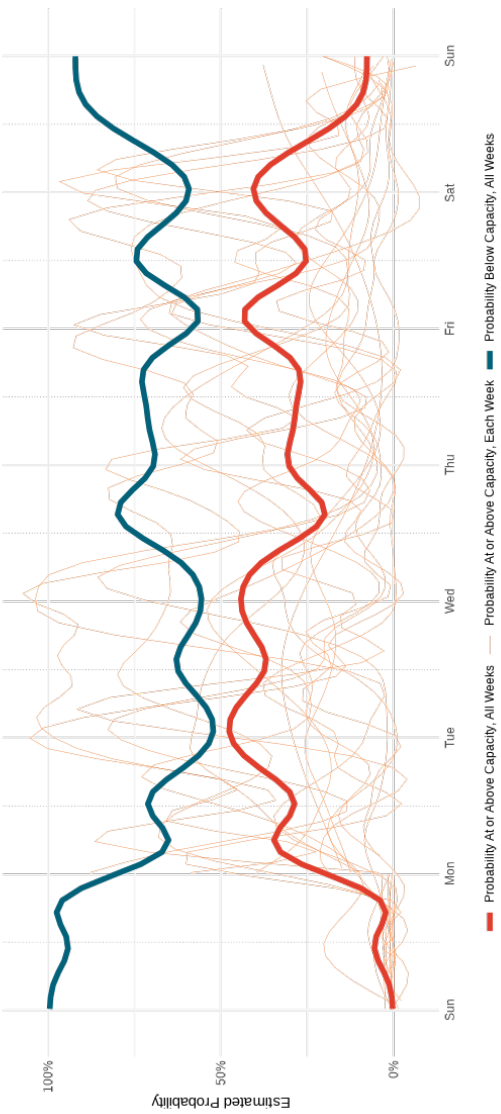
Service Shed 3



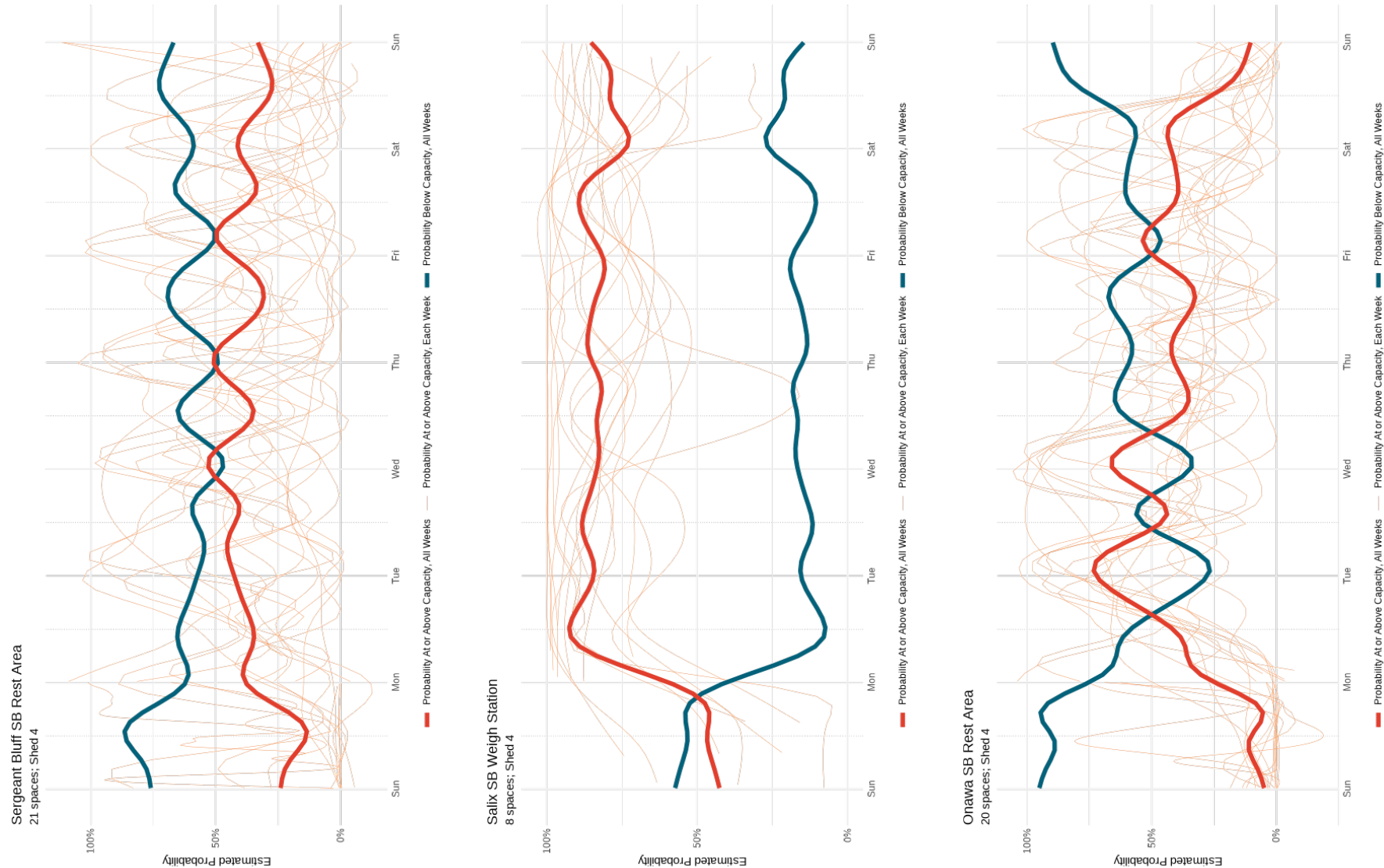
Salix NB Parking Only
12 spaces; Shed 3



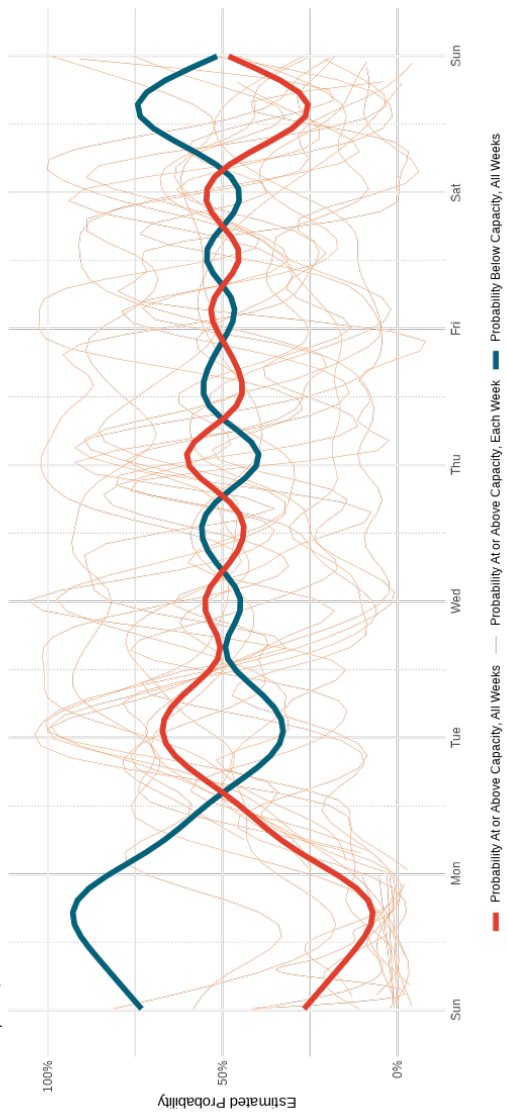
Sergeant Bluff NB Rest Area
21 spaces; Shed 3



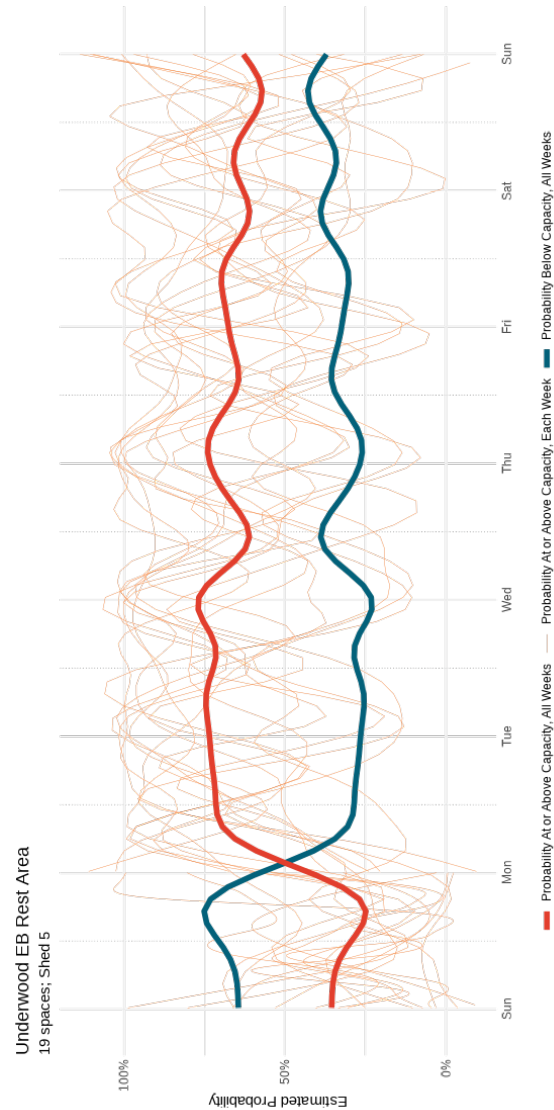
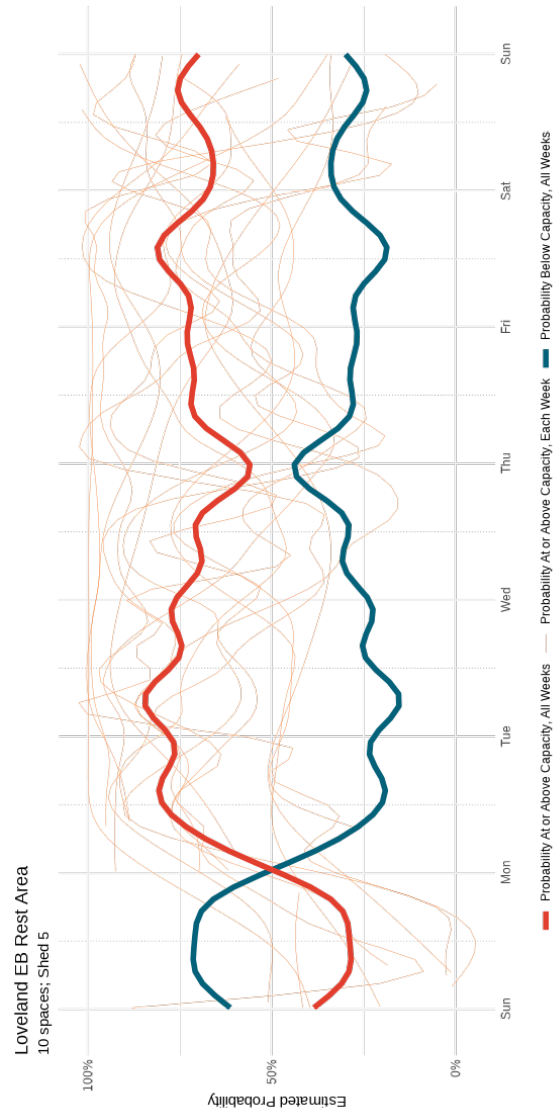
Service Shed 4



