

# Raw Weather Data

STATION	NAME	DATE	AWND	PRCP	SNOW	SNWD	TAVG	TMAX	TMIN	TOBS	WDF2	WDF5	WSF2	WSF5
USW00053914	MCKINNEY MUNICIPAL AIRPORT, TX US	7/5/2017	9.62	1.21	0	0		89	71		280	270	28	38.9
USW00053914	MCKINNEY MUNICIPAL AIRPORT, TX US	7/6/2017	3.36	0	0	0		92	71		240	210	13	17
USW00053914	MCKINNEY MUNICIPAL AIRPORT, TX US	7/7/2017	3.8	0	0	0		94	74		210	220	18.1	23.9
USW00053914	MCKINNEY MUNICIPAL AIRPORT, TX US	7/8/2017	4.47	1.19	0	0		93	73		270	270	45	62
USW00053914	MCKINNEY MUNICIPAL AIRPORT, TX US	7/9/2017	6.26	0.45	0	0		89	73		170	180	32	36.9
USW00053914	MCKINNEY MUNICIPAL AIRPORT, TX US	7/10/2017	9.17	0	0	0		90	71		140	150	16.1	19
USW00053914	MCKINNEY MUNICIPAL AIRPORT, TX US	7/11/2017	10.96	0	0	0		94	74		140	200	17	23.9
USW00053914	MCKINNEY MUNICIPAL AIRPORT, TX US	7/12/2017	8.5	0	0	0		92	75		140	160	17	23
USW00053914	MCKINNEY MUNICIPAL AIRPORT, TX US	7/13/2017	7.16	0	0	0		93	75		140	170	14.1	17
USW00053914	MCKINNEY MUNICIPAL AIRPORT, TX US	7/14/2017	5.59	0	0	0		97	75		190	250	14.1	18.1
USW00053914	MCKINNEY MUNICIPAL AIRPORT, TX US	7/15/2017	4.47	0.11	0	0		90	74		30	30	21.9	27.1
USW00053914	MCKINNEY MUNICIPAL AIRPORT, TX US	7/16/2017	4.7	0	0	0		93	73		70	70	13	18.1
USW00053914	MCKINNEY MUNICIPAL AIRPORT, TX US	7/17/2017	4.47	0	0	0		93	74		110	140	13	19
USW00053914	MCKINNEY MUNICIPAL AIRPORT, TX US	7/18/2017	6.04	0	0	0		94	73		170	170	14.1	18.1
USW00053914	MCKINNEY MUNICIPAL AIRPORT, TX US	7/19/2017	6.26	0	0	0		95	75		150	170	14.1	18.1
USW00053914	MCKINNEY MUNICIPAL AIRPORT, TX US	7/20/2017	6.71	0	0	0		96	75		150	210	14.1	17
USW00053914	MCKINNEY MUNICIPAL AIRPORT, TX US	7/21/2017	8.28	0	0	0		97	77		140	170	16.1	21.9
USW00053914	MCKINNEY MUNICIPAL AIRPORT, TX US	7/22/2017	8.05	0	0	0		98	75		150	150	18.1	21
USW00053914	MCKINNEY MUNICIPAL AIRPORT, TX US	7/23/2017	8.72	0.06	0	0		99	72		40	40	32	44.1
