



TECHNICAL MEMORANDUM

To: John Kinney
Airport Director
Aspen-Pitkin County Airport

From: Brian Gulliver, P.E.
Kimley-Horn and Associates, Inc.

Date: June 3, 2019

Subject: ASE Airport Performance Evaluation

INTRODUCTION

At the request of the Aspen-Pitkin County Airport (ASE), Kimley-Horn was tasked with generating an Airport Performance Evaluation of (9) specific airport performance metrics (outlined below). A summary of the analysis and results is provided in this technical memo.

PERFORMANCE METRICS

<u>METRIC</u>	<u>DATA RANGE</u>
1) Historical Enplanements	2008-2018
2) Air Carrier Flights	2008-2018
3) Air Carrier Operations	2008-2018
4) Air Carrier Flight Cancellations	2008-2018
5) Air Carrier Diversions	2008-2018
6) Air Carrier Delays	2008-2018
7) TSA Baggage Screening	2016-2018
8) Fuel Sales	2015-2018
9) Parking Fees	2017-2018

SUMMARY OF RESULTS

HISTORICAL ENPLANEMENTS (See Attachment 1)

Enplanement is defined as the act or process of a passenger boarding an aircraft. Enplanements at the Airport have sporadically grown since 2008 yielding an average annual compounding growth rate of 2.9% through 2018. The growth rate has been even stronger since 2014 at 6.9%. During this timeframe, 2018 observed a record number of Enplanements (283,848) while 2013 observed an eleven-year minimum (206,686).

AIR CARRIER FLIGHTS (See Attachment 2)

Air Carrier Flight is defined as any scheduled air carrier aircraft arriving from a domestic origin. Annual Air Carrier (AC) Flights at ASE decreased from 5,799 flights in 2008 to a minimum of 4,436 flights in 2013. AC Flight numbers rebounded and steadily increased to a maximum of 6,408 flights in 2018. The Average Annual Compounding Growth Rate observed from 2008 through 2018 is 1.0% while an accelerated growth is noted from 2013 to 2018 at 3.4%. On average, slightly more than half (51%) of all arrivals occur between December and March.

AIR CARRIER OPERATIONS (See Attachment 3)

Air Carrier Operation is defined as the sum of scheduled On-Time Flights, Air Carrier Delays, Weather Delays, National Aviation System Delays, Security Delays, Aircraft Late Arrivals, Cancellations, and Diversions. Since 2008, the Average Annual Compounding Growth Rate for Air Carrier Operations is 2.7% indicating an upward trend in operations at the Airport. The eleven-year low was recorded in 2015 at 3,620 operations while the maximum was recorded in 2018 at 6,861 operations.

AIR CARRIER FLIGHT CANCELLATIONS (See Attachment 4)

Air Carrier Flight Cancellation is defined as any scheduled arrival aircraft service that is terminated before departure due to unforeseen circumstances. Annual Arrival Air Carrier Cancellations at ASE peaked in 2008 (392 flights) while the minimum number of cancellations was recorded in 2015 (143 flights). Since 2015, AC Flight Cancellations have increased steadily through 2018 by 48 cancellations per year on average. Between 3.6% and 8.0% of arriving flights are cancelled each year.

AIR CARRIER DIVERSIONS (See Attachment 5)

Air Carrier Diversion is defined as any scheduled arrival aircraft service that is re-routed to an airport different from its original destination. Since 2008, approximately 2.8% (average annual percentage of operations) of arrival flights at the Airport were diverted. Arrival Air Carrier diversions peaked in 2014 at 5.5% while the minimum percentage of diversions was recorded in 2008 at 0.8%.

AIR CARRIER DELAYS (See Attachment 6)

Air Carrier Flight Delay is defined as any scheduled arrival aircraft service that arrives 15 or more minutes later than the planned arrival time at the destination gate. Since 2008 at ASE, approximately 23% of arrival flights are delayed on an average annual basis. The eleven-year minimum and maximum was recorded in 2010 and 2014 at 19% and 32% of flights respectively. When combined, Air Carrier and Late Arrival operations account for the majority (70%) of the delays at ASE.

TSA BAGGAGE SUMMARY (See Attachment 7)

Any unique baggage item screened and processed via TSA is considered in the calculation of the baggage summary at ASE Airport. TSA Processed the highest volume of bags at ASE in 2018 (238,303) while 2017 recorded a three year low (216,189). On an average monthly basis (2016 – 2018), January, February, and March experienced the highest volume of bags. March recorded the highest daily average of 1,341 bags. During the off-season months, July and August experienced higher volumes of baggage due to Summer vacation in the Aspen-Pitkin County area.

FUEL SALES (See Attachment 8)

Fuel Sale is defined as the quantity of money generated via purchase of eligible fuel provided by the Aspen-Pitkin County Airport. A Fuel Flowage Fee (\$0.12 per gallon of fuel) is utilized to calculate the monetary amount of fuel sold. Annual fuel sales at the Airport averaged \$500,000 annually from 2015 - 2018. July recorded annual highs averaging \$73,140 and May recorded annual lows around \$7,679.

PARKING REVENUE (See Attachment 9)

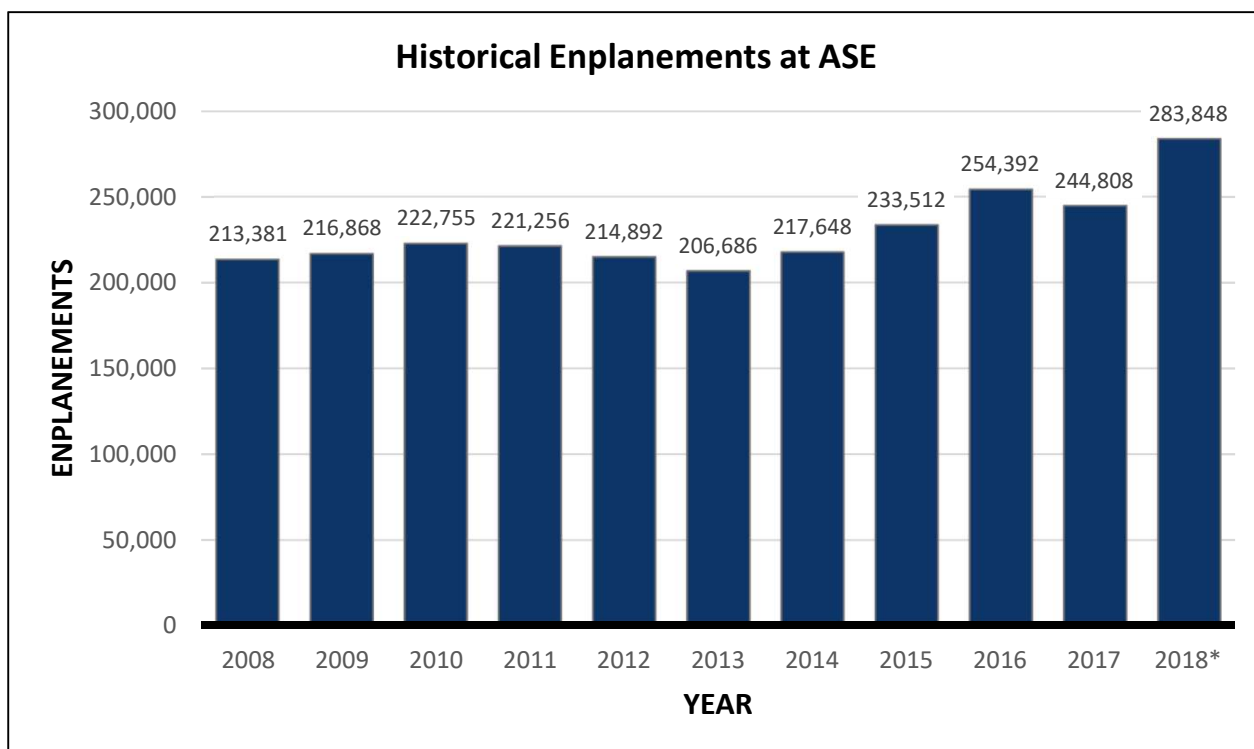
Parking Revenue is defined as the quantity of fees generated via vehicle parking services provided by the Airport. A vehicle parking fee is utilized to calculate the monetary amount (revenue) of parking services provided to its customers. Average monthly parking revenue increased the Airport from \$43,532 to \$59,451 in 2017 and 2018 accordingly. In 2017, the monthly high was recorded in August (\$58,914) while 2018's high was recorded in October (\$69,121). Monthly parking revenue remained the highest in the late Summer months through the Fall (August – November) in both 2017 and 2018. Higher parking volumes in this time frame is primarily due to summer vacation in the Aspen-Pitkin County area. Gross parking fees increased by 37% from 2017 to 2018.