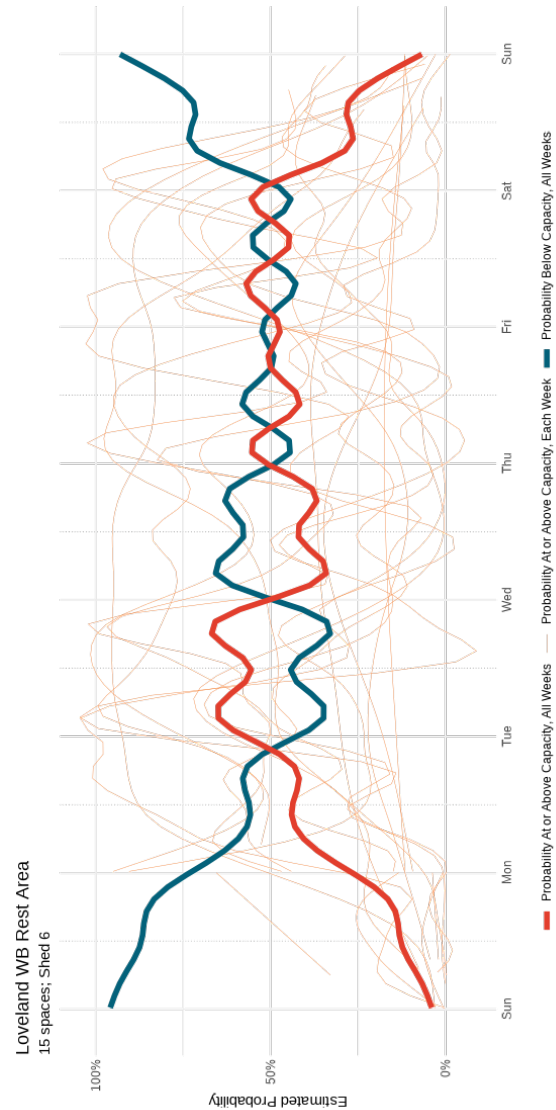
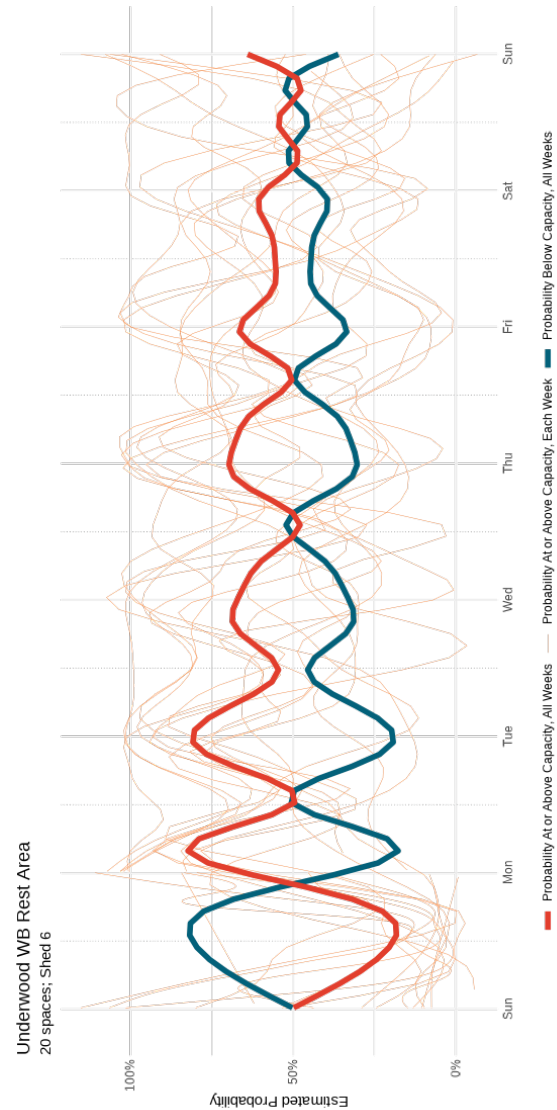
Missouri Valley SB Rest Area
18 spaces; Shed 4



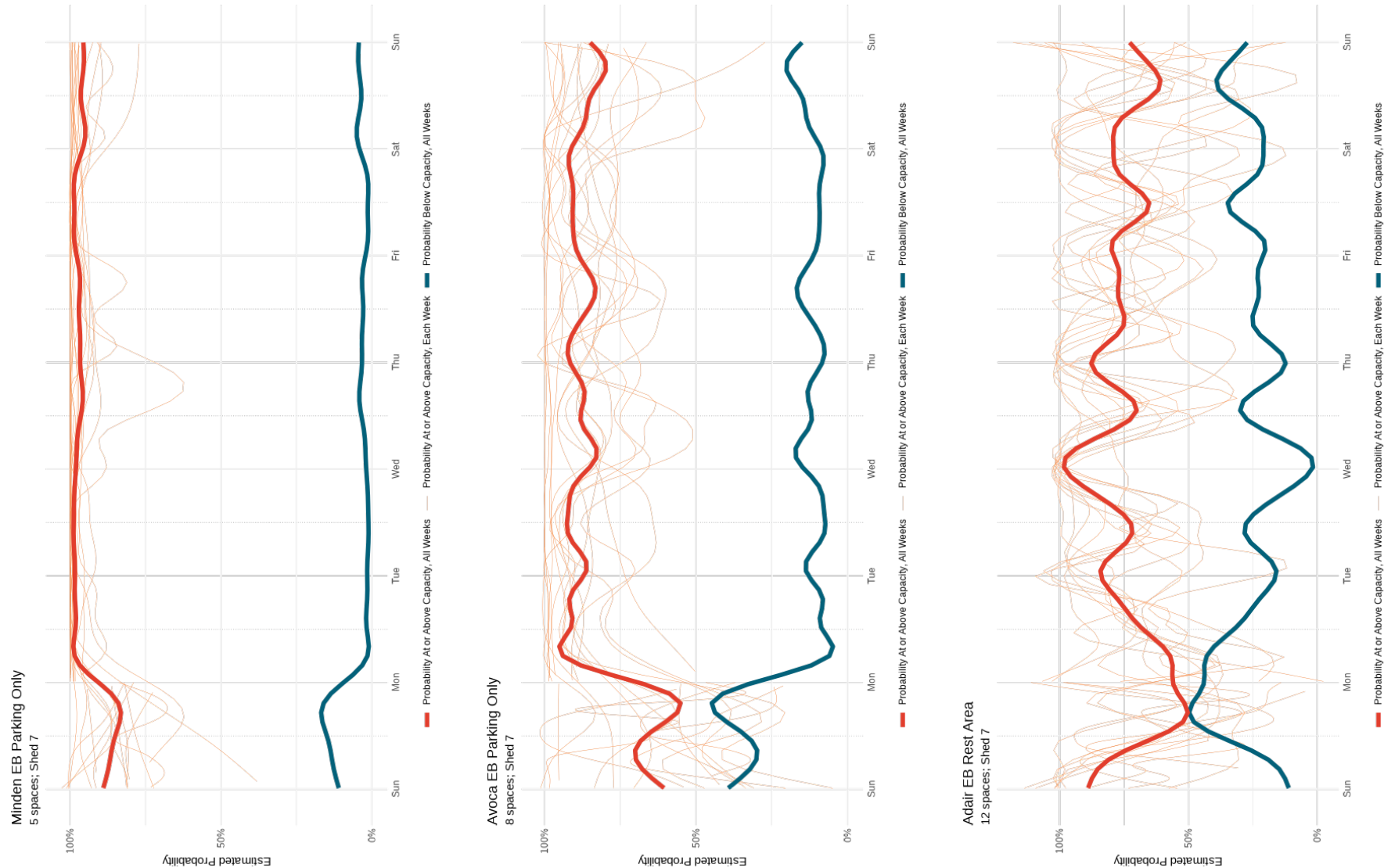
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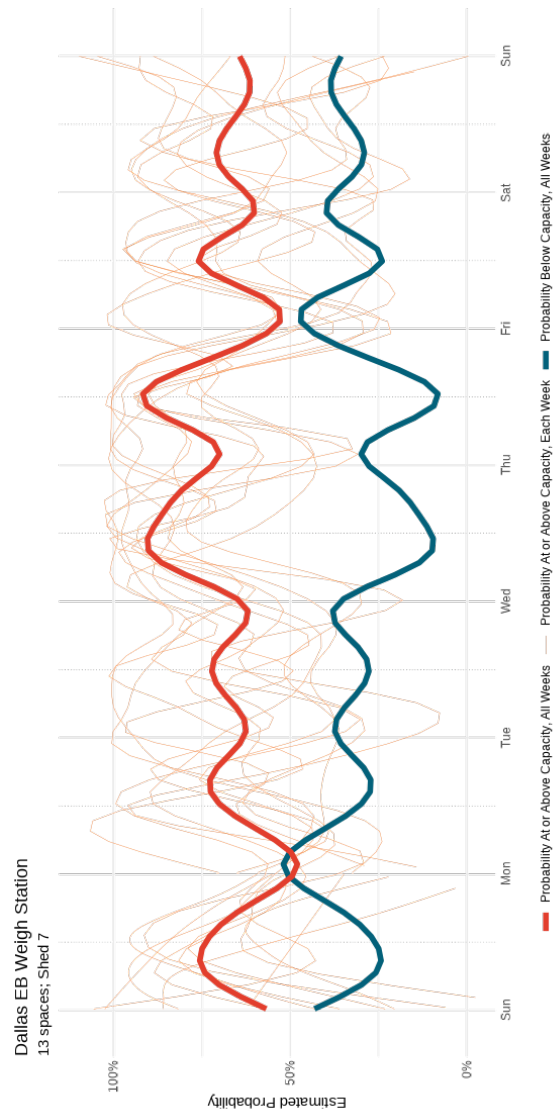


