Washington State Department of Transportation

The 2018 Corridor Capacity Report

Appendix

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Developed in partnership with

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How to read throughput and stamp graphs

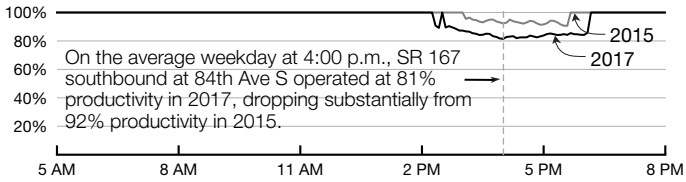
Throughput productivity

Vehicle throughput measures how many vehicles move through a highway segment/spot location in an hour. Throughput productivity is measured as the difference between the highest observed average 5-minute flow rate during the year and the flow rate that occurs when vehicles travel slower than the maximum throughput speed (42 to 51 mph) observed at a particular location of the highway for that calendar year. Lost throughput productivity is the percentage of a highway's vehicle throughput lost due to congestion (see pp. 5-6, 30, 38 and 45).

Example:

Throughput productivity on southbound SR 167 at 84th Avenue South in Kent

2015 and 2017; Based on the highest observed 5-minute flow rate of 1,860 vehicles per hour per lane = 100%



Data sources and analysis: WSDOT Multimodal Planning Division and WSDOT Office of Strategic Assessment and Performance Analysis.

Duration and frequency of congestion

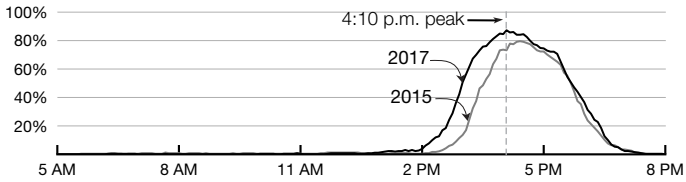
The best visual evidence to show whether the peak period is spreading or contracting can be seen in "stamp graphs". These graphs, comparing 2015 and 2017 data, show the percentage of days annually with average speeds that were slower than a defined congestion threshold (45 mph for "congestion" and 36 mph for "severe congestion") on key highway segments statewide (see pp. 9-11, pp. 24-25, 31-32, 37 and 41-42).

High occupancy vehicle (HOV) lane stamp graphs compare the frequency and duration of congestion for HOV lane users with the congestion experienced by general purpose (GP) lane users on the same route during 2017 (see pp. 24-25).

Example:

Severe congestion on the Seattle to Everett commute

2015 and 2017; Northbound; Percent of days the average speed was slower than 36 mph



Data sources and analysis: WSDOT Multimodal Planning Division and WSDOT Office of Strategic Assessment and Performance Analysis.

How frequently (and when) was the average trip speed slower than 36 mph? At 4:10 a.m. in 2015, there was a 78% chance that traffic would be moving slower than 36 mph. In 2017, the situation worsened (black line above gray line), and the chance of being stuck in severely congested conditions (slower than 36 mph) was 86%.

See the second edition of WSDOT's *Handbook for Corridor Capacity Evaluation* for additional details regarding methods for measuring and reporting transportation system performance, along with a glossary of terms used for systems analysis.

WSDOT's 2018 *Corridor Capacity Report* is available at http://wsdot.wa.gov/publications/fulltext/graynotebook/corridor-capacity-report-18.pdf. Additional congestion and capacity related analyses are available at www.wsdot.wa.gov/Accountability/Congestion/

On the cover: vehicles on I-5 head towards Seattle. (Photo courtesy of Eric Knigge and Shravan Aeneni)

Vehicle hours of delay

Average weekday delay on major freeways

2008 through 2017; Vehicle hours of delay per day

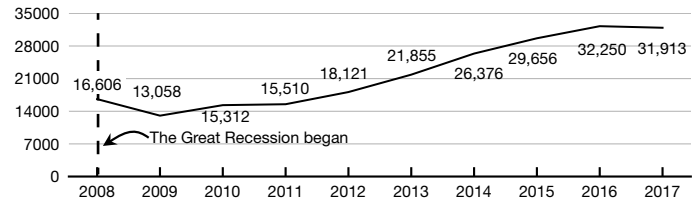
Central Puget Sound	2008	2009	2010	2011	2012	2013	2014	2015[1]	2016	2017	2015 vs. 2017
I-5	7,324	6,684	7,033	7,354	9,894	11,638	14,389	16,810[1]	18,590	19,443	**15.6%**
I-405	6,864	4,478	5,605	5,719	6,439	7,978	9,427	9,768[1]	10,200	9,640	**-1.3%**
SR 520	1,518	1,334	1,496	1,335	363	564	633	818[1]	850	542	**-33.3%**
I-90	282	212	455	565	756	963	1,064	1,149[1]	1,430	885	**-28.7%**
SR 167	618	350	723	537	669	712	863	1,111[1]	1,180	1,408	**27.4%**
Subtotal	**16,606**	**13,058**	**15,312**	**15,510**	**18,121**	**21,855**	**26,376**	**29,656[1]**	**32,250**	**31,918**	**7.3%**
South Puget Sound (I-5)[1]	N/A	N/A	N/A	2,185	1,828	3,257	6,002	4,389[1,2]	7,578	7,290	**66.1%**
Spokane Region (I-90)	N/A	N/A	N/A	N/A	N/A	20	34	61[1]	93	117	**90.7%**

Data source: WSDOT Multimodal Planning Division.

Notes: To learn why delay and miles traveled do not increase hand in hand, see p. 10 of the 2nd edition of the *Handbook for Corridor Capacity Evaluation*. See the lane mile inventory on p. 4 for delay context. **1** The 2015 data was recalculated for this report in order to make accurate comparisons. **2** The 2017 Corridor Capacity Report reported this figure incorrectly due to an error.

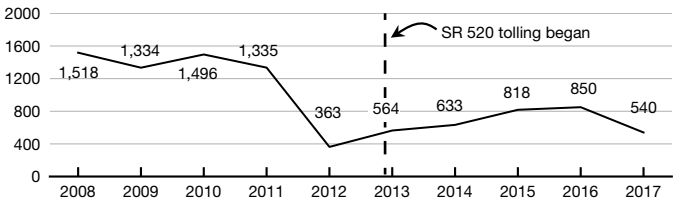
Central Puget Sound daily vehicle hours of delay

2008 through 2017; Combined delay for I-5, I-405, SR 520, I-90 and SR 167



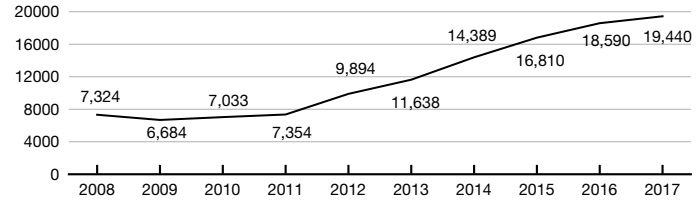
SR 520 daily vehicle hours of delay

2008 through 2017



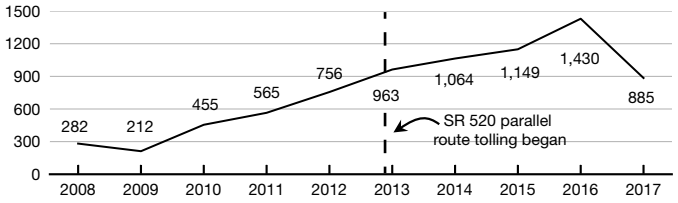
I-5 daily vehicle hours of delay

2008 through 2017



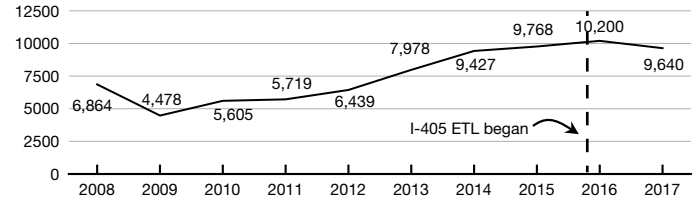
I-90 daily vehicle hours of delay

2008 through 2017



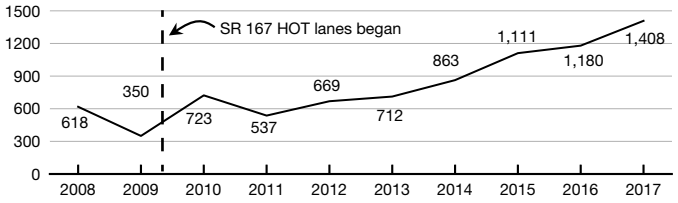
I-405 daily vehicle hours of delay

2008 through 2017



SR 167 daily vehicle hours of delay

2008 through 2017



Data source: WSDOT Multimodal Planning Division.

Note: See y-axis values for context of daily vehicle hours of delay across corridors.

Vehicle miles traveled, lane mile and ITS inventories

Average weekday vehicle miles traveled on major freeways

2008 through 2017; Vehicle miles traveled in thousands per day

Central Puget Sound	2008	2009	2010	2011	2012	2013	2014	2015[1]	2016	2017	2015 vs. 2017
I-5	7,583	7,676	7,835	8,020	7,919	8,000	8,027	8,119[1]	8,271	8,337	**2.7%**
I-405	3,500	3,616	3,656	3,744	3,717	3,722	3,697	3,687[1]	3,736	3,708	**0.6%**
SR 520	932	901	933	941	732	775	739	807[1]	812	813	**0.8%**
I-90	1,414	1,511	1,649	1,531	1,611	1,624	1,626	1,621[1]	1,658	1,648	**1.7%**
SR 167	921	947	1,060	1,003	992	977	987	992[1]	1,020	1,007	**1.5%**
Subtotal	**14,350**	**14,651**	**15,133**	**15,239**	**14,971**	**15,098**	**15,075**	**15,226[1]**	**15,497**	**15,514**	**1.9%**
South Puget Sound (I-5)[1]	N/A	N/A	N/A	4,981	5,115	5,163	5,290	5,199[1]	5,191	5,117	**-1.6%**

Data source: WSDOT Multimodal Planning Division.

Notes: The reported VMT numbers are only a partial representation for reasons such as only general purpose (GP) lanes being analyzed, data station malfunction, work zone traffic diversion, etc. **1** To make accurate comparisons, the 2015 data was recalculated for this report. See the lane mile inventory below for vehicle miles traveled context.

Lane mile inventory on major freeways

As of October 22, 2018

Corridor	Mileposts	Lane miles	Special use lane miles	Total lane miles
I-5	143.64 - 189.32	326.98	90.36	417.34
I-405	0.44 - 29.51	153.24	76.16	229.40
SR 520	0.28 - 11.22	46.78	16.85	63.63
I-90	3.02 - 16.96	94.95	27.08	112.03
SR 167	15.86 - 25.62	40.66	21.13	61.79
Subtotal		652.61	231.58	884.19
South Puget Sound (I-5)	105.38 - 143.64	272.98	15.68	288.66

Data source: WSDOT Multimodal Planning Division.

Note: This inventory does not include ramp mileage.

WSDOT Intelligent Transportation Systems Inventory

2013 through 2017; Number of devices or sites

Device Type	2013	2014	2015	2016	2017	Approximate cost per device
Closed circuit television cameras	933	1,087	1,146	1,212	1247	$15,000–$30,000
Variable message signs	279	306	319	327	338	$100,000–$250,000
Highway advisory radio transmitters	86	86	86	85	86	$50,000
Road/weather information systems	109	111	113	113	114	$25,000–$50,000
Metered ramps	150	189	190	199	202	$10,000–$20,000
Traffic data stations	767	840	899	932	933	$10,000–$20,000
Smarter highway gantries	56	56	59	59	59	$650,000–$900,000

Data source: WSDOT Traffic Operations Division.

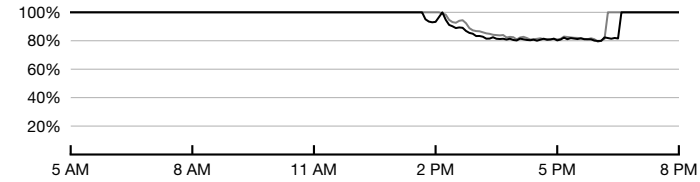
Throughput productivity

Throughput productivity at select central Puget Sound region freeway locations by commute direction (part 1)
2015 and 2017; Based on the highest observed 5-minute (min.) flow rates; Vehicles per hour per lane (vphpl) at specific mileposts (MP)

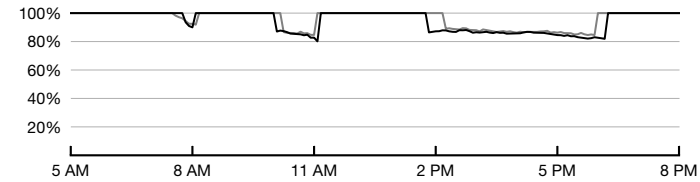
2015 2017

Southbound

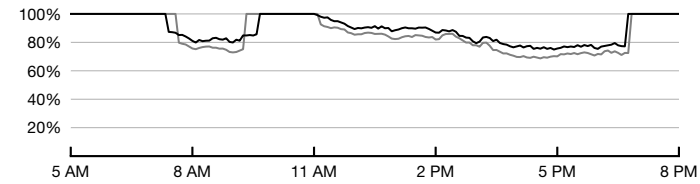
I-5 at S 188th Street (MP 152.8)
Based on the highest observed 5 min. flow rate of 1,640 vphpl = 100%



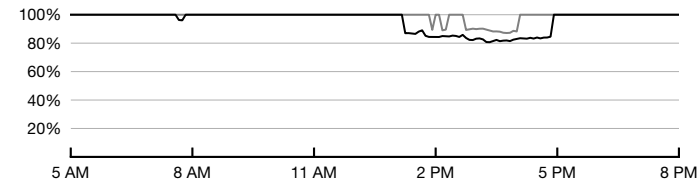
I-5 at I-90 (MP 164.7)
Based on the highest observed 5 min. flow rate of 2,040 vphpl = 100%



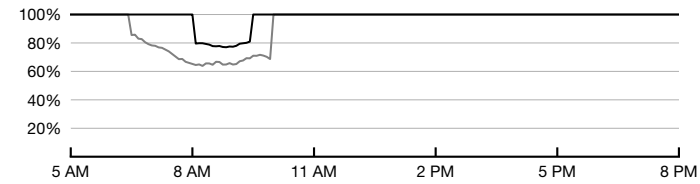
I-5 at NE 103rd Street (MP 172.2)
Based on the highest observed 5 min. flow rate of 1,610 vphpl = 100%



I-405 at SR 169 (MP 3.9)
Based on the highest observed 5 min. flow rate of 1,770 vphpl = 100%



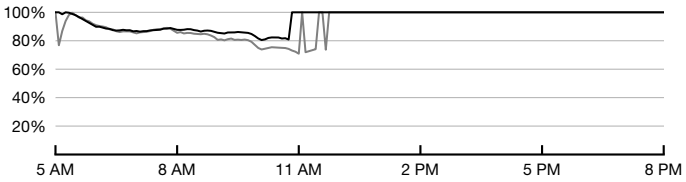
I-405 at NE 160th Street (MP 21.8)
Based on the highest observed 5 min. flow rate of 1,820 vphpl = 100%



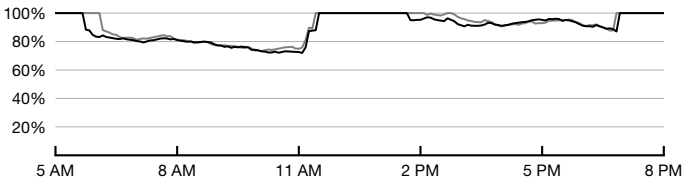
2015 2017

Northbound

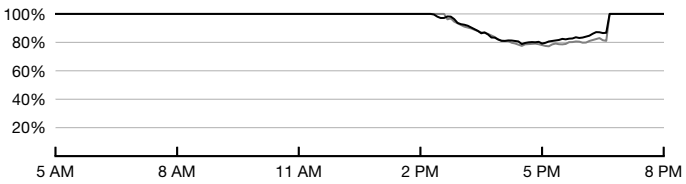
I-5 at S 188th Street (MP 152.8)
Based on the highest observed 5 min. flow rate of 1,990 vphpl = 100%



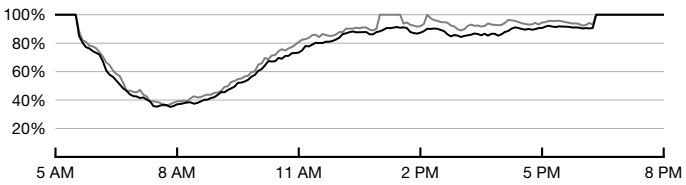
I-5 at I-90 (MP 164.7)
Based on the highest observed 5 min. flow rate of 1,300 vphpl = 100%



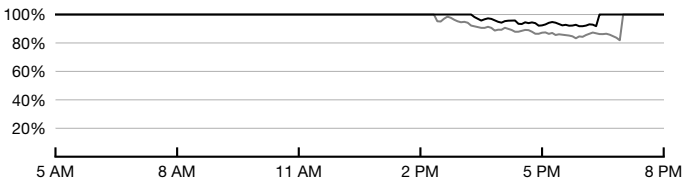
I-5 at NE 103rd Street (MP 172.2)
Based on the highest observed 5 min. flow rate of 1,570 vphpl = 100%



I-405 at SR 169 (MP 3.9)
Based on the highest observed 5 min. flow rate of 1,680 vphpl = 100%



I-405 at NE 160th Street (MP 21.8)
Based on the highest observed 5 min. flow rate of 1,520 vphpl = 100%



Data sources and analysis: WSDOT Northwest Region Traffic Office, WSDOT Multimodal Planning Division and WSDOT Office of Strategic Assessment and Performance Analysis.
Note: See p. 2 for throughput definitions and how to read these graphs.

Central Puget Sound Region

Throughput productivity

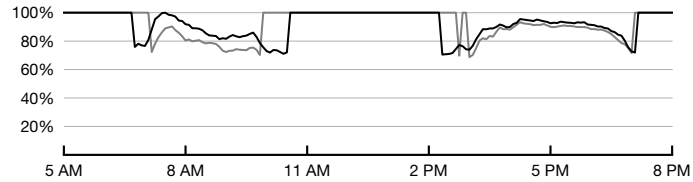
Throughput productivity at select central Puget Sound region freeway locations by commute direction (part 2)
2015 and 2017; Based on the highest observed 5-minute (min.) flow rates; Vehicles per hour per lane (vphpl) at specific mileposts (MP)

2015 2017

Westbound

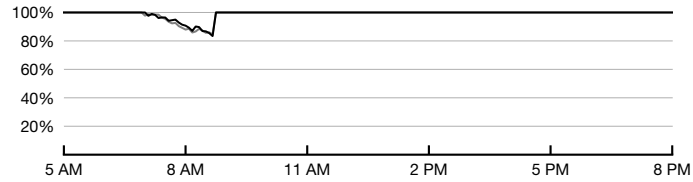
SR 520 at Evergreen Point Floating Bridge (MP 1.6)

Based on the highest observed 5 min. flow rate of 2,030 vphpl = 100%



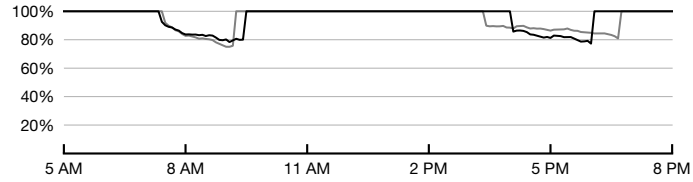
I-90 at SR 900 (MP 16.4)

Based on the highest observed 5 min. flow rate of 1,670 vphpl = 100%



I-90 at the floating bridge (MP 5.5)

Based on the highest observed 5 min. flow rate of 1,830 vphpl = 100%

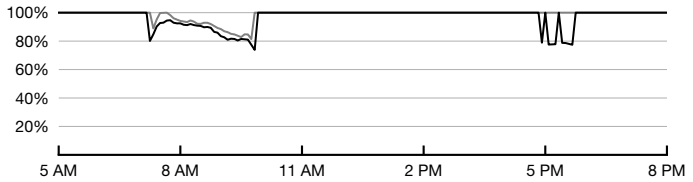


2015 2017

Eastbound

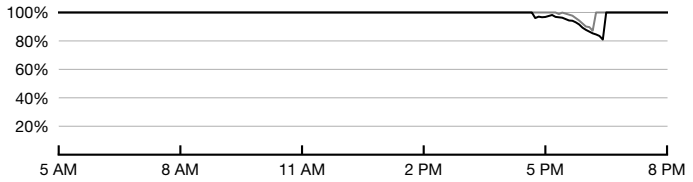
SR 520 at Evergreen Point Floating Bridge (MP 1.6)

Based on the highest observed 5 min. flow rate of 1,700 vphpl = 100%



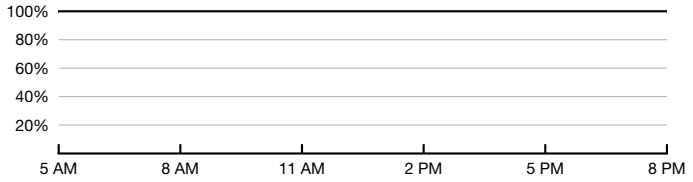
I-90 at SR 900 (MP 16.4)

Based on the highest observed 5 min. flow rate of 1,850 vphpl = 100%



I-90 at the floating bridge (MP 5.5)

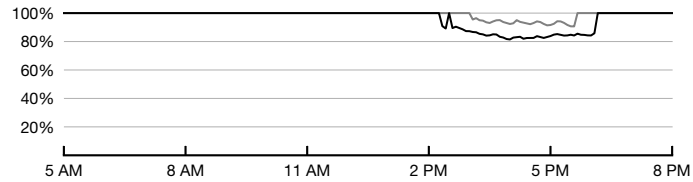
Based on the highest observed 5 min. flow rate of 1,790 vphpl = 100%



Southbound

SR 167 at 84th Avenue S (MP 21.5)

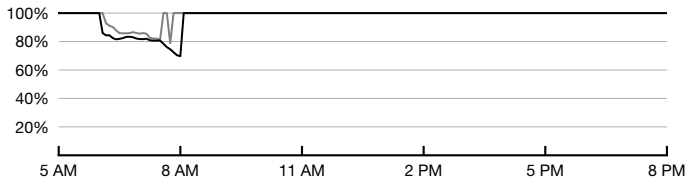
Based on the highest observed 5 min. flow rate of 1,860 vphpl = 100%



Northbound

SR 167 at 84th Avenue S (MP 21.5)

Based on the highest observed 5 min. flow rate of 1,770 vphpl = 100%



Data sources and analysis: WSDOT Northwest Region Traffic Office, WSDOT Multimodal Planning Division and WSDOT Office of Strategic Assessment and Performance Analysis.
Note: See p. 2 for throughput definitions and how to read these graphs.

Routinely congested segments in 2015

Central Puget Sound region routinely congested freeway segments
2015 weekdays; Length of congestion in miles; Duration of congestion in hours:minutes

	Morning peak period				Evening peak period			
Route and direction	**Start and end times**	**Begin and end milepost**	**Length of congestion**	**Duration of congestion**	**Start and end times**	**Begin and end milepost**	**Length of congestion**	**Duration of congestion**
I-5 northbound	5:20-8:45 a.m.	144.5-153.5	9.0	3:25	2:05-6:30 p.m.	161.5-165.5	4.0	4:25
	7:30-7:40 a.m.[1]	158.5-159	0.5	0:10	5:25-5:55 p.m.[1]	166-166.5	0.5	0:30
	5:45-10:05 a.m.	159-165.5	6.5	4:20	4:20-6:10 p.m.	166.5-167	0.5	1:50
					2:55-6:45 p.m.	167-176.5	9.5	3:50
					3:15-6:10 p.m.	176.5-177	0.5	2:55
					3:20-6:00 p.m.	177-178	1.0	2:40
					2:50-6:40 p.m.	178-178.5	0.5	3:50
					3:15-5:55 p.m.	178.5-179	0.5	2:40
					5:30-5:35 p.m.[1]	179.5-180	0.5	0:05
					3:40-5:35 p.m.	182.5-183	0.5	1:55
					2:30-6:15 p.m.	184.5-185	0.5	3:45
					2:45-4:45 p.m.	190-190.5	0.5	2:00
I-5 southbound	5:50-6:20 a.m.[1]	185.5-185	0.5	0:30	3:25-4:55 p.m.	172.5-172	0.5	1:30
	6:10-6:35 a.m.[1]	184-183.5	0.5	0:25	2:05-7:05 p.m.	172-165.5	6.5	5:00
	6:05-8:00 a.m.	182.5-181.5	1.0	1:55	2:40-4:45 p.m.	165.5-165	0.5	2:05
	5:55-9:05 a.m.	181.5-178	3.5	3:10	2:45-5:45 p.m.	164.5-164	0.5	3:00
	5:40-9:45 a.m.	178-177	1.0	4:05	2:05-6:55 p.m.	164-163	1.0	4:50
	6:05-9:15 a.m.	177-173.5	3.5	3:10	3:45-5:30 p.m.	157-156	1.0	1:45
	7:55-8:40 a.m.[1]	172.5-171.5	1.0	0:45	2:40-5:35 p.m.	156-154.5	1.5	2:55
	7:10-9:45 a.m.	171.5-168.5	3.0	2:35	3:15-4:45 p.m.	154.5-154	0.5	1:30
	8:35-9:05 a.m.[1]	168.5-167.5	1.0	0:30	2:35-6:00 p.m.	154-151.5	2.5	3:25
	8:10-9:00 a.m.	166.5-166	0.5	0:50	3:30-5:35 p.m.	151.5-151	0.5	2:05
	7:05-8:05 a.m.	164.5-163.5	1.0	1:00				
I-405 northbound	8:40-08:45 a.m.[1]	2.5-3	0.5	0:05	4:10-6:00 p.m.	0.5-1.5	1.0	1:50
	5:30-10:05 a.m.	3-8.5	5.5	4:35	4:55-5:50 p.m.	1.5-2	0.5	0:55
	8:40-9:00 a.m.[1]	10.5-11	0.5	0:20	3:40-6:00 p.m.	2-3.5	1.5	2:20
	8:30-9:45 a.m.	11-12	1.0	1:15	2:15-6:00 p.m.	3.5-5.5	2.0	3:45
					4:20-5:25 p.m.	14.5-15	0.5	1:05
					3:25-6:15 p.m.	15-18	3.0	2:50
					2:40-6:50 p.m.	18-23	5.0	4:10
					4:10-6:00 p.m.	23-23.5	0.5	1:50
					5:20-5:50 p.m.[1]	24-24.5	0.5	0:30
					4:05-6:10 p.m.	24.5-25.5	1.0	2:05
					2:30-6:45 p.m.	25.5-28	2.5	4:15
I-405 southbound	6:10-7:05 a.m.	29-27.5	1.5	0:55	4:25-4:45 p.m.[1]	15-14.5	0.5	0:20
	5:45-8:00 a.m.	27.5-27	0.5	2:15	2:40-6:25 p.m.	14.5-13	1.5	3:45
	6:10-7:10 a.m.	27-26.5	0.5	1:00	2:05-7:25 p.m.	13-9	4.0	5:20
	6:05-7:50 a.m.	26.5-26	0.5	1:45	4:45-5:55 p.m.	9-8.5	0.5	1:10
	6:05-9:30 a.m.	26-23	3.0	3:25	2:45-6:45 p.m.	8.5-8	0.5	4:00
	6:30-10:05 a.m.	23-16.5	6.5	3:35	2:05-7:20 p.m.	8-6.5	1.5	5:15
	7:40-8:55 a.m.	16.5-16	0.5	1:15	2:15-4:25 p.m.	3-2.5	0.5	2:10
	7:25-7:45 a.m.[1]	10-9	1.0	0:20	3:20-3:55 p.m.[1]	1.5-1	0.5	0:35
	7:10-8:20 a.m.	8-6.5	1.5	1:10	2:35-5:30 p.m.	1-0	1.0	2:55
	7:45-7:55 a.m.	6.5-6	0.5	0:10				

Central Puget Sound region routinely congested freeway segments
2015 weekdays; Length of congestion in miles; Duration of congestion in hours:minutes

	Morning peak period				Evening peak period			
Route and direction	**Start and end times**	**Begin and end milepost**	**Length of congestion**	**Duration of congestion**	**Start and end times**	**Begin and end milepost**	**Length of congestion**	**Duration of congestion**
I-90 eastbound					4:15-6:00 p.m.	9-10	1.0	1:45
I-90 westbound	7:05-8:05 a.m.	16.5-15	1.5	1:00	4:45-5:35 p.m.	11-10	1	0:50
	7:35-8:05 a.m.[1]	14.5-14	0.5	0:30	3:50-6:15 p.m.	8.5-7.5	1	2:25
	7:15-9:15 a.m.	14-12.5	1.5	2:00	3:25-7:05 p.m.	7.5-5.5	2	3:40
	7:40-9:05 a.m.	11-10.5	0.5	1:25				
	7:15-7:50 a.m.[1]	9-8	1.0	0:35				
	8:15-8:25 a.m.[1]	7-6.5	0.5	0:10				
	7:30-9:05 a.m.	6.5-3	3.5	1:35				
SR 520 eastbound	7:40-9:15 a.m.	0.5-2.5	2.0	1:35	5:25-6:05 p.m.[1]	11-11.5	0.5	0:40
SR 520 westbound	8:30-8:50 a.m.[1]	4.5-4	0.5	0:20	4:10-6:45 p.m.	7-4.5	2.5	2:35
	7:45-8:55 a.m.	4-3.5	0.5	1:10	3:15-6:55 p.m.	4.5-1.5	3	3:40
	7:15-9:50 a.m.	3.5-1.5	2.0	2:35				
SR 167 northbound	5:25-8:20 a.m.	16-19	3.0	2:55				
	6:25-6:55 a.m.[1]	23.5-24.5	1.0	0:30				
	6:05-8:35 a.m.	24.5-25.5	1.0	2:30				
	5:30-9:10 a.m.	25.5-26	0.5	3:40				
SR 167 southbound					2:50-5:35 p.m.	20-19.5	0.5	2:45
					2:05-6:00 p.m.	19.5-18	1.5	3:55
					2:45-3:55 p.m.	18-17.5	0.5	1:10
					2:20-4:55 p.m.	17.5-16	1.5	2:35
					2:10-5:40 p.m.	16-15.5	0.5	3:30
Totals	**75.5**						**78.0**	

Data sources and analysis: Washington State Transportation Center and WSDOT Office of Strategic Assessment and Performance Analysis.
Notes: Totals can include congestion at the same location at different times throughout the day. **1** Not reported on routinely congested segments map or narrative in main report due to duration of less than 50 minutes.