HISTORICAL ENPLANEMENTS

Historical Enplanements at ASE				Compounding Growth Rate 2008-2018*
Year	Enplanements	Annual Growth Rate	Rank - U.S. CSA	
2008	213,381	17.1%	172	2.9%
2009	216,868	1.6%	170	
2010	222,755	2.7%	171	
2011	221,256	-0.7%	172	
2012	214,892	-2.9%	177	
2013	206,686	-3.8%	177	
2014	217,648	5.3%	175	
2015	233,512	7.3%	172	
2016	254,392	8.9%	170	
2017	244,808	-3.8%	173	
2018*	283,848	1.2%	N/A	

*Bureau of Transportation (BTS.gov) T-100 Database

Source: [Passenger Boarding \(Enplanement\) and All-Cargo Data for U.S. Airports, May 2019, FAA.gov.](#)



Historical Enplanements Summary

Enplanement is defined as the act or process of a passenger boarding an aircraft. Enplanements at the Airport have sporadically grown since 2008 yielding an average annual compounding growth rate of 2.9% through 2018. The growth rate has been even stronger since 2014 at 6.9%. During this timeframe, 2018 observed a record number of Enplanements (283,848) while 2013 observed an eleven-year minimum (206,686).

AIR CARRIER FLIGHTS (ARRIVALS)

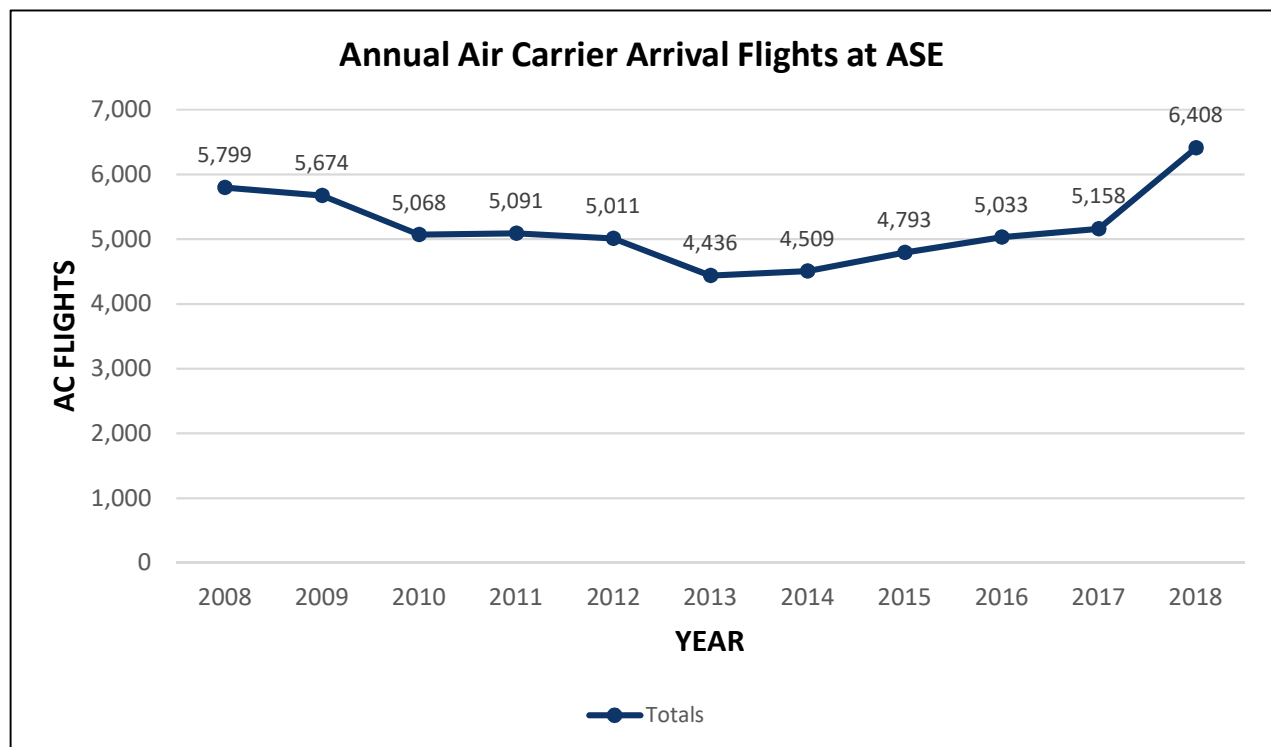
Summary of Arrival Air Carrier (AC) Flights at ASE													
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Totals
2008	617	609	699	305	344	532	595	580	397	352	294	475	5,799
2009	625	648	678	337	317	490	540	549	385	321	272	512	5,674
2010	730	632	726	306	261	394	466	440	289	174	133	517	5,068
2011	714	606	733	293	176	409	478	481	228	171	190	612	5,091
2012	748	760	861	275	138	365	456	421	240	147	157	443	5,011
2013	593	587	637	220	143	387	464	424	252	149	128	452	4,436
2014	547	587	749	214	174	368	448	408	256	196	130	432	4,509
2015	674	620	800	271	147	373	436	389	257	173	140	513	4,793
2016	717	720	771	216	119	352	490	451	298	203	133	563	5,033
2017	671	665	831	173	139	381	502	475	328	215	184	594	5,158
2018	921	800	1,020	384	244	497	444	529	370	276	251	672	6,408
Average	687	658	773	272	200	413	484	468	300	216	183	526	5,180