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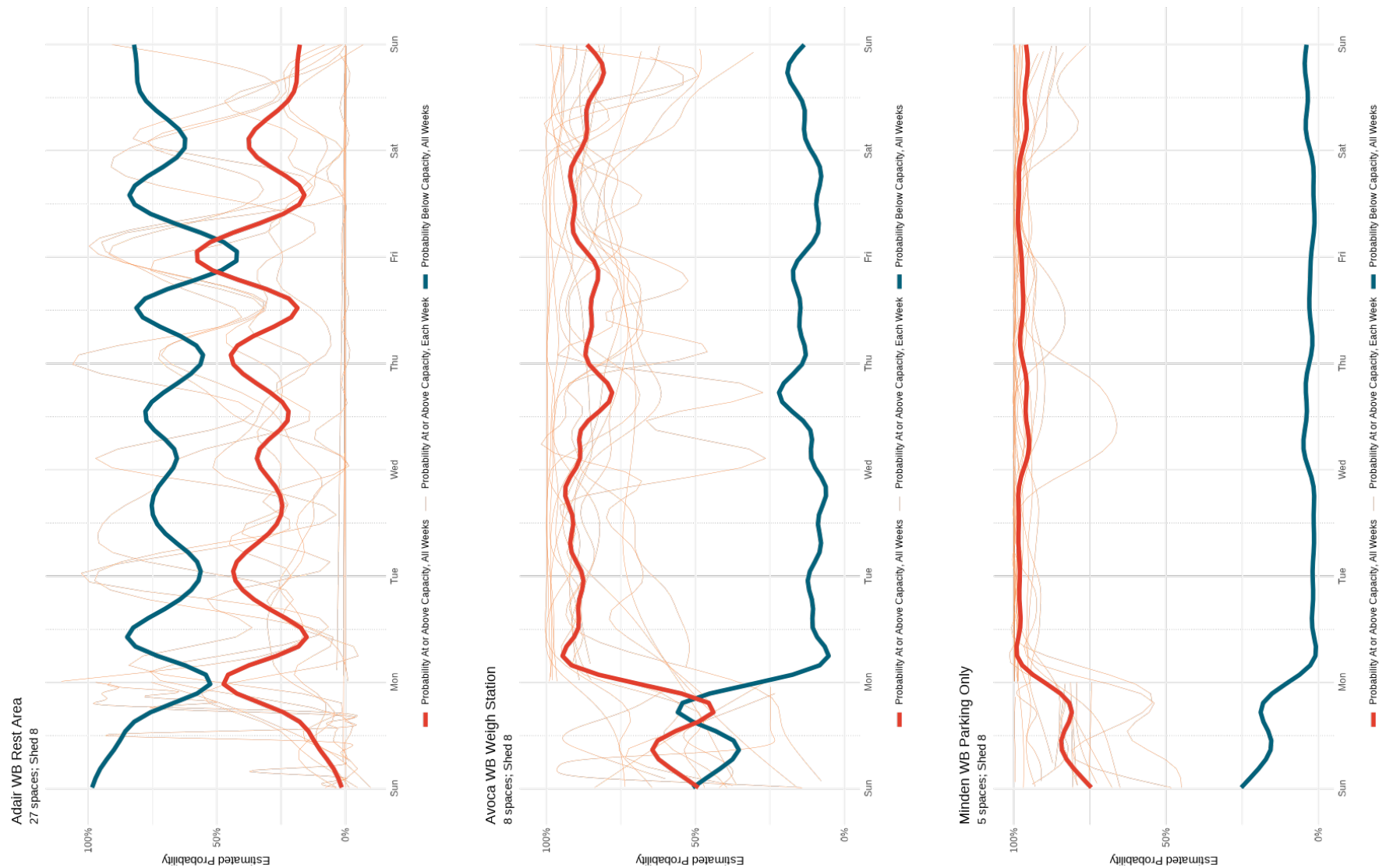


Service Shed 7

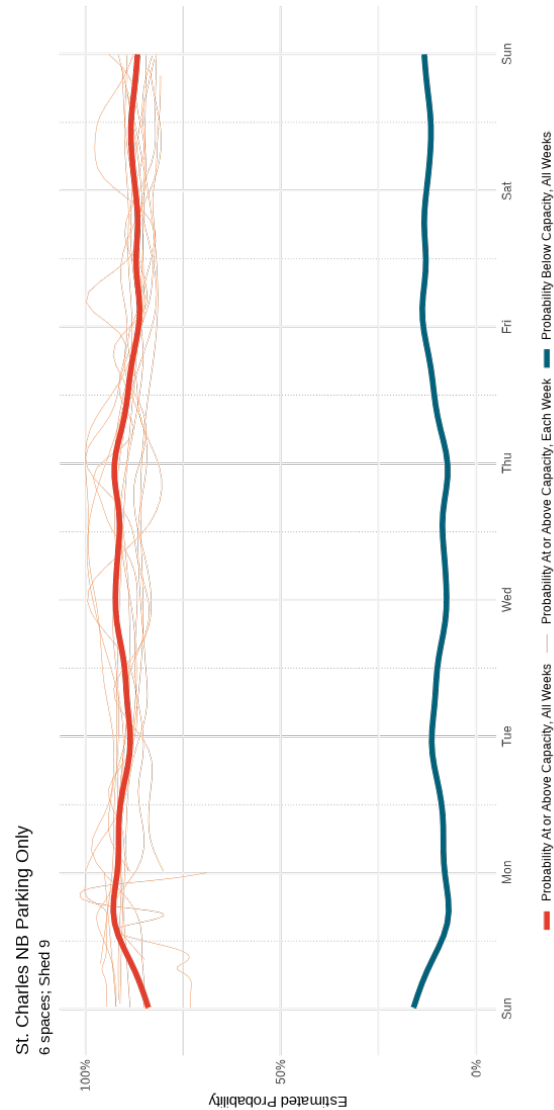
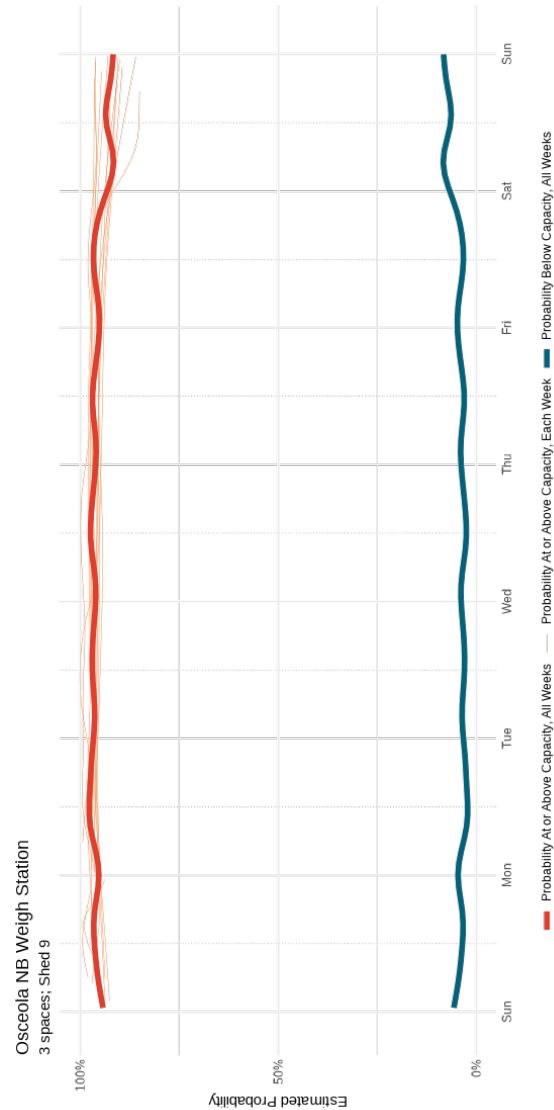
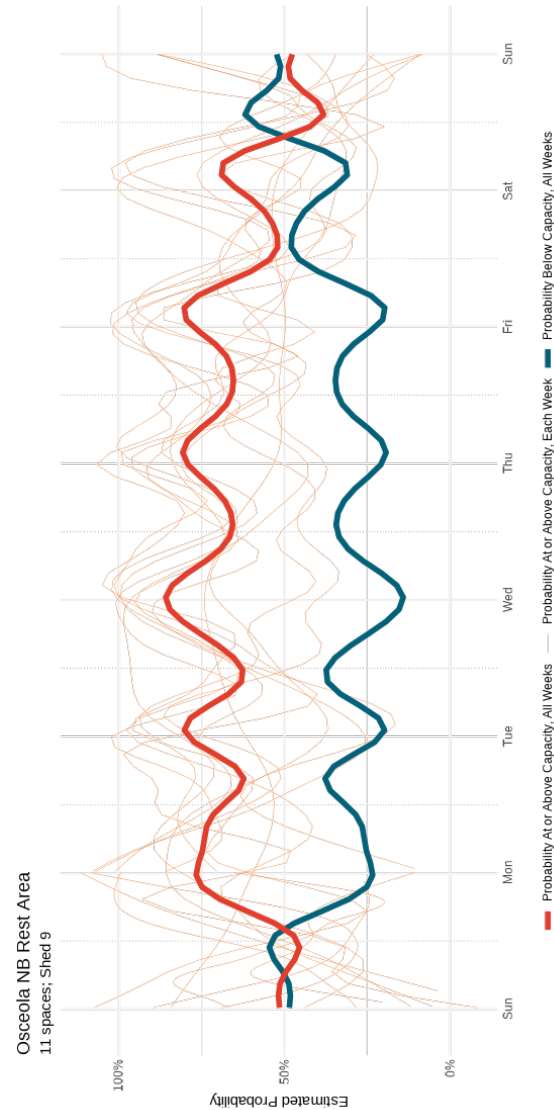