Routinely congested segments in 2017

Central Puget Sound region routinely congested freeway segments

2017 weekdays; Length of congestion in miles; Duration of congestion in hours:minutes

	Morning peak period				Evening peak period			
Route and direction	**Start and end times**	**Begin and end milepost**	**Length of congestion**	**Duration of congestion**	**Start and end times**	**Begin and end milepost**	**Length of congestion**	**Duration of congestion**
I-5 northbound	5:10-9:15 a.m.	144-153.5	9.5	4:05	2:05-6:30 p.m.	161.5-165.5	4.0	4:25
	5:40-10:05 a.m.	159-166	7.0	4:25	2:15-6:45 p.m.	166-180.5	14.5	4:30
					4:10-5:35 p.m.	180.5-182.5	2.0	1:25
					2:25-6:25 p.m.	182.5-183.5	1.0	4:00
					2:05-6:55 p.m.	184-185	1.0	4:50
					2:40-5:20 p.m.	189.5-190.5	1.0	2:40
I-5 southbound	5:15-5:20 a.m.	190-189.5	0.5	0:05	2:05-7:35 p.m.	172-165	7.0	5:30
	5:50-6:30 a.m.[1]	187.5-186.5	1.0	0:40	2:05-7:25 p.m.	164.5-163	1.5	5:20
	6:20-6:25 a.m.[1]	186-185.5	0.5	0:05	2:15-6:15 p.m.	157.5-151	6.5	4:00
	5:35-6:40 a.m.	185.5-185	0.5	1:05				
	5:40-6:45 a.m.	184.5-183.5	1.0	1:05				
	5:40-9:40 a.m.	182-173.5	8.5	4:00				
	7:55-8:50 a.m.	174.5-172	2.5	0:55				
	6:50-10:00 a.m.	172-168	4.0	3:10				
	8:00-9:30 a.m.	167.5-166	1.5	1:30				
	7:50-7:55 a.m.[1]	164.5-164	0.5	0:05				
	7:10-8:05 a.m.	164-163.5	0.5	0:55				
I-405 northbound	5:30-10:05 a.m.	3-8.5	5.5	4:35	2:05-6:30 p.m.	0.5-5.5	5.0	4:25
	7:30-10:05 a.m.	10-13.5	3.5	2:35	4:45-5:35 p.m.	15-15.5	0.5	0:50
					2:15-7:00 p.m.	16-19	3.0	4:45
					4:25-5:05 p.m.[1]	19-19.5	0.5	0:40
					3:55-6:05 p.m.	20.5-23.5	3.0	2:10
					4:10-6:05 p.m.	24-27	3.0	1:55
					4:15-5:05 p.m.	29.5-30	0.5	0:50
I-405 southbound	6:05-10:00 a.m.	29-23	6.0	3:55	4:20-4:30 p.m.[1]	15-14.5	0.5	0:10
	8:40-8:45 a.m.[1]	22-21.5	0.5	0:05	2:05-7:35 p.m.	14.5-6.5	8.0	5:30
	6:45-10:05 a.m.	21.5-18.5	3.0	3:20	2:10-2:15 p.m.[1]	6.5-6	0.5	0:05
	7:45-8:20 a.m.[1]	18.5-18	0.5	0:35	2:05-4:30 p.m.	4-2.5	1.5	2:25
	7:15-10:05 a.m.	18-16	2.0	2:50	2:40-5:35 p.m.	0.5-0	0.5	2:55
	6:45-9:00 a.m.	8.5-6	2.5	2:15				
I-90 eastbound					4:45-5:00 p.m.[1]	3.5-4	0.5	0:15
					3:45-5:55 p.m.	8.5-10	1.5	2:10
					5:30-6:10 p.m.[1]	16-17	1.0	0:40
I-90 westbound	7:15-8:10 a.m.	16.5-15.5	1.0	0:55	3:45-6:00 p.m.	11-10	1.0	2:15
	7:30-7:40 a.m.[1]	15.5-15	0.5	0:10	4:10-5:55 p.m.	7.5-5.5	2.0	1:45
	7:40-9:50 a.m.	11-10.5	0.5	2:10				
	7:05-9:25 a.m.	9-5	4.0	2:20				
	7:25-9:05 a.m.	4-3.5	0.5	1:40				
	8:30-8:45 a.m.[1]	3.5-3	0.5	0:15				

Central Puget Sound region routinely congested freeway segments

2017 weekdays; Length of congestion in miles; Duration of congestion in hours:minutes

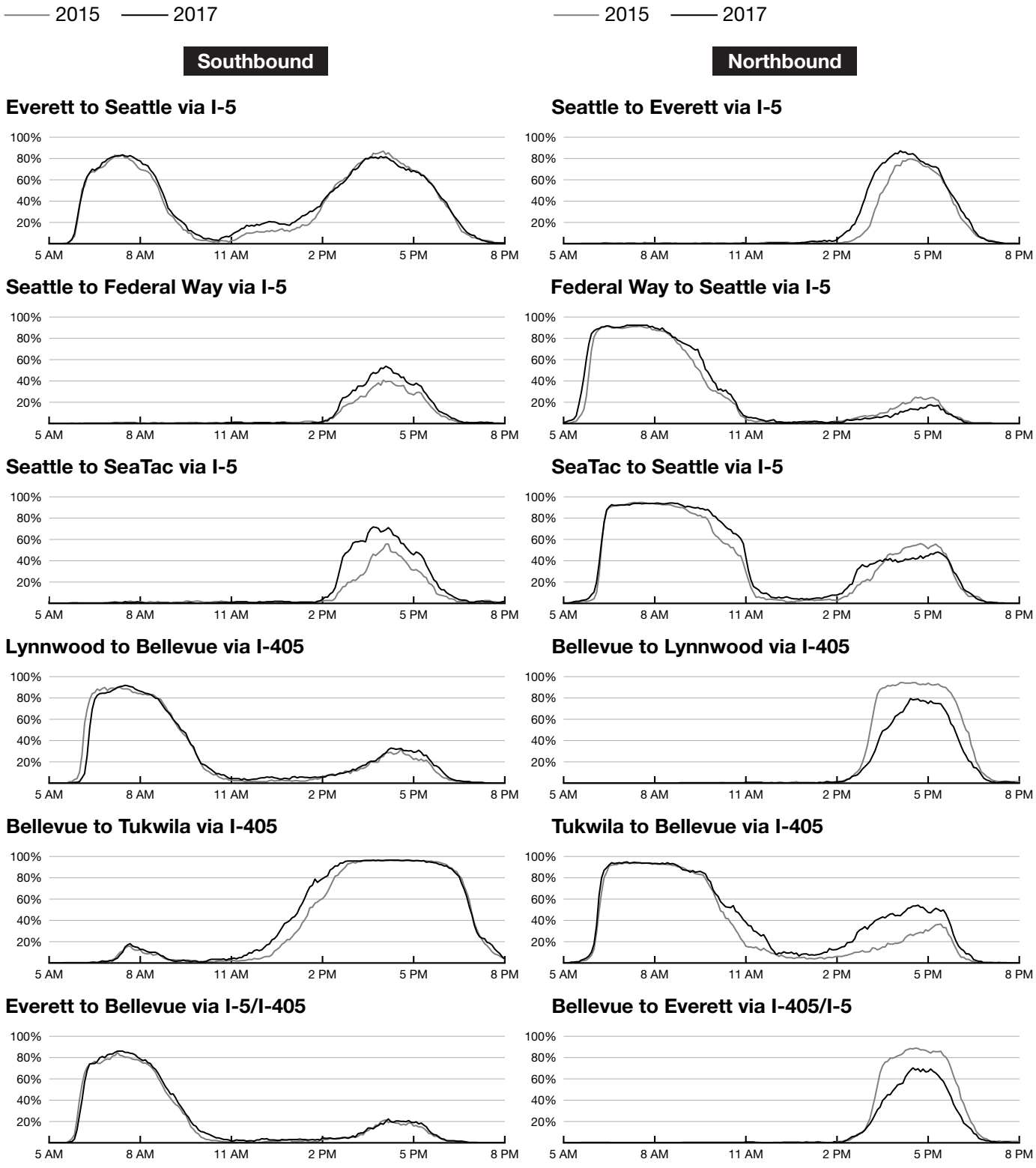
	Morning peak period				Evening peak period			
Route and direction	**Start and end times**	**Begin and end milepost**	**Length of congestion**	**Duration of congestion**	**Start and end times**	**Begin and end milepost**	**Length of congestion**	**Duration of congestion**
SR 520 eastbound	8:10-9:05 a.m.	0.5-2	1.5	0:55	5:20-6:10 p.m.	11-11.5	0.5	0:50
	8:40-9:00 a.m.[1]	7-7.5	0.5	0:20				
	8:35-9:40 a.m.	8-9.5	1.5	1:05				
SR 520 westbound	8:10-8:55 a.m.[1]	7.5-6.5	1.0	0:45	5:20-5:40 p.m.[1]	7.5-6.5	1.0	0:20
	8:00-9:00 a.m.	4.5-2.5	2.0	1:00	4:25-4:50 p.m.[1]	6-5.5	0.5	0:25
	8:35-8:50 a.m.[1]	2.5-2	0.5	0:15	3:40-6:45 p.m.	5.5-0.5	5.0	3:05
	7:30-9:15 a.m.	1.5-0	1.5	1:45	3:50-3:55 p.m.[1]	0.5-0	0.5	0:05
SR 167 northbound	5:20-9:00 a.m.	16-19	3.0	3:40	4:20-5:35 p.m.	25.5-26	0.5	1:15
	6:15-8:05 a.m.	23-24.5	1.5	1:50				
	5:25-8:45 a.m.	24.5-25.5	1.0	3:20				
	5:15-9:45 a.m.	25.5-26	0.5	4:30				
SR 167 southbound					3:45-4:50 p.m.	22.5-22	0.5	1:05
					2:35-5:55 p.m.	22-20	2.0	3:20
					2:05-6:20 p.m.	20-18	2.0	4:15
					2:45-6:00 p.m.	18-17	1.0	3:15
Totals			**82.5**				**84.5**	

Data sources and analysis: WSDOT Multimodal Planning Division and WSDOT Office of Strategic Assessment and Performance Analysis.

Notes: Totals can include congestion at the same location at different times throughout the day. **1** Not reported on routinely congested segments map or narrative in main report due to duration of less than 50 minutes.

Stamp graphs: Frequency, duration of SEVERE congestion

Stamp graphs of SEVERE congestion by time of day on central Puget Sound region freeways
Percent of weekdays the average speed was slower than 36 mph; 2015 and 2017



Data sources and analysis: WSDOT Northwest Region Traffic Office, WSDOT Multimodal Planning Division and WSDOT Office of Strategic Assessment and Performance Analysis.
Note: See p. 2 for congestion definitions and how to read these graphs.

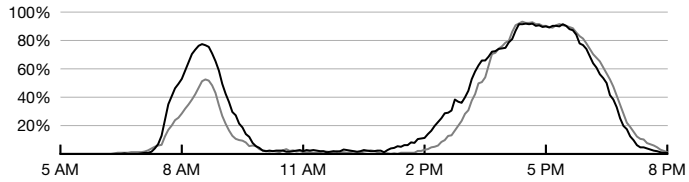
Stamp graphs: Frequency, duration of SEVERE congestion

Stamp graphs of SEVERE congestion by time of day on central Puget Sound region freeways
Percent of weekdays the average speed was slower than 36 mph; 2015 and 2017

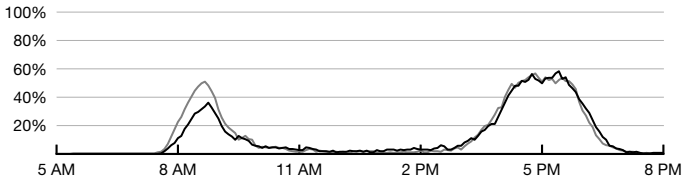
2015 2017 2015 2017

Westbound **Eastbound**

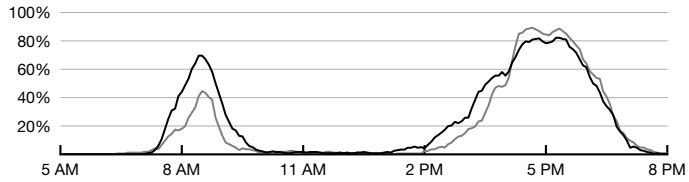
Bellevue to Seattle via I-405/SR 520/I-5



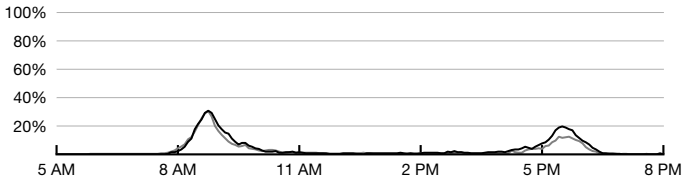
Seattle to Bellevue via I-5/SR 520/I-405



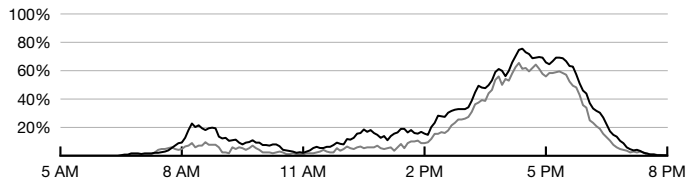
Redmond to Seattle via SR 520/I-5



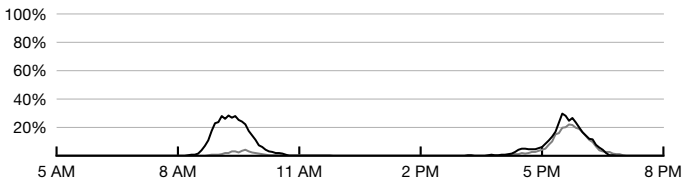
Seattle to Redmond via I-5/SR 520



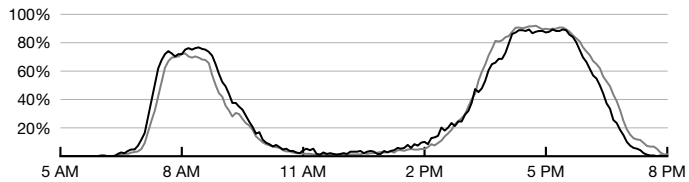
Redmond to Bellevue via SR 520/I-405



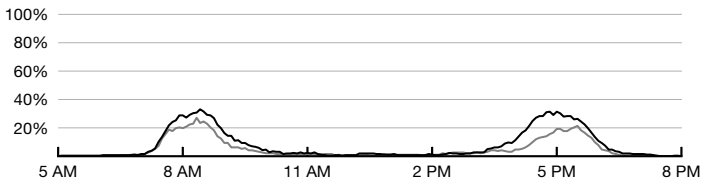
Bellevue to Redmond via I-405/SR 520



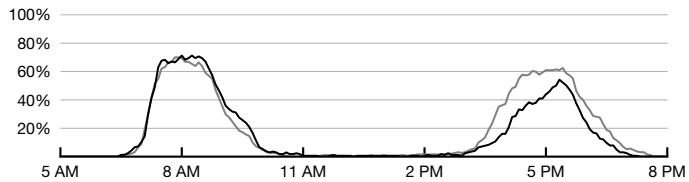
Bellevue to Seattle via I-405/I-90/I-5



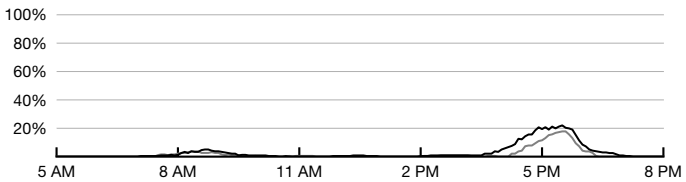
Seattle to Bellevue via I-5/I-90/I-405



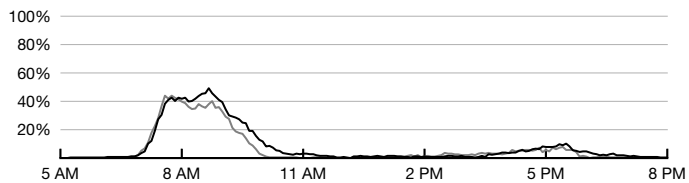
Issaquah to Seattle via I-90/I-5



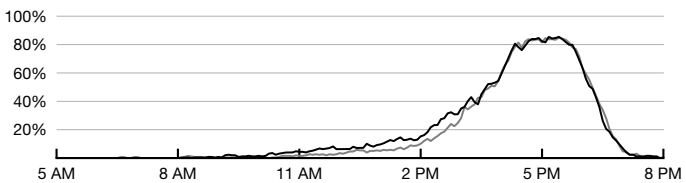
Seattle to Issaquah via I-5/I-90



Issaquah to Bellevue via I-90/I-405



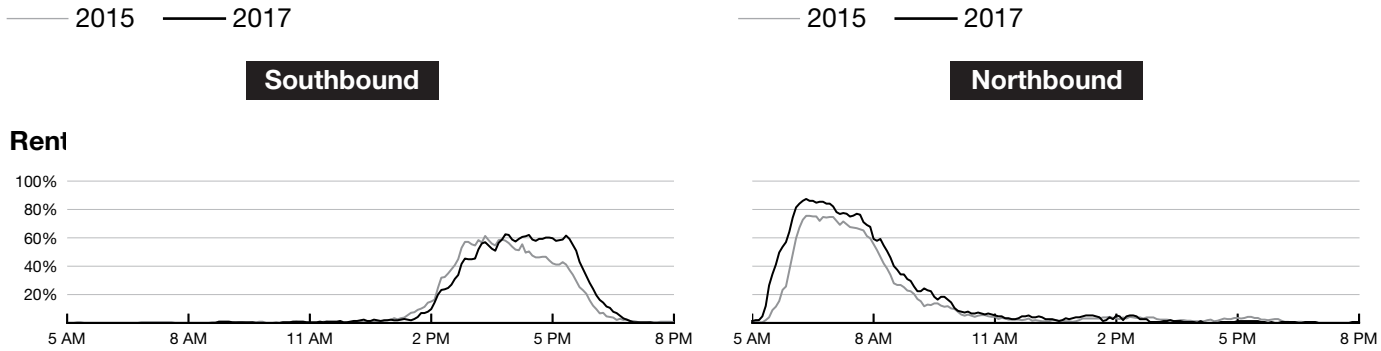
Bellevue to Issaquah via I-405/I-90



Data sources and analysis: WSDOT Northwest Region Traffic Office, WSDOT Multimodal Planning Division and WSDOT Office of Strategic Assessment and Performance Analysis.
Note: See p. 2 for congestion definitions and how to read these graphs.

Stamp graphs and how to read a heatmap

Stamp graphs of SEVERE congestion by time of day on central Puget Sound region freeways
Percent of weekdays the average speed was slower than 36 mph; 2015 and 2017



Data sources and analysis: WSDOT Northwest Region Traffic Office, WSDOT Multimodal Planning Division and WSDOT Office of Strategic Assessment and Performance Analysis.
Note: See p. 2 for congestion definitions and how to read these graphs.

How to read a heatmap graph

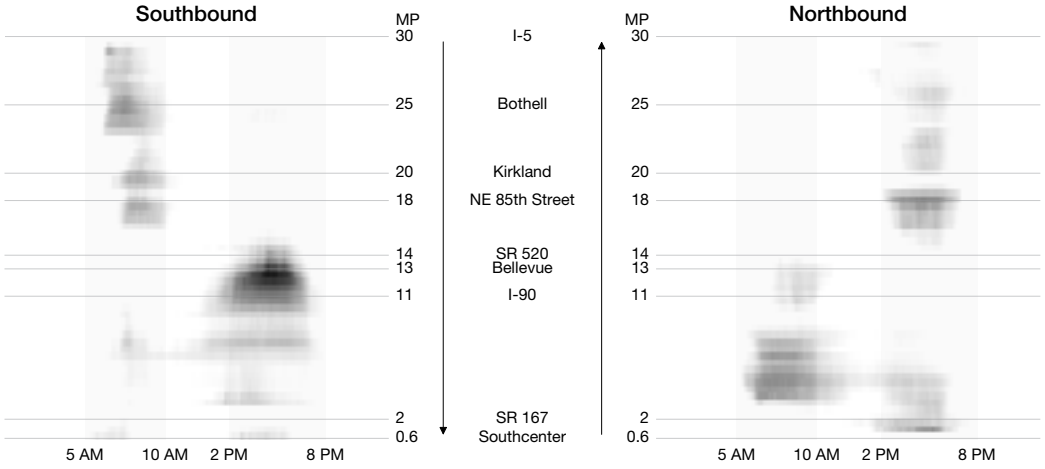
When and where was the most intense delay as measured by daily vehicle hours of delay? How does delay differ by direction of travel? What corridors experienced the most noticeable delay?

Heatmap graphs visualize the intensity of delay over an entire corridor throughout the day. The following example shows vehicle hours of delay by time of day (measured in 5-minute intervals) and location on the chosen corridor. The result is a map of the intensity of delay. Darker shading represents more intense delay on the commute corridor. Shading was standardized across all the corridors to allow for comparisons. In addition, the heatmaps were separated by direction on the corridor, supporting more detailed comparisons. Each direction is read in a different manner, as indicated by the arrows. The northbound graph to the right is read from the bottom to the top. The corresponding southbound graph is read from the top to the bottom. For the purposes of this report, the eastbound direction is read like northbound; the westbound direction like southbound.

Sample heatmap graph

I-405 delay between Tukwila and the Lynnwood I-5/I-405 interchange
2017; Vehicle hours of delay; Weekdays only; By milepost (MP); Shading represents intensity of delay; Highlighted sections represent peak periods

In 2017 on southbound I-405, the most intense delay extended from SR 520 past I-90, and lasted from 3-6:30 p.m. There was also southbound delay during the morning commute from I-5 to the NE 85th Street exit. On northbound I-405, the worst delay occurred during the morning peak period north of the SR 167 interchange. There were pockets of delay near SR 167 and from SR 520 to I-5 during the evening commute.



Data sources and analysis: WSDOT Multimodal Planning Division and WSDOT Office of Strategic Assessment and Performance Analysis.

Heatmaps: Daily vehicle hours of delay on I-5

I-5 delay between Federal Way and Everett

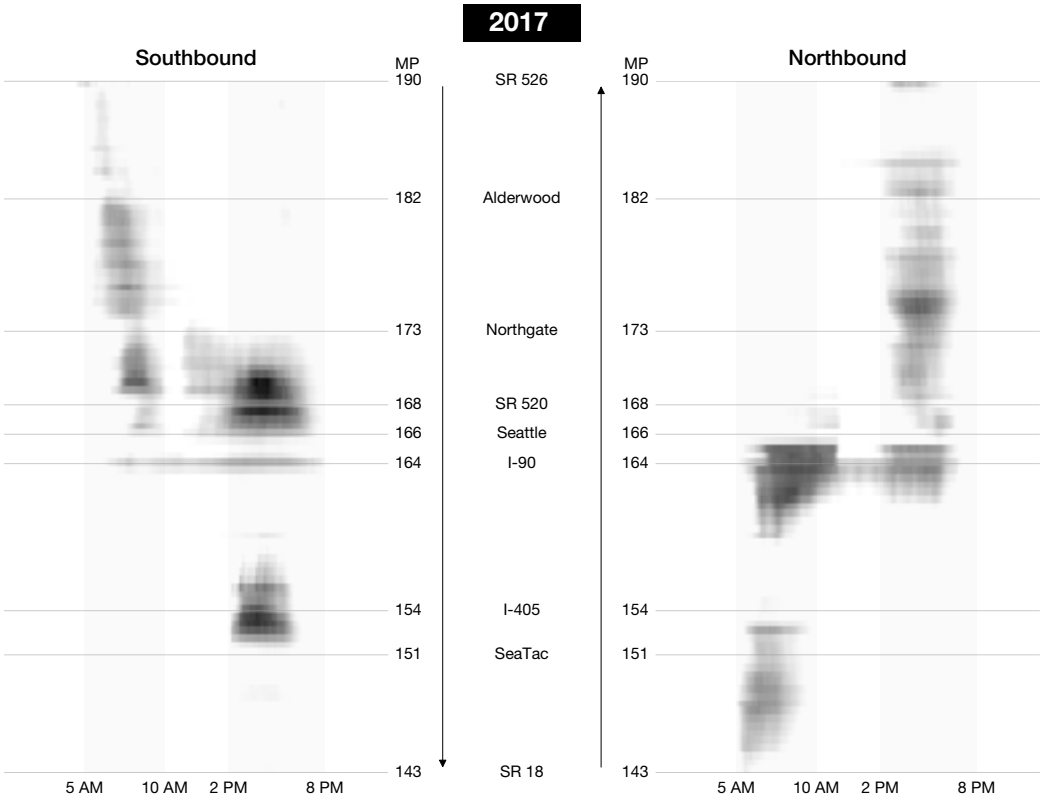
2015 and 2017; Vehicle hours of delay; Weekdays only; By milepost (MP); Shading represents intensity of delay; Highlighted sections represent peak periods

For both travel directions in 2017, delay was prevalent around the Seattle area throughout the entire day.

Delay on southbound I-5 was most intense from 2 p.m. to 7:30 p.m., with notable hotspots around Seattle and SeaTac during those hours. Southbound delay in the morning was somewhat less intense, but extended from Everett through downtown Seattle.

Delay on northbound I-5 was most intense from 7a.m.-12:30p.m. approaching Seattle, with a less-intense hotspot at SeaTac; evening northbound delay extended from south of the I-90 interchange to Everett.

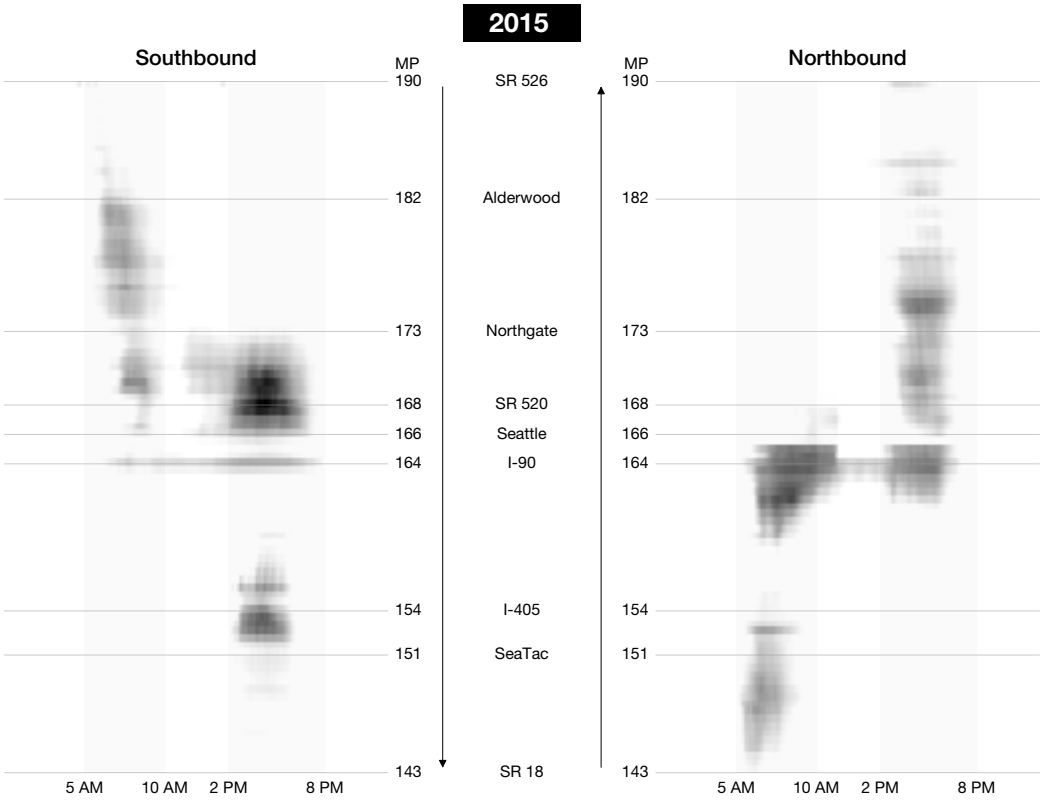
The most notable change between 2015 and 2017 was the increase in the intensity of the delay around SeaTac.



In 2015, delay was prevalent in both directions around the Seattle area throughout the entire day.

Delay on southbound I-5 was most intense from 2 p.m. to 7:30 p.m., with notable hotspots around Seattle and SeaTac during those hours. Southbound delay in the morning was somewhat less intense, but extended from Everett through downtown Seattle.

Delay on northbound I-5 was most intense from 7a.m.-12:30p.m. approaching Seattle, with a less-intense hotspot at SeaTac; evening northbound delay extended from south of the I-90 interchange to Everett.



Data sources and analysis: WSDOT Multimodal Planning Division and WSDOT Office of Strategic Assessment and Performance Analysis.

Heatmaps: Daily vehicle hours of delay on I-405

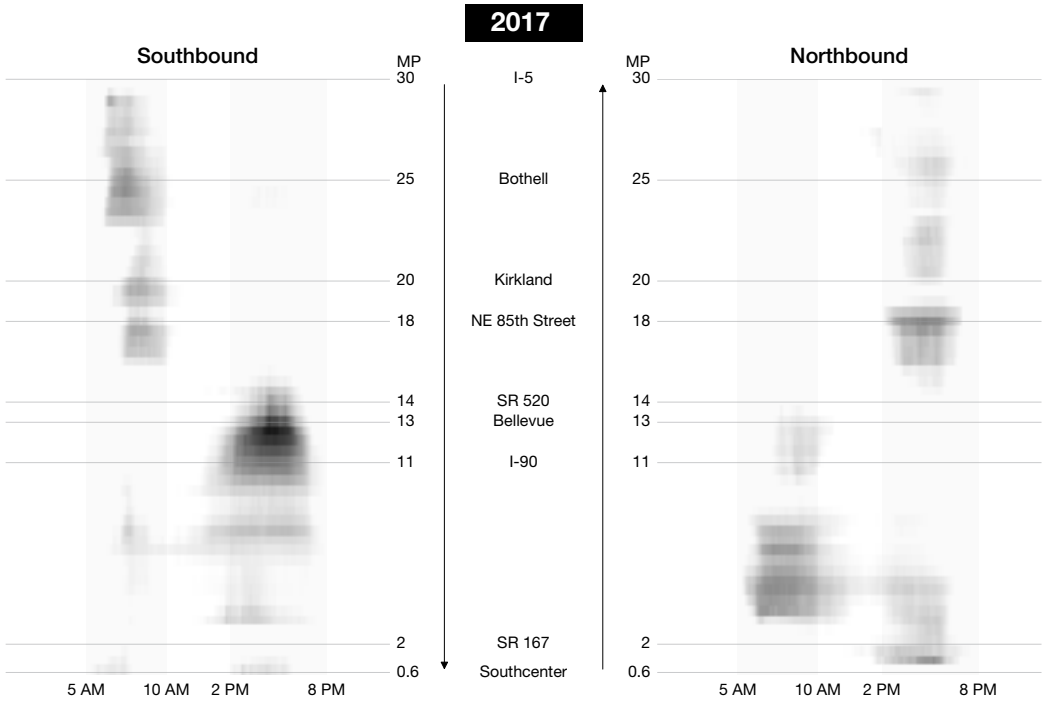
I-405 delay between Tukwila and the Lynnwood I-5/I-405 interchange

2015 and 2017; Vehicle hours of delay; Weekdays only; By milepost (MP); Shading represents intensity of delay; Highlighted sections represent peak periods

The worst delay on southbound I-405 in 2017 extended from SR 520 past I-90, and lasted from 2 p.m. to 7:30 p.m. There was also southbound delay during the morning commute from I-5 to well past Kirkland.

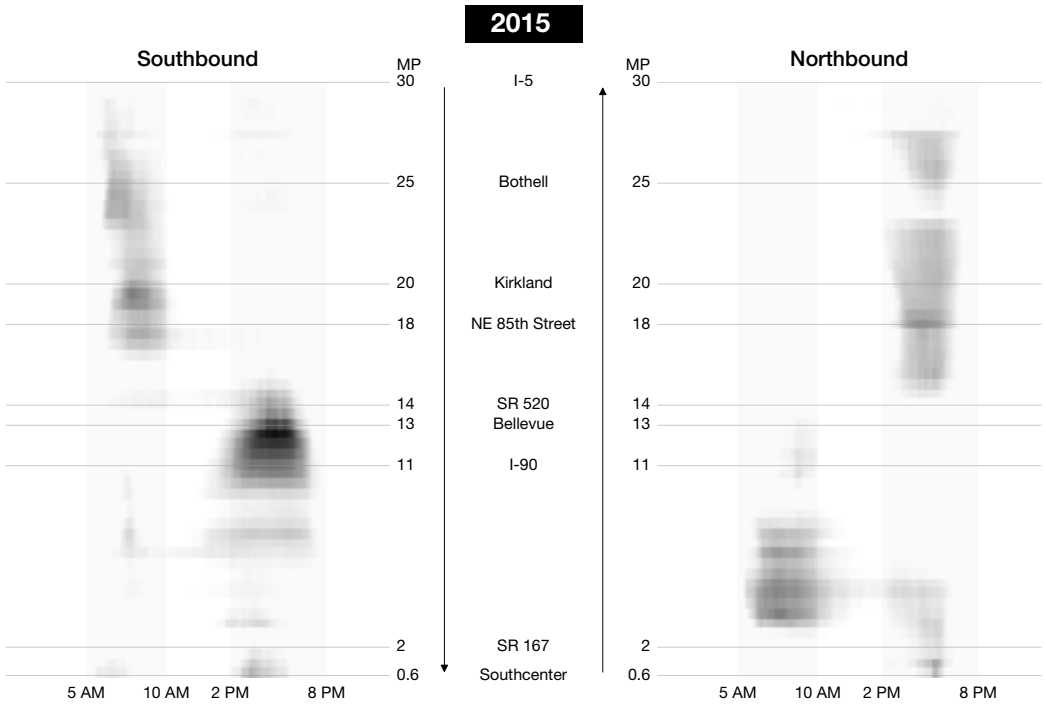
On northbound I-405, the worst delay occurred during the morning peak period north of the SR 167 interchange. There were additional areas of delay during the evening commute near the SR 167 interchange and around NE 185th Street.