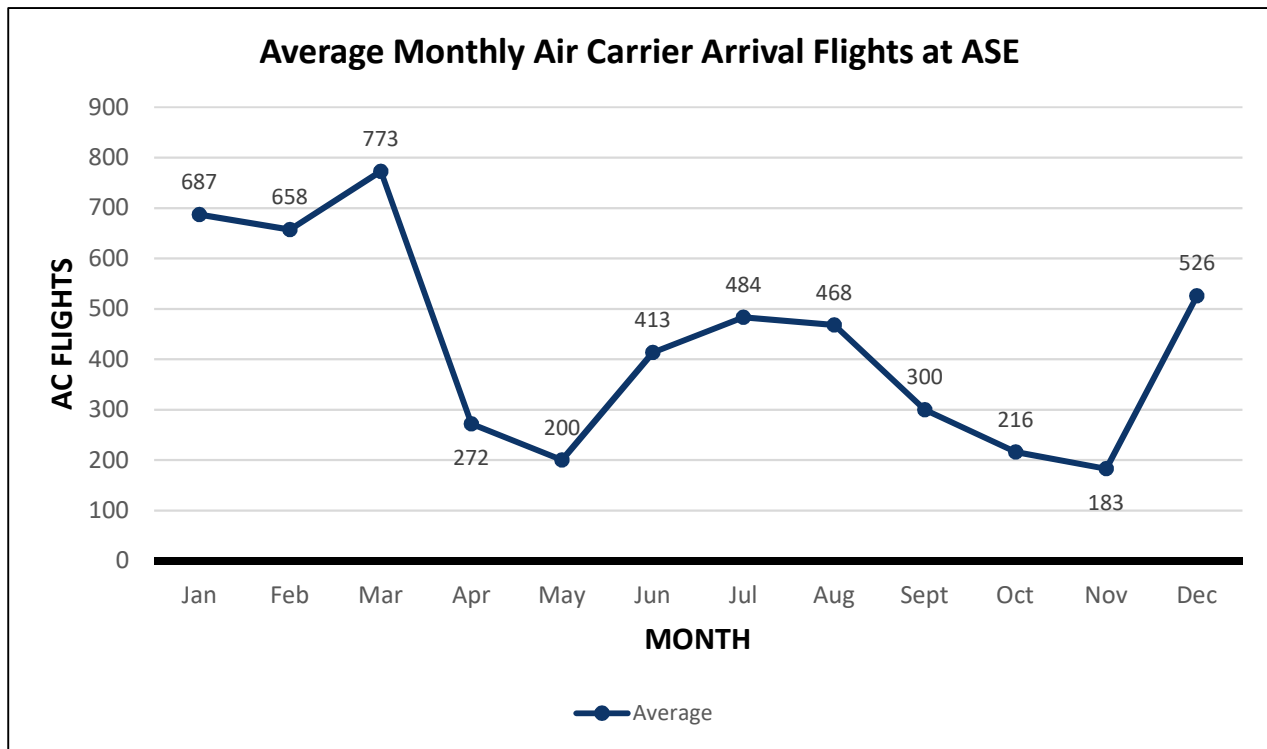
Grey Highlight represents peak season travel from January through March.

Source: Bureau of Transportation Statistics T-100 Segment Data, May 2019, [BTS.gov](https://www.bts.gov/).

Compounding Growth Rate 2008-2018
1.0%

Compounding Growth Rate 2013-2018
7.6%





Air Carrier Arrival Flights Summary

Air Carrier Flight is defined as any scheduled air carrier aircraft arriving from a domestic origin. Annual Air Carrier (AC) Flights at ASE decreased from 5,799 flights in 2008 to a minimum of 4,436 flights in 2013. AC Flight numbers rebounded and steadily increased to a maximum of 6,408 flights in 2018. The Average Annual Compounding Growth Rate observed from 2008 through 2018 is 1.0% while an accelerated growth is noted from 2013 to 2018 at 3.4%. On average, slightly more than half (51%) of all arrivals occur between December and March.

AIR CARRIER OPERATIONS (ARRIVAL)

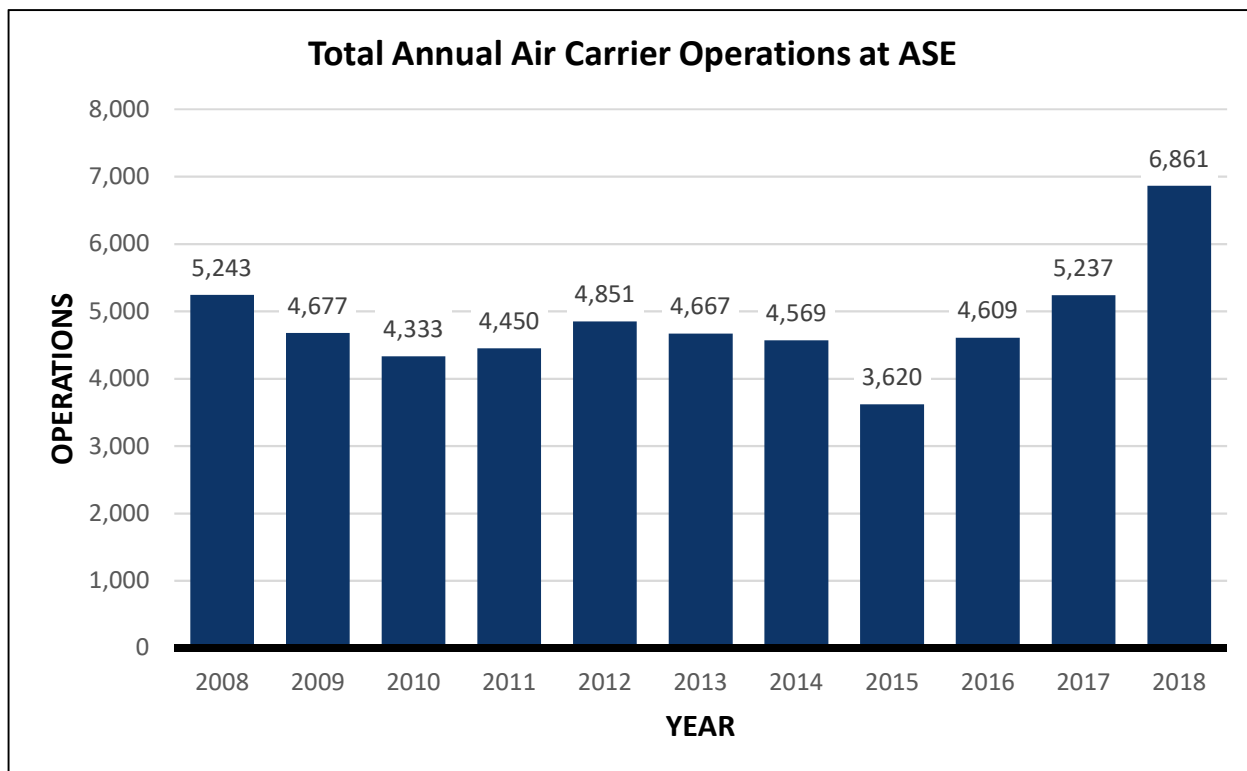
Year	Operations	Annual Growth Rate
2008	5,243	-0.1%
2009	4,677	-10.8%
2010	4,333	-7.4%
2011	4,450	2.7%
2012	4,851	9.0%
2013	4,667	-3.8%
2014	4,569	-2.1%
2015	3,620	-20.8%
2016	4,609	27.3%
2017	5,237	13.6%
2018	6,861	31.0%
TOTAL OPERATIONS	53,117	

Compounding Growth Rate 2008-2018
2.7%

Notes:

(1) Operations defined as the sum of On-Time flights, AC Delays, Weather Delays, National Aviation System Delay, Security Delay, Aircraft Late Arrivals, Cancellations, and Diversions

Source: Bureau of Transportation Statistics T-100 Segment Data, May 2019, [BTS.gov](https://www.bts.gov/).



Air Carrier Operations (Arrival) Summary

Air Carrier Operation is defined as the sum of scheduled On-Time Flights, Air Carrier Delays, Weather Delays, National Aviation System Delays, Security Delays, Aircraft Late Arrivals, Cancellations, and Diversions. Since 2008, the Average Annual Compounding Growth Rate for Air Carrier Operations is 2.7% indicating an upward trend in operations at the Airport. The eleven-year low was recorded in 2015 at 3,620 operations while the maximum was recorded in 2018 at 6,861 operations.