USW00053914	MCKINNEY MUNICIPAL AIRPORT, TX US	7/24/2017	6.71	0.14	0	0		89	72		290	300	17	21
USW00053914	MCKINNEY MUNICIPAL AIRPORT, TX US	7/25/2017	9.4	0	0	0		94	75		140	150	17	23
USW00053914	MCKINNEY MUNICIPAL AIRPORT, TX US	7/26/2017	10.29	0	0	0		96	77		160	180	18.1	23
USW00053914	MCKINNEY MUNICIPAL AIRPORT, TX US	7/27/2017	8.5	0	0	0		98	76		150	150	16.1	19
USW00053914	MCKINNEY MUNICIPAL AIRPORT, TX US	7/28/2017	7.16	0	0	0		101	79		280	280	14.1	18.1
USW00053914	MCKINNEY MUNICIPAL AIRPORT, TX US	7/29/2017	6.71	0	0	0		94	78		60	60	15	19.9
USW00053914	MCKINNEY MUNICIPAL AIRPORT, TX US	7/30/2017	6.71	0	0	0		90	74		60	80	16.1	21
USW00053914	MCKINNEY MUNICIPAL AIRPORT, TX US	7/31/2017	4.7	0	0	0		90	68		60	30	14.1	19
USW00053914	MCKINNEY MUNICIPAL AIRPORT, TX US	8/1/2017	5.14	0.04	0	0		89	72		30	30	18.1	25.1
USW00053914	MCKINNEY MUNICIPAL AIRPORT, TX US	8/2/2017	4.47	0	0	0		83	72		60	50	10.1	13
USW00053914	MCKINNEY MUNICIPAL AIRPORT, TX US	8/3/2017	2.01	0	0	0		92	70		80	80	10.1	13
USW00053914	MCKINNEY MUNICIPAL AIRPORT, TX US	8/4/2017	3.36	0	0	0		94	71		340	290	18.1	23
USW00053914	MCKINNEY MUNICIPAL AIRPORT, TX US	8/5/2017	11.18	0	0	0		96	73		170	160	21	25.9
USW00053914	MCKINNEY MUNICIPAL AIRPORT, TX US	8/6/2017	10.07	0.1	0	0		94	79		180	180	19.9	23
USW00053914	MCKINNEY MUNICIPAL AIRPORT, TX US	8/7/2017	7.38	0.06	0	0		92	71		330	70	23	25.9
USW00053914	MCKINNEY MUNICIPAL AIRPORT, TX US	8/8/2017	8.28	0	0	0		89	73		30	40	17	21.9
USW00053914	MCKINNEY MUNICIPAL AIRPORT, TX US	8/9/2017	6.26	0	0	0		90	71		110	90	13	17
USW00053914	MCKINNEY MUNICIPAL AIRPORT, TX US	8/10/2017	3.8	0	0	0		95	72		150	170	10.1	14.1
USW00053914	MCKINNEY MUNICIPAL AIRPORT, TX US	8/11/2017	7.38	0	0	0		97	77		360	350	19.9	25.9
USW00053914	MCKINNEY MUNICIPAL AIRPORT, TX US	8/12/2017	5.14	2.53	0	0		93	74		20	20	29.1	35.1
USW00053914	MCKINNEY MUNICIPAL AIRPORT, TX US	8/13/2017	4.92	0.59	0	0		89	73		140	110	12.1	15