In general, 2017 delay on I-405 looked a lot like 2015 delay, with substantial improvements north of Bellevue, and some increases in delay between SR 167 and Bellevue.



The worst delay on southbound I-405 in 2015 was between SR 520 and I-90, and lasted for most of the evening peak period. There was also southbound delay during the morning commute from I-5 to well past Kirkland.

On northbound I-405, the worst delay occurred during the morning peak period north of the SR 167 interchange. There was also significant delay during the evening commute near the SR 167 interchange and from Bellevue to Bothell.



Data sources and analysis: WSDOT Multimodal Planning Division and WSDOT Office of Strategic Assessment and Performance Analysis.

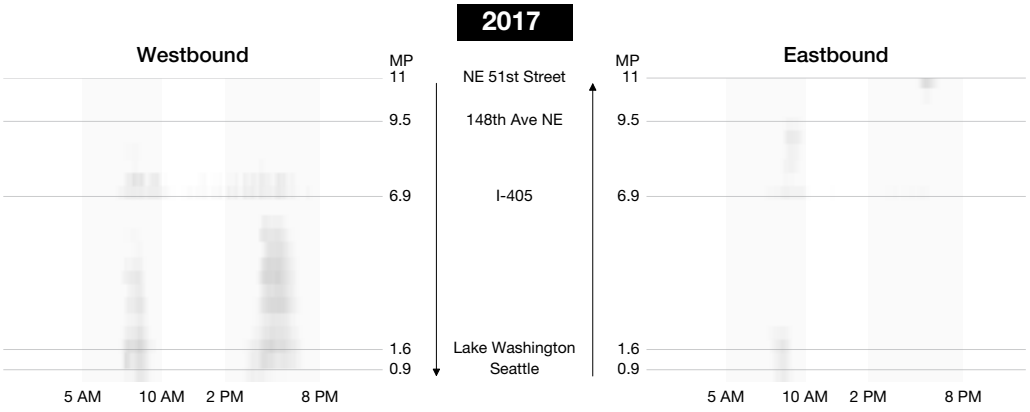
Heatmaps: Daily vehicle hours of delay on SR 520

SR 520 delay between Seattle and Redmond

2015 and 2017; Vehicle hours of delay; Weekdays only; By milepost (MP); Shading represents intensity of delay; Highlighted sections represent peak periods

In 2017, on westbound SR 520, there was delay from just east of I-405 to Seattle during both the morning and evening peak periods, with the evening delay lasting slightly longer.

On eastbound SR 520 in 2017, delay occurred primarily near the end of the morning peak period between 148th Ave NE and I-405, and from Lake Washington to Seattle.

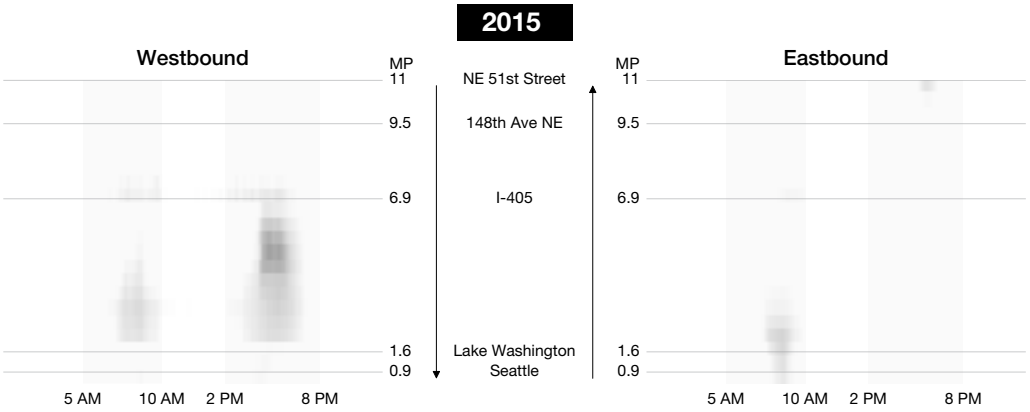


The addition of HOV lanes across the Evergreen Point Floating Bridge (see story on p. 20 of the main report) reduced the intensity of the delay on the westbound approach to the bridge between 2015 and 2017, most notably during the evening peak period.

The addition of HOV lanes across the Evergreen Point Floating Bridge (see story on p. 20 of the main report) also reduced the intensity of the delay during the morning peak period on the eastbound approach to the bridge between 2015 and 2017.

In 2015, the most intense delay on SR 520 occurred westbound between I-405 and the west end of the Evergreen Point Floating Bridge, between 8 a.m. and 10 a.m. and betweeen 3 p.m. and 7 p.m..

Eastbound delay was not nearly as extensive as westbound delay, and occurred primarily between 8 a.m. and 9 a.m. between Seattle and Lake Washington (that is, on the eastbound approach to the Evergreen Point Floating Bridge.)



Data sources and analysis: WSDOT Multimodal Planning Division and WSDOT Office of Strategic Assessment and Performance Analysis.

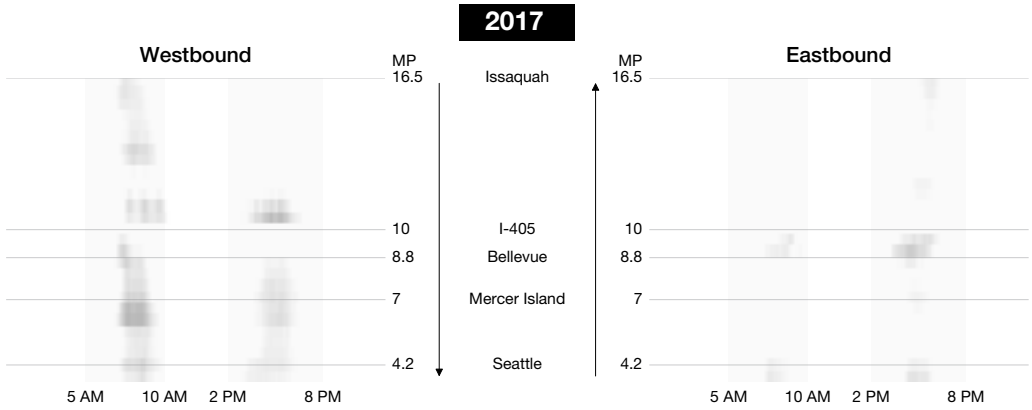
Heatmaps: Daily vehicle hours of delay on I-90

I-90 delay between Seattle and Issaquah

2015 and 2017; Vehicle hours of delay; Weekdays only; By milepost (MP); Shading represents intensity of delay; Highlighted sections represent peak periods

In 2017, delay on westbound I-90 in the central Puget Sound region occurred in patches spread throughout the full length of the corridor during the morning commute, and between I-405 and Seattle during the evening commute.

The eastbound commutes saw much less delay than the westbound, with notable patches around Bellevue and Seattle around the middles of both the a.m. and the p.m. commutes.

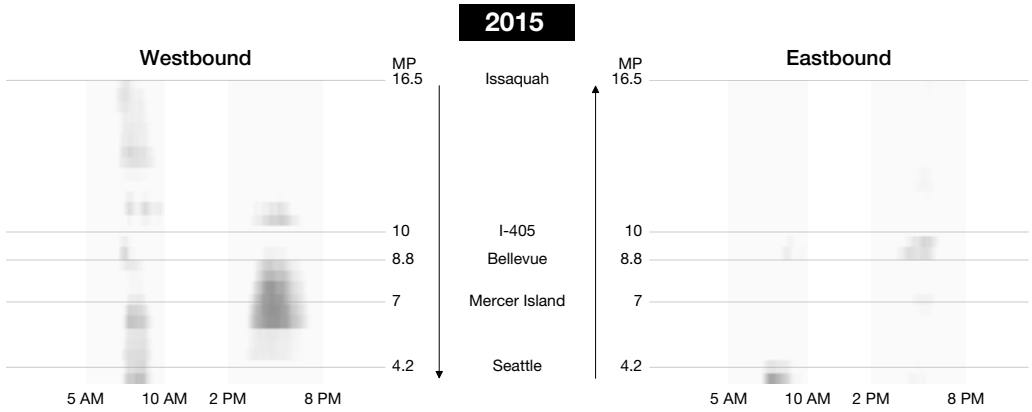


The morning westbound commute on I-90 was quite similar in 2015 and 2017, with delay becoming a little more intense and lasting a little longer throughout. The evening commute saw a notable improvement between the two years due to the opening of a 24-hour HOV lane in each direction in June 2017.

Delay on eastbound I-90 was also quite similar in both 2015 and 2017, with most delayed areas becoming a little bit worse between the two years.

In 2015, the worst delay on I-90 in the central Puget Sound region occurred during the westbound evening commute, with delay lasted from 3:30 p.m. to 7 p.m. between Bellevue and Seattle. The morning westbound commute had patches of delay all along the corridor.

The eastbound commutes on I-90 had relatively little delay, with notable patches around Seattle between 8 a.m. and 10 a.m., and from 4 p.m. to 6 p.m. near Bellevue.



Data sources and analysis: WSDOT Multimodal Planning Division and WSDOT Office of Strategic Assessment and Performance Analysis.

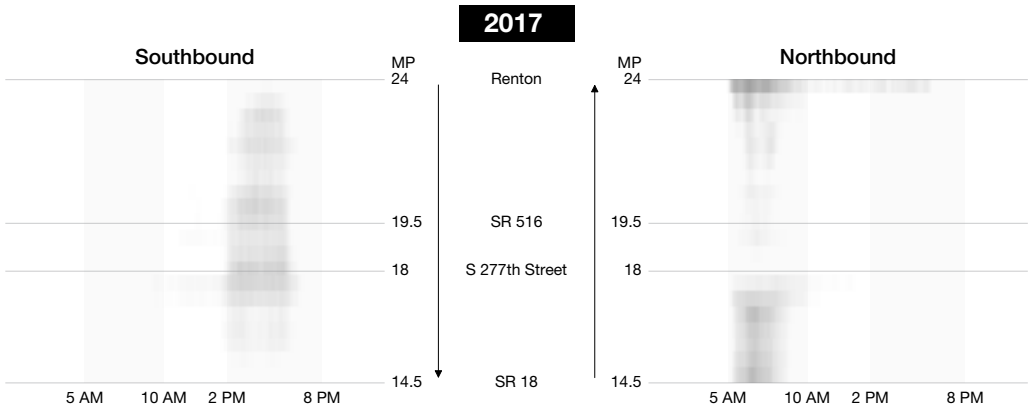
Heatmaps: Daily vehicle hours of delay on SR 167

SR 167 delay between Auburn and Renton

2015 and 2017; Vehicle hours of delay; Weekdays only; By milepost (MP); Shading represents intensity of delay; Highlighted sections represent peak periods

In 2017, on southbound SR 167, delay lasted from approximately 2 p.m. to 6 p.m., and affected nearly the entire length of the corridor.

Northbound delay lasted the full length of the morning commute on the full corridor, and near milepost 24 in Renton it lasted from 5 a.m. to 5 p.m.

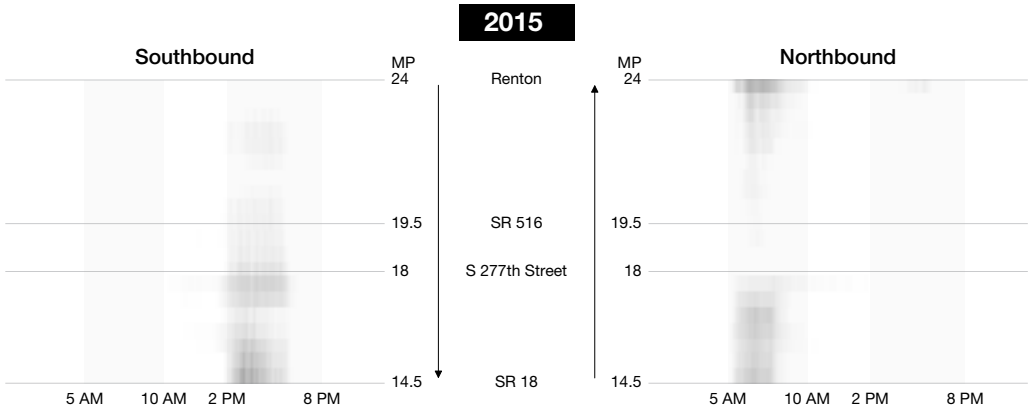


The extension of the southbound HOT lane to Pacific in December 2016 led to a noticable decrease in the intensity of southbound delay on SR 167 between S 277th Street and SR 18. However, the part of the corridor north of S 277th Street saw increases in delay between 2015 and 2017.

Northbound delay on SR 167 occurred at more or less the same times and locations in both 2015 and 2017, but grew more intense between the two years.

In 2015, on southbound SR 167, delay lasted from approximately 2 p.m. to 6 p.m., and affected nearly the entire length of the corridor.

On northbound SR 167 in 2015, delay was most intense during the morning commute in Renton and from S 277th Street to SR 18.



Data sources and analysis: WSDOT Multimodal Planning Division and WSDOT Office of Strategic Assessment and Performance Analysis.

Commute trip analysis

Morning commutes: Changes in travel time performance, congestion and reliability for 19 morning high-demand commute trips in the central Puget Sound region
2015 and 2017; Morning peak (5-10 a.m.) for an annualized average weekday; 5-minute peak of commuter rush (individual peak times vary); Length of route in miles; All travel times in minutes; Peak of commuter rush and duration of congestion expressed in hours and minutes; Cost of congestion in dollars.

Morning

				Travel Times								Congestion						Reliability											
						Average travel time at peak of morning commute			Maximum throughput travel time index (MT^3)									2015 percentiles				2017 percentiles				Δ: 2015 vs. 2017			
																		Median				Median				Median			
Route	Direction of travel	Length of route	Peak commute time	Travel time at posted speed	Travel time at maximum throughput speed	2015	2017	%Δ	2015	2017	Peak period %Δ in VMT	Duration of congestion: How long average speed is below 45 mph 2015	2017	Δ	Cost of congestion[1] per person[2], per trip 2015	2017	%Δ	50th	80th	90th	95th	50th	80th	90th	95th	50th	80th	90th	95th
To Seattle																													
I-5 Everett to Seattle[9]	SB	24	7:20	24	28	56	59	5%	1.98	2.07	1%	3:30	4:30	1:00	$6.31	$5.65	-10%	55	68	80	**92**	57	72	81	**95**	2	4	1	**3**
I-5 Federal Way to Seattle[9]	NB	22	7:10	22	27	57	59	4%	2.12	2.22	-1%	5:15	5:35	0:20	$6.64	$7.39	11%	57	67	73	**79**	60	72	78	**82**	3	5	4	**3**
I-90/I-5 Issaquah to Seattle	WB/NB	15	8:15	15	19	30	30	0%	1.63	1.65	1%	2:45	2:50	0:05	$2.61	$2.68	3%	29	36	42	**46**	31	36	41	**45**	1	0	-1	**-1**
SR 520/I-5 Redmond to Seattle	WB/SB	13	8:30	13	16	22	27	23%	1.38	1.65	-4%	1:30	2:00	0:30	$0.97	$1.93	99%	21	27	30	**33**	26	33	37	**40**	4	7	7	**7**
I-5 SeaTac to Seattle[8]	NB	13	8:20	13	16	36	35	-3%	2.30	2.25	1%	5:15	5:30	0:15	$4.86	$4.98	2%	36	42	44	**46**	35	41	44	**47**	-1	-1	0	**1**
I-405/I-90/I-5 Bellevue to Seattle	SB/WB/NB	10	8:25	10	12	20	21	5%	1.65	1.73	2%	2:55	3:15	0:20	$1.75	$1.88	7%	20	25	27	**30**	22	25	28	**30**	2	1	1	**0**
I-405/SR 520/I-5 Bellevue to Seattle	NB/WB/SB	10	8:35	10	12	19	23	21%	1.51	1.85	-6%	2:30	2:25	-0:05	$0.98	$1.93	97%	17	23	26	**29**	22	28	32	**35**	5	5	6	**6**
To Bellevue																													
I-5/I-405 Everett to Bellevue	SB	24	7:20	24	28	55	57	4%	1.93	1.99	1%	3:55	4:00	0:05	$6.09	$6.34	4%	55	67	74	**79**	56	67	77	**85**	1	0	2	**6**
I-405 Lynnwood to Bellevue	SB	16	7:30	16	19	45	46	2%	2.34	2.36	-1%	4:05	4:00	-0:05	$6.27	$6.02	-4%	46	57	62	**66**	48	55	61	**68**	2	-2	-1	**2**
I-405 Tukwila to Bellevue	NB	13	8:15	13	16	42	42	0%	2.60	2.61	-2%	5:30	6:05	0:35	$5.46	$5.45	0%	43	48	53	**59**	44	51	54	**56**	1	2	1	**-3**
I-5/I-90/I-405 Seattle to Bellevue	SB/EB/NB	11	8:30	11	13	16	17	6%	1.27	1.33	-5%	2:20	2:40	0:20	$0.51	$0.67	31%	16	18	19	**21**	16	20	21	**23**	0	2	2	**2**
I-5/SR 520/ I-405 Seattle to Bellevue	NB/EB/SB	10	8:45	10	12	17	16	-6%	1.42	1.32	5%	2:20	3:20	1:00	$0.80	$0.33	-59%	17	20	22	**24**	15	19	21	**24**	-2	-1	-1	**0**
I-90/I-405 Issaquah to Bellevue	WB/NB	9	8:35	9	11	16	16	0%	1.39	1.45	0%	2:30	2:50	0:20	$0.91	$1.03	13%	15	18	22	**26**	15	20	23	**25**	0	2	1	**-1**
SR 520/I-405 Redmond to Bellevue	WB/SB	6	8:45	6	7	8	9	13%	1.15	1.24	1%	2:00	2:40	0:40	$0.08	$0.22	175%	8	9	10	**11**	9	10	11	**13**	0	1	2	**2**
Other																													
I-405 Bellevue to Tukwila	SB	13	7:40	13	16	19	19	0%	1.20	1.20	2%	0:30	0:40	0:10	$0.40	$0.37	-8%	18	21	25	**30**	18	22	24	**26**	1	1	-1	**-4**
I-405/SR 520 Bellevue to Redmond	NB/EB	5	9:15	5	7	7	8	14%	1.10	1.28	4%	0:00	1:25	1:25	$-	$0.30	N/A	7	8	8	**9**	8	10	11	**11**	1	2	3	**2**
SR 167 Auburn to Renton[9]	NB	10	6:45	10	12	21	22	5%	1.68	1.78	-2%	3:50	4:30	0:40	$1.84	$2.13	16%	21	25	28	**30**	22	26	28	**30**	1	1	0	**0**
I-5/I-90 Seattle to Issaquah	SB/EB	16	8:20	16	19	20	20	0%	1.06	1.06	-3%	0:00	0:00	0:00	$-	$-	N/A	19	22	22	**25**	19	22	24	**25**	0	1	1	**0**
I-5/SR 520 Seattle to Redmond	NB/EB	13	8:45	13	16	20	20	0%	1.24	1.24	6%	1:05	1:00	-0:05	$0.45	$0.48	7%	20	23	25	**27**	19	24	25	**28**	-1	0	0	**1**

Data source: WSDOT Multimodal Planning Division, WSDOT Office of Strategic Assessment and Performance Analysis, and the Puget Sound Regional Council (PSRC).

Notes: The symbol "Δ" is used to denote change in a variable. Commute lengths and travel time values have been rounded to integer values for publication only. MT^3 Index values cannot be reproduced as published using the integer values in the table. Due to rounding, some percentages are not computable based on numbers in the table. **1** Commute congestion cost based on $23.76 for every hour of congested conditions measured when commute speeds are slower than 45 mph, applied to the volume of traffic during the congested conditions on an average annual weekday commute. This methodology is in accordance with WSDOT's update 2017 guidelines for assessing the cost of travel. **2** Per-person metrics were estimated based on vehicle occupancy observed on the freeway in the general purpose lanes. **3** Greenhouse gas emissions were calculated based on emission factors developed by PSRC for different vehicle types at varying travel speeds for each analysis year. In addition, the emissions used the traffic volume and percent of trucks, the average speeds for every 5-minute interval during the peak period, and the average vehicle occupancy on the freeway.

Commute trip analysis

Evening commutes: Changes in travel time performance, congestion and reliability for 21 evening high-demand commute trips in the central Puget Sound region

2015 and 2017; Evening peak (2-8 p.m.) for an annualized average weekday; 5-minute peak of commuter rush (individual peak times vary); Length of route in miles; All travel times in minutes; Peak of commuter rush and duration of congestion expressed in hours and minutes; Cost of congestion in dollars.

Evening

				Travel Times								Congestion						Reliability											
						Average travel time at peak of morning commute			Maximum throughput travel time index (MT^3I)									2015 percentiles				2017 percentiles				Δ: 2015 vs. 2017			
																		Median				Median				Median			
Route	Direction of travel	Length of route	Peak time	Travel time at posted speed	Travel time at maximum throughput speed	2015	2017	%Δ	2015	2017	Peak period %Δ in VMT	Duration of congestion: How long average speed is below 45 mph 2015	2017	Δ	Cost of congestion[1] per person[2], per trip 2015	2017	%Δ	50th	80th	90th	95th	50th	80th	90th	95th	50th	80th	90th	95th
From Seattle																													
I-5 Seattle to Everett[8]	NB	23	16:10	23	28	47	52	11%	1.67	1.83	0%	3:25	4:05	0:40	$4.63	$5.71	23%	46	55	60	**66**	51	61	68	**75**	5	7	7	**9**
I-5 Seattle to Federal Way[8]	SB	22	16:10	22	27	37	39	5%	1.39	1.45	1%	3:05	3:25	0:20	$2.18	$2.78	28%	35	43	48	**55**	37	45	49	**55**	2	3	1	**0**
I-5 Seattle to SeaTac[9]	SB	13	16:05	13	16	23	25	9%	1.50	1.63	2%	3:10	3:40	0:30	$1.64	$2.41	47%	22	27	33	**36**	25	30	34	**40**	3	3	1	**4**
I-5/I-90/I-405 Seattle to Bellevue	SB/EB/NB	11	16:50	11	13	15	17	13%	1.18	1.32	-1%	1:30	2:30	1:00	$0.24	$0.68	183%	13	18	20	**22**	16	20	23	**27**	2	2	3	**5**
I-5/SR 520/I-405 Seattle to Bellevue	NB/EB/SB	10	17:25	10	12	18	18	0%	1.47	1.49	9%	3:20	3:35	0:15	$1.23	$1.18	-4%	17	22	24	**26**	18	22	24	**26**	0	0	0	**0**
I-5/SR 520 Seattle to Redmond	NB/EB	13	17:30	13	16	18	19	6%	1.13	1.19	8%	0:25	0:45	0:20	$0.10	$0.38	280%	17	21	23	**25**	18	22	25	**26**	1	1	2	**1**
I-5/I-90 Seattle to Issaquah	SB/EB	16	17:15	16	19	22	23	5%	1.16	1.23	0%	0:55	1:40	0:45	$0.23	$0.66	187%	21	26	29	**32**	22	27	31	**35**	1	1	2	**3**
From Bellevue																													
I-405/I-5 Bellevue to Everett	NB	23	16:50	23	28	49	44	-10%	1.75	1.58	-2%	4:00	3:45	-0:15	$4.84	$3.52	-27%	48	56	61	**65**	42	53	58	**62**	-6	-4	-3	**-3**
I-405 Bellevue to Lynnwood	NB	16	16:50	16	19	40	34	-15%	2.07	1.76	-1%	4:10	3:50	-0:20	$4.88	$3.27	-33%	39	46	49	**52**	32	41	47	**50**	-7	-5	-2	**-2**
I-405 Bellevue to Tukwila	SB	13	16:50	13	16	39	39	0%	2.43	2.46	-2%	6:45	7:25	0:40	$5.69	$5.66	-1%	38	44	48	**50**	39	44	47	**49**	1	0	-1	**-1**
I-405/I-90/I-5 Bellevue to Seattle	SB/WB/NB	10	17:20	10	12	29	25	-14%	2.40	2.07	0%	5:20	5:15	-0:05	$3.54	$2.48	-30%	29	36	40	**45**	25	31	35	**37**	-4	-5	-5	**-8**
I-405/SR 520/I-5 Bellevue to Seattle	NB/WB/SB	10	16:55	10	12	30	28	-7%	2.42	2.24	-8%	6:10	6:25	0:15	$3.29	$2.88	-12%	31	35	38	**45**	26	35	38	**40**	-5	0	0	**-5**
I-405/I-90 Bellevue to Issaquah	SB/EB	9	17:35	9	11	19	20	5%	1.66	1.72	2%	4:40	5:10	0:30	$1.55	$1.60	3%	19	21	23	**24**	19	22	26	**30**	0	1	3	**6**
I-405/SR 520 Bellevue to Redmond	NB/EB	5	17:30	5	7	8	9	13%	1.24	1.31	3%	1:10	1:15	0:05	$0.22	$0.30	36%	7	9	11	**12**	8	10	11	**13**	1	1	0	**1**
Other																													
I-5 Everett to Seattle	SB	24	15:55	24	28	52	50	-4%	1.83	1.76	-1%	5:40	6:40	1:00	$5.23	$4.59	-12%	51	61	69	**72**	50	59	64	**68**	-2	-2	-5	**-4**
I-90/I-5 Issaquah to Seattle	WB/NB	15	17:20	15	19	30	27	-10%	1.62	1.47	1%	3:15	2:45	-0:30	$2.46	$1.55	-37%	28	38	43	**48**	26	33	36	**40**	-2	-5	-7	**-8**
SR 520/I-5 Redmond to Seattle	WB/SB	13	17:25	13	16	35	32	-9%	2.17	2.00	-3%	4:45	4:50	0:05	$3.66	$3.32	-9%	34	42	49	**55**	31	41	46	**50**	-3	-1	-2	**-5**
SR 520/I-405 Redmond to Bellevue	WB/SB	6	16:25	6	7	15	17	13%	2.02	2.35	6%	4:55	6:20	1:25	$1.37	$1.53	12%	14	20	25	**30**	15	25	28	**33**	2	5	4	**3**
I-5 SeaTac to Seattle[9]	NB	13	17:20	13	16	24	23	-4%	1.51	1.44	1%	3:35	4:00	0:25	$1.81	$1.47	-19%	23	28	32	**36**	21	28	31	**33**	-1	0	-1	**-3**
SR 167 Renton to Auburn[8]	SB	10	16:25	10	12	20	20	0%	1.66	1.63	1%	4:05	4:20	0:15	$1.97	$1.91	-3%	18	26	32	**36**	19	24	29	**32**	0	-2	-3	**-4**
I-405 Tukwila to Bellevue	NB	13	16:30	13	16	21	24	14%	1.31	1.46	-2%	3:10	4:20	1:10	$0.63	$1.52	141%	20	26	29	**32**	23	28	33	**36**	3	3	4	**4**

Data source: WSDOT Multimodal Planning Division, WSDOT Office of Strategic Assessment and Performance Analysis, and the Puget Sound Regional Council (PSRC).

Notes: The symbol "Δ" is used to denote change in a variable. Commute lengths and travel time values have been rounded to integer values for publication only. MT^3 Index values cannot be reproduced as published using the integer values in the table. Due to rounding, some percentages are not computable based on numbers in the table. **1** Commute congestion cost based on $23.76 for every hour of congested conditions measured when commute speeds are slower than 45 mph, applied to the volume of traffic during the congested conditions on an average annual weekday commute. This methodology is in accordance with WSDOT's update 2017 guidelines for assessing the cost of travel. **2** Per-person metrics were estimated based on vehicle occupancy observed on the freeway in the general purpose lanes. **3** Greenhouse gas emissions were calculated based on emission factors developed by PSRC for different vehicle types at varying travel speeds for each analysis year. In addition, the emissions used the traffic volume and percent of trucks, the average speeds for every 5-minute interval during the peak period, and the average vehicle occupancy on the freeway.