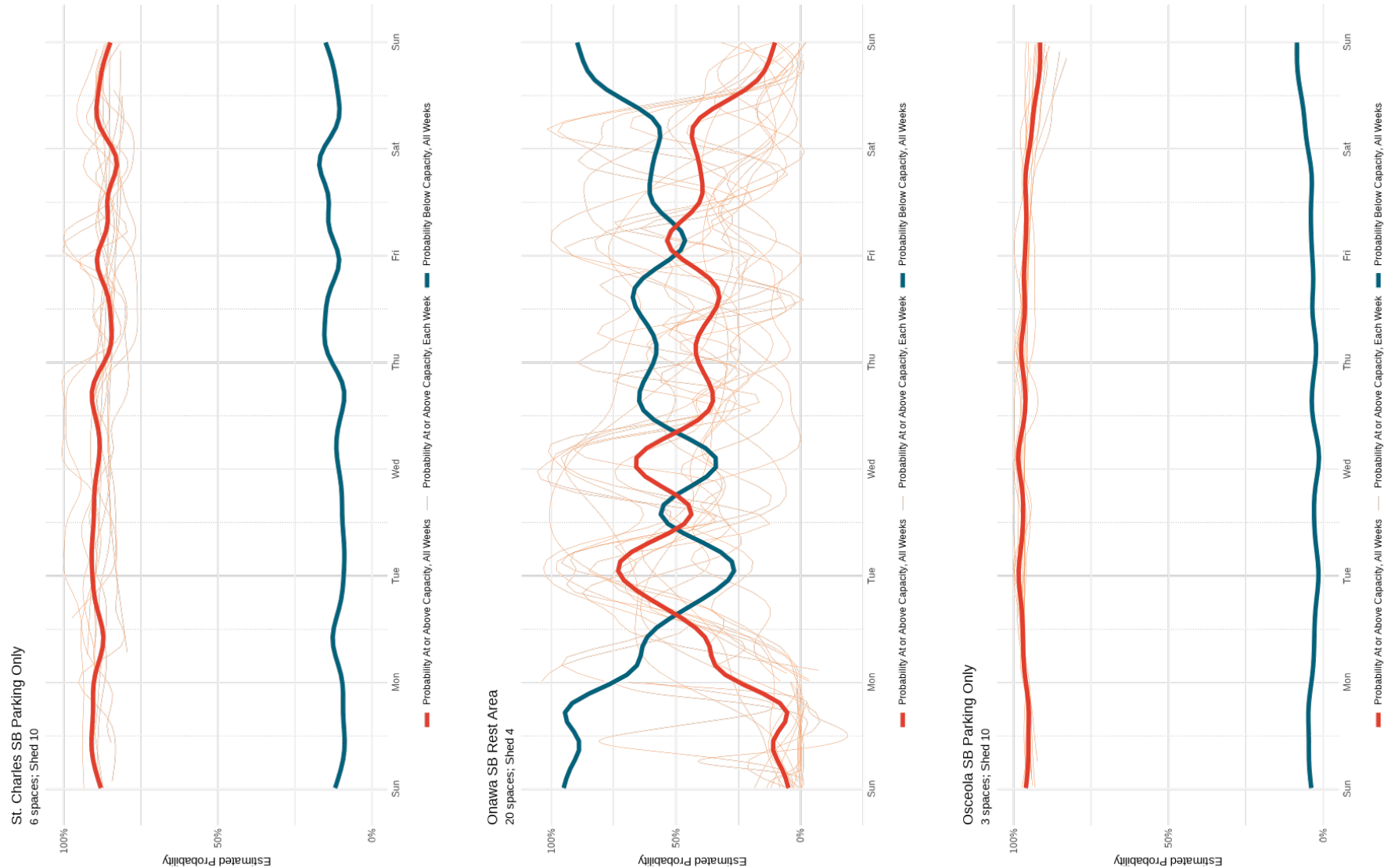
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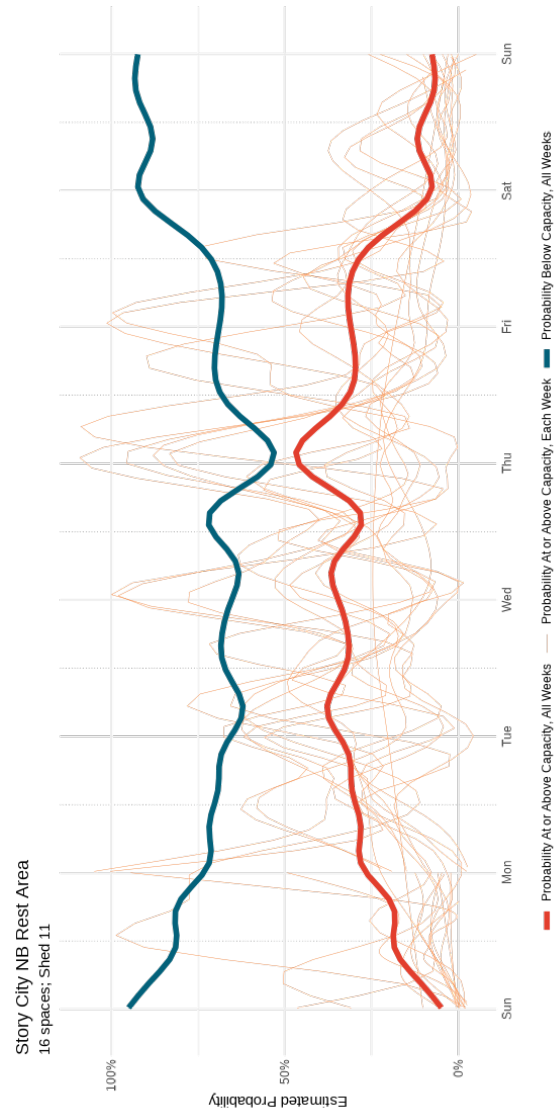
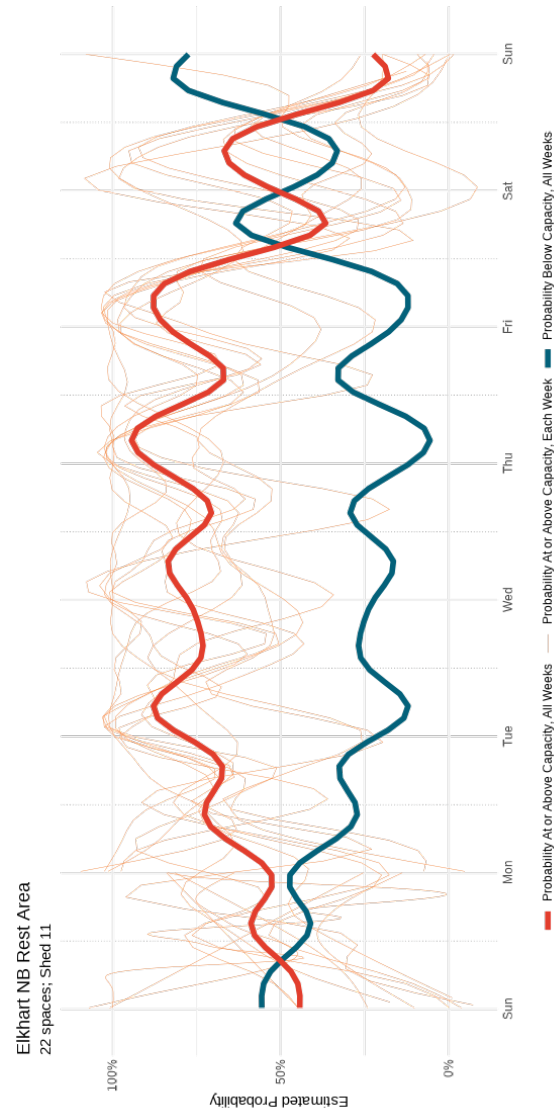
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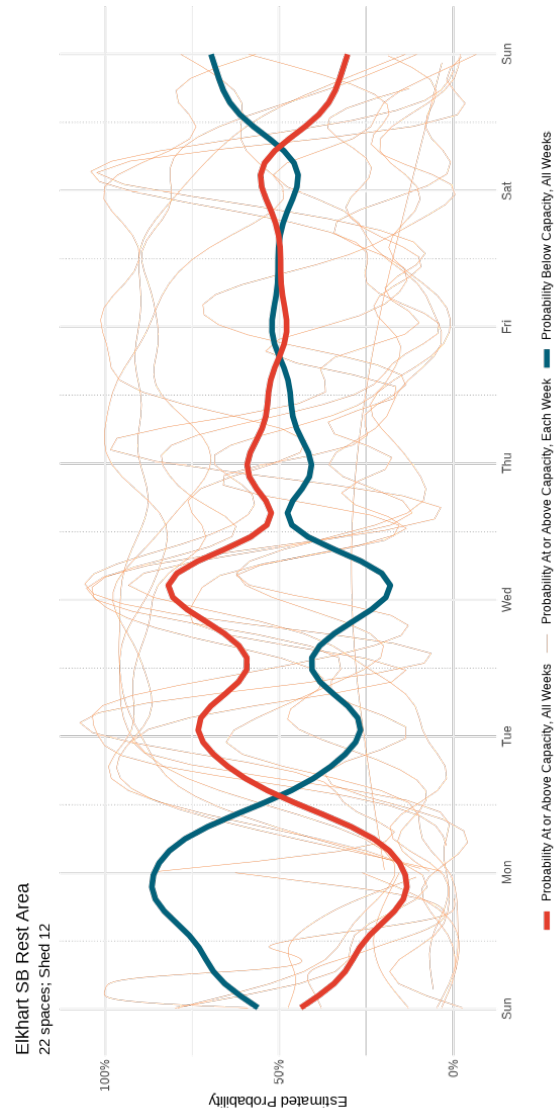
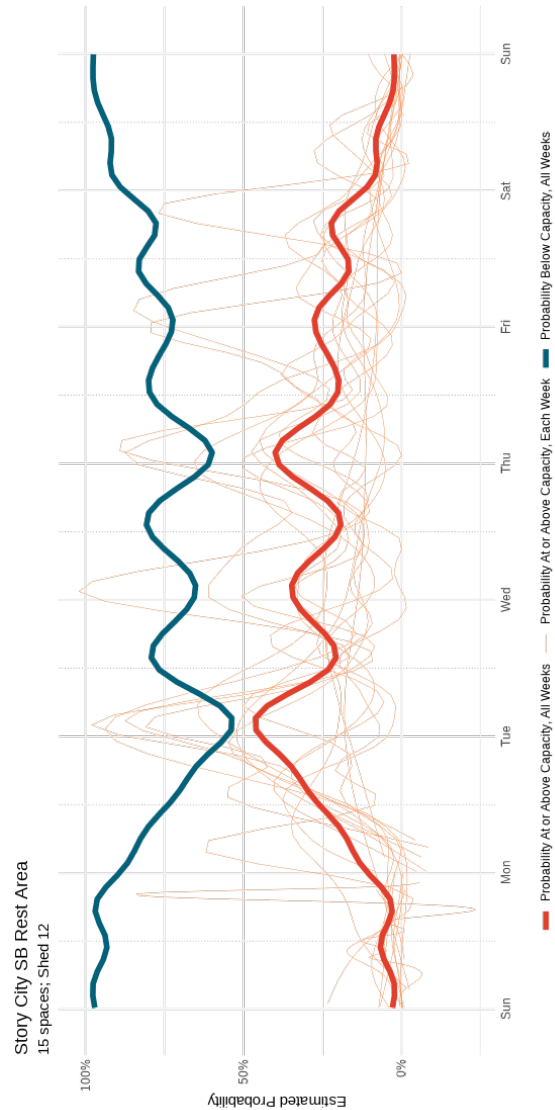
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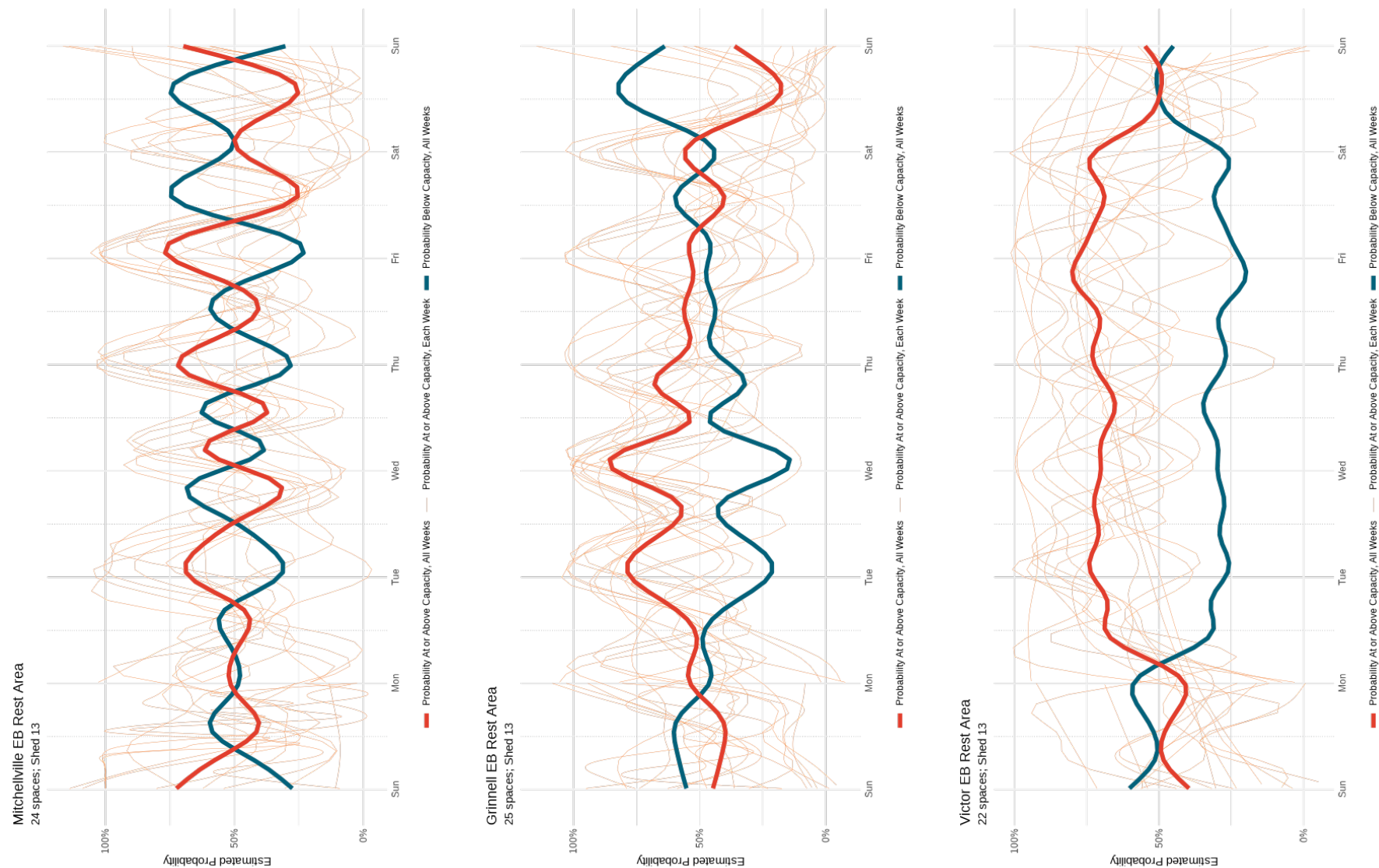
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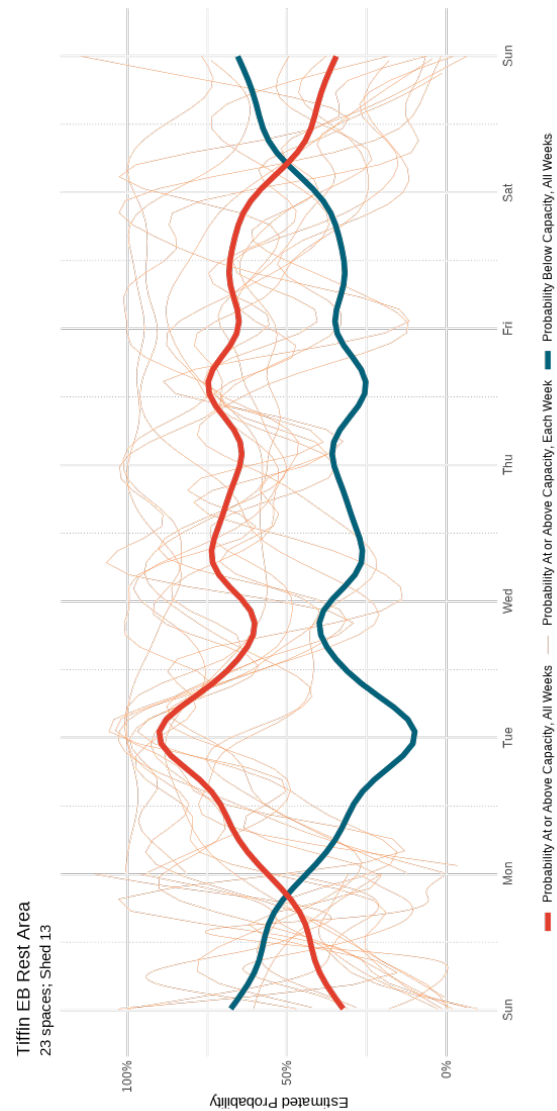