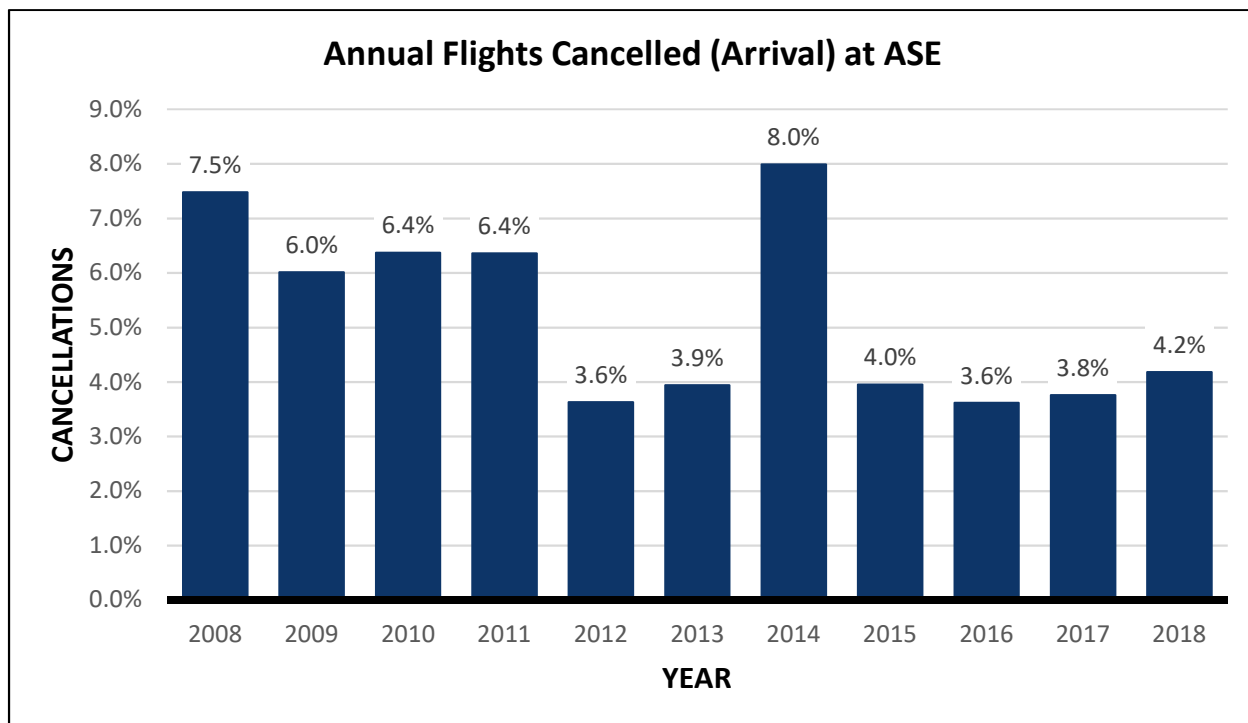
AIR CARRIER FLIGHTS CANCELLED (ARRIVAL)

Year	Cancelled	% Cancelled
2008	392	7.5%
2009	281	6.0%
2010	276	6.4%
2011	283	6.4%
2012	176	3.6%
2013	184	3.9%
2014	365	8.0%
2015	143	4.0%
2016	167	3.6%
2017	197	3.8%
2018	287	4.2%
AVERAGE	250	5.2%

Notes:

(1) Operation Categories: Cancellation, On-Time Flight, Air Carrier Delay, Weather Delay, National Aviation System Delay, Security Delay, Aircraft Late Arrival, and Diversion

Source: [Bureau of Transportation Statistics T-100 Segment Data, May 2019, BTS.gov.](#)



Cancelled Flights (Arrival) Summary

Air Carrier Flight Cancellation is defined as any scheduled arrival aircraft service that is terminated before departure due to unforeseen circumstances. Annual Arrival Air Carrier Cancellations at ASE peaked in 2008 (392 flights) while the minimum number of cancellations was recorded in 2015 (143 flights). Since 2015, AC Flight Cancellations have increased steadily through 2018 by 48 cancellations per year on average. Between 3.6% and 8.0% of arriving flights are cancelled each year.

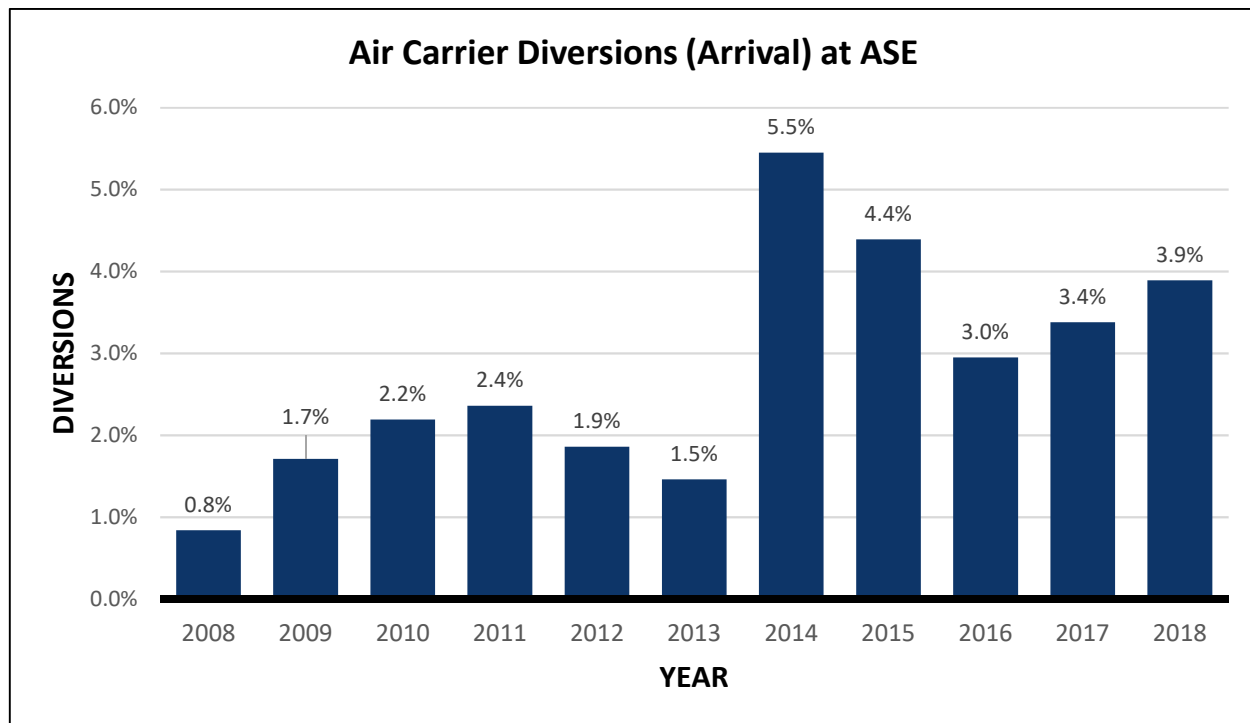
AIR CARRIER DIVERSIONS (ARRIVAL)

Year	Diverted	% Diverted
2008	44	0.8%
2009	80	1.7%
2010	95	2.2%
2011	105	2.4%
2012	90	1.9%
2013	68	1.5%
2014	249	5.5%
2015	159	4.4%
2016	136	3.0%
2017	177	3.4%
2018	267	3.9%
AVERAGE	134	2.8%

Notes:

(1) Operation Categories: Cancellation, On-Time Flight, Air Carrier Delay, Weather Delay, National Aviation System Delay, Security Delay, Aircraft Late Arrival, and Diversion

Source: Bureau of Transportation Statistics T-100 Segment Data, May 2019, [BTS.gov](https://www.bts.gov/).