Transit commute trip analysis

Morning transit commutes: Changes in transit travel time performance, ridership, and greenhouse gas (GHG) emissions for 19 morning high-demand commute trips in the central Puget Sound region

2015 and 2017; Morning peak (6-9 a.m.) for an annualized average weekday; The indicator route for each commute occurs as close as possible to the 5-minute peak and is used to calculate travel times; 5-minute peak of commuter rush in hours and minutes (individual peak times vary); All travel times in minutes; Emissions in pounds of carbon dioxide equivalents (CO_2e); Average transit ridership, average seats used, and emissions avoided based on the average maximum load during the peak period

Morning

						Travel Times									Ridership															Emissions					
						Travel times in minutes at peak of morning commute[3]																														
						Auto 95% reliable			Transit average			Transit 95% reliable			Ridership[4]			Passenger miles traveled			Lane capacity savings[5]			Average percent of seats used[6]			Number of trips			Percent of trips over 90% capacity			Daily emissions avoided due to transit use[7]			Vehicle miles traveled avoided due to transit use		
Route	Direction of travel	Length of GP[1] commute	2015 indicator[1,2] route length	2017 indicator[1,2] route length	Peak time	2015	2017	Δ	2015	2017	Δ	2015	2017	Δ	2015	2017	%Δ	2015	2017	%Δ	2015	2017	%Δ	2015	2017	Δ	2015	2017	%Δ	2015	2017	Δ	2015	2017	%Δ	2015	2017	%Δ
To Seattle																																				
I-5 Everett to Seattle[8]	SB	24	23.6	23.6	7:20	92	95	3	43	48	5	66	71	5	10,941	11,774	8%	172,521	176,629	2%	1.91	2.05	8%	71%	69%	-2%	234	257	10%	21%	20%	-1%	85,304	87,801	3%	106,963	109,510	2%
I-5 Federal Way to Seattle[9]	NB	22	22.2	22.2	7:10	79	82	3	41	48	7	50	64	14	6,562	6,483	-1%	139,967	139,110	-1%	1.14	1.13	-1%	71%	65%	-6%	141	154	9%	13%	8%	-5%	70,975	68,443	-4%	86,779	86,248	-1%
I-90/I-5 Issaquah to Seattle	WB/NB	15	15.4	15.4	8:15	46	45	-1	26	22	-4	31	30	-1	3,495	4,209	20%	45,234	45,828	1%	0.60	0.73	20%	105%	89%	-16%	59	85	44%	81%	51%	-31%	23,489	22,753	-3%	28,045	28,413	1%
SR 520/I-5 Redmond to Seattle	WB/SB	13	13.4	13.4	8:30	33	40	7	29	25	-4	35	31	-4	4,703	4,956	5%	44,404	33,700	-24%	0.85	0.90	5%	87%	78%	-9%	99	121	22%	44%	31%	-13%	22,294	16,315	-27%	27,530	20,894	-24%
I-5 SeaTac to Seattle[8]	NB	13	13.0	13.0	8:20	46	47	1	37	41	4	39	42	3	5,734	8,939	56%	62,029	107,447	73%	1.00	1.56	56%	92%	104%	12%	71	74	4%	41%	50%	9%	29,426	63,930	117%	38,458	66,617	73%
I-405/I-90/I-5 Bellevue to Seattle	SB/WB/NB	10	10.2	10.2	8:25	30	30	0	29	12	-17	34	16	-18	2,512	2,316	-8%	17,421	15,847	-9%	0.45	0.41	-8%	97%	94%	-3%	44	41	-7%	64%	63%	0%	8,952	8,069	-10%	10,801	9,825	-9%
I-405/SR 520/I-5 Bellevue to Seattle	NB/WB/SB	10	10.3	10.3	8:35	29	35	6	20	15	-5	26	18	-8	1,038	978	-6%	6,539	6,144	-6%	0.19	0.18	-6%	63%	56%	-7%	35	75	114%	11%	3%	-9%	3,014	2,713	-10%	4,054	3,809	-6%
To Bellevue																																				
I-5/I-405 Everett to Bellevue	SB	24	23.7	23.7	7:20	79	85	6	46	47	1	58	61	3	745	783	5%	17,657	18,233	3%	0.13	0.14	5%	95%	100%	5%	14	14	0%	64%	79%	14%	9,161	9,517	4%	10,947	11,305	3%
I-405 Lynnwood to Bellevue	SB	16	16.2	16.2	7:30	66	68	2	47	47	0	58	57	-1	1,018	1,729	70%	10,962	18,392	68%	0.18	0.30	70%	72%	76%	4%	28	45	61%	21%	24%	3%	5,272	8,884	69%	6,796	11,403	68%
I-405 Tukwila to Bellevue	NB	13	13.5	13.5	8:15	59	56	-3	27	26	-1	31	30	-1	780	843	8%	8,766	9,820	12%	0.14	0.15	8%	66%	57%	-9%	27	30	11%	4%	7%	3%	4,610	4,568	-1%	5,435	6,089	12%
I-5/I-90/I-405 Seattle to Bellevue	SB/EB/NB	11	10.6	10.6	8:30	21	23	2	27	21	-6	31	25	-6	842	880	5%	5,557	5,830	5%	0.15	0.16	5%	91%	95%	4%	16	16	0%	56%	69%	13%	2,822	2,995	6%	3,445	3,614	5%
I-5/SR 520/ I-405 Seattle to Bellevue	NB/EB/SB	10	10.3	10.2	8:45	24	24	0	26	15	-11	32	18	-14	898	812	-10%	5,507	4,070	-26%	0.16	0.15	-10%	74%	81%	8%	26	24	-8%	27%	38%	11%	2,556	1,971	-23%	3,415	2,523	-26%
I-90/I-405 Issaquah to Bellevue	WB/NB	9	9.4	9.4	8:35	26	25	-1	21	20	-1	24	25	1	331	248	-25%	2,747	2,341	-15%	0.06	0.04	-25%	71%	61%	-10%	8	7	-13%	25%	0%	-25%	1,295	1,051	-19%	1,703	1,451	-15%
SR 520/I-405 Redmond to Bellevue	WB/SB	6	6.1	6.1	8:45	11	13	2	18	16	-2	22	20	-2	144	124	-14%	788	750	-5%	0.03	0.02	-14%	29%	29%	0%	11	10	-9%	0%	10%	10%	228	226	-1%	489	465	-5%
Other																																				
I-405 Bellevue to Tukwila	SB	13	13.2	13.2	7:40	30	26	-4	19	23	4	21	26	5	209	141	-33%	1,877	1,349	-28%	0.04	0.03	-33%	29%	21%	-8%	16	14	-13%	0%	0%	0%	546	245	-55%	1,164	836	-28%
I-405/SR 520 Bellevue to Redmond	NB/EB	5	5.5	5.5	9:15	9	11	2	11	18	7	14	20	6	229	257	12%	1,083	1,165	8%	0.04	0.05	12%	24%	26%	2%	22	22	0%	0%	5%	5%	245	332	35%	671	722	8%
SR 167 Auburn to Renton[8]	NB	10	9.8	10.3	6:45	30	30	0	34	48	14	41	57	16	2,892	3,684	27%	27,120	37,832	39%	0.50	0.64	27%	52%	68%	16%	25	21	-16%	0%	19%	19%	15,130	21,751	44%	16,814	23,456	39%
I-5/I-90 Seattle to Issaquah	SB/EB	16	15.7	15.7	8:20	25	25	0	27	21	-6	30	26	-4	467	658	41%	5,624	7,652	36%	0.08	0.11	41%	59%	61%	2%	14	21	50%	0%	5%	5%	2,479	3,395	37%	3,487	4,744	36%
I-5/SR 520 Seattle to Redmond	NB/EB	13	13.3	13.3	8:45	27	28	1	28	24	-4	34	29	-5	2,037	1,666	-18%	22,200	15,361	-31%	0.37	0.30	-18%	57%	54%	-3%	62	57	-8%	13%	9%	-4%	10,203	6,764	-34%	13,764	9,524	-31%

Data sources and analysis: Sound Transit, Pierce Transit, King County Metro, Community Transit, WSDOT Northwest Region Traffic Office,WSDOT Multimodal Planning Division and WSDOT Office of Strategic Assessment and Performance Analysis.

Notes: The symbol "Δ" is used to denote change in a variable. Due to rounding, some percentages are not computable based on numbers in the table. **1** GP commute distances are used for calculating PMT for transit routes which are longer than the GP commutes. **2** Indicator routes are the routes used to calculate average and reliable transit travel times **3** Transit travel times may not be directly comparable to GP/HOV trips due to different start and end points or off-highway travel such as exiting to stop at a transit center. WSDOT attempts to match transit trips as closely as is practical to GP/HOV. **4** Ridership was reported for the peak transit commute periods (6-9 a.m. and 3-6 p.m.). **5** Lane capacity savings is a measure of how many general purpose lanes' worth of capacity transit ridership provides during the peak periods. See the 2nd edition of the *Handbook for Corridor Capacity Evaluation* at http://wsdot.wa.gov/publications/fulltext/graynotebook/CCR_methodology_2nd_edition.pdf for more calculation methods. **6** Average percent of seats used is based on the average maximum load of each bus or train trip and the total seats on the bus or train. Individual trips could show a load greater than 100% if there was standing-room only. Averaging the load for each commute levels out this variation across multiple trips, and may under-represent the load experienced during the peak utilization of transit. **7** Greenhouse gas emissions avoided by transit use were estimated based on the following factors: a) the average maximum transit load; b) the assumption that for every transit passenger mile traveled, 0.62 miles of single-occupant vehicle travel is avoided; c) the distance traveled on the WSDOT-defined commute trip (not the entire transit trip); d) the average emissions of one pound of CO_2e for every mile traveled; and e) the emissions from transit vehicle operations provided by the transit agencies. **8** Transit services include buses and Sounder commuter trains.
9 Transit services include buses and Link light rail trains.

Transit commute trip analysis

Evening transit commutes: Changes in transit travel time performance, ridership, and greenhouse gas (GHG) emissions for 21 evening high-demand commute trips in the central Puget Sound region

2015 and 2017; Evening peak (3-6 p.m.) for an annualized average weekday; 5-minute peak of commuter rush in hours and minutes (individual peak times vary); All travel times in minutes; Emissions in pounds of carbon dioxide equivalents (CO_2e); Average transit ridership, average seats used, and emissions avoided based on the average maximum load during the peak period

Evening

						Travel Times									Ridership																Emissions					
						Travel times in minutes at peak of evening commute[3]																																
						Auto 95% reliable			Transit average			Transit 95% reliable			Ridership[4]			Passenger miles traveled			Lane capacity savings[5]			Average percent of seats used[6]			Number of trips			Percent of trips over 90% capacity			Daily emissions avoided due to transit use[7]			Vehicle miles traveled avoided due to transit use		
Route	Direction of travel	Length of GP[1] com-mute	2015 indic-ator[1,2] route length	2017 indic-ator[1,2] route length	Peak time	2015	2017	Δ	2015	2017	Δ	2015	2017	Δ	2015	2017	%Δ	2015	2017	%Δ	2015	2017	%Δ	2015	2017	Δ	2015	2017	%Δ	2015	2017	Δ	2015	2017	%Δ	2015	2017	%Δ
From Seattle																																						
I-5 Seattle to Everett[8]	NB	23	23.5	23.5	16:10	66	75	9	36	43	7	45	56	11	10,713	10,596	-1%	171,359	163,520	-5%	1.67	1.65	-1%	68%	67%	-1%	244	236	-3%	19%	18%	-1%	83,448	81,014	-3%	106,243	101,382	-5%
I-5 Seattle to Federal Way[9]	SB	22	22.2	22.2	16:10	55	55	0	47	49	2	61	62	1	5,390	5,139	-5%	113,916	110,258	-3%	0.87	0.83	-5%	65%	59%	-6%	125	129	3%	9%	2%	-7%	56,809	52,897	-7%	70,628	68,360	-3%
I-5 Seattle to SeaTac[9]	SB	13	13.0	13.0	16:05	36	40	4	40	40	0	44	43	-1	6,622	10,233	55%	72,478	121,902	68%	1.07	1.65	55%	103%	111%	8%	70	78	11%	57%	67%	10%	35,296	72,816	106%	44,937	75,579	68%
I-5/I-90/I-405 Seattle to Bellevue	SB/EB/NB	11	10.6	10.6	16:50	22	27	5	26	18	-8	30	20	-10	2,437	2,255	-7%	16,715	15,369	-8%	0.40	0.37	-7%	94%	96%	2%	44	40	-9%	50%	63%	13%	8,525	7,867	-8%	10,363	9,529	-8%
I-5/SR 520/I-405 Seattle to Bellevue	NB/EB/SB	10	10.3	10.2	17:25	26	26	0	18	16	-2	25	17	-8	904	1,009	12%	5,149	5,217	1%	0.16	0.17	12%	60%	50%	-10%	33	45	36%	9%	2%	-7%	2,269	2,126	-6%	3,192	3,235	1%
I-5/SR 520 Seattle to Redmond	NB/EB	13	13.3	13.3	17:30	25	26	1	29	22	-7	37	24	-13	4,387	4,698	7%	42,289	34,406	-19%	0.76	0.81	7%	80%	75%	-5%	101	123	22%	39%	28%	-10%	20,829	16,326	-22%	26,219	21,332	-19%
I-5/I-90 Seattle to Issaquah	SB/EB	16	15.7	15.7	17:15	32	35	3	25	20	-5	28	22	-6	3,129	2,260	-28%	40,684	31,040	-24%	0.54	0.39	-28%	97%	82%	-16%	57	51	-11%	61%	37%	-24%	20,826	15,236	-27%	25,224	19,245	-24%
From Bellevue																																						
I-405/I-5 Bellevue to Everett	NB	23	23.3	23.3	16:50	65	62	-3	56	54	-2	65	63	-2	735	1,034	41%	17,096	20,063	17%	0.12	0.17	41%	88%	85%	-3%	15	22	47%	40%	41%	1%	8,722	10,234	17%	10,600	12,439	17%
I-405 Bellevue to Lynnwood	NB	16	15.9	15.9	16:50	52	50	-2	57	52	-5	64	61	-3	888	1,150	29%	9,152	13,692	50%	0.15	0.20	29%	69%	74%	4%	26	32	23%	19%	28%	9%	4,269	6,525	53%	5,675	8,489	50%
I-405 Bellevue to Tukwila	SB	13	13.2	13.2	16:50	50	49	-1	31	34	3	40	45	5	737	889	21%	8,058	10,102	25%	0.12	0.15	21%	65%	65%	0%	27	30	11%	11%	10%	-1%	3,864	4,793	24%	4,996	6,263	25%
I-405/I-90/I-5 Bellevue to Seattle	SB/WB/NB	10	10.2	10.2	17:20	45	37	-8	43	26	-17	78	37	-41	990	926	-6%	6,633	5,947	-10%	0.16	0.15	-6%	90%	94%	4%	19	17	-11%	63%	71%	7%	3,361	3,045	-9%	4,112	3,687	-10%
I-405/SR 520/I-5 Bellevue to Seattle	NB/WB/SB	10	10.3	10.3	16:55	45	40	-5	24	20	-4	33	22	-11	894	844	-6%	5,271	4,348	-18%	0.15	0.15	-6%	81%	82%	1%	24	25	4%	38%	40%	3%	2,552	2,124	-17%	3,268	2,696	-18%
I-405/I-90 Bellevue to Issaquah	SB/EB	9	9.2	9.5	17:35	24	30	6	27	20	-7	40	27	-13	304	214	-30%	2,554	1,911	-25%	0.05	0.04	-30%	66%	61%	-4%	8	6	-25%	0%	0%	0%	1,153	847	-27%	1,583	1,185	-25%
I-405/SR 520 Bellevue to Redmond	NB/EB	5	5.5	5.5	17:30	12	13	1	12	12	0	15	16	1	147	51	-65%	754	257	-66%	0.03	0.01	-65%	43%	16%	-27%	8	8	0%	13%	0%	-13%	294	-2	-101%	467	159	-66%
Other																																						
I-5 Everett to Seattle	SB	24	23.6	23.6	15:55	72	68	-4	61	62	1	78	83	5	815	1,019	25%	13,454	14,609	9%	0.13	0.16	25%	50%	49%	-2%	29	37	28%	0%	-	-	5,695	6,036	6%	8,341	9,057	9%
I-90/I-5 Issaquah to Seattle	WB/NB	15	15.4	15.4	17:20	48	40	-8	34	27	-7	47	38	-9	549	925	68%	6,974	10,220	47%	0.10	0.16	68%	64%	69%	5%	15	26	73%	0%	27%	27%	3,160	4,744	50%	4,324	6,336	47%
SR 520/I-5 Redmond to Seattle	WB/SB	13	13.4	13.4	17:25	55	50	-5	38	30	-8	49	34	-15	1,932	1,842	-5%	21,185	15,969	-25%	0.33	0.32	-5%	63%	57%	-6%	57	61	7%	18%	8%	-9%	9,796	7,165	-27%	13,134	9,901	-25%
SR 520/I-405 Redmond to Bellevue	WB/SB	6	6.1	6.1	16:25	30	33	3	20	20	0	27	26	-1	143	210	47%	772	1,061	37%	0.02	0.04	47%	16%	18%	2%	21	26	24%	0%	0%	0%	31	72	134%	479	658	37%
I-5 SeaTac to Seattle[9]	NB	13	13.0	13.0	17:20	36	33	-3	39	42	3	42	48	6	2,764	5,541	101%	31,407	68,157	117%	0.45	0.89	101%	50%	63%	13%	52	57	10%	2%	-	-	10,286	40,634	295%	19,472	42,257	117%
SR 167 Renton to Auburn[8]	SB	10	9.8	10.3	16:25	36	32	-4	41	46	5	49	54	5	2,945	4,138	41%	27,514	42,096	53%	0.48	0.67	41%	61%	81%	19%	23	25	9%	13%	12%	-1%	15,572	24,214	55%	17,058	26,100	53%
I-405 Tukwila to Bellevue	NB	13	13.5	13.5	16:30	32	36	4	23	28	5	27	32	5	202	193	-5%	1,891	1,871	-1%	0.03	0.03	-5%	30%	29%	-1%	16	15	-6%	0%	7%	7%	552	510	-8%	1,173	1,160	-1%

Data sources and analysis: Sound Transit, Pierce Transit, King County Metro, Community Transit, WSDOT Olympic Region Traffic Office, WSDOT Multimodal Planning Division and WSDOT Office of Strategic Assessment and Performance Analysis.

Notes: The symbol "Δ" is used to denote change in a variable. Due to rounding, some percentages are not computable based on numbers in the table. **1** GP commute distances are used for calculating PMT for transit routes which are longer than the GP commutes. **2** Indicator routes are the routes used to calculate average and reliable transit travel times **3** Transit travel times may not be directly comparable to GP/HOV trips due to different start and end points or off-highway travel such as exiting the highway to stop at a transit center. WSDOT attempts to match transit trips as closely as is practical to GP/HOV. **4** Ridership was reported for the peak transit commute periods (6-9 a.m. and 3-6 p.m.). **5** Lane capacity savings is a measure of how many general purpose lanes' worth of capacity transit ridership provides during the peak periods. See the 2nd edition of the *Handbook for Corridor Capacity Evaluation* at http://wsdot.wa.gov/publications/fulltext/graynotebook/CCR_methodology_2nd_edition.pdf for more calculation methods. **6** Average percent of seats used is based on the average maximum load of each bus or train trip and the total seats on the bus or train. Individual trips could show a load greater than 100% if there was standing-room only. Averaging the load for each commute levels out this variation across multiple trips, and may under-represent the load experienced during the peak utilization of transit. **7** Greenhouse gas emissions avoided by transit use were estimated based on the following factors: a) the average maximum transit load; b) the assumption that for every transit passenger mile traveled, 0.62 miles of single-occupant vehicle travel is avoided; c) the distance traveled on the WSDOT-defined commute trip (not the entire transit trip); d) the average emissions of one pound of CO_2e for every mile traveled; and e) the emissions from transit vehicle operations provided by the transit agencies. **8** Transit services include buses and Sounder commuter trains. **9** Transit services include buses and Link light rail trains. .

Commute trip analysis

Additional 12 commutes: Changes in travel time performance, congestion and reliability

2015 and 2017; Morning peak (5-10 a.m.) and evening peak (2-8 p.m.) for an annualized average weekday; 5-minute peak of commuter rush (individual peak times vary); Length of route in miles; All travel times in minutes; Peak of commuter rush and duration of congestion expressed in hours and minutes

				Travel Times								Congestion			Reliability		
						Average travel time at peak of morning commute			Maximum throughput travel time index (MT^3I)			Duration of congestion - How long average speed is slower than 45 mph			95th percentiles		
Route	Direction of travel	Length of route	Peak time	Travel time at posted speed	Travel time at maximum throughput speed	2015	2017	%Δ	2015	2017	Peak period %Δ in VMT	2015	2017	Δ	2015	2017	%Δ
Morning																	
From Seattle, Bellevue and Renton																	
I-5 Seattle to Everett	NB	23	9:55	23	28	25	25	0%	0.89	0.89	3%	0:00	0:00	0:00	27	28	4%
I-5 Seattle to SeaTac	SB	13	7:50	13	16	14	14	0%	0.92	0.91	3%	0:00	0:00	0:00	16	16	0%
I-405 Bellevue to Lynnwood[1]	NB	16	9:35	16	19	16	16	0%	0.85	0.85	0%	0:00	0:00	0:00	17	17	0%
SR 167 Renton to Auburn	SB	10	9:35	10	12	11	11	0%	0.89	0.91	3%	0:00	0:00	0:00	12	12	0%
I-5 Seattle to Federal Way	SB	22	7:50	22	27	23	23	0%	0.88	0.88	3%	0:00	0:00	0:00	25	26	4%
I-405/I-5 Bellevue to Everett[1]	NB	23	7:35	23	28	24	24	0%	0.86	0.87	-1%	0:00	0:00	0:00	25	25	0%
I-405/I-90 Bellevue to Issaquah	EB	9	9:15	9	11	11	11	0%	0.94	0.98	4%	0:00	0:00	0:00	12	14	17%
Evening																	
To Seattle, Bellevue and Renton																	
I-405 Lynnwood to Bellevue[1]	SB	16	16:15	16	19	25	25	0%	1.30	1.31	-1%	2:40	2:20	-0:20	39	41	5%
SR 167 Auburn to Renton	NB	10	14:20	10	12	12	12	0%	0.96	0.96	2%	0:00	0:00	0:00	16	17	6%
I-90/I-405 Issaquah to Bellevue	WB	9	17:15	9	11	12	13	8%	1.08	1.11	2%	0:00	0:00	0:00	16	18	13%
I-5 Federal Way to Seattle	NB	22	17:10	22	27	33	31	-6%	1.24	1.18	1%	2:25	1:25	-1:00	47	42	-11%
I-5/I-405 Everett to Bellevue[1]	SB	24	16:10	24	28	34	34	0%	1.21	1.20	0%	2:05	2:00	-0:05	50	50	0%

Data sources and analysis: WSDOT Northwest Region Traffic Office, WSDOT Multimodal Planning Division and WSDOT Office of Strategic Assessment and Performance Analysis.

Notes: The symbol "Δ" is used to denote change in a variable. Commute lengths and travel time values have been rounded to integer values for publication only. MT^3 Index values cannot be reproduced as published using the integer values in the table. Due to rounding, some percentages are not computable based on numbers in the table. **1** In the fall of 2015, WSDOT deployed express toll lanes on I-405 between Bellevue and Lynnwood. Please see the special report on pp. 19-22 of the 2017 *Corridor Capacity Report*. For detailed quarterly reports, see www.wsdot.wa.gov/tolling/405/reporting-and-measuring-performance..

Reliability percentiles in plain English

Analyzing reliability based on travel times recorded on approximately 260 weekdays in a calendar year during the peak 5-minute interval

	Definition	Why do we measure this?
Average travel time (the mean)	Average of all the recorded travel times.	Describes the "average" experience on the road that year.
50th percentile travel time (the median)	Half of recorded travel times were shorter, half longer, than this duration.	The median is not affected by very large times as an average is, so it gives a better sense of actual conditions.
80th percentile travel time	80% of recorded travel times were shorter than this duration.	WSDOT uses this percentile to track changes in reliable travel times over the years at a finer level, to better evaluate operational improvements.
90th percentile travel time	90% of recorded travel times were shorter than this duration.	WSDOT uses this percentile to track changes in reliable travel times over the years at a finer level, to better evaluate operational improvements.
95th percentile travel time	95% of recorded travel times were shorter than this duration.	Allows commuters to plan how much time will be required to make a trip and be on time 19 days a month, on average (late one of 20 days).

High occupancy vehicle (HOV) trip analysis

Morning commutes: HOV lane travel time performance compared to general purpose (GP) lanes

2015 and 2017; Morning peak (6-9 a.m.) for an annualized average weekday; 5-minute peak of commuter rush (individual peak times vary); Length of route in miles; All travel times and differences in minutes; Peak of commuter rush expressed in hours and minutes

Morning

Route	Direction of travel	Length of route	Peak time	Travel times on the route at: Posted speed	Travel times on the route at: Maximum throughput speed	Average travel time at peak of morning rush: HOV lanes 2015	HOV lanes 2017	HOV lanes Δ	GP lanes 2017	2017: Δ HOV vs. GP	95% reliable travel times: HOV lanes 2015	HOV lanes 2017	HOV lanes Δ	GP lanes 2017	2017: Δ HOV vs. GP
To Seattle															
I-5 Everett to Seattle															
Regular HOV lane	SB	24	7:20	24	28	47	49	2	59	-10	76	79	3	95	-16
Reversible lanes	SB	24	7:20	24	28	45	45	0	59	-14	72	72	0	95	-23
I-5 Federal Way to Seattle[1]	NB	22	7:10	22	27	42	46	4	59	-13	61	64	3	82	-18
I-90/I-5 Issaquah to Seattle	WB/NB	14	8:15	14	17	18	17	-1	26	-9	31	22	-9	41	-19
SR 520/I-5 Redmond to Seattle	WB/SB	13	8:30	13	16	20	23	3	27	-4	26	31	5	40	-9
I-5 SeaTac to Seattle	NB	13	8:20	13	16	27	26	-1	35	-9	37	36	-1	47	-11
I-405/I-90/I-5 Bellevue to Seattle	SB/WB/NB	9	8:25	9	11	14	12	-2	17	-5	28	16	-12	24	-8
I-405/SR 520/I-5 Bellevue to Seattle	NB/WB/SB	10	8:35	10	12	16	19	3	23	-4	22	27	5	35	-8
To Bellevue[2]															
I-5/I-405 Everett to Bellevue[2]	SB	24	7:20	24	28	31	36	5	57	-21	41	56	15	85	-29
I-405 Lynnwood to Bellevue[2]	SB	16	7:30	16	19	22	26	4	46	-20	29	42	13	68	-26
I-405 Tukwila to Bellevue	NB	13	8:15	13	16	24	22	-2	42	-20	34	36	2	56	-20
I-5/I-90/I-405 Seattle to Bellevue[1]	SB/EB/NB	8	8:35	8	10	11	11	0	13	-2	13	12	-1	19	-7
I-5/SR 520/I-405 Seattle to Bellevue	NB/EB/SB	11	8:45	11	13	18	17	-1	16	1	24	24	0	24	0
I-90/I-405 Issaquah to Bellevue	WB/NB	9	8:35	9	11	12	12	0	16	-4	15	15	0	25	-10
SR 520/I-405 Redmond to Bellevue	WB/SB	6	8:45	6	7	8	9	1	9	0	10	11	1	13	-2
To other locations															
I-405 Bellevue to Tukwila	SB	13	7:40	13	16	13	13	0	19	-6	14	14	0	26	-12
SR 167 Auburn to Renton (HOT)	NB	10	6:45	10	12	14	15	1	22	-7	20	20	0	30	-10
I-5/I-90 Seattle to Issaquah[1]	SB/EB/NB	14	8:25	14	17	16	14	-2	17	-3	19	16	-3	22	-6
I-5/SR 520 Seattle to Redmond	NB/EB	13	8:45	13	16	21	21	0	20	1	28	30	2	28	2

Data sources and analysis: WSDOT Northwest Region Traffic Office, WSDOT Multimodal Planning Division and WSDOT Office of Strategic Assessment and Performance Analysis.

Notes: Commute lengths have been rounded to integer values for publication purposes only. Trip routes on I-5 include reversible lane options for the weekday time periods (morning or evening) and directions of travel when the reversible lanes are in effect. **1** Some HOV trips have modified trip lengths compared to the corresponding standard GP trips in the central Puget Sound region due to the lack of data at the HOV trip's endpoints. Affected trips are on I-90 between Seattle and Issaquah and on I-90 between Bellevue and Seattle. In each case, to enable a direct comparison, the lengths of the corresponding GP trips have been adjusted to match the HOV trip length as closely as possible; this means travel times and time stamps for the peak of the commuter rush for these modified GP trips will not necessarily match those in the GP trip tables on pp. 17-18. HOV trips with the same endpoints as GP lane trips, but differing lengths, do not require any adjustment, since the difference in lengths is the result of HOVs using different roadways than GPs (e.g., an HOV only interchange ramp). **2** In the fall of 2015, WSDOT opened express toll lanes on I-405 between Bellevue and Lynnwood. Please see the special report on pp. 19-22 of the 2017 *Corridor Capacity Report*. For detailed quarterly reports, see www.wsdot.wa.gov/tolling/405/library.htm.

High occupancy vehicle (HOV) trip analysis

Evening commutes: HOV lane travel time performance compared to general purpose (GP) lanes

2015 and 2017; Evening peak (3-6 p.m.) for an annualized average weekday; 5-minute peak of commuter rush (individual peak times vary); Length of route in miles; All travel times and differences in minutes; Peak of commuter rush expressed in hours and minutes

Evening

Route	Direction of travel	Length of route	Peak time	Travel times on the route at: Posted speed	Travel times on the route at: Maximum throughput speed	Average travel time at peak of evening rush: HOV lanes 2015	HOV lanes 2017	HOV lanes Δ	GP lanes 2017	2017: Δ HOV vs. GP	95% reliable travel times: HOV lanes 2015	HOV lanes 2017	HOV lanes Δ	GP lanes 2017	2017: Δ HOV vs. GP
From Seattle															
I-5 Seattle to Everett															
Regular HOV lane	NB	23	16:10	23	28	42	46	4	52	-6	58	64	6	75	-11
Reversible lanes	NB	23	16:10	23	28	33	38	5	52	-14	44	52	8	75	-23
I-5 Seattle to Federal Way	SB	22	16:10	22	27	33	35	2	39	-4	45	49	4	55	-6
I-5 Seattle to SeaTac	SB	13	16:05	13	16	21	24	3	25	-1	31	34	3	40	-6
I-5/I-90/I-405 Seattle to Bellevue	SB/EB/NB	8	16:45	8	10	11	10	-1	12	-2	15	14	-1	20	-6
I-5/SR 520/I-405 Seattle to Bellevue	NB/EB/SB	11	17:25	11	13	16	17	1	18	-1	21	24	3	26	-2
I-5/SR 520 Seattle to Redmond	NB/EB	13	17:30	13	16	17	18	1	19	-1	22	24	2	26	-2
I-5/I-90 Seattle to Issaquah	SB/EB	14	17:20	14	17	16	17	1	19	-2	22	21	-1	28	-7
From Bellevue															
I-405 Bellevue to Everett[2]	NB	23	16:50	23	28	32	29	-3	44	-15	40	39	-1	62	-23
I-405 Bellevue to Lynnwood[2]	NB	16	16:50	16	19	25	19	-6	34	-15	33	27	-6	50	-23
I-405 Bellevue to Tukwila	SB	13	16:50	13	16	23	25	2	39	-14	33	35	2	49	-14
I-405/I-90/I-5 Bellevue to Seattle[1]	SB/WB/NB	9	17:10	9	11	18	15	-3	20	-5	31	23	-8	31	-8
I-405/SR 520/I-5 Bellevue to Seattle	NB/WB/SB	10	16:55	10	12	18	20	2	28	-8	25	26	1	40	-14
I-405/I-90 Bellevue to Issaquah	SB/EB	9	17:35	9	11	16	17	1	20	-3	22	26	4	30	-4
I-405/SR 520 Bellevue to Redmond	NB/EB	5	17:30	5	7	7	7	0	9	-2	9	9	0	13	-4
From other locations															
I-5 Everett to Seattle	SB	24	15:55	24	28	49	48	-1	50	-2	65	63	-2	68	-5
I-90/I-5 Issaquah to Seattle[1]	WB/NB	14	17:15	14	17	19	16	-3	22	-6	31	22	-9	32	-10
SR 520/I-5 Redmond to Seattle	WB/SB	13	17:25	13	16	22	24	2	32	-8	30	32	2	50	-18
I-5 SeaTac to Seattle	NB	13	17:20	13	16	18	18	0	23	-5	26	25	-1	33	-8
SR 167 Renton to Auburn (HOT)	SB	10	16:25	10	12	13	13	0	20	-7	18	17	-1	32	-15
I-405 Tukwila to Bellevue	NB	13	16:30	13	16	14	14	0	24	-10	15	17	2	36	-19

Data sources and analysis: WSDOT Northwest Region Traffic Office, WSDOT Multimodal Planning Division and WSDOT Office of Strategic Assessment and Performance Analysis.

Notes: Commute lengths have been rounded to integer values for publication purposes only. Trip routes on I-5 include reversible lane options for the weekday time periods (morning or evening) and directions of travel when the reversible lanes are in effect. **1** Some HOV trips have modified trip lengths compared to the corresponding standard GP trips in the central Puget Sound region due to the lack of data at the HOV trip's endpoints. Affected trips are on I-90 between Seattle and Issaquah and on I-90 between Bellevue and Seattle. In each case, to enable a direct comparison, the lengths of the corresponding GP trips have been adjusted to match the HOV trip length as closely as possible; this means travel times and time stamps for the peak of the commuter rush for these modified GP trips will not necessarily match those in the GP trip tables on pp. 17-18. HOV trips with the same endpoints as GP lane trips, but differing lengths, do not require any adjustment, since the difference in lengths is the result of HOVs using different roadways than GPs (e.g., an HOV only interchange ramp). **2** In the fall of 2015, WSDOT opened express toll lanes on I-405 between Bellevue and Lynnwood. Please see the special report on pp. 19-22 of the 2017 *Corridor Capacity Report*. For detailed quarterly reports, see www.wsdot.wa.gov/tolling/405/library.htm.