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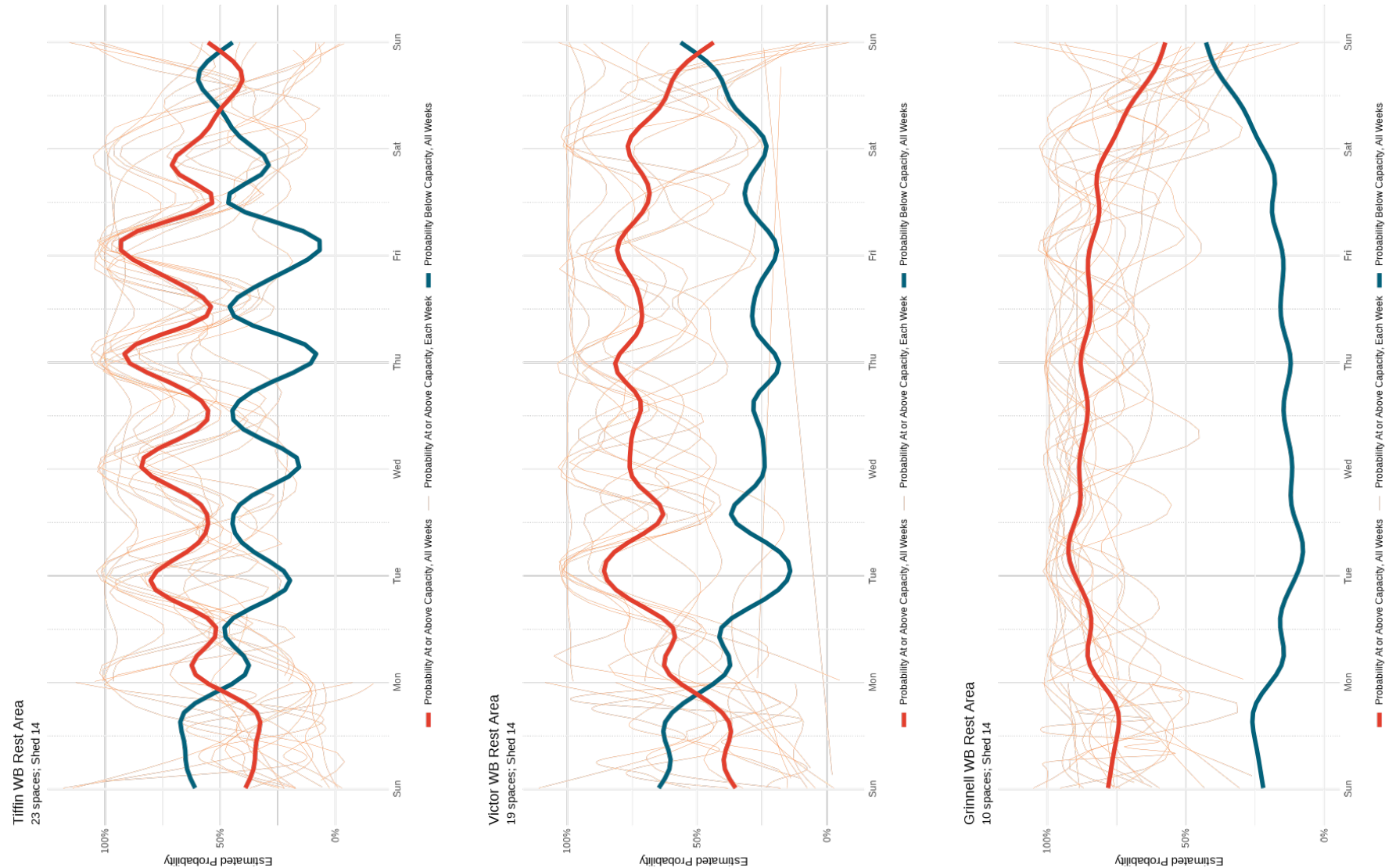