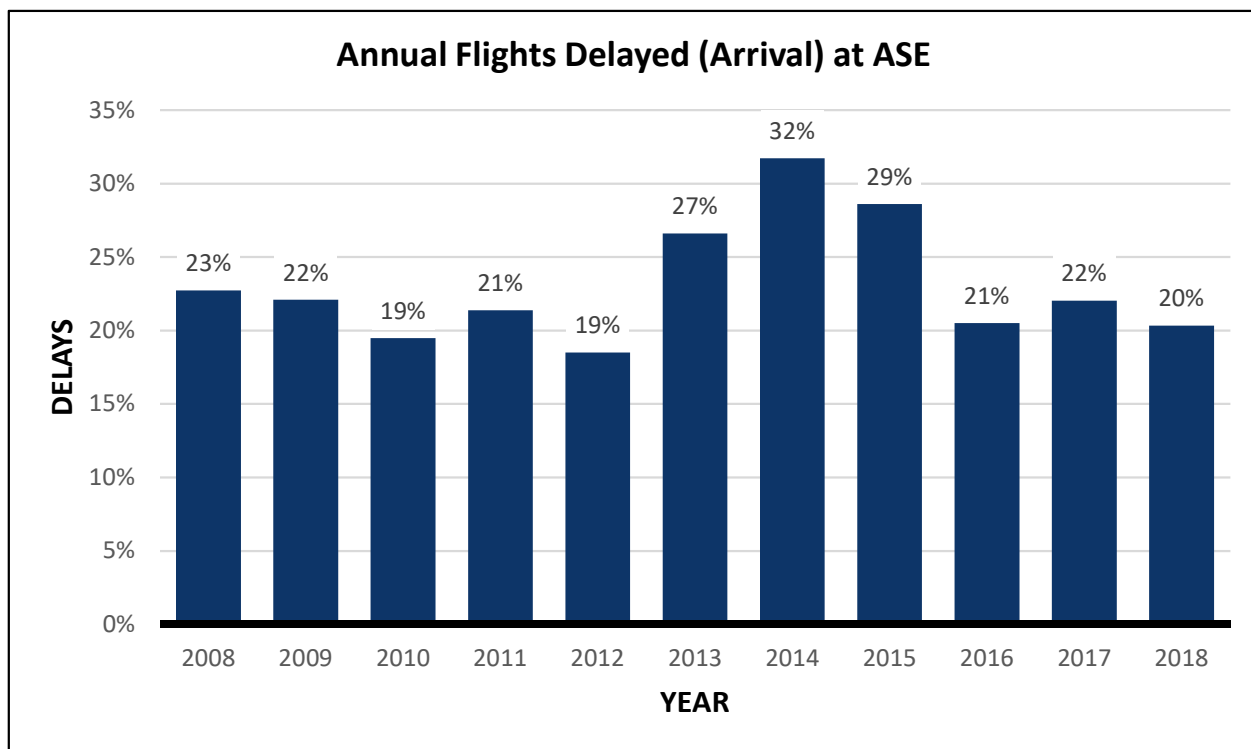
**Air Carrier Diversions (Arrival) Summary**

Air Carrier Diversion is defined as any scheduled arrival aircraft service that is re-routed to an airport different from its original destination. Since 2008, approximately 2.8% (average annual percentage of operations) of arrival flights at the Airport were diverted. Arrival Air Carrier diversions peaked in 2014 at 5.5% while the minimum percentage of diversions was recorded in 2008 at 0.8%.

AIR CARRIER FLIGHTS DELAYED (ARRIVAL)

Year	Delay Classification					Summary	
	Air Carrier	Weather	NAS	Security	Late Arrival	TOTAL	% Delay
2008	467	109	143	4	468	1,191	23%
2009	404	119	214	2	293	1,032	22%
2010	299	54	180	3	308	844	19%
2011	348	38	245	1	319	951	21%
2012	335	48	169	1	327	880	19%
2013	456	57	262	2	463	1,240	27%
2014	533	76	324	0	516	1,449	32%
2015	364	60	296	6	309	1,035	29%
2016	309	63	282	1	290	945	21%
2017	368	79	312	3	391	1,153	22%
2018	412	86	441	1	455	1,395	20%
AVERAGE	390	72	261	2	376	1,101	23%

Source: Bureau of Transportation Statistics Airline Service Quality Performance 234, May 2019. [BTS.gov](https://www.bts.gov/).



Delay Class Definitions:

Air Carrier Delay: The cause was due to circumstances within the airline's control (e.g. maintenance or crew problems, aircraft cleaning, baggage loading, fueling, etc.).

Weather: Significant meteorological conditions (actual or forecasted) that, in the judgment of the carrier, delays or prevents the operation of a flight such as tornado, blizzard or hurricane.

National Aviation System (NAS): Delays and cancellations attributable to the national aviation system that refer to a broad set of conditions, such as non-extreme weather conditions, airport operations, heavy traffic volume, and air traffic control.

Security: Delays or cancellations caused by evacuation of a terminal or concourse, re-boarding of aircraft because of security breach, inoperative screening equipment and/or long lines in excess of 29 minutes at screening areas.

Late-Arriving Aircraft: (5) Late-Arriving Aircraft: previous flight with same aircraft arrived late, causing the present flight to depart late.

Air Carrier Delays (Arrival) Summary

Air Carrier Flight Delay is defined as any scheduled arrival aircraft service that arrives 15 or more minutes later than the planned arrival time at the destination gate. Since 2008 at ASE, approximately 23% of arrival flights are delayed on an average annual basis. The eleven-year minimum and maximum was recorded in 2010 and 2014 at 19% and 32% of flights respectively. When combined, Air Carrier and Late Arrival operations account for the majority (70%) of the delays at ASE.

TSA BAGGAGE SCREENING

2016	Month	Total Baggage Count	Daily Avg.	Daily Min.	Daily Max.
	January	37,156	1,199	129	2,687
	February	38,068	1,313	79	2,415
	March	40,901	1,319	547	1,913
	April	10,921	390	66	1,678
	May	4,125	133	85	231
	June	10,427	348	150	720
	July	18,490	596	413	872
	August	18,012	581	345	867
	September	11,122	371	254	516
	October	7,258	234	125	454
	November	4,826	161	73	375
	December	22,134	714	129	1,834