Central Puget Sound Region

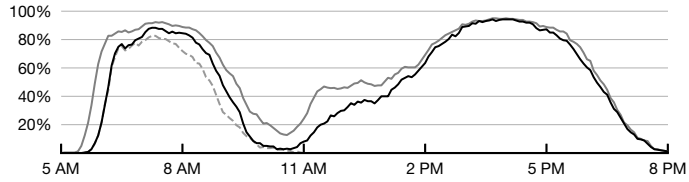
HOV stamp graphs: Frequency, duration of congestion

Comparing HOV and adjacent GP lanes: Percent of weekdays experiencing congestion (part 1)
2017; Percent of days average speed was slower than 45 mph in HOV and GP lanes

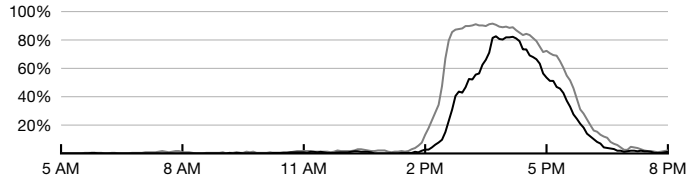
HOV lanes GP lanes Reversible lanes

Southbound

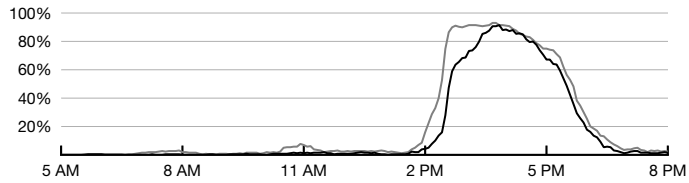
Everett to Seattle via I-5[1]



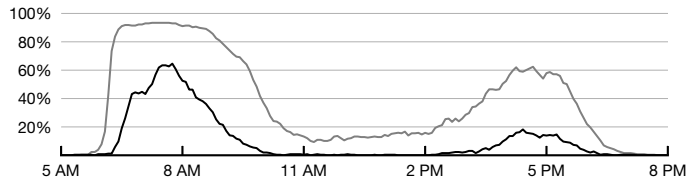
Seattle to Federal Way via I-5



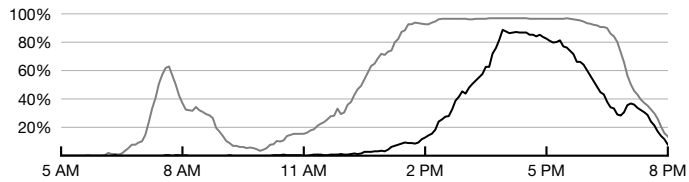
Seattle to SeaTac via I-5



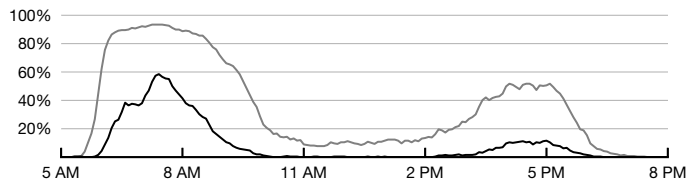
Lynnwood to Bellevue via I-405



Bellevue to Tukwila via I-405

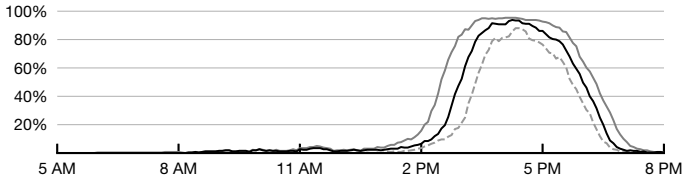


Everett to Bellevue via I-5/I-405

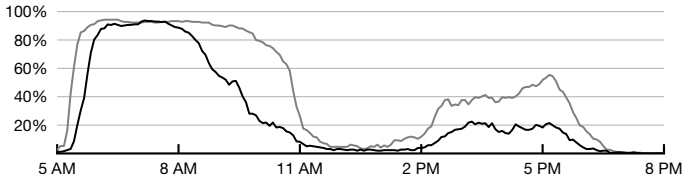


Northbound

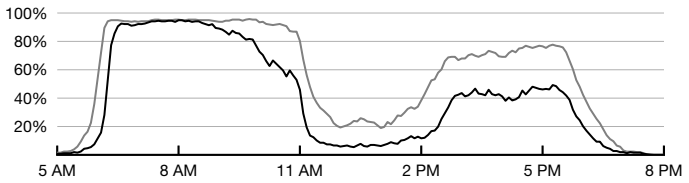
Seattle to Everett via I-5[1]



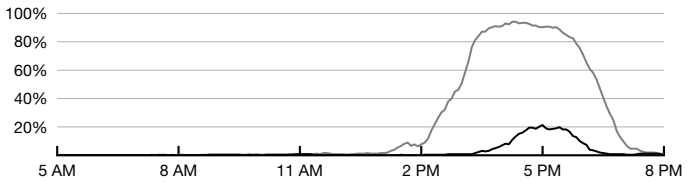
Federal Way to Seattle via I-5



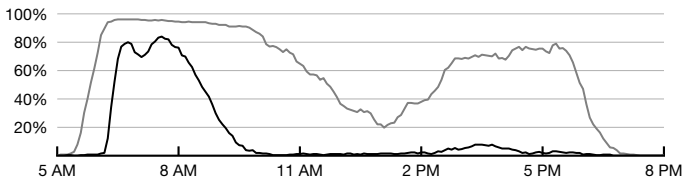
SeaTac to Seattle via I-5



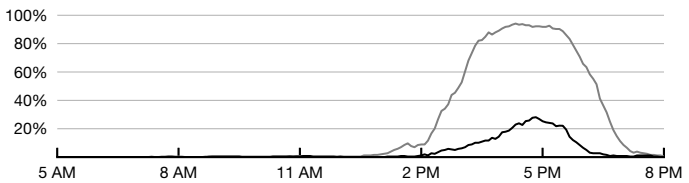
Bellevue to Lynnwood via I-405



Tukwila to Bellevue via I-405



Bellevue to Everett via I-405/I-5



Data sources and analysis: WSDOT Northwest Region Traffic Office, WSDOT Multimodal Planning Division and WSDOT Office of Strategic Assessment and Performance Analysis.
Note: See p. 2 for congestion definitions and how to read these graphs. **1** Weekday hours of operation for the I-5 reversible lanes on the Everett to Seattle commute are 5 a.m. to 11 a.m.; weekday hours of operation for the I-5 reversible lanes on the Seattle to Everett commute are noon to 11 p.m.

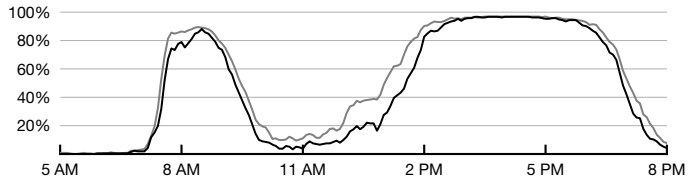
HOV stamp graphs: Frequency, duration of congestion

Comparing HOV and adjacent GP lanes: Percent of weekdays experiencing congestion (part 2)
2017; Percent of days average speed was slower than 45 mph on HOV in GP lanes

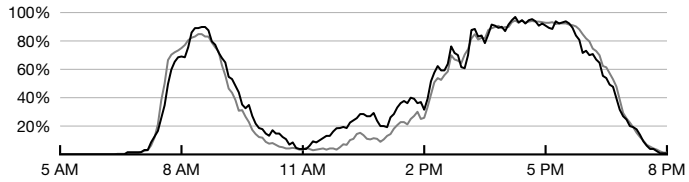
HOV lanes GP lanes

Westbound

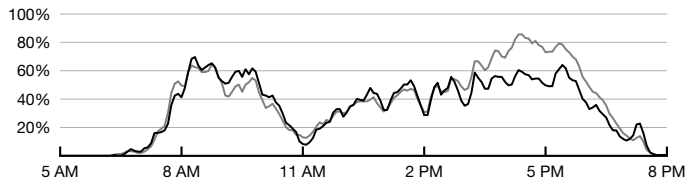
Bellevue to Seattle via I-405/SR 520/I-5



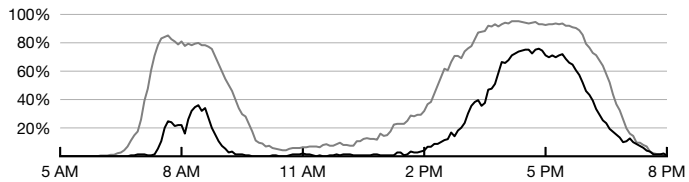
Redmond to Seattle via SR 520/I-5



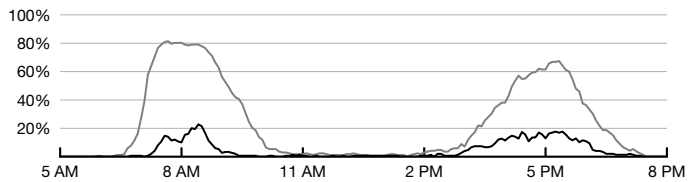
Redmond to Bellevue via SR 520/I-405



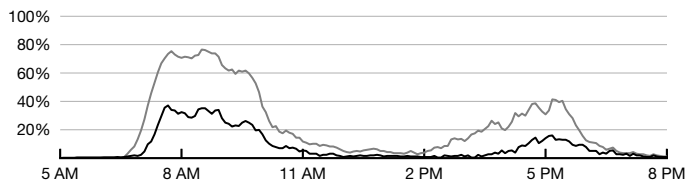
Bellevue to Seattle via I-405/I-90/I-5



Issaquah to Seattle via I-90/I-5

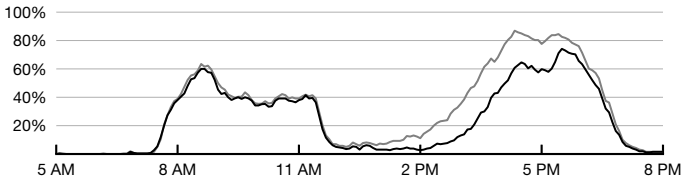


Issaquah to Bellevue via I-90/I-405

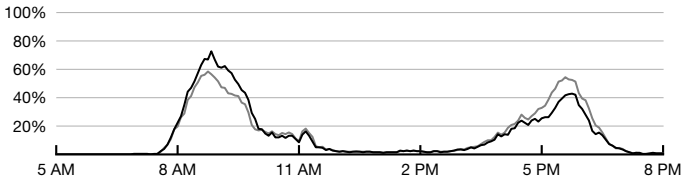


Eastbound

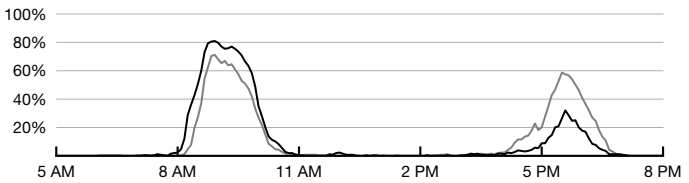
Seattle to Bellevue via I-5/SR 520/I-405



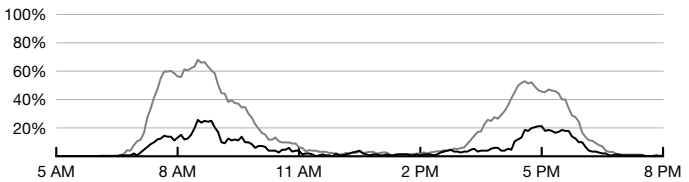
Seattle to Redmond via I-5/SR 520



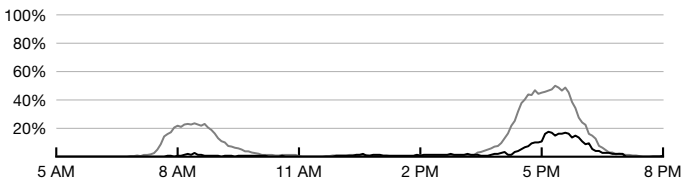
Bellevue to Redmond via I-405/SR 520



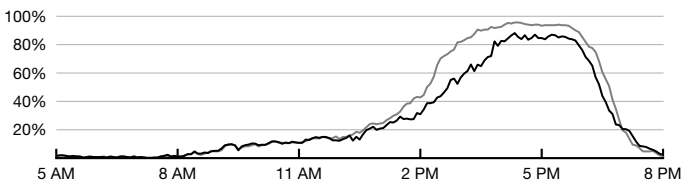
Seattle to Bellevue via I-5/I-90/I-405



Seattle to Issaquah via I-5/I-90



Bellevue to Issaquah via I-405/I-90



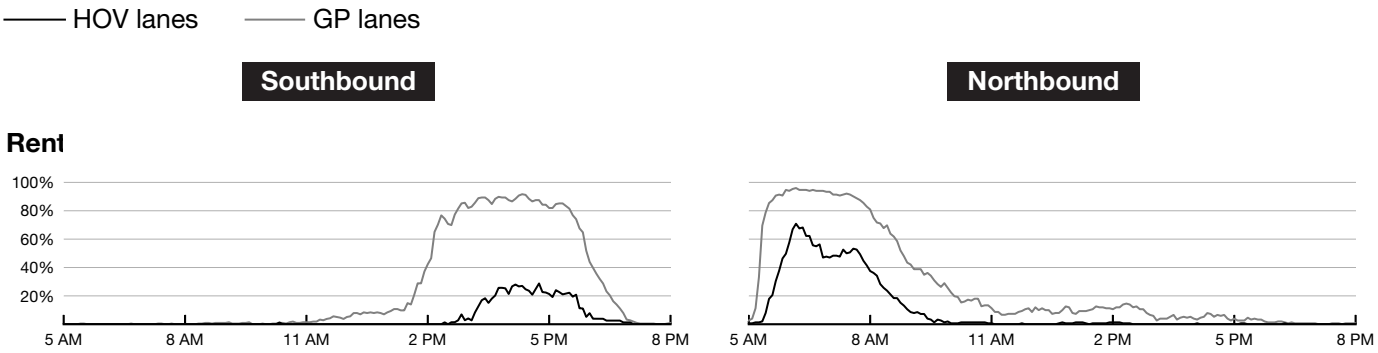
Data sources and analysis: WSDOT Northwest Region Traffic Office, WSDOT Multimodal Planning Division and WSDOT Office of Strategic Assessment and Performance Analysis.
Notes: See p. 2 for congestion definitions and how to read these graphs.

Central Puget Sound Region

HOV stamp graphs and reliability performance

Comparing HOV and adjacent GP lanes: Percent of weekdays experiencing congestion (part 3)

2017; Percent of days average speed was slower than 45 mph in HOV and GP lanes



Data sources and analysis: WSDOT Northwest Region Traffic Office, WSDOT Multimodal Planning Division and WSDOT Office of Strategic Assessment and Performance Analysis.

Note: See p. 2 for congestion definitions and how to read these graphs.

High occupancy vehicle lane speed and reliability performance on major central Puget Sound corridors

2013 through 2017; Goal is to maintain 45 mph for 90% of peak hour; Percent of peak hour goal was met

Commute routes	2013	2014	2015	2016	2017	Commute routes	2013	2014	2015	2016	2017
Morning commutes						**Evening commutes**					
I-5, Everett to Seattle SB	42%	28%	26%	19%	**18%**	I-5, Seattle to Everett NB	66%	46%	36%	21%	**12%**
I-5, Federal Way to Seattle NB	43%	30%	18%	18%	**15%**	I-5, Seattle to Federal Way SB	53%	40%	32%	21%	**19%**
I-405, Tukwila to Bellevue NB	65%	35%	26%	24%	**22%**	I-405, Bellevue to Tukwila SB	41%	26%	21%	18%	**14%**
I-90, Issaquah to Seattle WB[1]	100%	98%	98%	97%	**89%**	I-90, Seattle to Issaquah EB[1]	99%	100%	99%	97%	**94%**
SR 520, Redmond to Bellevue WB	50%	44%	63%	61%	**50%**	SR 520, Redmond to Bellevue WB	52%	52%	73%	71%	**65%**
SR 167, Auburn to Renton NB[2]	94%	86%	66%	45%	**56%**	SR 167, Renton to Auburn SB[2]	98%	98%	95%	87%	**69%**

Data source: WSDOT Multimodal Planning Division.

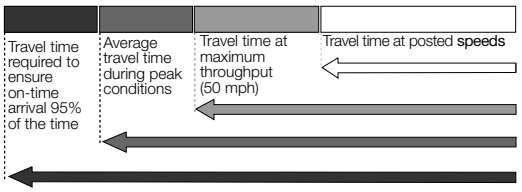
Notes: The above HOV reliability performance standards are based on the peak hour, when average travel time is slowest. To meet the standard, a speed of 45 mph must be maintained for 90% of the peak hour. Numbers represent the percentage of the peak hour when speeds are faster than 45 mph. The WSDOT Multimodal Planning Division analyzes performance data for all complete segments of HOV lanes that have a loop detector. In some cases, like southbound SR 167, data cannot be analyzed for the very beginning and ends of the lanes because there are no detectors at these locations. I-405 commutes between Lynnwood and Bellevue are no longer listed above, as they now have different legislatively mandated speed and reliability performance measures per RCW 47.56.880. For performance information, see www.wsdot.wa.gov/tolling/405/library.htm. **1** The I-90 reversible HOV lane between I-5 and Mercer Island was replaced by 24-hour HOV lanes in both directions on June 4, 2017. **2** High occupancy toll lanes replaced regular HOV lanes May 3, 2008.

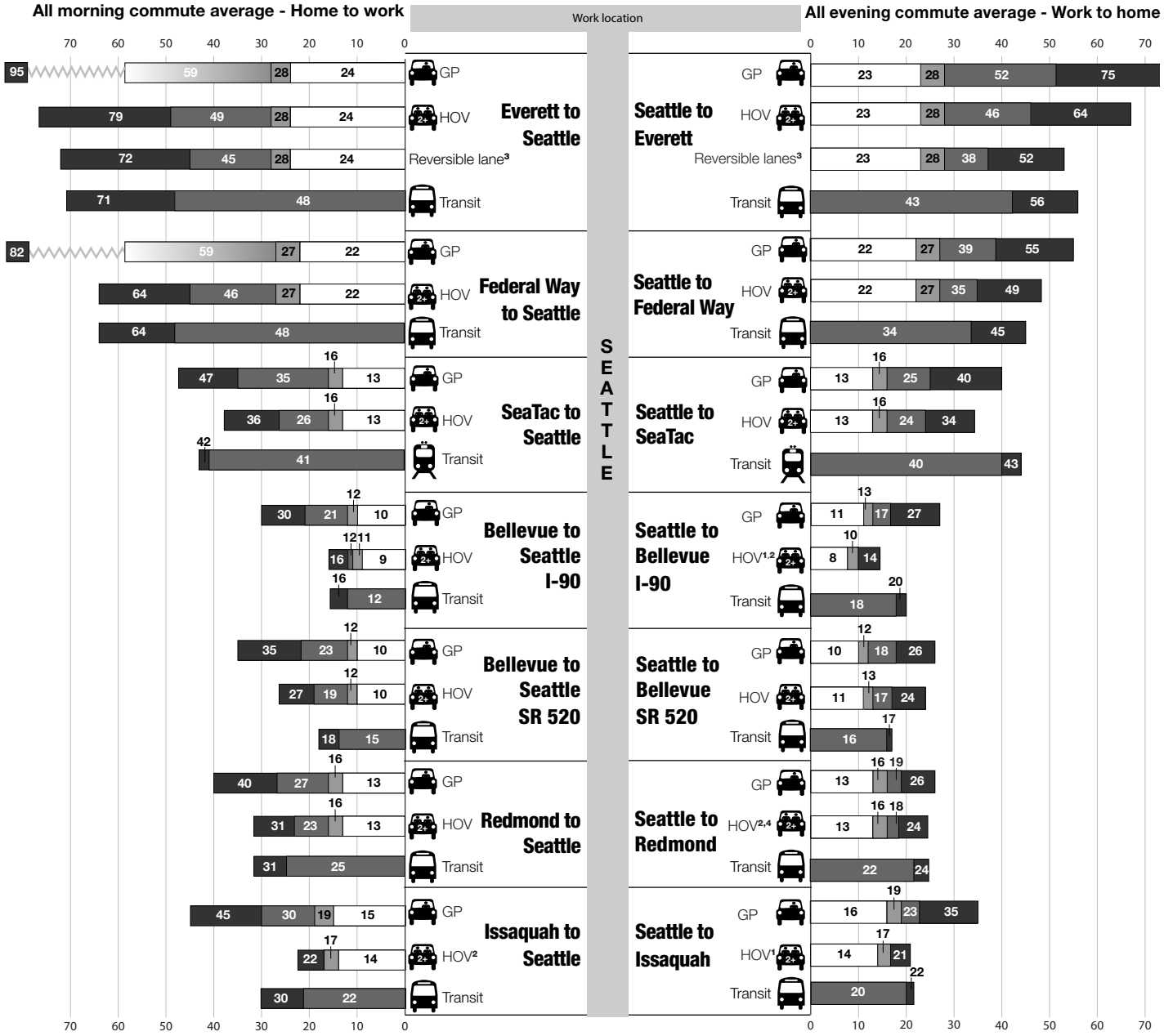
HOV, GP and transit trip analysis – Seattle

Travel times at posted speeds, maximum throughput speeds, average travel times, and 95th percentile reliable travel times

Morning and evening commutes by work location

2017; General purpose (GP), high occupancy vehicle (HOV) and public transit[1] commutes in the central Puget Sound area; Travel time in minutes





Data sources and analysis: WSDOT Multimodal Planning Division and WSDOT Office of Strategic Assessment and Performance Analysis.

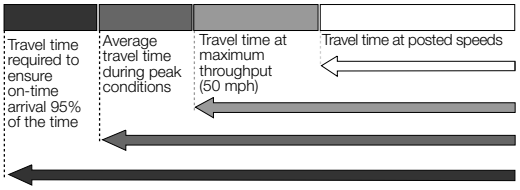
Notes: **1** Transit travel times by bus may not be directly comparable to GP/HOV trips due to different start and end points or off-highway travel to stops. WSDOT attempts to match transit trips as closely as is practical to GP/HOV. **2** Average travel times were equal to or faster than maximum throughput travel times on this route. **3** Monday through Friday reversible lane hours of operation: I-5 Southbound - 5:00 a.m.-11 a.m.; Northbound - 12-noon-11 p.m. **4** HOV lane from SR-520: I-405 Interchange to Redmond.

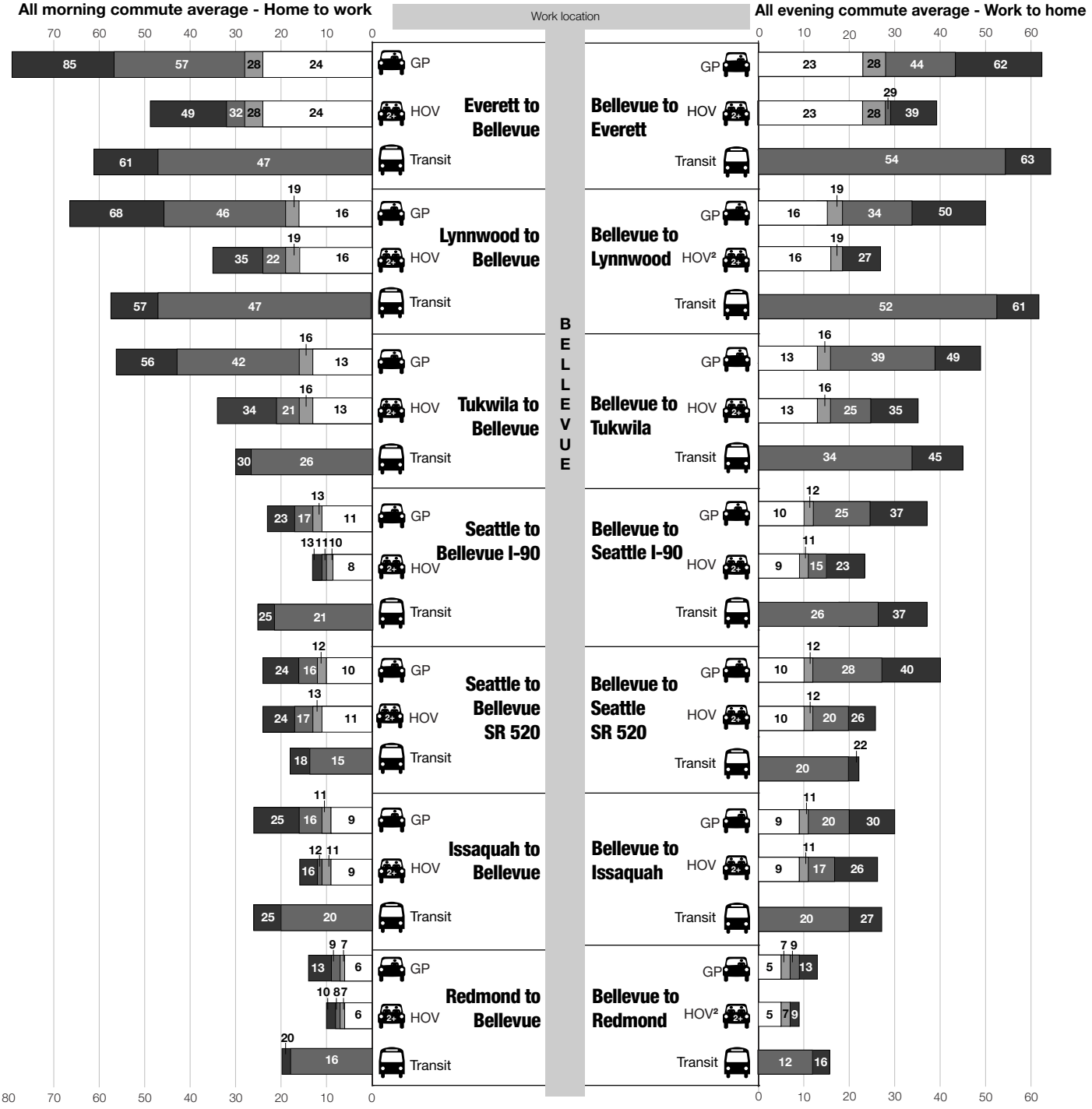
HOV, GP and transit trip analysis – Bellevue

Travel times at posted speeds, maximum throughput speeds, average travel times, and 95th percentile reliable travel times

Morning and evening commutes by work location

2017; General purpose (GP), high occupancy vehicle (HOV) and public transit[1] commutes in the central Puget Sound area; Travel time in minutes





Data sources and analysis: WSDOT Multimodal Planning Division and WSDOT Office of Strategic Assessment and Performance Analysis.

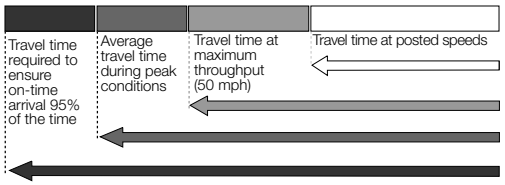
Notes: **1** Transit travel times by bus may not be directly comparable to GP/HOV trips due to different start and end points or off-highway travel to stops. WSDOT attempts to match transit trips as closely as is practical to GP/HOV. **2** Average travel times were equal to or faster than maximum throughput travel times on this route.

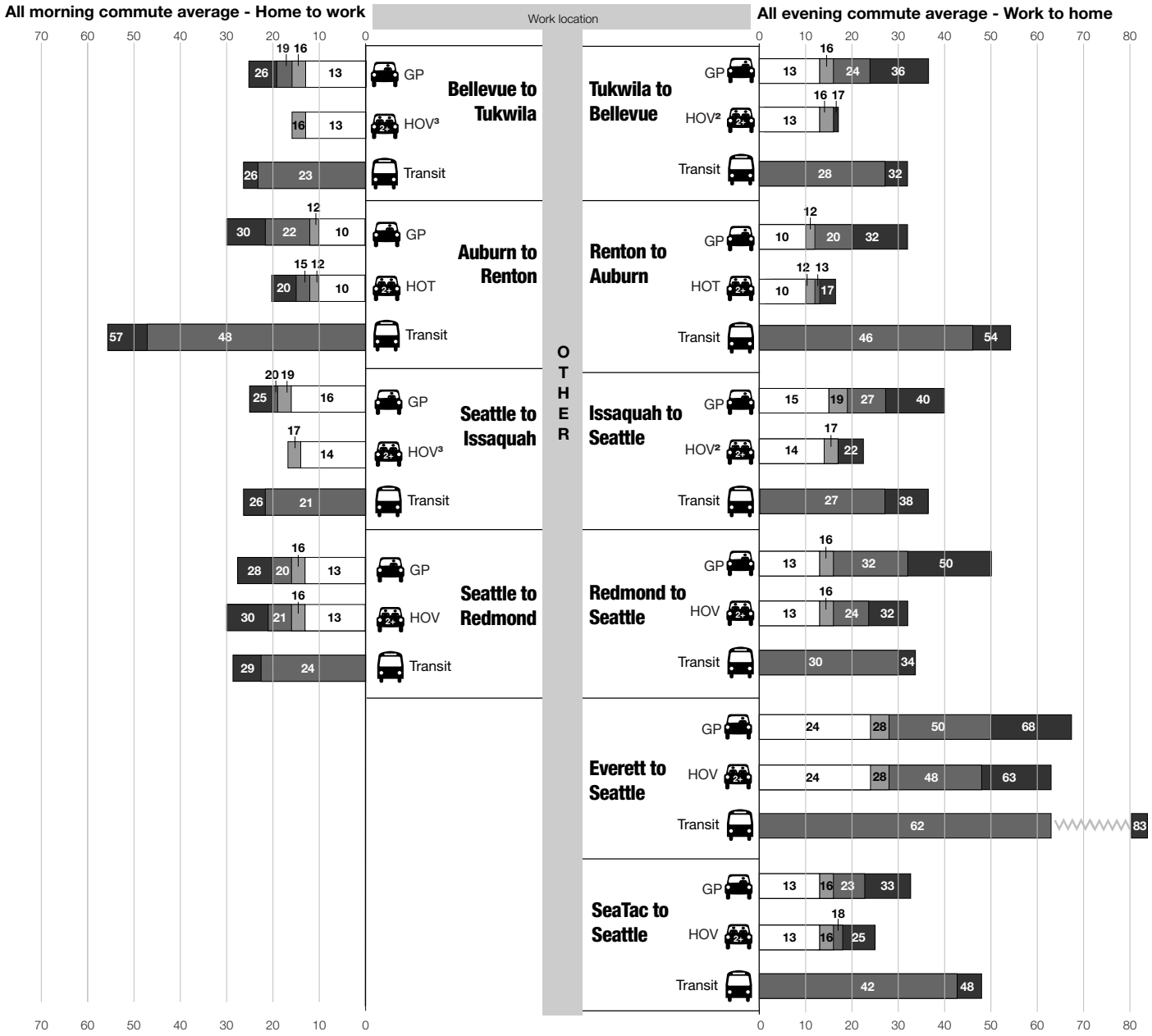
HOV, GP and transit trip analysis – Other locations

Travel times at posted speeds, maximum throughput speeds, average travel times, and 95th percentile reliable travel times

Morning and evening commutes by work location

2017; General purpose (GP), high occupancy vehicle (HOV), high occupancy toll (HOT), and public transit[1] commutes in the central Puget Sound area; Travel time in minutes





Data sources and analysis: WSDOT Multimodal Planning Division and WSDOT Office of Strategic Assessment and Performance Analysis.

Notes: **1** Transit travel times by bus may not be directly comparable to GP/HOV trips due to different start and end points or off-highway travel to stops. WSDOT attempts to match transit trips as closely as is practical to GP/HOV. **2** Average travel times were equal to or faster than maximum throughput travel times on this route. **3** Average travel times and 95th percentile reliable travel times were equal to or faster than maximum throughput travel times on this route.