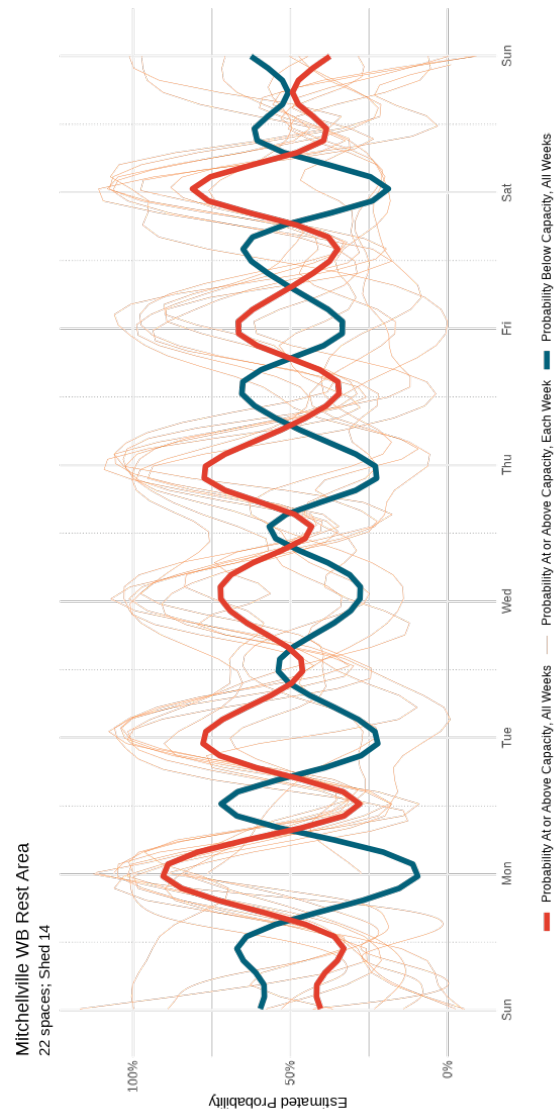
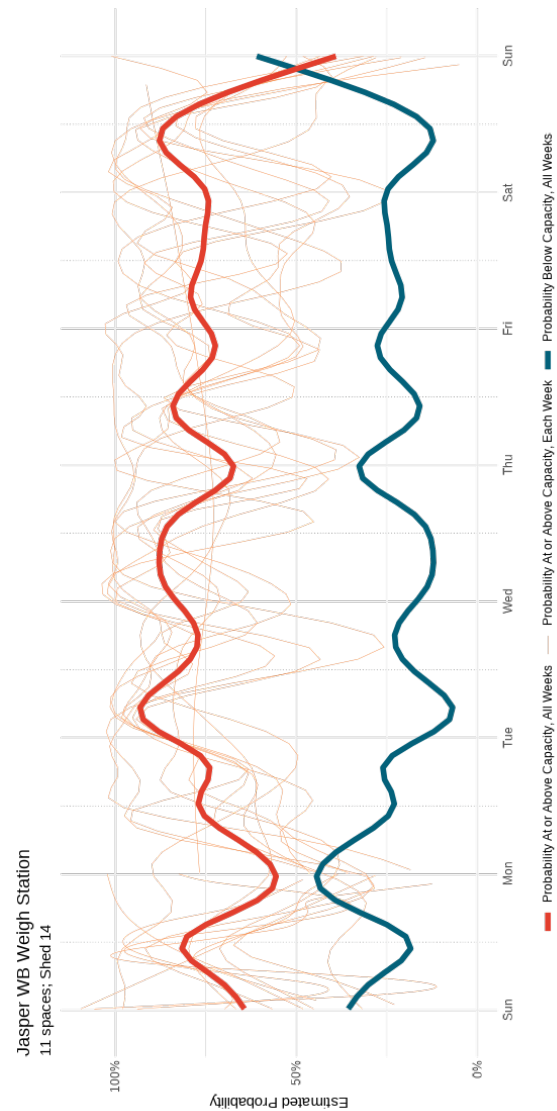
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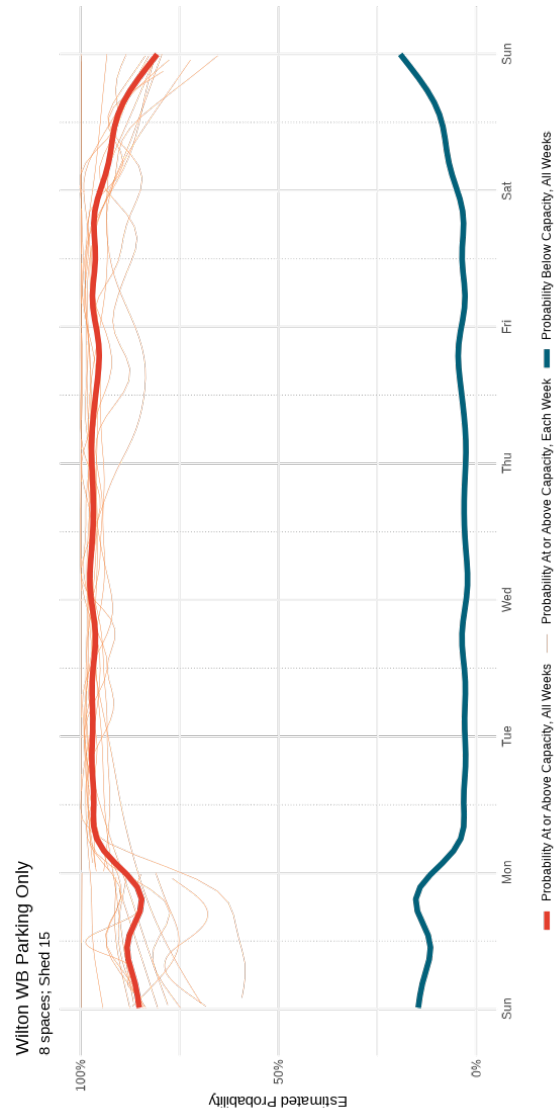
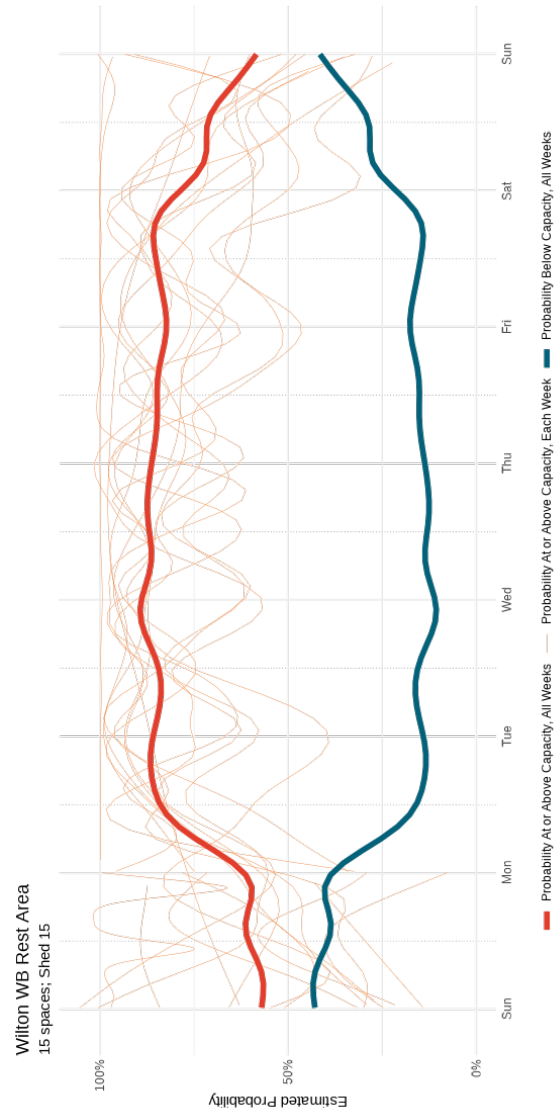
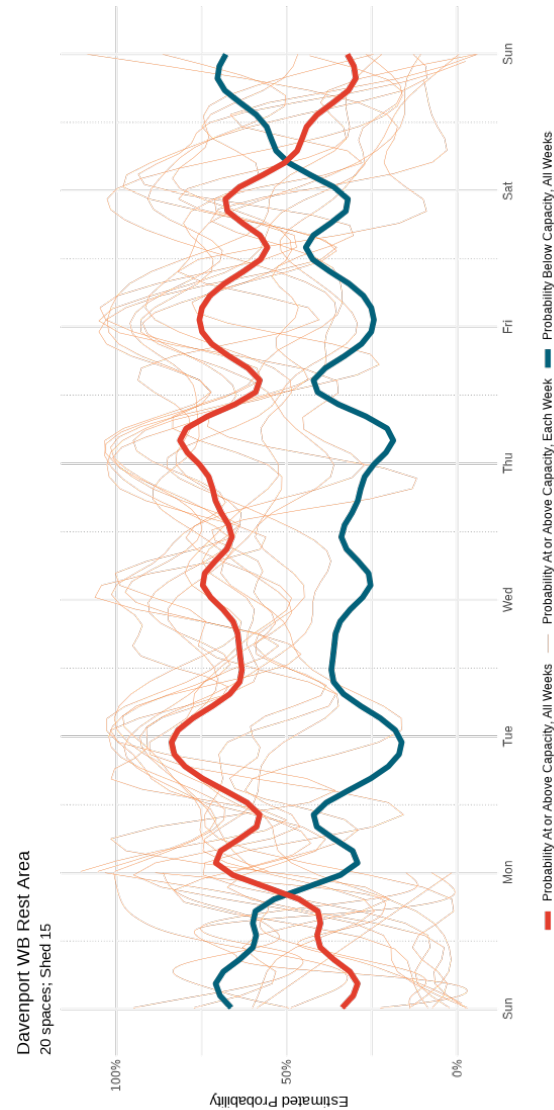


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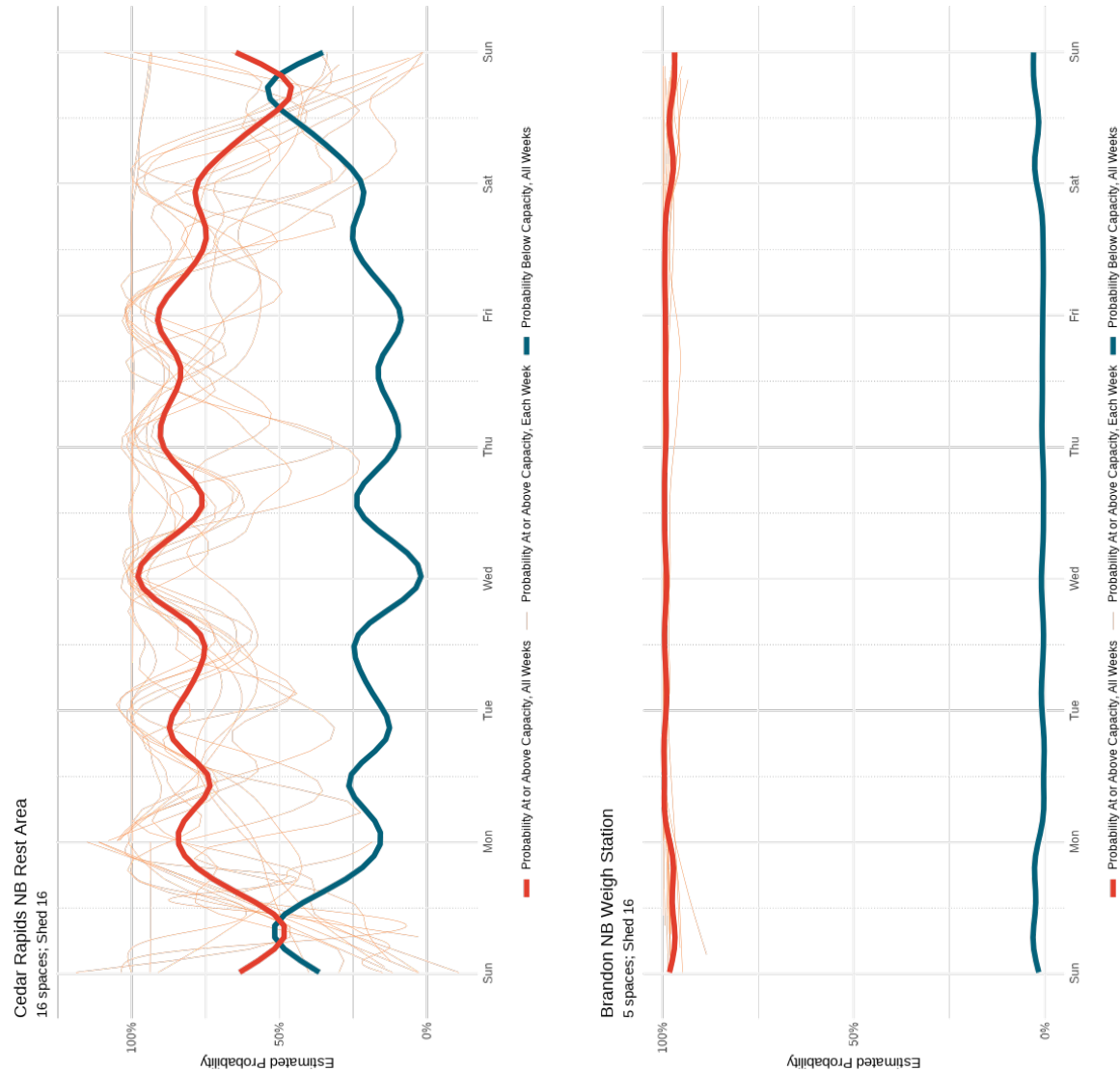