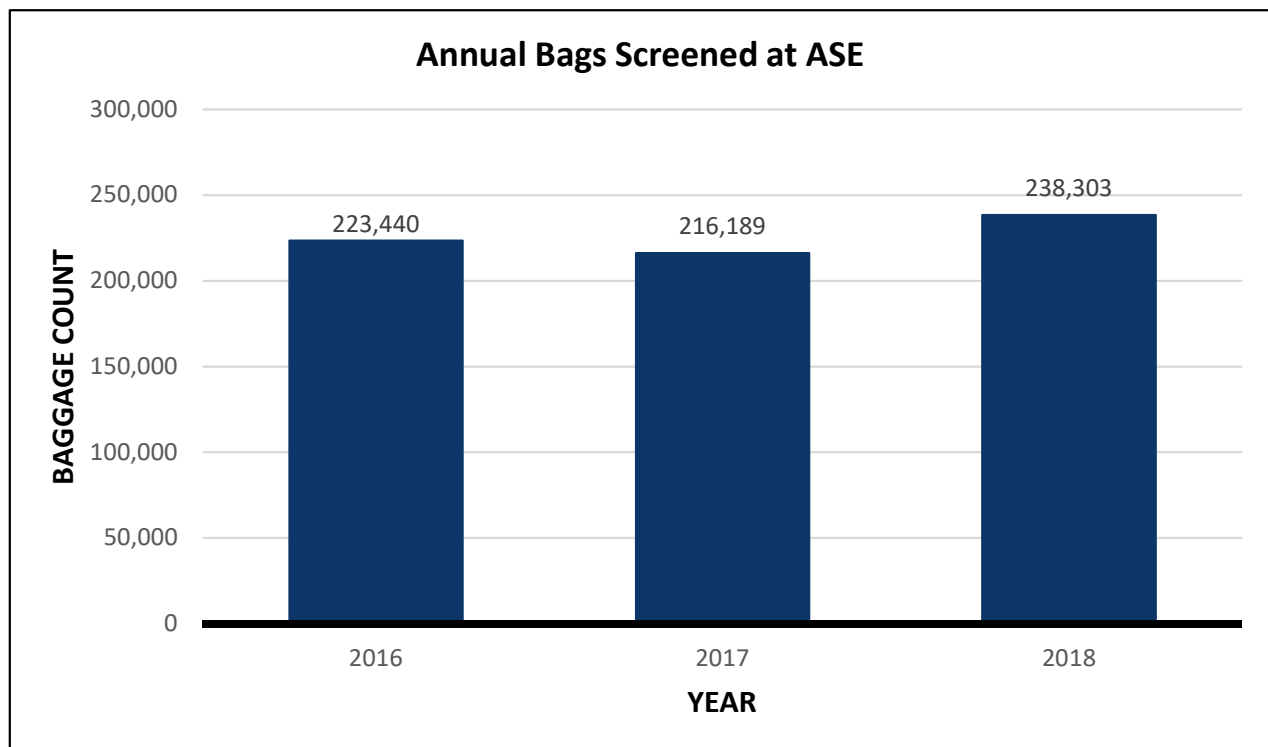
2017	Month	Total Baggage Count	Daily Avg.	Daily Min.	Daily Max.
	January	39,844	1,285	31	2,429
	February	34,454	1,231	160	2,195
	March	42,224	1,362	586	2,132
	April	8,682	289	87	1,370
	May	3,542	114	75	184
	June	10,325	344	40	692
	July	17,260	557	146	828
	August	16,637	537	338	777
	September	10,968	366	93	640
	October	7,462	241	137	509
	November	5,443	181	65	423
	December	19,348	624	113	1,986

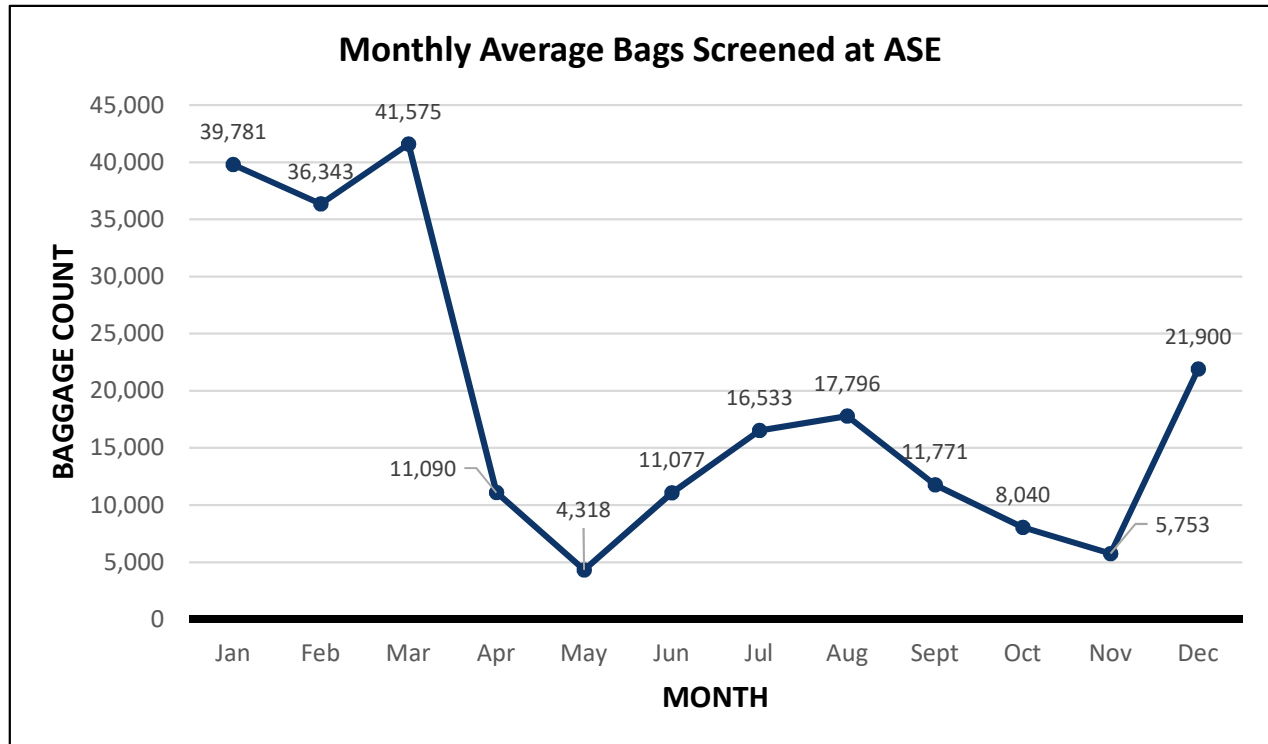
2018	Month	Total Baggage Count	Daily Avg.	Daily Min.	Daily Max.
	January	42,343	1,366	563	2,865
	February	36,507	1,304	662	2,314
	March	41,601	1,342	608	2,119
	April	13,666	456	131	1,618
	May	5,287	171	114	246
	June	12,479	416	189	772
	July	13,850	447	28	759
	August	18,740	605	376	853
	September	13,222	441	304	673
	October	9,399	304	178	458
	November	6,990	233	108	475
	December	24,219	782	242	2,313

Source: TSA Baggage at ASE, May 2019. Office of the ASE Controller.

Annual Baggage Summary at ASE	
Year	Total Bags Screened
2016	223,440
2017	216,189
2018	238,303

Monthly Baggage Average at ASE				
Month	Average Bags Screened	Daily Avg.	Daily Min.	Daily Max.
Jan	39,781	1,283	241	2,660
Feb	36,343	1,283	300	2,308
Mar	41,575	1,341	580	2,055
Apr	11,090	378	95	1,555
May	4,318	139	91	220
Jun	11,077	369	126	728
Jul	16,533	533	196	820
Aug	17,796	574	353	832
Sept	11,771	393	217	610
Oct	8,040	260	147	474
Nov	5,753	192	82	424
Dec	21,900	707	161	2,044





TSA Baggage Summary

Any unique baggage item screened and processed via TSA is considered in the calculation of the baggage summary at ASE Airport. TSA Processed the highest volume of bags at ASE in 2018 (238,303) while 2017 recorded a three year low (216,189). On an average monthly basis (2016 – 2018), January, February, and March experienced the highest volume of bags. March recorded the highest daily average of 1,341 bags. During the off-season months, July and August experienced higher volumes of baggage due to Summer vacation in the Aspen-Pitkin County area.