South Puget Sound Region

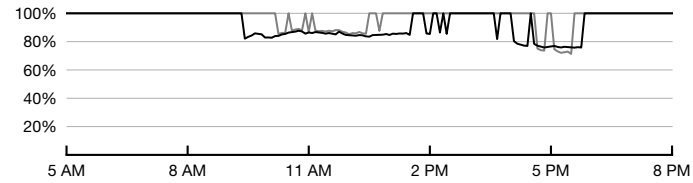
Throughput productivity

Throughput productivity at select south Puget Sound region freeway locations by commute direction
2015 and 2017; Based on the highest observed 5-minute (min.) flow rates; Vehicles per hour per lane (vphpl) at specific mileposts (MP)

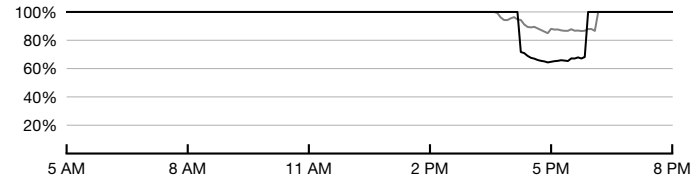
2015 2017

Southbound

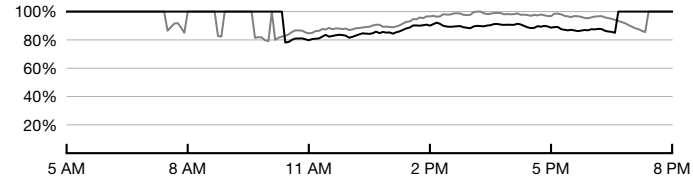
I-5 in Olympia at S 14th Avenue (MP 105.4)
Based on the highest observed 5 min. flow rate of 1,310 vphpl = 100%



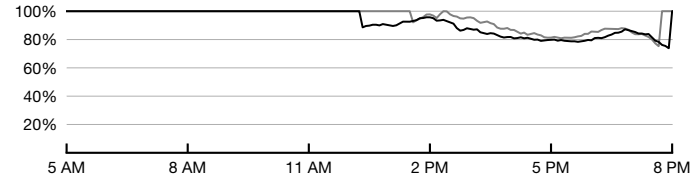
I-5 at JBLM (MP 122.0)
Based on the highest observed 5 min. flow rate of 1,150 vphpl = 100%



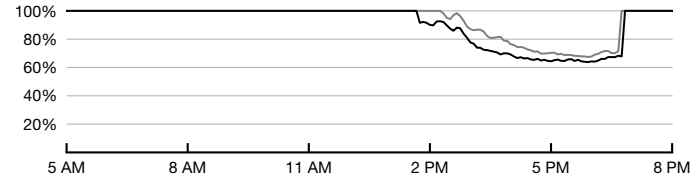
I-5 at the Tacoma Dome (MP 134.1)
Based on the highest observed 5 min. flow rate of 1,430 vphpl = 100%



I-5 at Fife (MP 137.1)
Based on the highest observed 5 min. flow rate of 1,460 vphpl = 100%



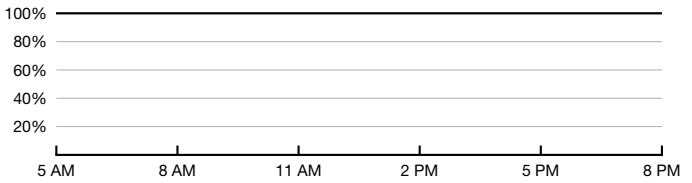
I-5 at SR 18 (MP 141.3)
Based on the highest observed 5 min. flow rate of 1,580 vphpl = 100%



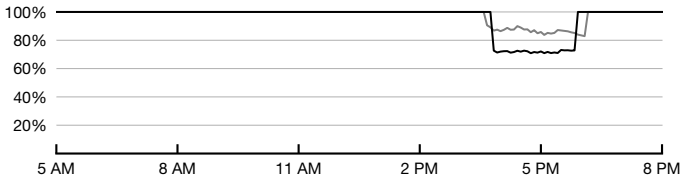
2015 2017

Northbound

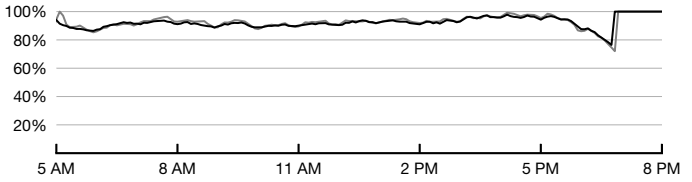
I-5 in Olympia at S 14th Avenue (MP 105.4)
Based on the highest observed 5 min. flow rate of 1,190 vphpl = 100%



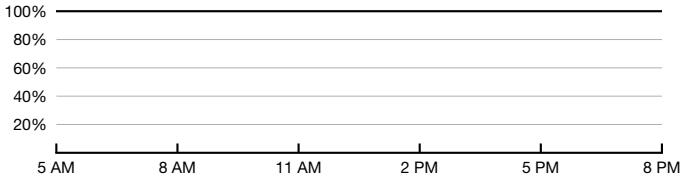
I-5 at JBLM (MP 122.0)
Based on the highest observed 5 min. flow rate of 1,180 vphpl = 100%



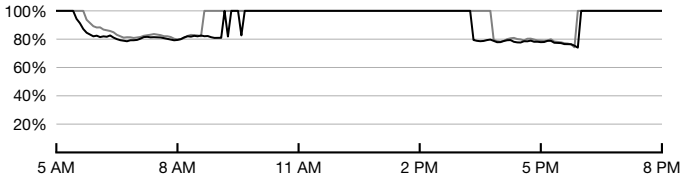
I-5 at the Tacoma Dome (MP 134.1)
Based on the highest observed 5 min. flow rate of 1,580 vphpl = 100%



I-5 at Fife (MP 137.1)
Based on the highest observed 5 min. flow rate of 1,550 vphpl = 100%



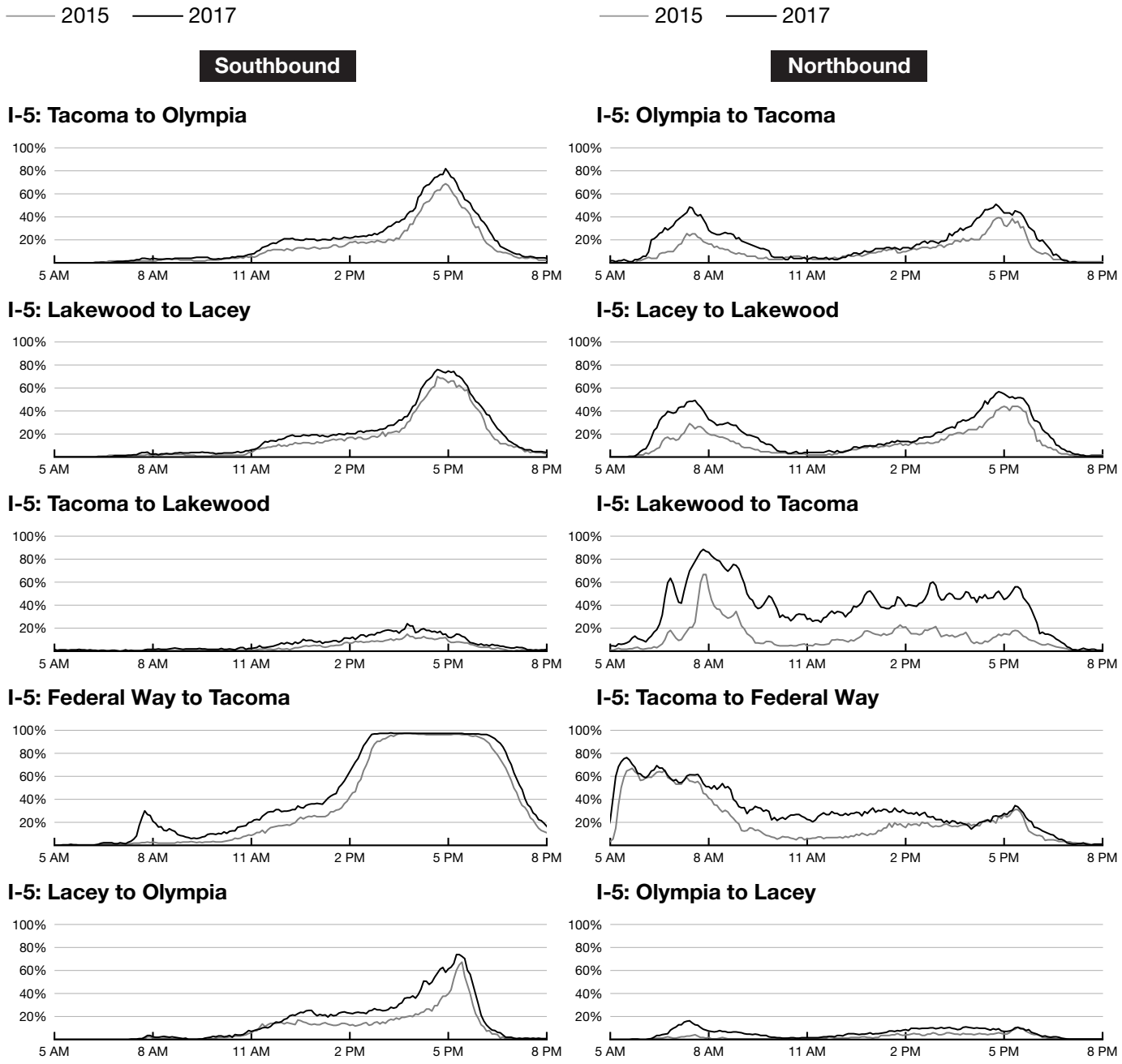
I-5 at SR 18 (MP 141.3)
Based on the highest observed 5 min. flow rate of 1,640 vphpl = 100%



Data sources and analysis: WSDOT Olympic Region Traffic Office, WSDOT Multimodal Planning Division and WSDOT Office of Strategic Assessment and Performance Analysis.
Note: See p. 2 for throughput definitions and how to read these graphs.

Stamp graphs: Frequency, duration of congestion

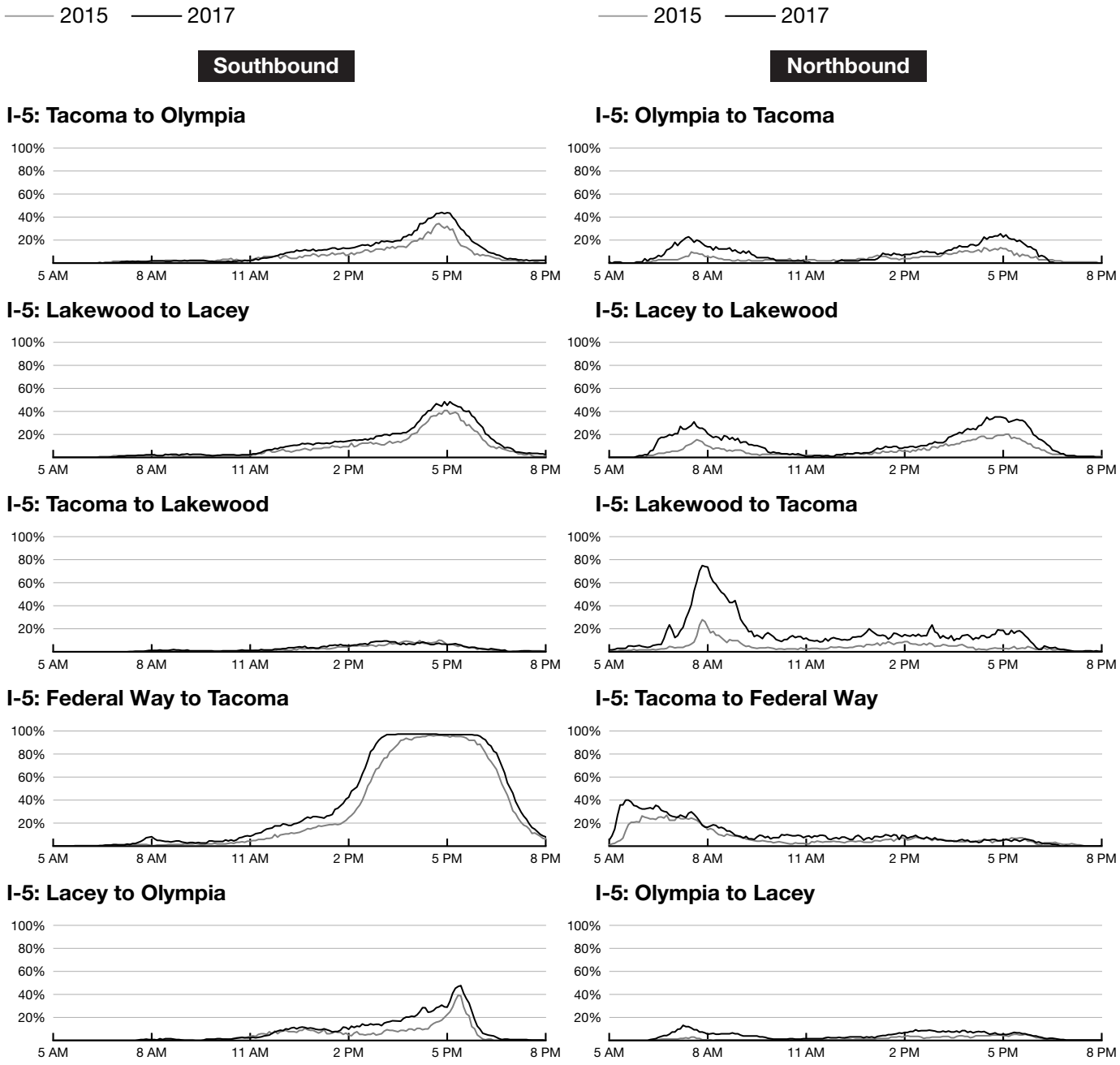
Stamp graphs of congestion by time of day on south Puget Sound region freeways
Percent of weekdays the average speed was slower than 45 mph; 2015 and 2017



Data sources and analysis: WSDOT Olympic Region Traffic Office, WSDOT Multimodal Planning Division and WSDOT Office of Strategic Assessment and Performance Analysis.
Note: See p. 2 for congestion definitions and how to read these graphs.

Stamp graphs: Frequency, duration of SEVERE congestion

Stamp graphs of SEVERE congestion by time of day on south Puget Sound region freeways
Percent of weekdays the average speed was slower than 36 mph; 2015 and 2017



Data sources and analysis: WSDOT Olympic Region Traffic Office, WSDOT Multimodal Planning Division and WSDOT Office of Strategic Assessment and Performance Analysis.
Note: See p. 2 for congestion definitions and how to read these graphs.

Routinely congested segments

South Puget Sound region routinely congested segments of I-5

2015 weekdays; Length of congestion in miles; Duration of congestion in hours:minutes

	Morning peak period				Evening peak period			
Route and direction	**Start and end times**	**Begin and end milepost**	**Length of congestion**	**Duration of congestion**	**Start and end times**	**Begin and end milepost**	**Length of congestion**	**Duration of congestion**
I-5 northbound	7:40-8:10 a.m.[1]	130.5-132	1.5	0:30	2:00-5:55 p.m.	133-135.5	2.5	3:55
	5:05-8:40 a.m.	132.5-136.5	4	3:35				
	6:25-7:55 a.m.	141-141.5	0.5	1:30				
I-5 southbound					2:05-7:15 p.m.	141.5-135	6.5	5:10
					2:30-5:25 p.m.	134.5-133.5	1	2:55
					4:05-5:45 p.m.	124.5-122	2.5	1:40
					5:20-5:25 p.m.[1]	107-106.5	0.5	0:05
Totals			**6.0**				**13.0**	

2017 weekdays; Length of congestion in miles; Duration of congestion in hours:minutes

	Morning peak period				Evening peak period			
Route and direction	**Start and end times**	**Begin and end milepost**	**Length of congestion**	**Duration of congestion**	**Start and end times**	**Begin and end milepost**	**Length of congestion**	**Duration of congestion**
I-5 northbound	6:20-7:55 a.m.	113.5-116.5	3	1:35	4:25-5:55 p.m.	120-122	2	1:30
	6:40-9:55 a.m.	130-132	2	3:15	2:35-5:40 p.m.	131-131.5	0.5	3:05
	5:00-9:55 a.m.	133-135.5	2.5	4:55	2:00-5:55 p.m.	134-135.5	1.5	3:55
	5:00-6:10 a.m.	136-136.5	0.5	1:10				
	5:40-8:05 a.m.	141-142	1	2:25				
I-5 southbound	7:40-7:55 a.m.[1]	135.5-135	0.5	0:15	2:05-7:30 p.m.	142-135	7	5:25
					3:35-5:40 p.m.	134-133.5	0.5	2:05
					4:40-5:10 p.m.[1]	124.5-124	0.5	0:30
					4:05-5:50 p.m.	123.5-122	1.5	1:45
					3:40-6:00 p.m.	120.5-119	1.5	2:20
					5:05-5:20 p.m.[1]	118-117.5	0.5	0:15
					5:10-5:35 p.m.[1]	107.5-106.5	1	0:25
					4:45-5:35 p.m.	106-105.5	0.5	0:50
Totals			**9.5**				**17**	

Data sources and analysis: WSDOT Multimodal Planning Division and WSDOT Office of Strategic Assessment and Performance Analysis.
Note: Totals can include congestion at the same location at different times throughout the day. **1** Not reported on routinely congested segments map or narrative in main report due to duration of less than 50 minutes.

Heatmaps: Daily vehicle hours of delay on I-5

I-5 delay between Olympia and Federal Way

2015 and 2017; Vehicle hours of delay; Weekdays only; By milepost (MP); Shading represents intensity of delay; Highlighted sections represent peak periods

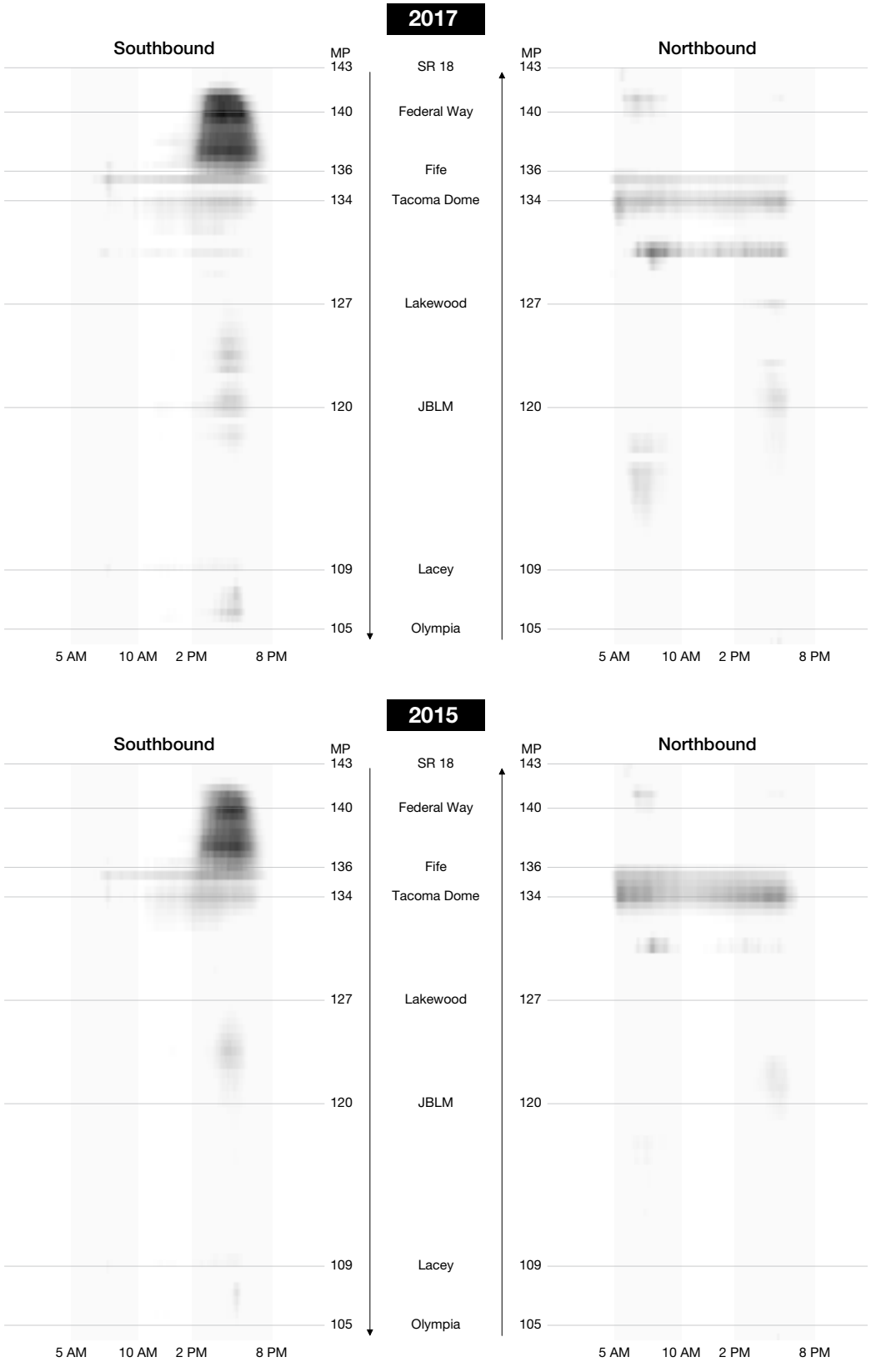
In 2017, the most intense delay on I-5 in the south Puget Sound region occured southbound on the evening commute, between Federal Way and Fife. This area of delay, the worst of which lasted from 2 p.m. to 7:30 p.m., occurs as traffic approaches the merge at the end of the HOV lanes at Fife. There was additional southbound congestion at the Tacoma Dome and at JBLM.

On northbound I-5, delay lasted from 5 a.m. to 7 p.m. around Fife and Tacoma Dome. There was also northbound delay from 7 a.m. to 7 p.m. halfway between the Tacoma Dome and Lakewood. Additionally, there were shorter, less intense periods of delay in the JBLM area on both the morning and evening commutes.

In general, delay on I-5 in the south Puget Sound region occurred in the locations and at approximately the same times in 2015 and 2017. In most of these locations, delay got worse between the two years.

As in 2017, the worst delay on I-5 in the south Puget Sound region in 2015 was southbound in the evening between Federal Way and Fife from 2 p.m. to 7:30 p.m., with less intense but longer-lasting southbound delay at the Tacoma Dome.

On northbound I-5, the worst delay in 2015 was between the Tacoma Dome and Fife, where traffic was continuously delayed from 5 a.m. to 6:30 p.m.



Data sources and analysis: WSDOT Multimodal Planning Division and WSDOT Office of Strategic Assessment and Performance Analysis.

Commute trip analysis

Morning and evening commutes: Changes in travel time performance, congestion, reliability and emissions for 10 morning and evening high-demand commute trips in the south Puget Sound region

2015 and 2017; Morning peak (5-10 a.m.) and evening peak (2-8 p.m.) for an annualized average weekday; 5-minute peak of commuter rush (individual peak times vary); Length of route in miles; All travel times in minutes; Peak of commuter rush and duration of congestion expressed in hours and minutes; Cost of congestion in dollars; Emissions in pounds of carbon dioxide equivalents (CO_2e)

Morning

				Travel Times								Congestion						Reliability											
						Average travel time at peak of morning commute			Maximum throughput travel time index (MT^3I)		Peak period %Δ in VMT	Duration of congestion: How long average speed is below 45 mph			Cost of congestion[1] per person[2], per trip			2015 percentiles				2017 percentiles				Δ: 2013 vs. 2015			
																		Median				Median				Median			
Route	Direction of travel	Length of route	Peak time	Travel time at posted speed	Travel time at maximum throughput speed	2015	2017	%Δ	2015	2017		2015	2017	Δ	2015	2017	%Δ	50th	80th	90th	95th	50th	80th	90th	95th	50th	80th	90th	95th
Northbound																													
I-5 Olympia to Lacey	NB	6	7:20	6	7	6.	7	17%	0.88	1.02	-4%	0:00	0:00	0:00	$-	$-	N/A	6	6	6	**6**	6	6	11	**14**	0	0	5	**8**
I-5 Lacey to Lakewood	NB	17	7:30	17	20	21	24	14%	1.05	1.20	0%	0:00	1:15	1:15	$-	$0.35	N/A	18	24	30	**33**	22	31	34	**38**	3	6	4	**5**
I-5 Lakewood to Tacoma	NB	3	7:50	3	4	5	7	40%	1.30	1.86	-1%	0:50	3:55	3:05	$0.15	$0.39	160%	5	6	7	**8**	7	9	10	**11**	2	3	3	**3**
I-5 Tacoma to FederalWay	NB	12	5:30	12	15	19	20	5%	1.28	1.36	-8%	3:25	3:45	0:20	$0.72	$0.89	24%	18	22	26	**29**	19	23	27	**29**	2	1	1	**0**
I-5 Olympia to Tacoma	NB	26	7:25	26	31	32	37	16%	1.03	1.21	-1%	0:00	0:45	0:45	$-	$0.81	N/A	29	36	42	**46**	34	44	52	**58**	5	8	11	**12**
Southbound																													
I-5 Lacey to Olympia	SB	6	7:50	6	7	6	7	17%	0.92	0.94	3%	0:00	0:00	0:00	$-	$-	N/A	6	7	7	**7**	6	7	7	**7**	0	0	0	**0**
I-5 Lakewood to Lacey	SB	17	7:35	17	20	18	18	0%	0.88	0.90	0%	0:00	0:00	0:00	$-	$-	N/A	17	18	18	**19**	18	18	19	**21**	0	1	1	**2**
I-5 Tacoma to Lakewood	SB	3	8:40	3	4	3	3	0%	0.87	0.94	1%	0:00	0:00	0:00	$-	$-	N/A	3	3	3	**3**	3	3	4	**4**	0	0	1	**1**
I-5 FederalWay to Tacoma	SB	12	7:50	12	15	14	16	14%	0.95	1.06	-1%	0:00	0:35	0:35	$-	$0.16	N/A	14	14	15	**16**	14	18	20	**21**	1	3	5	**5**
I-5 Tacoma to Olympia	SB	26	7:30	26	31	27	28	4%	0.88	0.91	1%	0:00	0:00	0:00	$-	$-	N/A	27	27	28	**29**	28	28	29	**31**	1	1	1	**2**

Evening

Northbound																													
I-5 Olympia to Lacey	NB	6	17:25	6	7	7	7	0%	0.99	1.02	-4%	0:00	0:00	0:00	$-	$-	N/A	6	7	8	**10**	6	7	8	**14**	0	0	0	**4**
I-5 Lacey to Lakewood	NB	17	16:50	17	20	23	27	17%	1.15	1.34	-1%	1:05	2:25	1:20	$0.24	$1.15	379%	21	27	33	**36**	24	35	42	**46**	3	8	9	**10**
I-5 Lakewood to Tacoma	NB	3	14:50	3	4	4	5	25%	1.05	1.28	-2%	0:00	5:25	5:25	$-	$0.09	N/A	4	4	5	**5**	4	5	6	**7**	1	1	1	**2**
I-5 Tacoma to FederalWay	NB	12	17:25	12	15	16	16	0%	1.10	1.09	-6%	0:00	0:00	0:00	$-	$-	N/A	16	17	19	**22**	16	18	19	**21**	0	0	1	**-1**
I-5 Olympia to Tacoma	NB	26	16:45	26	31	33	38	15%	1.08	1.23	-2%	0:00	2:00	2:00	$-	$0.88	N/A	31	39	43	**46**	34	45	52	**62**	3	6	9	**16**
Southbound																													
I-5 Lacey to Olympia	SB	6	17:20	6	7	9	10	11%	1.36	1.44	1%	1:05	2:20	1:15	$0.39	$0.44	13%	8	12	14	**15**	9	12	14	**16**	1	1	1	**1**
I-5 Lakewood to Lacey	SB	17	16:45	17	20	28	30	7%	1.37	1.47	-2%	2:20	3:25	1:05	$1.36	$1.69	24%	25	34	40	**42**	27	38	43	**49**	2	3	4	**7**
I-5 Tacoma to Lakewood	SB	3	15:45	3	4	4	4	0%	1.06	1.10	-3%	0:00	0:00	0:00	$-	$-	N/A	3	4	5	**8**	4	4	5	**6**	0	1	0	**-2**
I-5 FederalWay to Tacoma	SB	12	16:50	12	15	35	38	9%	2.34	2.56	-7%	6:50	7:30	0:40	$4.08	$4.91	20%	35	41	44	**47**	38	43	46	**48**	3	3	2	**1**
I-5 Tacoma to Olympia	SB	26	16:40	26	31	41	43	5%	1.31	1.40	-1%	1:50	3:05	1:15	$1.55	$2.01	30%	38	48	53	**62**	41	53	60	**65**	2	5	7	**3**

Data sources and analysis: WSDOT Olympic Region Traffic Office, Puget Sound Regional Council, WSDOT Multimodal Planning Division and WSDOT Office of Strategic Assessment and Performance Analysis.

Notes: The symbol "Δ" is used to denote change in a variable. Commute lengths and travel time values have been rounded to integer values for publication only. MT^3 Index values cannot be reproduced as published using the integer values in the table. Due to rounding, some percentages are not computable based on numbers in the table. **1** Commute congestion cost based on $23.76 for every hour of congested conditions measured when commute speeds are slower than 45 mph, applied to the volume of traffic during the congested conditions on an average annual weekday commute. This methodology is in accordance with WSDOT's update 2017 guidelines for assessing the cost of travel. **2** Per-person metrics were estimated based on vehicle occupancy observed on the freeway in the general purpose lanes. **3** Greenhouse gas emissions were calculated based on emission factors developed by PSRC for different vehicle types at varying travel speeds for each analysis year. In addition, the emissions used the traffic volume and percent of trucks, the average speeds for every 5-minute interval during the peak period, and the average vehicle occupancy on the freeway.