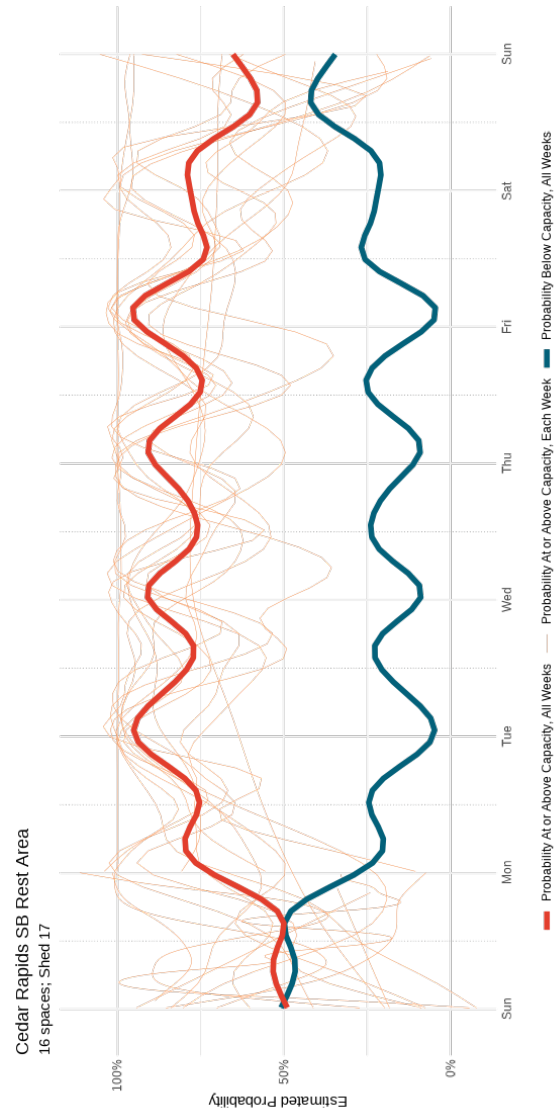
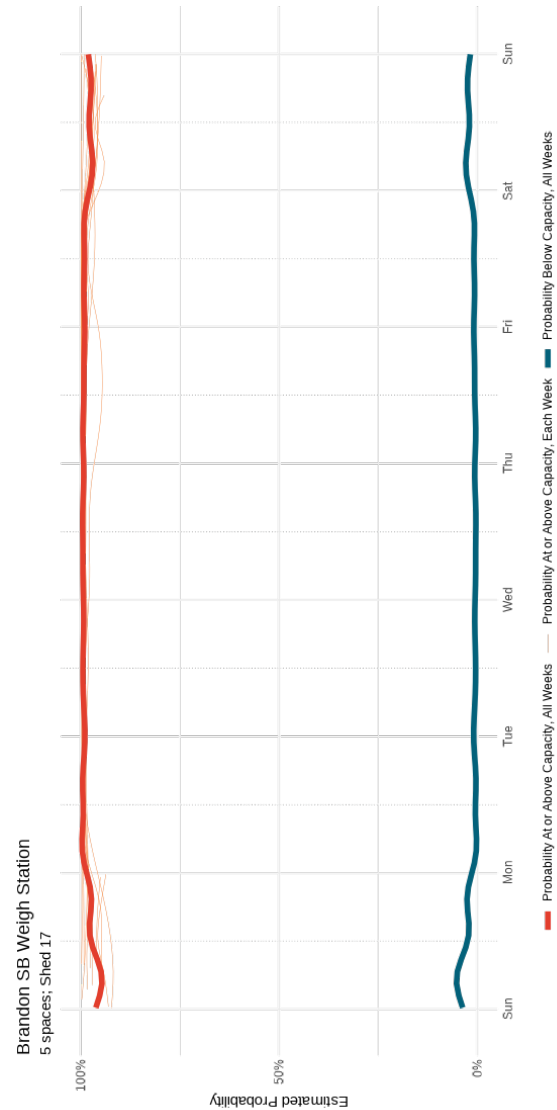
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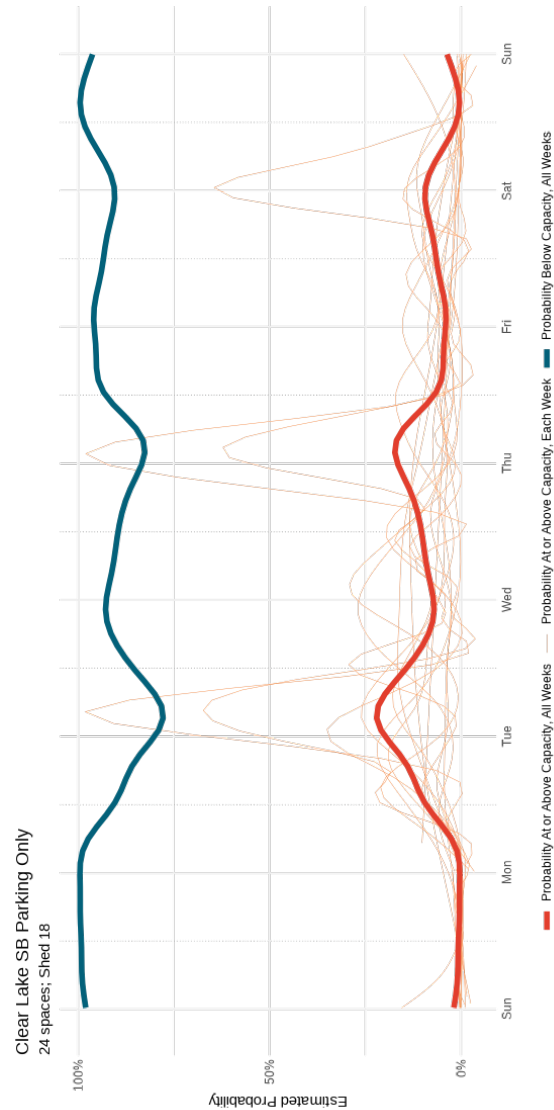
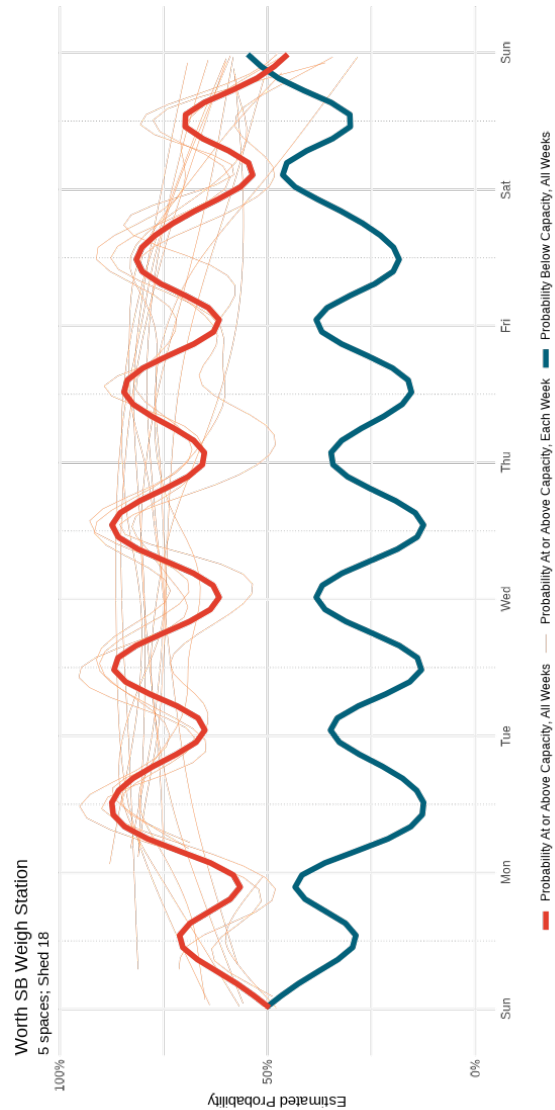
Service Shed 16