FUEL SALES

2015	Month	Ineligible Fuel (Gallons)	Eligible Fuel (Gallons)	Fuel Sales Total (\$)
	January	423,130	395,294	\$ 47,435
	February	352,217	353,348	\$ 42,402
	March	487,295	500,824	\$ 60,099
	April	91,694	114,444	\$ 13,733
	May	38,709	48,793	\$ 5,855
	June	148,980	292,705	\$ 35,125
	July	164,096	616,414	\$ 73,970
	August	152,771	492,790	\$ 59,135
	September	83,003	358,782	\$ 43,054
	October	26,333	142,404	\$ 17,089
	November	26,249	147,374	\$ 17,685
	December	315,825	407,744	\$ 48,929
	2015 TOTALS	2,310,301	3,870,917	\$ 464,510

2016	Month	Ineligible Fuel (Gallons)	Eligible Fuel (Gallons)	Fuel Sales Total (\$)
	January	445,781	457,381	\$ 54,886
	February	439,247	441,115	\$ 52,934
	March	530,588	496,219	\$ 59,546
	April	86,186	99,518	\$ 11,942
	May	46,501	63,350	\$ 7,602
	June	168,025	393,723	\$ 47,247
	July	213,369	632,349	\$ 75,882
	August	225,609	577,377	\$ 69,285
	September	114,996	330,883	\$ 39,706
	October	49,944	209,382	\$ 25,126
	November	34,133	135,869	\$ 16,304
	December	420,987	405,819	\$ 48,698
	2016 TOTALS	2,775,368	4,242,983	\$ 509,158

2017	Month	Ineligible Fuel (Gallons)	Eligible Fuel (Gallons)	Fuel Sales Total (\$)
	January	436,440	474,693	\$ 56,963
	February	553,487	394,985	\$ 47,398
	March	573,024	571,105	\$ 68,533
	April	78,990	120,714	\$ 14,486
	May	32,061	79,262	\$ 9,511
	June	232,896	391,400	\$ 46,968
	July	306,725	629,145	\$ 75,497
	August	285,481	567,813	\$ 68,138
	September	173,633	444,602	\$ 53,352
	October	107,292	198,361	\$ 23,803
	November	73,346	122,603	\$ 14,712
	December	444,510	439,433	\$ 52,732
	2017 TOTALS	3,297,884	4,434,117	\$ 532,094

2018	Month	Ineligible Fuel (Gallons)	Eligible Fuel (Gallons)	Fuel Sales Total (\$)
	January	726,937	509,852	\$ 61,182
	February	738,441	261,600	\$ 31,392
	March	637,683	596,443	\$ 71,573
	April	152,064	152,239	\$ 18,269
	May	103,159	64,565	\$ 7,748
	June	261,546	401,478	\$ 48,177
	July	212,627	560,096	\$ 67,212
	August	294,095	530,533	\$ 63,664
	September	203,679	399,398	\$ 47,928
	October	135,542	116,952	\$ 14,034
	November	145,432	107,102	\$ 12,852
	December	557,986	401,151	\$ 48,138
	2018 TOTALS	4,169,192	4,101,408	\$ 492,169

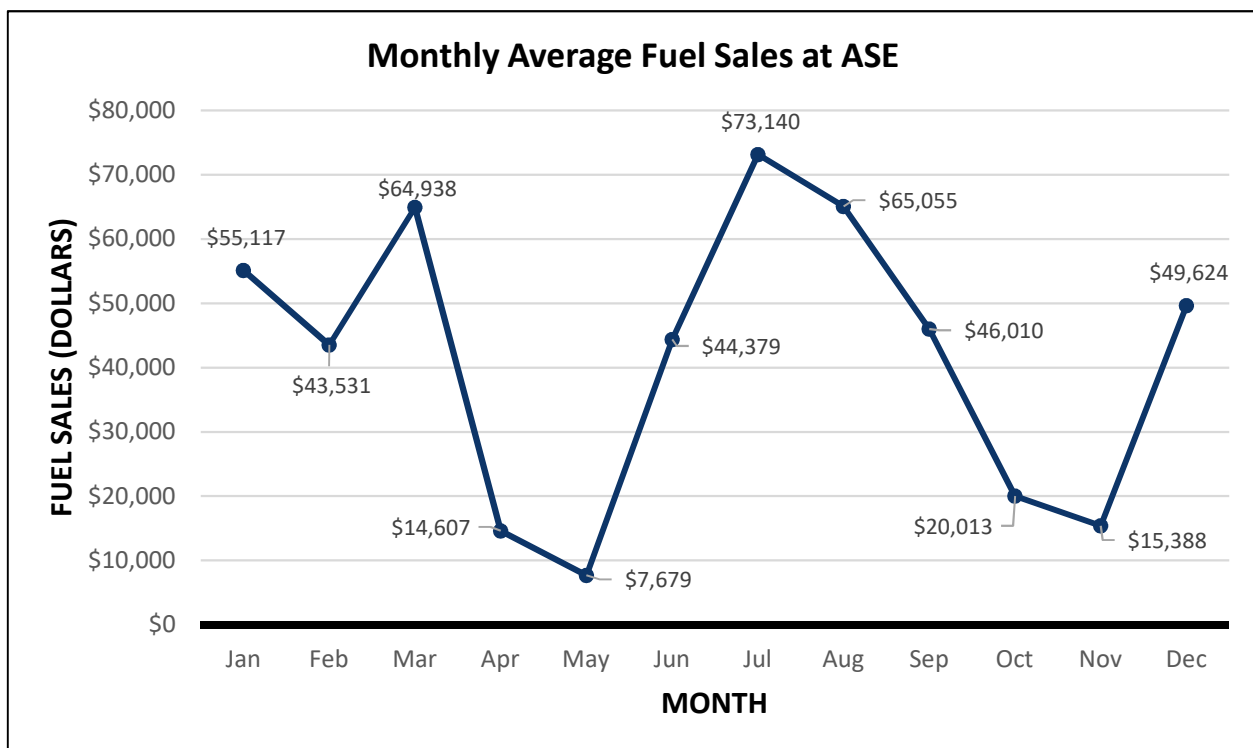
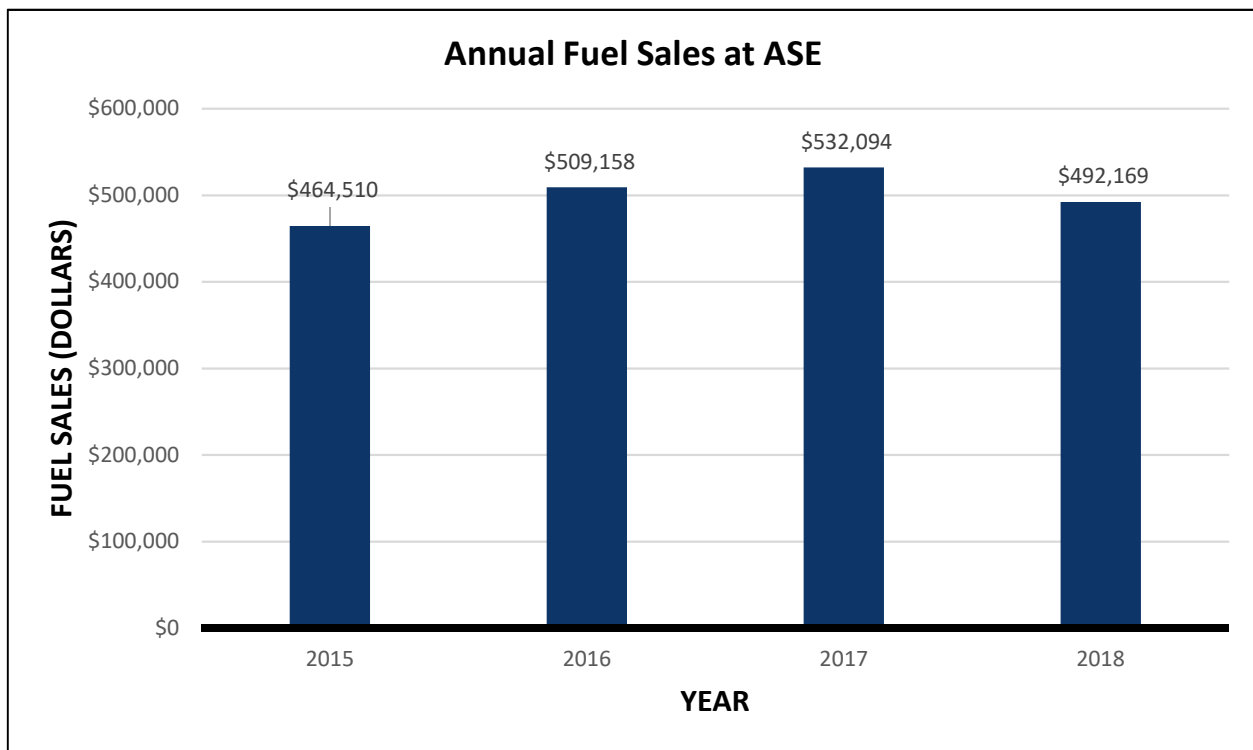
Annual Fuel Sales Summary			
Year	Ineligible Fuel (Gallons)	Eligible Fuel (Gallons)	Fuel Sales Total (\$)
2015	2,310,301	3,870,917	\$ 464,510
2016	2,775,368	4,242,983	\$ 509,158
2017	3,297,884	4,434,117	\$ 532,094
2018	4,169,192	4,101,408	\$ 492,169