Transit commute trip analysis

Morning and evening transit commutes: Changes in transit travel time performance, ridership, and greenhouse gas (GHG) emissions for 10 high-demand commute trips in the south Puget Sound region
2015 and 2017; Morning peak (6-9 a.m.) and evening peak (3-6 p.m.) for an annualized average weekday; 5-minute peak of commuter rush in hours and minutes (individual peak times vary); All travel times in minutes; Emissions in pounds of carbon dioxide equivalents (CO_2e); Average transit ridership, average seats used, and emissions avoided based on the average maximum load during the peak period

Morning

				Travel Times									Ridership															Emissions					
				Travel times in minutes at peak of morning/evening commute[1]																														
				Auto 95% reliable			Transit average			Transit 95% reliable			Ridership[2]			Passenger miles traveled			Lane capacity savings[3]			Average percent of seats used[4]			Number of trips			Percent of trips over 90% capacity			Daily emissions avoided due to transit use[5]			Vehicle miles traveled avoided due to transit use		
Route	Direction of travel	Length of route	Peak time	2015	2017	Δ	2015	2017	Δ	2015	2017	Δ	2015	2017	%Δ	2015	2017	%Δ	2015	2017	%Δ	2015	2017	Δ	2015	2017	%Δ	2015	2017	Δ	2015	2017	%Δ	2015	2017	%Δ
Northbound																																			
I-5 Olympia to Lacey	NB	6	7:20	6	14	8	13	15	2	14	20	6	53	53	0%	306	305	0%	0.01	0.01	0%	14%	13%	-1%	10	10	0%	0%	0%	0%	42	21	-49%	189	189	0%
I-5 Lacey to Lakewood	NB	17	7:30	33	38	5	20	25	5	24	33	9	135	117	-13%	2,124	1,625	-24%	0.02	0.02	-13%	18%	15%	-3%	18	18	0%	0%	0%	0%	552	297	-46%	1,317	1,007	-24%
I-5 Lakewood to Tacoma	NB	3	7:50	8	11	3	15	15	0	19	20	1	202	150	-26%	628	465	-26%	0.04	0.03	-26%	30%	21%	-9%	14	15	7%	0%	0%	0%	249	142	-43%	389	289	-26%
I-5 Tacoma to Federal Way[6]	NB	12	5:30	29	29	0	16	18	2	21	23	2	3,684	3,920	6%	45,465	48,404	6%	0.68	0.72	6%	67%	63%	-3%	81	87	7%	1%	3%	2%	23,611	24,705	5%	28,188	30,011	6%
I-5 Olympia to Tacoma	NB	26	7:25	46	58	12	62	65	3	75	81	6	260	241	-7%	3,824	2,555	-33%	0.05	0.04	-7%	22%	17%	-4%	26	30	15%	0%	0%	0%	1,160	653	-44%	2,371	1,584	-33%
Southbound																																			
I-5 Lacey to Olympia	SB	6	7:50	7	7	0	12	12	0	17	20	3	86	78	-8%	495	453	-8%	0.02	0.01	-8%	25%	23%	-2%	9	9	0%	0%	0%	0%	196	171	-13%	307	281	-8%
I-5 Lakewood to Lacey	SB	17	7:35	19	21	2	19	14	-5	23	20	-3	112	181	62%	1,774	2,877	62%	0.02	0.03	62%	24%	31%	7%	12	15	25%	0%	0%	0%	681	1,267	86%	1,100	1,784	62%
I-5 Tacoma to Lakewood	SB	3	8:40	3	4	1	14	14	0	16	17	1	175	180	3%	544	561	3%	0.03	0.03	3%	23%	20%	-2%	16	19	19%	0%	0%	0%	173	164	-5%	337	348	3%
I-5 Federal Way to Tacoma[6]	SB	12	7:50	16	21	5	36	37	1	40	42	2	371	337	-9%	4,151	3,938	-5%	0.07	0.06	-9%	21%	18%	-3%	23	26	13%	0%	0%	0%	1,305	1,028	-21%	2,574	2,442	-5%
I-5 Tacoma to Olympia	SB	26	7:30	29	31	2	51	52	1	59	62	3	256	247	-3%	4,166	3,956	-5%	0.05	0.05	-3%	25%	22%	-3%	22	25	14%	0%	0%	0%	1,606	1,357	-15%	2,583	2,453	-5%

Evening

Northbound[8]																																	
I-5 Olympia to Lacey	NB	6	17:25	10	14	4	16	15	-1	23	22	-1	102	146	43%	592	842	42%	0.02	0.03	43%	27%	32%	5%	10	12	20%	0%	0%	0%	244	377	55%	367	522	42%
I-5 Lacey to Lakewood	NB	17	16:50	36	46	10	23	24	1	45	36	-9	117	171	46%	1,767	2,518	43%	0.02	0.03	46%	25%	32%	6%	12	14	17%	0%	0%	0%	697	1,106	59%	1,096	1,561	43%
I-5 Lakewood to Tacoma	NB	3	14:50	5	7	2	14	16	2	18	21	3	181	127	-30%	564	396	-30%	0.03	0.02	-30%	22%	13%	-9%	18	20	11%	0%	0%	0%	163	34	-79%	350	246	-30%
I-5 Tacoma to Federal Way[6]	NB	12	17:25	22	21	-1	18	19	1	23	24	1	693	526	-24%	7,978	6,208	-22%	0.13	0.10	-24%	40%	27%	-13%	25	28	12%	0%	0%	0%	3,621	2,322	-36%	4,946	3,849	-22%
I-5 Olympia to Tacoma	NB	26	16:45	46	62	16	61	66	5	85	89	4	233	236	1%	3,991	4,300	8%	0.04	0.04	1%	21%	18%	-3%	25	28	12%	0%	0%	0%	1,421	1,423	0%	2,474	2,666	8%
Southbound[8]																																	
I-5 Lacey to Olympia	SB	6	17:20	15	16	1	16	17	1	37	24	-13	58	83	43%	323	466	44%	0.01	0.02	43%	19%	17%	-1%	8	12	50%	0%	0%	0%	87	116	34%	200	289	44%
I-5 Lakewood to Lacey	SB	17	16:45	42	49	7	31	30	-1	49	38	-11	222	240	8%	3,250	2,907	-11%	0.04	0.04	8%	35%	30%	-5%	16	19	19%	0%	0%	0%	1,371	1,091	-20%	2,015	1,803	-11%
I-5 Tacoma to Lakewood	SB	3	15:45	8	6	-2	18	22	4	24	29	5	243	215	-11%	754	668	-11%	0.04	0.04	-11%	35%	26%	-9%	15	17	13%	0%	0%	0%	312	237	-24%	468	414	-11%
I-5 Federal Way to Tacoma[6]	SB	12	16:50	47	48	1	31	34	3	48	44	-4	3,356	3,328	-1%	41,333	40,980	-1%	0.62	0.61	-1%	61%	57%	-4%	75	78	4%	4%	3%	-1%	21,159	20,375	-4%	25,626	25,408	-1%
I-5 Tacoma to Olympia	SB	26	16:40	62	65	3	80	77	-3	101	94	-7	425	392	-8%	5,797	4,489	-23%	0.08	0.07	-8%	35%	27%	-8%	28	32	14%	0%	0%	0%	2,406	1,490	-38%	3,594	2,783	-23%

Data sources and analysis: Intercity Transit, Pierce Transit, Sound Transit, WSDOT Olympic Region Traffic Office, WSDOT Multimodal Planning Division and WSDOT Office of Strategic Assessment and Performance Analysis.
Notes: The symbol "Δ" is used to denote change in a variable. Due to rounding, some percentages are not computable based on numbers in the table. **1** Transit travel times include off-highway travel such as exiting to stop at a transit center and may not be directly comparable to private auto times which only include highway travel. **2** Ridership was reported for the peak transit commute periods (6-9 a.m. and 3-6 p.m.). **3** Lane capacity savings is a measure of how many general purpose lanes' worth of capacity transit ridership provides during the peak periods. See the second edition of WSDOT's *Handbook for Corridor Capacity Evaluation* at www.wsdot.wa.gov/publications/fulltext/graynotebook/CCR_methodology_2nd_edition.pdf for more calculation methods. **4** Average percent of seats used is based on the average maximum load of each bus or train trip and the total seats on the bus or train. Individual trips could show a load greater than 100% if there was standing-room only. Averaging the load for each commute levels out this variation across multiple trips, and may under-represent the load experienced during the peak utilization of transit. **5** Greenhouse gas emissions avoided by transit use were estimated based on the following factors: a) the average maximum transit load; b) the assumption that for every transit passenger mile traveled, 0.62 miles of single-occupant vehicle travel is avoided; c) the distance traveled on the WSDOT-defined commute trip (not the entire transit trip); d) the average emissions of one pound of CO_2e for every private vehicle mile traveled; and e) the emissions from transit vehicle operations provided by the transit agencies. **6** Transit services include buses and Sounder commuter trains.

Routinely congested segments and stamp graphs

Spokane region routinely congested segments of I-90

2015 weekdays; Length of congestion in miles; Duration of congestion in hours:minutes

	Morning peak period				Evening peak period			
Route and direction	**Start and end times**	**Begin and end milepost**	**Length of congestion**	**Duration of congestion**	**Start and end times**	**Begin and end milepost**	**Length of congestion**	**Duration of congestion**
I-90 westbound	7:40-8:05 a.m.[1]	283.3-284.8	1.5	0:25				
I-90 eastbound					4:45-5:45 p.m.	282.1-284.6	2.5	1:00
Totals			**1.5**				**2.5**	

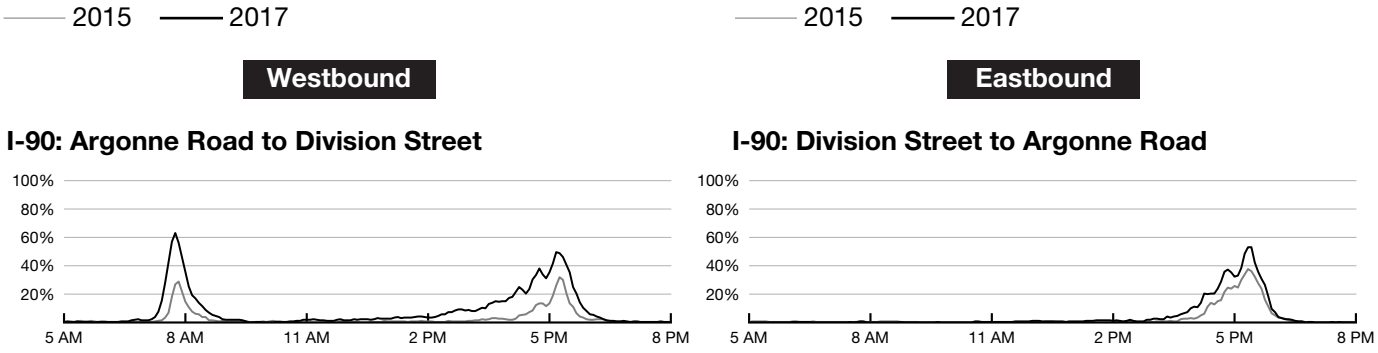
2017 weekdays; Length of congestion in miles; Duration of congestion in hours:minutes

	Morning peak period				Evening peak period			
Route and direction	**Start and end times**	**Begin and end milepost**	**Length of congestion**	**Duration of congestion**	**Start and end times**	**Begin and end milepost**	**Length of congestion**	**Duration of congestion**
I-90 westbound	7:20-8:15 a.m.	283.3-287.1	3.8	0:55	5:15-5:30 p.m.[1]	284.3-285.5	1.2	0:15
I-90 eastbound					4:15-5:50 p.m.	280.8-284.6	3.8	1:35
Totals			**3.8**				**5.0**	

Data sources and analysis: WSDOT Eastern Region Traffic Office and WSDOT Office of Strategic Assessment and Performance Analysis.
Notes: Totals can include congestion at the same location at different times throughout the day. **1** Not reported on routinely congested segments map in main report due to duration of less than 50 minutes.

Stamp graphs of congestion by time of day on Spokane region freeways

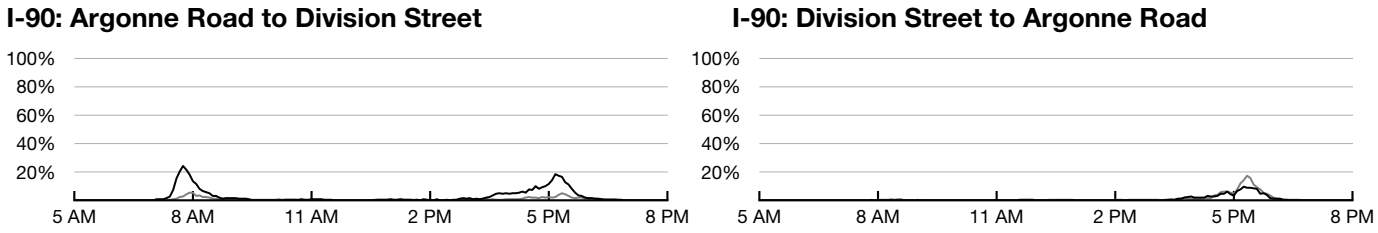
Percent of weekdays the average speed was slower than 45 mph; 2015 and 2017



Data sources and analysis: WSDOT Eastern Region Traffic Office and WSDOT Office of Strategic Assessment and Performance Analysis.
Note: See p. 2 for congestion definitions and how to read these graphs.

Stamp graphs of SEVERE congestion by time of day on Spokane region freeways

Percent of weekdays the average speed was slower than 36 mph; 2015 and 2017



Data sources and analysis: WSDOT Eastern Region Traffic Office and WSDOT Office of Strategic Assessment and Performance Analysis.
Note: See p. 2 for congestion definitions and how to read these graphs.

Spokane Region

Throughput productivity

Throughput productivity at select Spokane region freeway locations by commute direction

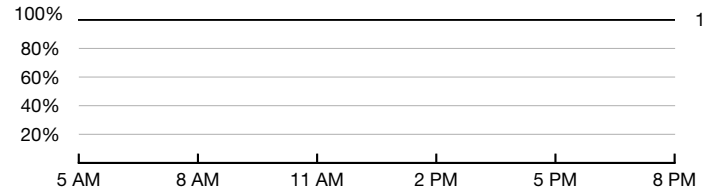
2015 and 2017; Based on the highest observed 5-minute (min.) flow rates; Vehicles per hour per lane (vphpl) at specific mileposts (MP)

2015 2017

Westbound

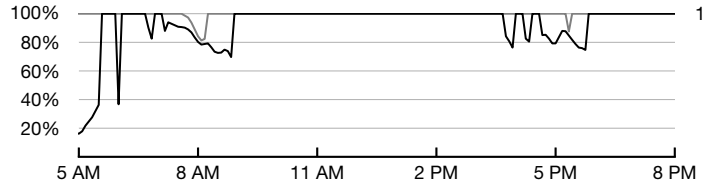
I-90 near Freya Street (MP 283.8)

Based on the highest observed 5 min. flow rate of 1,660 vphpl = 100%



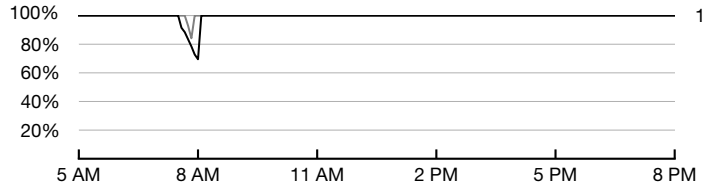
I-90 near Custer Road (MP 284.6)

Based on the highest observed 5 min. flow rate of 1,930 vphpl = 100%



I-90 near Broadway Avenue (MP286.2)

Based on the highest observed 5 min. flow rate of 1,690 vphpl = 100%

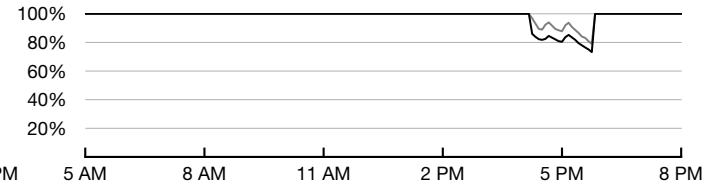


2015 2017

Eastbound

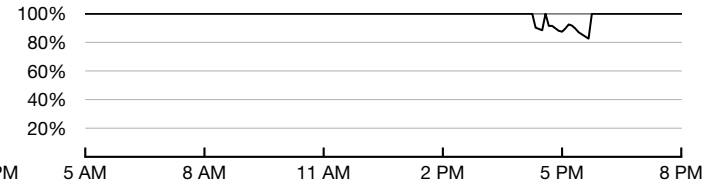
I-90 near Freya Street (MP 283.8)

Based on the highest observed 5 min. flow rate of 1,740 vphpl = 100%



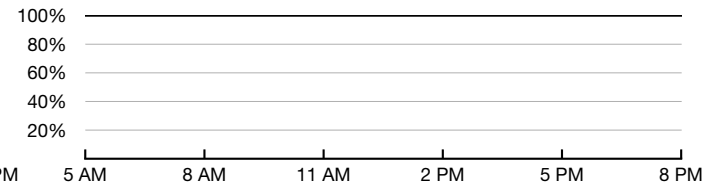
I-90 near Custer Road (MP 284.6)

Based on the highest observed 5 min. flow rate of 1,970 vphpl = 100%



I-90 near Broadway Avenue (MP286.2)

Based on the highest observed 5 min. flow rate of 1,630 vphpl = 100%



Data sources and analysis: WSDOT Eastern Region Traffic Office and WSDOT Office of Strategic Assessment and Performance Analysis.

Note: See p. 2 for throughput definitions and how to read these graphs.

Commute trip analysis

Morning and evening commutes: Changes in travel time performance, congestion, reliability and emissions for four high-demand commute trips in the Spokane region
2015 and 2017; Morning peak (7-10 a.m.) and evening peak (3-6 p.m.) for an annualized average weekday; 5-minute peak of commuter rush (individual peak times vary); Length of route in miles; All travel times in minutes; Peak of commuter rush and duration of congestion expressed in hours and minutes; Cost of congestion in dollars

Morning

				Travel Times								Congestion						Reliability											
						Average travel time at peak of morning/evening commute			Maximum throughput travel time index (MT^3I)									2015 percentiles				2017 percentiles				Δ: 2015 vs. 2017			
Route	Direction of travel	Length of route	Peak time	Travel time at posted speed	Travel time at maximum throughput speed	2015	2017	%Δ	2015	2017	Peak period %Δ in VMT	Duration of congestion How long average speed is below 45 mph 2015	2017	Δ	Cost of Congestion[1] per person[2], per trip 2015	2017	%Δ	Median 50th	80th	90th	95th	Median 50th	80th	90th	95th	Median 50th	80th	90th	95th
I-90 Argonne Road to Division Street	WB	7.5	7:45	8	9	10	11	10%	1.07	1.24	-2%	0:00	0:20	0:20	$-	$0.36	N/A	9	11	11	**12**	11	13	15	**16**	2	2	3	**4**
I-90 Division Street to Argonne Road	EB	7.5	9:05	8	9	8	8	0%	0.86	0.85	6%	0:00	0:00	0:00	$-	$-	N/A	8	8	8	**8**	8	8	8	**8**	0	0	0	**0**

Evening

I-90 Argonne Road to Division Street	WB	7.5	17:15	8	9	9	10	11%	1.05	1.16	0%	0:00	0:00	0:00	$-	$-	N/A	9	11	12	**12**	10	12	13	**15**	1	1	2	**3**
I-90 Division Street to Argonne Road	EB	7.5	17:20	8	9	10	10	0%	1.13	1.12	-1%	0:00	0:00	0:00	$-	$-	N/A	10	12	13	**15**	10	11	12	**14**	1	-1	-1	**-1**

Data sources and analysis: WSDOT Eastern Region Traffic Office and WSDOT Office of Strategic Assessment and Performance Analysis.
Notes: The symbol "Δ" is used to denote change in a variable. Commute lengths and travel time values have been rounded to integer values for publication only. MT^3 Index values cannot be reproduced as published using the integer values in the table. Due to rounding, some percentages are not computable based on numbers in the table. **1** Commute congestion cost based on $21.78 for every hour of congested conditions measured when commute speeds are slower than 45 mph, applied to the volume of traffic during the congested conditions on an average annual weekday commute. This methodology is in accordance with WSDOT's update 2017 guidelines for assessing the cost of travel. **2** Per-person metrics were estimated based on vehicle occupancy observed on the freeway in the general purpose lanes.

Morning and evening transit commutes: Changes in transit travel time performance, ridership, and greenhouse gas (GHG) emissions for two high-demand commute trips in the Spokane region
2015 and 2017; Morning peak (6-9 a.m.) and evening peak (3-6 p.m.) for an annualized average weekday; 5-minute peak of commuter rush in hours and minutes (individual peak times vary); All travel times in minutes; Emissions in pounds of carbon dioxide equivalents (CO_2e); Average transit ridership, average seats used, and emissions avoided based on the average maximum load during the peak period

Morning

				Travel Times										Ridership														Emissions					
				Travel times in minutes at peak of morning/evening commute[1]																													
				Auto 95% reliable			Transit average			Transit 95% reliable			Ridership[2]			Passenger miles traveled			Lane capacity savings[3]			Average percent of seats used[4]			Number of trips			Percent of trips over 90% capacity			Daily emissions avoided due to transit use[5]			Vehicle miles traveled avoided due to transit use		
Route	Direction of travel	Length of route	Peak time	2015	2017	Δ	2015	2017	Δ	2015	2017	Δ	2015	2017	%Δ	2015	2017	%Δ	2015	2017	%Δ	2015	2017	Δ	2015	2017	%Δ	2015	2017	Δ	2015	2017	%Δ	2015	2017	%Δ
I-90 Argonne Road to Division Street	WB	7.5	7:45	12	16	4	N/A	10	N/A	19	14	N/A	573	499	-13%	3,323	2,746	-17%	0.10	0.09	-13%	57%	49%	-8%	23	23	0%	0%	0%	0%	1,447	1,113	-23%	2,061	1,679	-18%

Evening

I-90 Division Street to Argonne Road	EB	7.5	17:20	15	14	-1	N/A	12	N/A	20	25	N/A	400	332	-17%	2,440	2,024	-17%	0.07	0.06	-17%	56%	47%	-10%	17	17	0%	0%	0%	0%	1,052	794	-25%	1,513	1,255	-17%

Data sources and analysis: Spokane Transit Authority, WSDOT Eastern Region Traffic Office, and WSDOT Office of Strategic Assessment and Performance Analysis.
Notes: The symbol "Δ" is used to denote change in a variable. Due to rounding, some percentages are not computable based on numbers in the table. **1** Transit travel times include off-highway travel such as exiting to stop at a transit center and may not be directly comparable to private auto times which only include highway travel. **2** Ridership was reported for the peak transit commute periods (6-9 a.m. and 3-6 p.m.). **3** Lane capacity savings is a measure of how many general purpose lanes' worth of capacity transit ridership provides during the peak periods. See the second edition of WSDOT's *Handbook for Corridor Capacity Evaluation* at www.wsdot.wa.gov/publications/fulltext/graynotebook/CCR_methodology_2nd_edition.pdf for more calculation methods. **4** Average percent of seats used is based on the average maximum load of each bus or train trip and the total seats on the bus or train. Individual trips could show a load greater than 100% if there was standing-room only. Averaging the load for each commute levels out this variation across multiple trips, and may under-represent the load experienced during the peak utilization of transit. **5** Greenhouse gas emissions avoided by transit use were estimated based on the following factors: a) the average maximum transit load; b) the assumption that for every transit passenger mile traveled, 0.62 miles of single-occupant vehicle travel is avoided; c) the distance traveled on the WSDOT-defined commute trip (not the entire transit trip); d) the average emissions of one pound of CO_2e for every mile traveled; and e) the emissions from transit vehicle operations provided by the transit agencies.

Commute trip analysis

Morning and evening commutes: Changes in travel time performance, congestion, reliability, emissions and transit performance for six high-demand commute trips in the Vancouver region
2015 and 2017; Morning peak (6-9 a.m.) and evening peak (3-6 p.m.) for an annualized average weekday; 5-minute peak of commuter rush (individual peak times vary); Length of route in miles; All travel times in minutes; Peak of commuter rush and duration of congestion expressed in hours and minutes; Cost of congestion in dollars.

Morning

				Travel Times								Congestion						Reliability											
						Average travel time at peak of morning/ evening commute			Maximum throughput travel time index (MT^3I)			Duration of congestion How long average speed is below 45 mph			Cost of Congestion[2] Per person[3], per trip			2015 percentiles				2017 percentiles				Δ: 2015 vs. 2017			
Route	Direction of travel	Length of route	Peak time	Travel time at posted speed	Travel time at maximum throughput speed	2015	2017	%Δ	2015	2017	Peak period %Δ in VMT[1]	2015	2017	Δ	2015	2017	%Δ	Median 50th	80th	90th	95th	Median 50th	80th	90th	95th	Median 50th	80th	90th	95th
Southbound AM: To Portland Oregon (Washington state line)																													
I-5 (I-205 interchange to I-5 bridge [Oregon])	SB	8	6:35	8	9	18	15	-17%	1.93	1.57	-9%[1]	2:55	2:35	-0:20	$1.72	$1.06	-38%	19	23	24	**25**	14	19	20	**22**	-4	-4	-4	**-3**
I-5 (SR 500 interchange to I-5 bridge [Oregon])	SB	2	6:40	2	2	10	9	-10%	4.64	4.17	-3%[1]	6:10	5:00	-1:10	$0.91	$1.01	11%	10	11	12	**12**	10	11	11	**12**	0	-1	-1	**0**
I-205 (I-5 interchange to Glenn Jackson Bridge [Oregon])	SB	10	6:35	8	10	13	16	23%	1.31	1.63	-5%[1]	1:30	2:05	0:35	$0.45	$1.30	189%	12	16	20	**22**	16	20	22	**24**	5	4	3	**2**
I-205 (SR 500 interchange to Glenn Jackson Bridge [Oregon])	SB	4	6:40	4	4	7	10	43%	1.50	2.36	-15%[1]	2:00	2:50	0:50	$0.41	$1.11	171%	6	8	10	**10**	11	14	15	**16**	5	5	5	**6**
Westbound: From Camas, Washington																													
SR 14 (Camas to I-5 interchange)	WB	13	7:30	13	15	20	17	-15%	1.34	1.12	-3%[1]	1:30	0:05	-1:25	$0.77	$0.06	-92%	19	26	29	**32**	16	19	24	**26**	-3	-6	-5	**-6**
SR 14 (Camas to I-205 interchange)	WB	8	7:30	8	9	15	11	-27%	1.63	1.19	-1%[1]	1:50	0:40	-1:10	$1.07	$0.17	-84%	13	21	23	**26**	10	13	15	**17**	-3	-7	-8	**-9**

Evening

Northbound: From Portland, Oregon (Washington state line)																													
I-5 (I-5 bridge [Oregon] to I-205 interchange)	NB	8	17:10	8	9	8	8	0%	0.89	0.89	-4%[1]	0:00	0:00	0:00	$-	$-	N/A	8	9	9	**10**	8	9	9	**9**	0	0	0	**-1**
I-5 (I-5 bridge [Oregon] to SR 500 interchange)	NB	2	17:15	2	2	2	2	0%	1.02	1.01	4%[1]	0:00	0:00	0:00	$-	$-	N/A	2	2	2	**3**	2	2	2	**3**	0	0	0	**0**
I-205 (Glenn Jackson Bridge [Oregon] to I-5 interchange)	NB	10	17:20	8	10	11	12	9%	1.11	1.18	-7%[1]	0:00	2:05	2:05	$-	$0.15	N/A	11	12	14	**14**	12	13	15	**15**	1	1	1	**1**
I-205 (Glenn Jackson Bridge [Oregon] to SR 500 interchange)	NB	4	16:20	4	4	5	5	0%	1.17	1.20	-13%[1]	0:40	1:55	1:15	$0.06	$0.09	50%	5	6	7	**8**	5	6	7	**8**	0	0	0	**0**
Eastbound PM: From Vancouver, Washington																													
SR 14 (I-5 interchange to Camas)	EB	13	17:15	13	15	15	16	7%	0.98	1.06	-4%[1]	0:00	0:00	0:00	$-	$-	N/A	14	16	17	**18**	15	18	19	**20**	1	1	2	**2**
SR 14 (I-205 interchange to Camas)	EB	8	17:15	8	9	9	9	0%	0.94	1.00	-1%[1]	0:00	0:00	0:00	$-	$-	N/A	8	9	10	**10**	8	10	11	**11**	0	1	1	**1**

Data sources and analysis: WSDOT Southwest Region Planning Office, WSDOT Multimodal Planning Division and WSDOT Office of Strategic Assessment and Performance Analysis.
Notes: The symbol "Δ" is used to denote change in a variable. Commute lengths and travel time values have been rounded to integer values for publication only. MT^3 Index values cannot be reproduced as published using the integer values in the table. Due to rounding, some percentages are not computable based on numbers in the table. **1** The peak periods in the Vancouver area are defined as 6 a.m. to 9 a.m. and 3 p.m. to 6 p.m.; in 2017 there was considerable congestion before 6 a.m. **2** Commute congestion cost based on $21.78 for every hour of congested conditions measured when commute speeds are slower than 45 mph, applied to the volume of traffic during the congested conditions on an average annual weekday commute. This methodology is in accordance with WSDOT's update 2017 guidelines for assessing the cost of travel. **3** Per-person metrics were estimated based on vehicle occupancy observed on the freeway in the single occupant vehicle lanes.

Stamp graphs: Frequency, duration of congestion

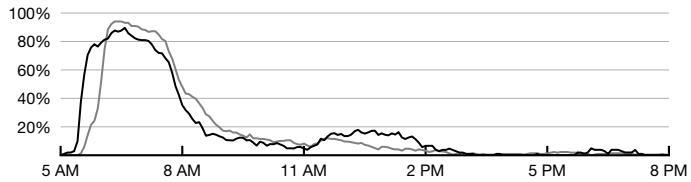
Stamp graphs of congestion by time of day on Vancouver region freeways

Percent of weekdays the average speed was slower than 45 mph; 2015 and 2017

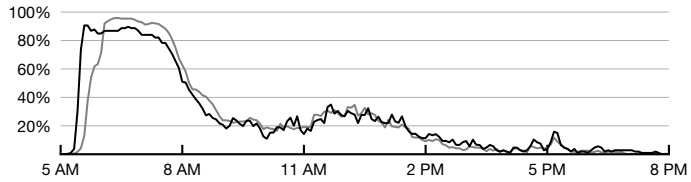
2015 2017

Southbound

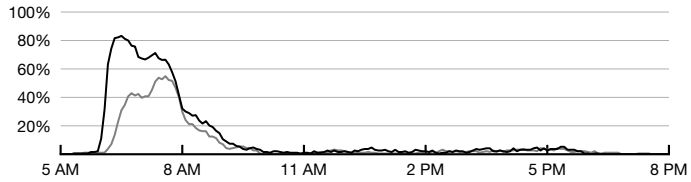
I-5: I-205 Interchange to I-5 Bridge



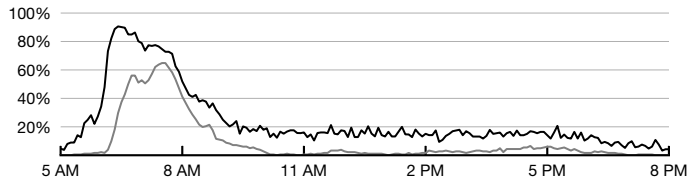
I-5: SR 500 Interchange to I-5 Bridge



I-205: I-5 Interchange to Glenn Jackson Bridge

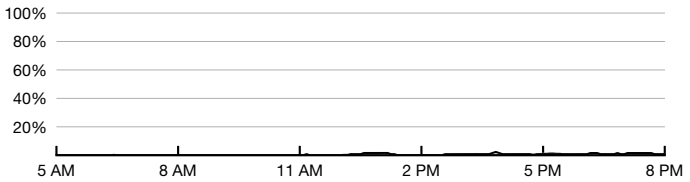


I-205: SR 500 Interchange to Glenn Jackson Bridge

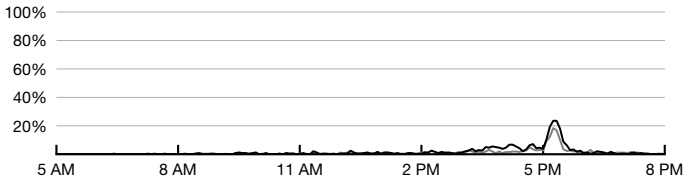


Northbound

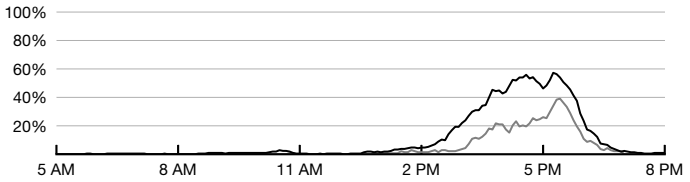
I-5: I-5 Bridge to I-205 Interchange



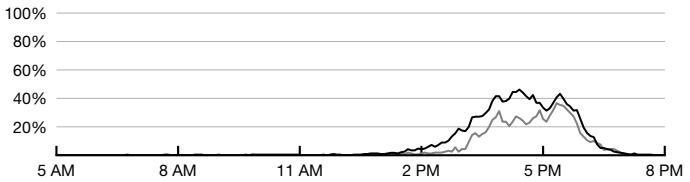
I-5: I-5 Bridge to SR 500 Interchange



I-205: Glenn Jackson Bridge to I-5 Interchange

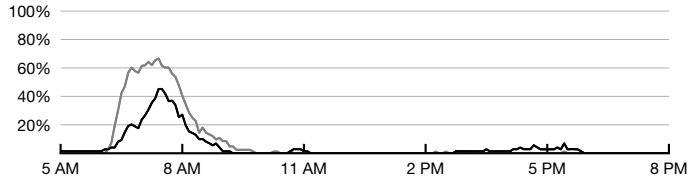


I-205: Glenn Jackson Bridge to SR 500 Interchange

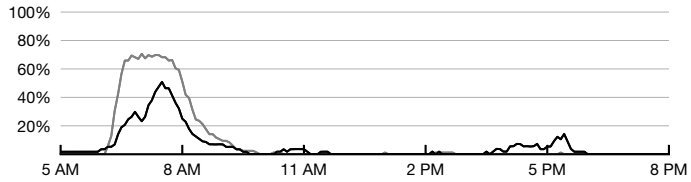


Westbound

SR 14: Camas to I-5 Interchange

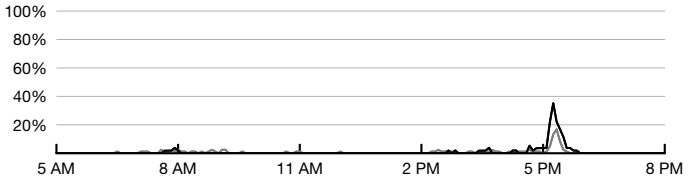


SR 14: Camas to I-205 Interchange

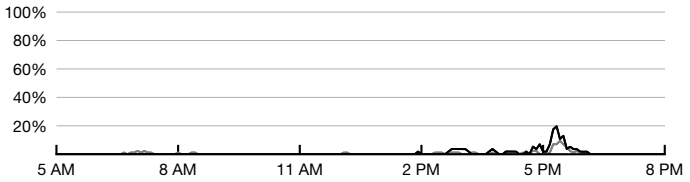


Eastbound

SR 14: I-5 Interchange to Camas



SR 14: I-205 Interchange to Camas



Data sources and analysis: WSDOT Southwest Region Traffic Office, WSDOT Multimodal Planning Division and WSDOT Office of Strategic Assessment and Performance Analysis.