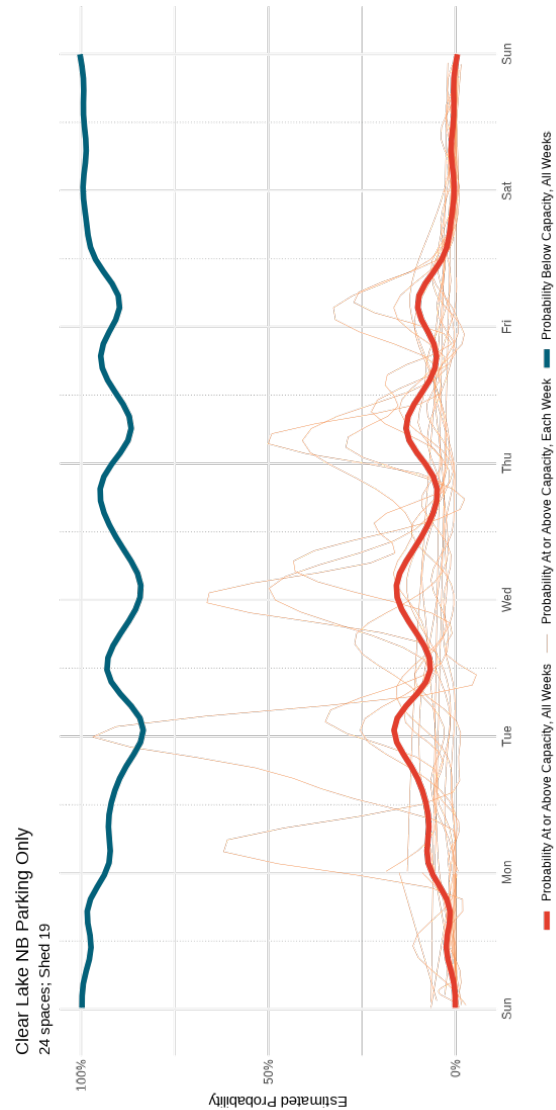
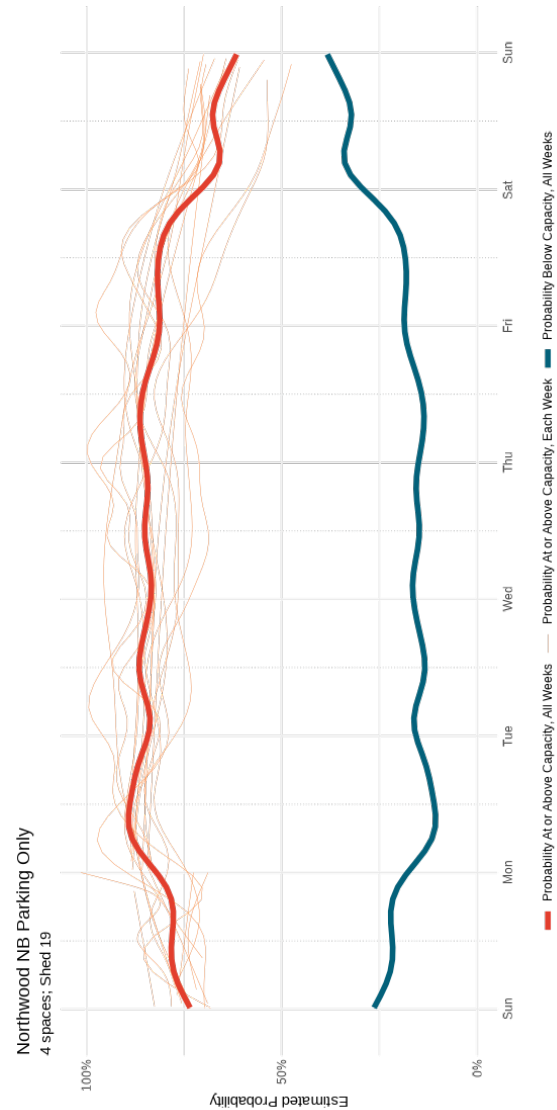
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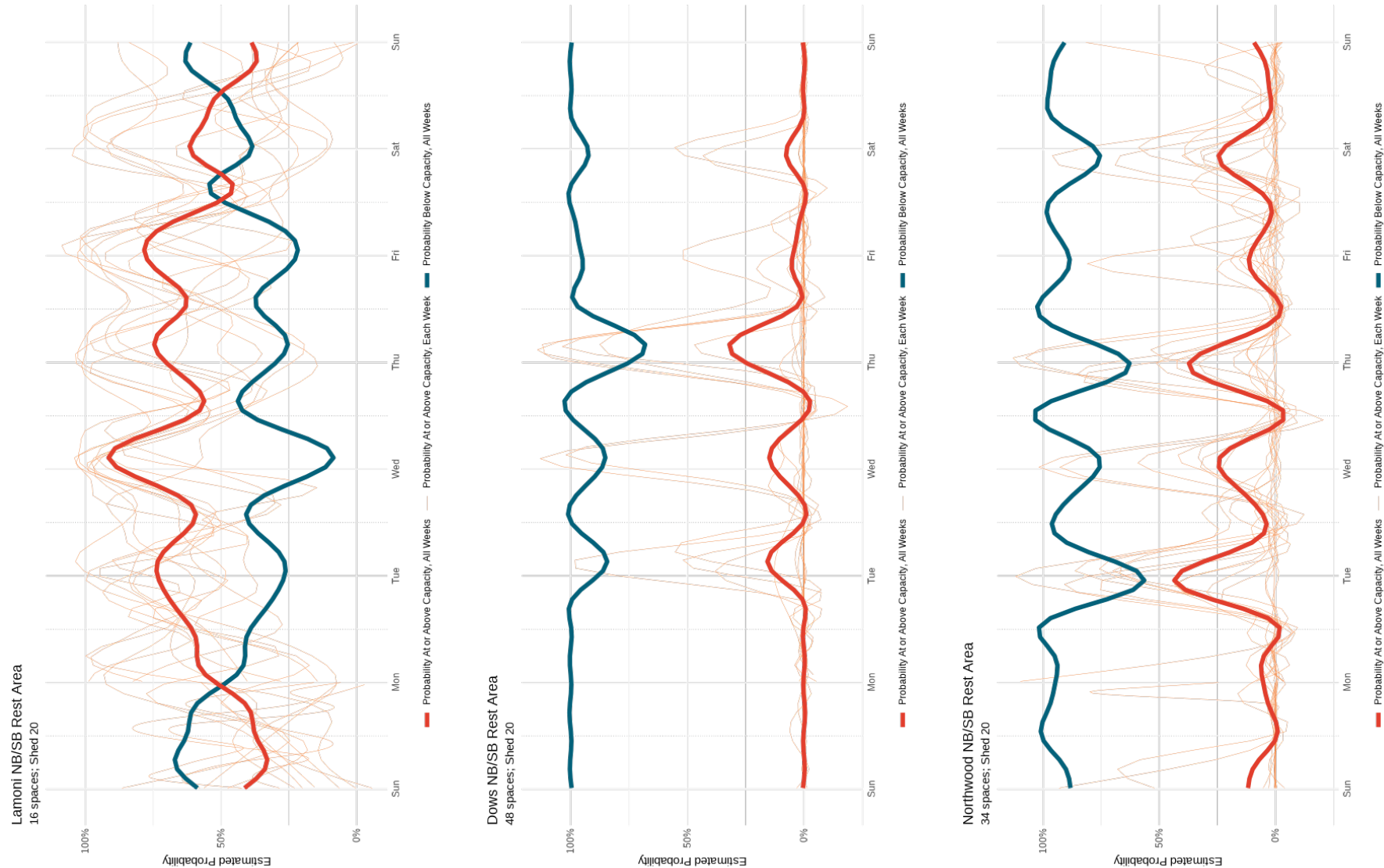
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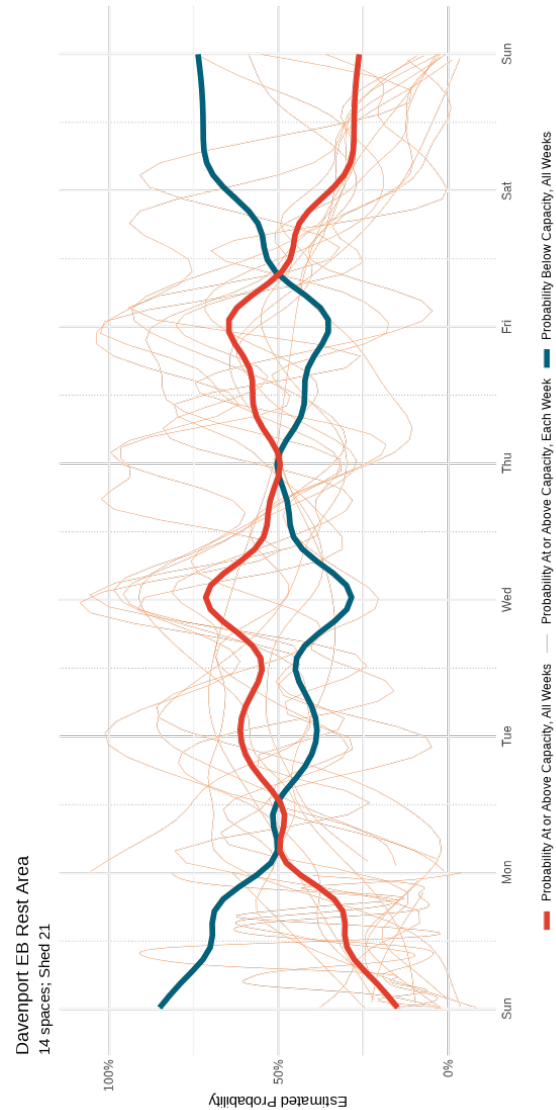
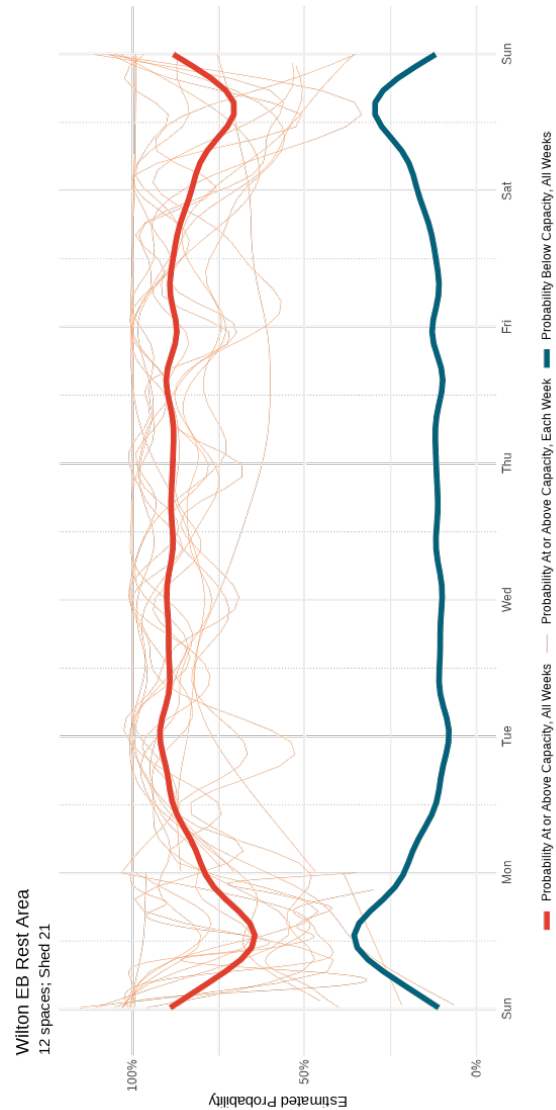
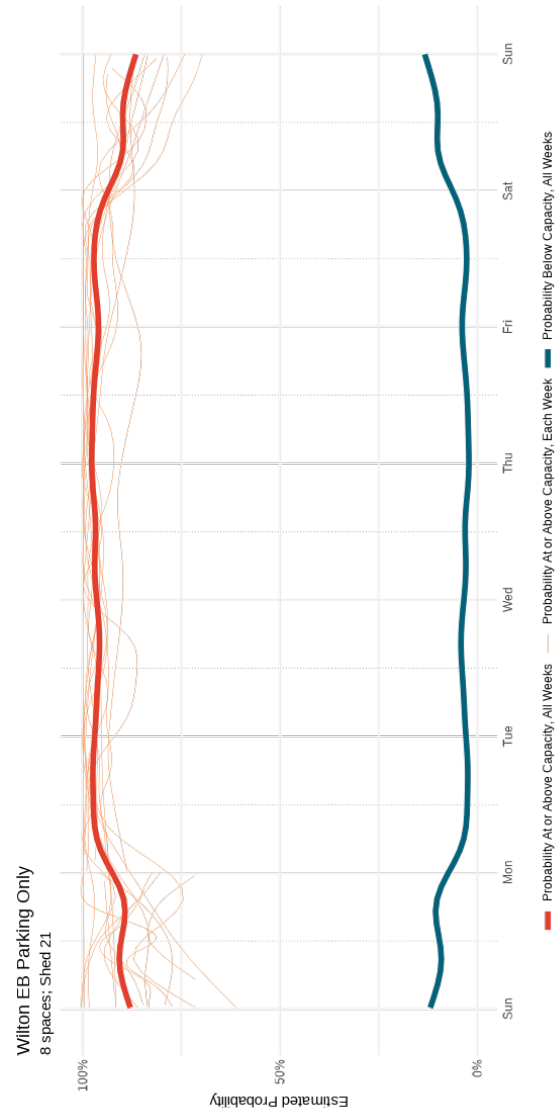
Service Shed 19



Service Shed 20



Service Shed 21



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