Monthly Fuel Sales Summary			
Year	Ineligible Fuel (Gallons)	Eligible Fuel (Gallons)	Fuel Sales Total (\$)
Jan	508,072	459,305	\$ 55,117
Feb	520,848	362,762	\$ 43,531
Mar	557,148	541,148	\$ 64,938
Apr	102,234	121,729	\$ 14,607
May	55,108	63,992	\$ 7,679
Jun	202,862	369,826	\$ 44,379
Jul	224,204	609,501	\$ 73,140
Aug	239,489	542,128	\$ 65,055
Sep	143,828	383,416	\$ 46,010
Oct	79,778	166,775	\$ 20,013
Nov	69,790	128,237	\$ 15,388
Dec	434,827	413,537	\$ 49,624

Source: Fuel Sales at ASE, May 2019. Office of the ASE Controller.

Notes:

- (1) ASE Fuel Flowage Fee is \$0.12 per gallon
- (2) Ineligible Fuel defined as the sum of the fuel lost due to shrinkage plus 'All Airlines (Avfuel)'
- (3) Eligible Fuel defined as the sum of 'JET' plus 'Avgas' minus 'All Airlines (Avfuel)'



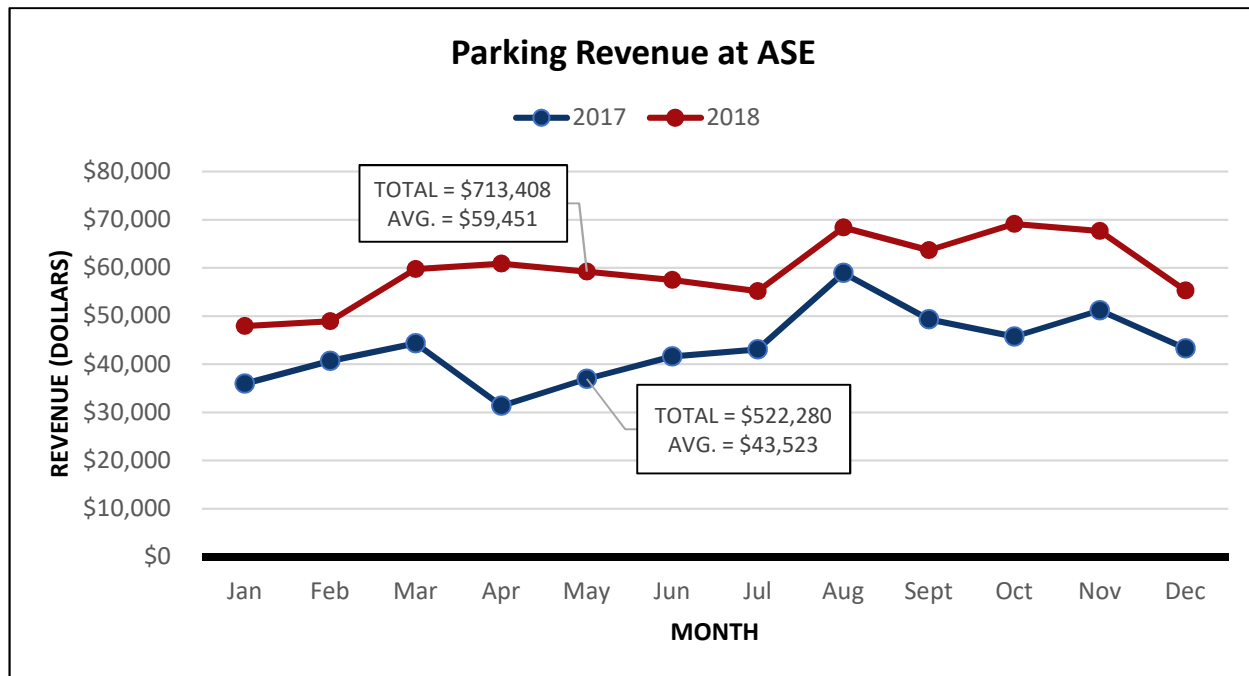
Fuel Sales Summary

Fuel Sale is defined as the quantity of money generated via purchase of eligible fuel provided by the Aspen-Pitkin County Airport. A Fuel Flowage Fee (\$0.12 per gallon of fuel) is utilized to calculate the monetary amount of fuel sold. Annual fuel sales at the Airport averaged \$500,000 annually from 2015 - 2018. July recorded annual highs averaging \$73,140 and May recorded annual lows around \$7,679.

PARKING REVENUE

MONTH	GROSS PARKING FEE	
	2017	2018
January	\$35,973	\$47,909
February	\$40,685	\$48,877
March	\$44,357	\$59,742
April	\$31,341	\$60,903
May	\$36,942	\$59,204
June	\$41,597	\$57,488
July	\$43,074	\$55,172
August	\$58,914	\$68,384
September	\$49,320	\$63,687
October	\$45,688	\$69,121
November	\$51,139	\$67,660
December	\$43,250	\$55,261
AVERAGE FEE	\$43,523	\$59,451
TOTAL FEE	\$522,280	\$713,408

Source: Annual Fuel Sales at Aspen-Pitkin County Airport. Office of the ASE Controller, May 2019.



Parking Revenue Summary

Parking Revenue is defined as the quantity of fees generated via vehicle parking services provided by the Airport. A vehicle parking fee is utilized to calculate the monetary amount (revenue) of parking services provided to its customers. Average monthly parking revenue increased the Airport from \$43,532 to \$59,451 in 2017 and 2018 accordingly. In 2017, the monthly high was recorded in August (\$58,914) while 2018's high was recorded in October (\$69,121). Monthly parking revenue remained the highest in the late Summer months through the Fall (August – November) in both 2017 and 2018. Higher parking volumes in this time frame is primarily due to summer vacation in the Aspen-Pitkin County area. Gross parking fees increased by 37% from 2017 to 2018