Note: See p. 2 for congestion definitions and how to read these graphs.

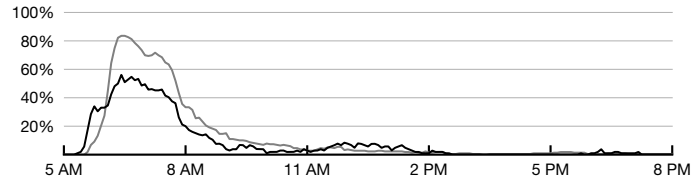
Stamp graphs: Frequency, duration of SEVERE congestion

Stamp graphs of SEVERE congestion by time of day on Vancouver region freeways
Percent of weekdays the average speed was slower than 36 mph; 2015 and 2017

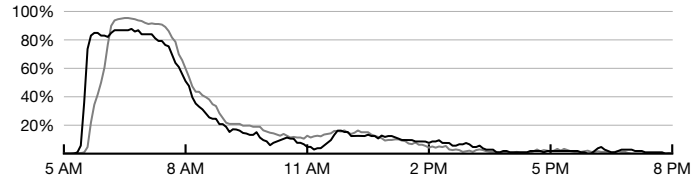
2015 2017 2015 2017

Southbound

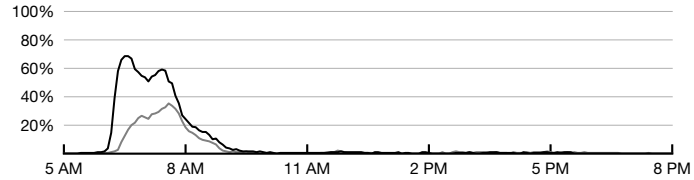
I-5: I-205 Interchange to I-5 Bridge



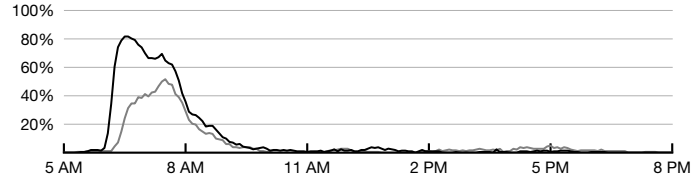
I-5: SR 500 Interchange to I-5 Bridge



I-205: I-5 Interchange to Glenn Jackson Bridge

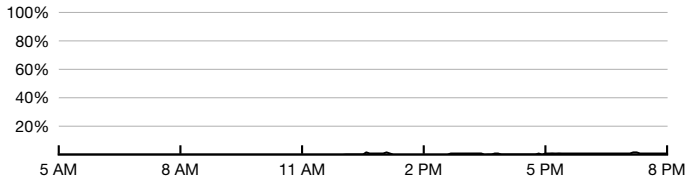


I-205: SR 500 Interchange to Glenn Jackson Bridge

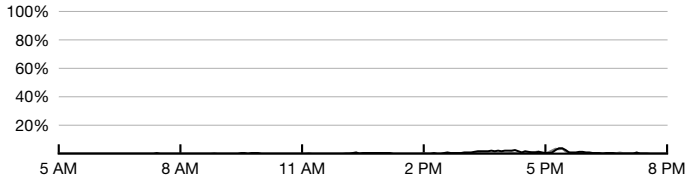


Northbound

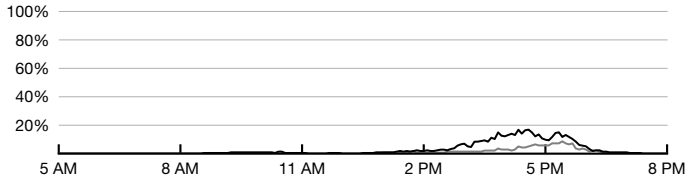
I-5: I-5 Bridge to I-205 Interchange



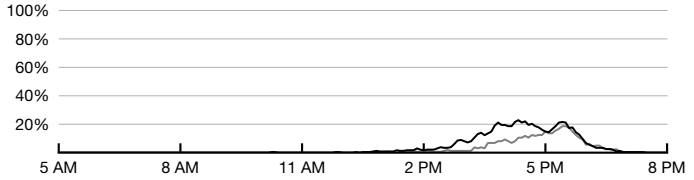
I-5: I-5 Bridge to SR 500 Interchange



I-205: Glenn Jackson Bridge to I-5 Interchange

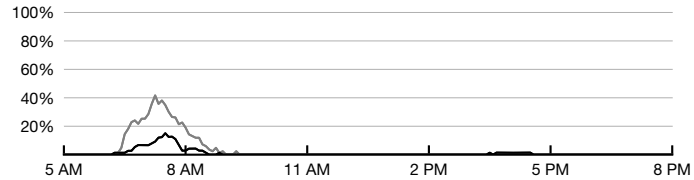


I-205: Glenn Jackson Bridge to SR 500 Interchange

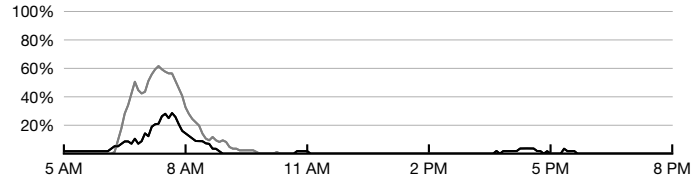


Westbound

SR 14: Camas to I-5 Interchange

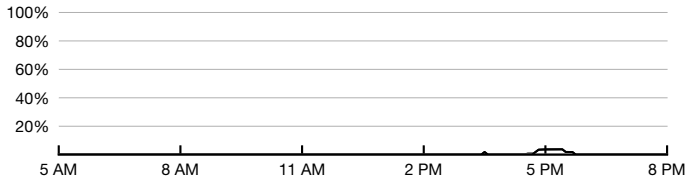


SR 14: Camas to I-205 Interchange

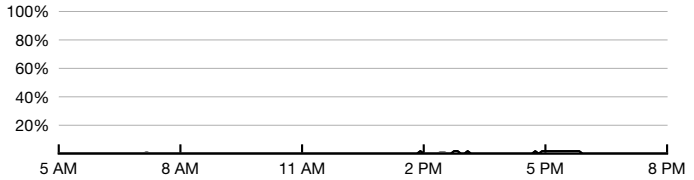


Eastbound

SR 14: I-5 Interchange to Camas



SR 14: I-205 Interchange to Camas



Data sources and analysis: WSDOT Southwest Region Traffic Office, WSDOT Multimodal Planning Division and WSDOT Office of Strategic Assessment and Performance Analysis.

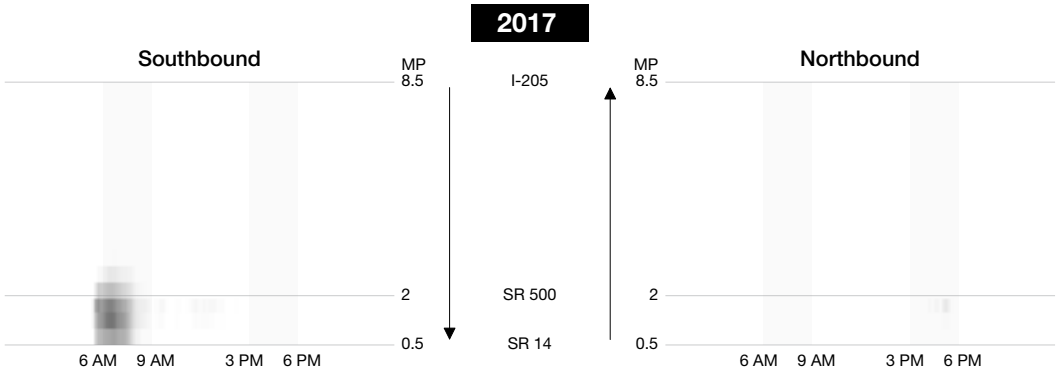
Note: See p. 2 for congestion definitions and how to read these graphs.

Heatmaps: Daily vehicle hours of delay on I-5, I-205

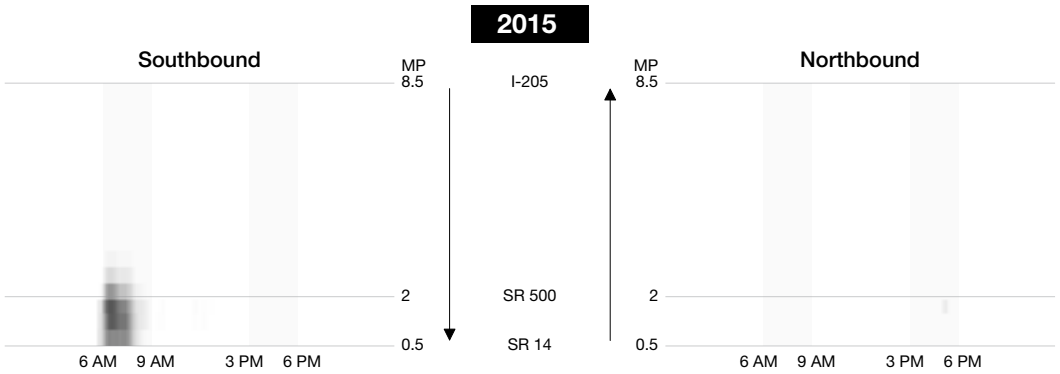
I-5 delay between I-5 bridge and I-205

2015 and 2017; Vehicle hours of delay; Weekdays only; By milepost (MP); Shading represents intensity of delay; Highlighted sections represent peak periods

Delay on I-5 in 2017 was concentrated on the southbound morning commute between SR 500 and the bridge over the Columbia River at the state line. It lasted from shortly before 6 a.m. to shortly after 8 a.m.



As in 2017, delay on I-5 in 2015 was concentrated on the southbound morning commute between SR 500 and the bridge over the Columbia River at the state line. In 2015 the delay did not reach its peak intensity until slightly later than in 2017, lasting from around 6 a.m. to 8 a.m.



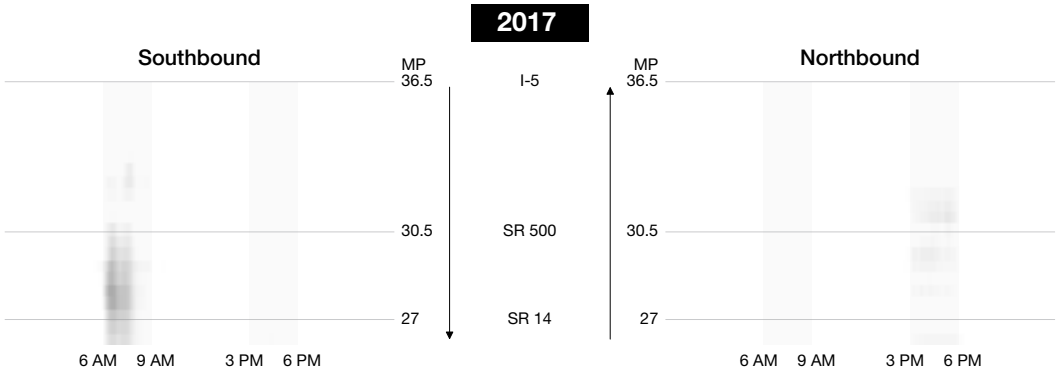
Data sources and analysis: WSDOT Southwest Region Planning Office, WSDOT Multimodal Planning Division and WSDOT Office of Strategic Assessment and Performance Analysis.

I-205 Delay between I-205 bridge and I-5

2015 and 2017; Vehicle hours of delay; Weekdays only; By milepost (MP); Shading represents intensity of delay; Highlighted sections represent peak periods

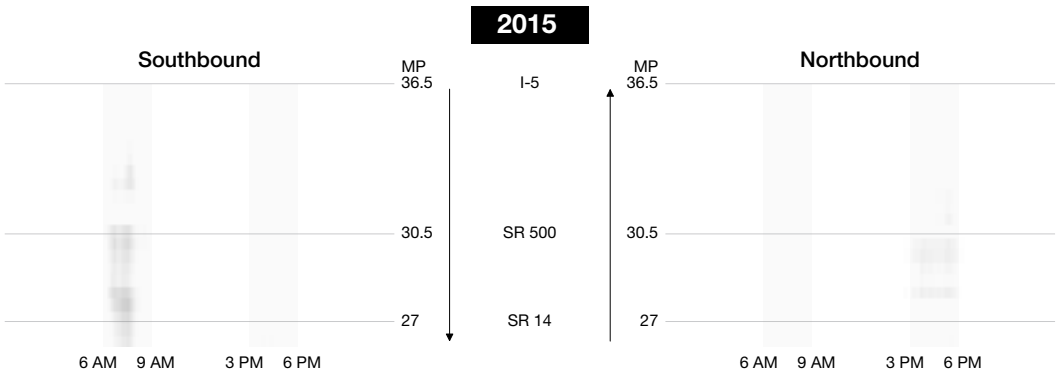
In 2017, the most intense delay on I-205 occurred on southbound I-205 between 6 a.m. and 8 a.m. This section of delay extended from SR 500 all the way to the state line.

Northbound delay on I-205 was less intense than southbound delay in 2017. It lasted from 3 p.m. to 6 p.m., and extended from the state line to north of SR 500.



In 2015, delay on I-205 occurred in a similar pattern to delay in 2017, but was in general less intense.

Southbound delay was concentrated on the morning commute between SR 500 and the state line. Northbound delay occurred during the afternoon peak period between the state line and SR 500.

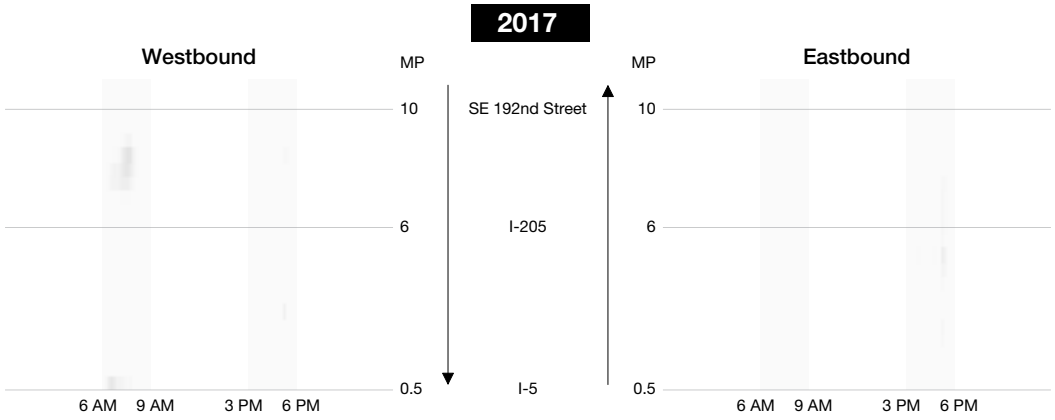


Data sources and analysis: WSDOT Southwest Region Planning Office, WSDOT Multimodal Planning Division and WSDOT Office of Strategic Assessment and Performance Analysis.

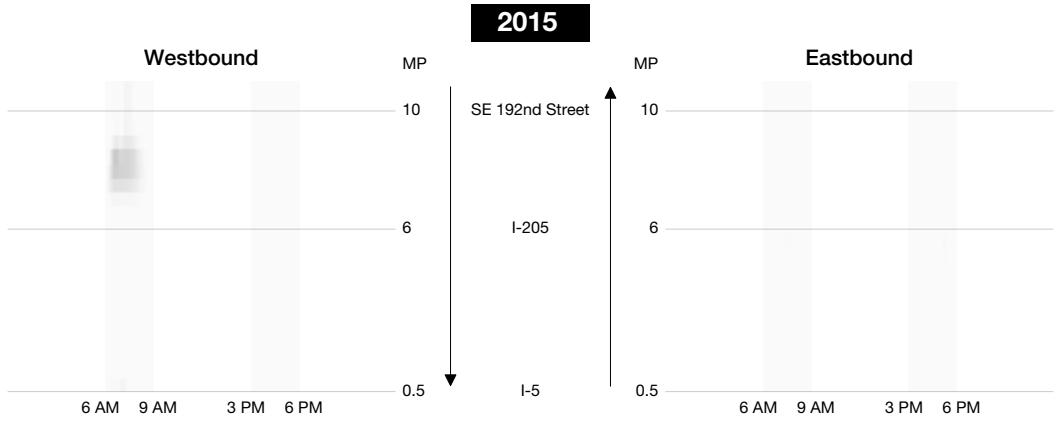
Heatmaps: Daily vehicle hours of delay on SR 14

SR 14 delay between I-5 and Camas

2015 and 2017; Vehicle hours of delay; Weekdays only; By milepost (MP); Shading represents intensity of delay; Highlighted sections represent peak periods



Delay on SR 14 was very similar in 2015 and 2017, with most of the delay on the corridor occurring on the westbound morning commute. In 2017, there was a new patch of delay around the I-5 interchange. The delay just between I-205 and SE 192nd decreased in intensity between 2015 and 2017.



Data sources and analysis: WSDOT Southwest Region Planning Office, WSDOT Multimodal Planning Division and WSDOT Office of Strategic Assessment and Performance Analysis.

Throughput productivity

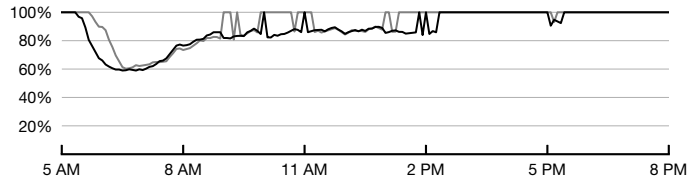
Throughput productivity at select Vancouver region freeway locations by commute direction
2015 and 2017; Based on the highest observed 5-minute (min.) flow rates; Vehicles per hour per lane (vphpl) at specific mileposts (MP)

2015 2017

Southbound

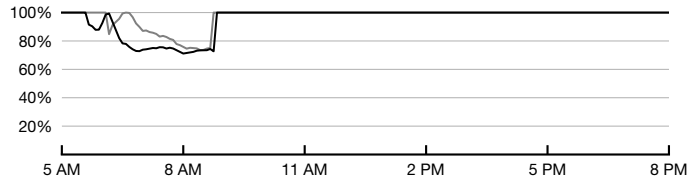
I-5 near Fourth Plain Boulevard (MP 1.4)

Based on the highest observed 5 min. flow rate of 1,330 vphpl = 100%



I-205 near 10th Street (MP 27.8)

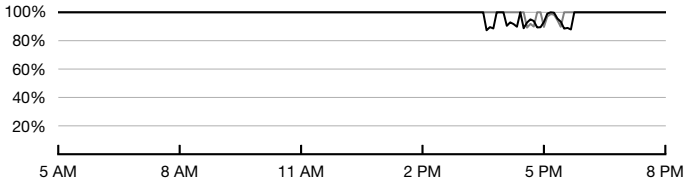
Based on the highest observed 5 min. flow rate of 1,940 vphpl = 100%



Northbound

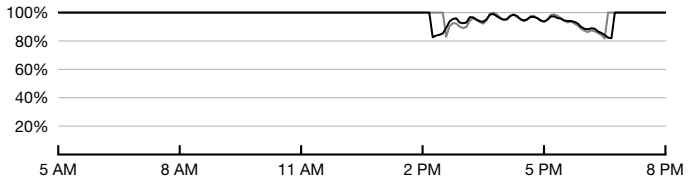
I-5 near Fourth Plain Boulevard (MP 1.4)

Based on the highest observed 5 min. flow rate of 1,550 vphpl = 100%



I-205 near 10th Street (MP 27.8)

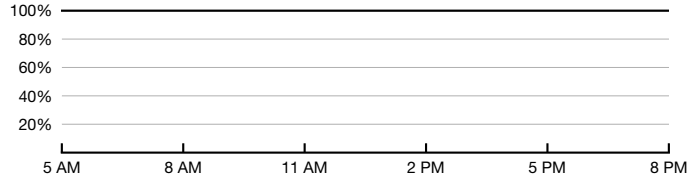
Based on the highest observed 5 min. flow rate of 1,610 vphpl = 100%



Westbound

SR 14 near S Lieser Road (MP 4.3)

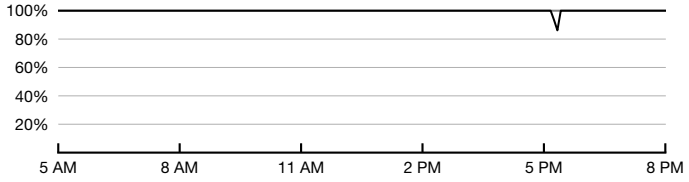
Based on the highest observed 5 min. flow rate of 1,420 vphpl = 100%



Eastbound

SR 14 near S Lieser Road (MP 4.3)

Based on the highest observed 5 min. flow rate of 1,700 vphpl = 100%



Data sources and analysis: WSDOT Southwest Region Traffic Office, WSDOT Multimodal Planning Division and WSDOT Office of Strategic Assessment and Performance Analysis.

Note: See p. 2 for throughput definitions and how to read these graphs.

Routinely congested segments

2015 Vancouver region routinely congested segments[1]

2015 weekdays; Length of congestion in miles; Duration of congestion in hours:minutes

	Morning peak period				Evening peak period			
Route and direction	**Start and end times**	**Begin and end milepost**	**Length**	**Duration**	**Start and end times**	**Begin and end milepost**	**Length**	**Duration**
I-5 southbound	5:45-8:30 a.m.	2.5-0	2.5	2:45				
I-205 southbound	6:40-7:55 a.m.	33-31.5	1.5	1:15				
	6:40-7:45 a.m.	30.5-29.5	1	1:05				
	6:35-7:50 a.m.	28-25.5	2.5	1:15				
SR 14 westbound	6:20-8:15 a.m.	8.5-7	1.5	1:55				
Totals			**9.0**				**0.0**	

Data sources and analysis: WSDOT Southwest Region Planning Office, WSDOT Multimodal Planning Division and WSDOT Office of Strategic Assessment and Performance Analysis.
Notes: Totals can include congestion at the same location at different times throughout the day. **1** These tables only include routine congestion that occurs in Washington state. Significant congestion occurs in Oregon on I-5 and I-205 that affects commuters in the Vancouver area (see p. 47).

2017 Vancouver region routinely congested segments[1]

2017 weekdays; Length of congestion in miles; Duration of congestion in hours:minutes

	Morning peak period				Evening peak period			
Route and direction	**Start and end times**	**Begin and end milepost**	**Length**	**Duration**	**Start and end times**	**Begin and end milepost**	**Length**	**Duration**
I-5 southbound	5:30-8:20 a.m.	2.5-0	2.5	2:50				
I-205 northbound					4:15-5:45 p.m.	31-31.5	0.5	1:30
I-205 southbound	6:10-7:55 a.m.	30.5-25.5	5	1:45				
SR 14 westbound	7:05-7:50 a.m.	8.5-7	1.5	0:45				
	6:25-7:15 a.m.	0.5-0	0.5	0:50				
Totals			**9.5**				**0.5**	

Data sources and analysis: WSDOT Southwest Region Planning Office, WSDOT Multimodal Planning Division and WSDOT Office of Strategic Assessment and Performance Analysis.
Notes: Totals can include congestion at the same location at different times throughout the day. **1** These tables only include routine congestion that occurs in Washington state. Significant congestion occurs in Oregon on I-5 and I-205 that affects commuters in the Vancouver area (see p. 47).

Routinely congested segments for Portland

2015 Portland region routinely congested segments

2015 weekdays; Length of congestion in miles; Duration of congestion in hours:minutes

	Morning peak period				Evening peak period			
Route and direction	**Start and end times**	**Begin and end milepost**	**Length**	**Duration**	**Start and end times**	**Begin and end milepost**	**Length**	**Duration**
	6:40-8:30 a.m.	287.5-290.5	3	1:50	2:20-6:45 p.m.	295.5-301	5.5	4:25
I-5 northbound	6:35-9:55 a.m.	294-299.5	5.5	3:20	2:10-7:05 p.m.	301.5-308	6.5	4:55
	7:45-8:15 a.m.	301.5-302	0.5	0:30				
I-5 southbound	6:20-10:05 a.m.	307.5-301.5	6	3:45	2:10-6:25 p.m.	304.5-297.5	7	4:15
	7:35-7:50 a.m.	299-298	1	0:15	2:25-6:05 p.m.	293.5-287	6.5	3:40
I-205 northbound	7:25-7:55 a.m.	11-12.5	1.5	0:30	2:30-6:30 p.m.	4-9.5	5.5	4:00
					3:30-6:45 p.m.	14-25	11	3:15
I-205 southbound	6:40-7:55 a.m.	12.5-8	4.5	1:25	2:45-6:00 p.m.	25-12.5	12.5	3:15
	.				3:05-4:25 p.m.	3-1.5	1.5	1:20
Totals			**22.0**				**56.0**	

Data sources and analysis: WSDOT Southwest Region Planning Office, WSDOT Multimodal Planning Division, WSDOT Office of Strategic Assessment and Performance Analysis, and endorsed by Oregon Department of Transportation.

Note: The above information is represented on the map in a generalized format on p. 42 of the *Corridor Capacity Report.* Totals can include congestion at the same location at different times throughout the day.

2017 Portland region routinely congested segments

2017 weekdays; Length of congestion in miles; Duration of congestion in hours:minutes

	Morning peak period				Evening peak period			
Route and direction	**Start and end times**	**Begin and end milepost**	**Length**	**Duration**	**Start and end times**	**Begin and end milepost**	**Length**	**Duration**
I-5 northbound	6:35-8:25 a.m.	287.5-290.5	3	1:50	2:10-7:40 p.m.	296-308	12	5:30
	6:30-10:00 a.m.	294.5-300	5.5	3:30				
	6:25-10:05 a.m.	301-303	2	3:40				
I-5 southbound	6:15-10:05 a.m.	307.5-303	4.5	3:50	2:10-6:40 p.m.	304.5-301	3.5	4:30
	7:15-10:05 a.m.	302.5-301.5	1	2:50	2:10-6:20 p.m.	300-297.5	2.5	4:10
	7:35-7:45 a.m.	299-298	1	0:10	2:10-6:20 p.m.	293-287	6	4:10
I-205 northbound	6:30-9:40 a.m.	15-20.5	5.5	3:10	2:10-7:00 p.m.	14.5-26	11.5	4:50
I-205 southbound	6:15-9:55 a.m.	12-7.5	4.5	3:40	2:10-6:10 p.m.	24.5-19	5.5	4:00
					3:20-6:10 p.m.	15.5-11.5	4	2:50
					3:15-3:15 p.m.	2-1.5	0.5	0:05
Totals			**27.0**				**45.5**	

Data sources and analysis: WSDOT Southwest Region Planning Office, WSDOT Multimodal Planning Division, WSDOT Office of Strategic Assessment and Performance Analysis, and endorsed by Oregon Department of Transportation.

Note: The above information is represented on the map in a generalized format on p. 42 of the *Corridor Capacity Report.* Totals can include congestion at the same location at different times throughout the day.

Commute trip analysis

Ferry system route utilization for people and vehicles by route, and number of vessel trips taken

2015 and 2017; Annual utilization for passengers and vehicles

	Passengers + drivers			Vehicles			Number of trips		
	2015	2017	Δ	2015	2017	Δ	2015	2017	%Δ
Anacortes – San Juan – Sidney, B.C.	17%	17%	0%	51%	41%	-10%	752	734	-2.4%
Fauntleroy – Vashon – Southworth[2]	9%	9%	0%	57%	55%	-2%	40,630	40,206	-1.0%
Point Defiance – Tahlequah	7%	8%	1%	54%	55%	1%	13,906	13,962	0.4%
Seattle – Bainbridge Island	16%	16%	0%	61%	60%	-1%	16,501	16,499	0.0%
Total	**12%**	**12%**	**0%**	**62%**	**61%**	**-1%**	**162,231**	**161,072**	**-0.7%**

Data source and analysis: WSDOT Ferries Division.

Notes: Utilization data is based on the cumulative capacity (in terms of the number of vehicle spaces and room for passengers) on all vessels serving that route, and is measured for all sailings in a calendar year. **1** Route utilization for the San Juan inter-island route is measured at Anacortes. **2** Route utilization for the Fauntleroy - Vashon - Southworth "triangle route" is measured at Fauntleroy.

Ferry system trip reliability and on–time performance by route

2015 and 2017; System-wide goals are: Reliability = 99% and on-time = 95%

	System-wide reliability			On–time performance		
	2015	2017	Δ	2015	2017	Δ
Anacortes – San Juan domestic	99.7%	99.1%	-0.6%	91.3%	84.4%	-6.9%
Anacortes – San Juan – Sidney, B.C.	99.5%	96.8%	-2.7%	93.3%	86.7%	-6.6%
Edmonds – Kingston	99.7%	99.9%	0.2%	98.3%	95.7%	-2.6%
Fauntleroy – Vashon – Southworth	99.4%	99.1%	-0.3%	92.0%	91.8%	-0.2%
Mukilteo – Clinton	99.9%	99.7%	-0.2%	94.6%	92.7%	-1.9%
Point Defiance – Tahlequah	99.9%	99.9%	0.0%	97.1%	96.1%	-1.0%
Port Townsend – Coupeville (Keystone)	95.7%	91.5%	-4.2%	99.3%	98.9%	-0.4%
Seattle – Bainbridge Island	99.8%	99.8%	0.0%	91.0%	91.2%	-0.2%
Seattle – Bremerton	99.8%	98.8%	-1.0%	97.6%	94.4%	-3.2%
Total	**99.5%**	**99.0%**	**-0.5%**	**94.4%**	**92.5%**	**-1.9%**

Data source and analysis: WSDOT Ferries Division.

Notes: Reliability is the percent of scheduled trips that were made; On–time performance is the percent of trips departing within 10 minutes of the scheduled departure time

Ferry system ridership by route

2015 and 2017; Annual ridership for passengers and vehicles

	Number of passengers			Number of vehicles/drivers			Combined ridership		
	2015	2017	%Δ	2015	2017	%Δ	2015	2017	%Δ
Anacortes – San Juan domestic	1,065,044	1,067,726	0%	909,195	950,768	5%	1,974,239	2,018,494	2.2%
Anacortes – San Juan – Sidney, B.C.	91,981	86,831	-6%	47,058	44,650	-5%	139,039	131,481	-5.4%
Edmonds – Kingston	1,978,586	1,987,876	0%	2,124,721	2,147,822	1%	4,103,307	4,135,698	0.8%
Fauntleroy – Vashon – Southworth	1,252,026	1,349,139	8%	1,722,982	1,761,762	2%	2,975,008	3,110,901	4.6%
Mukilteo – Clinton	1,878,082	1,847,687	-2%	2,234,947	2,257,709	1%	4,113,029	4,105,396	-0.2%
Point Defiance – Tahlequah	318,316	360,890	13%	450,258	483,042	7%	768,574	843,932	9.8%
Port Townsend – Coupeville (Keystone)	425,188	441,277	4%	362,203	365,546	1%	787,391	806,823	2.5%
Seattle – Bainbridge Island	4,404,227	4,596,132	4%	1,957,700	1,932,508	-1%	6,361,927	6,528,640	2.6%
Seattle – Bremerton	1,989,125	2,081,119	5%	670,688	697,561	4%	2,659,813	2,778,680	4.5%
Total	**13,402,575**	**13,818,677**	**3.1%**	**10,479,752**	**10,641,368**	**2%**	**23,882,327**	**24,460,045**	**2.4%**

Data source and analysis: WSDOT Ferries Division.

Publication Information

The *Corridor Capacity Report* is developed and produced by a small team of data analysts at the WSDOT Office of Strategic Assessment and Performance Analysis each year, with the help of dozens of individuals both at WSDOT and across the state's transportation community. WSDOT gratefully acknowledges their contributions.

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WSDOT's 2018 *Corridor Capacity Report Appendix* is prepared by the

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