# Raw Delivery Data

OrderNum	Date	Cost	Tip	Tip Percentage	Order Time	Delivery Time	Total Delivery Time	City	Housing
1	7/5/2017	42.83	10	0.2335	6:08 PM	6:32 PM		0:24 Frisco	Residential
2	7/5/2017	22.14	10	0.4517	7:24 PM	7:56 PM		0:32 Lewisville	Residential
3	7/5/2017	39.67	8	0.2017	8:01 PM	8:49 PM		0:48 Frisco	Residential
4	7/5/2017	61.86	10	0.1617	8:10 PM	9:05 PM		0:55 Frisco	Residential
5	7/5/2017	41.35	6	0.1451	8:14 PM	9:18 PM		1:04 Frisco	Residential
6	7/7/2017	30.9	7	0.2265	6:00 PM	6:00 PM		0:00 Plano	Residential
7	7/7/2017	33.02	6.98	0.2114	5:58 PM	6:36 PM		0:38 The Colony	Residential
8	7/7/2017	38.32	5	0.1305	6:14 PM	6:50 PM		0:36 Frisco	Residential
9	7/7/2017	24.09	5.91	0.2453	7:06 PM	7:38 PM		0:32 Frisco	Residential
10	7/7/2017	33.77	11	0.3257	7:01 PM	7:55 PM		0:54 Frisco	Residential
11	7/7/2017	41.89	5	0.1194	7:15 PM	8:04 PM		0:49 Frisco	Residential
12	7/8/2017	19.49	3	0.1539	4:44 PM	5:09 PM		0:25 Frisco	Residential
13	7/8/2017	25.93	4.07	0.157	5:37 PM	5:52 PM		0:15 Plano	Residential
14	7/8/2017	34.59	4.41	0.1275	6:19 PM	6:43 PM		0:24 Frisco	Residential
15	7/8/2017	29.77	5	0.168	6:49 PM	7:12 PM		0:23 Frisco	Apartment
16	7/8/2017	27.33	5.67	0.2075	7:44 PM	8:06 PM		0:22 Frisco	Residential
17	7/9/2017	25.66	5	0.1949	5:12 PM	5:46 PM		0:34 Frisco	Residential
18	7/9/2017	36.16	3.84	0.1062	5:22 PM	6:02 PM		0:40 Frisco	Residential
19	7/9/2017	17.54	5	0.2851	5:23 PM	6:13 PM		0:50 Frisco	Apartment
20	7/9/2017	35.4	5	0.1412	6:34 PM	7:02 PM		0:28 Frisco	Residential
21	7/9/2017	54.61	6	0.1099	6:52 PM	7:34 PM		0:42 Frisco	Residential
22	7/9/2017	33.24	4	0.1203	6:53 PM	7:45 PM		0:52 Frisco	Residential
23	7/9/2017	56.45	13	0.2303	7:03 PM	7:57 PM		0:54 Frisco	Residential
24	7/9/2017	47.41	3.59	0.0757	7:50 PM	8:31 PM		0:41 Plano	Residential
25	7/9/2017	55.1	10	0.1815	8:16 PM	9:04 PM		0:48 Frisco	Hotel
26	7/9/2017	56.51	4	0.0708	8:23 PM	9:47 PM		1:24 Frisco	Residential
27	7/10/2017	41.3	6	0.1453	5:55 PM	6:34 PM		0:39 Frisco	Residential
28	7/10/2017	37.56	5.44	0.1448	6:48 PM	7:09 PM		0:21 Frisco	Residential
29	7/10/2017	59.65	10	0.1676	7:50 PM	8:13 PM		0:23 The Colony	Residential

# Cleaned Delivery Data

OrderNum	Date	Cost	Tip	Tip Percentage	Order Time	Delivery Time	Total Delivery Time (Minutes)	City	Housing
1	7/5/2017	\$42.83	\$10.00	23.35%	6:08 PM	6:32 PM		24 Frisco	Residential
2	7/5/2017	\$22.14	\$10.00	45.17%	7:24 PM	7:56 PM		32 Lewisville	Residential
3	7/5/2017	\$39.67	\$8.00	20.17%	8:01 PM	8:49 PM		48 Frisco	Residential
4	7/5/2017	\$61.86	\$10.00	16.17%	8:10 PM	9:05 PM		55 Frisco	Residential
5	7/5/2017	\$41.35	\$6.00	14.51%	8:14 PM	9:18 PM		64 Frisco	Residential
6	7/7/2017	\$30.90	\$7.00	22.65%	6:00 PM	6:00 PM		0 Plano	Residential
7	7/7/2017	\$33.02	\$6.98	21.14%	5:58 PM	6:36 PM		38 The Colony	Residential
8	7/7/2017	\$38.32	\$5.00	13.05%	6:14 PM	6:50 PM		36 Frisco	Residential
9	7/7/2017	\$24.09	\$5.91	24.53%	7:06 PM	7:38 PM		32 Frisco	Residential
10	7/7/2017	\$33.77	\$11.00	32.57%	7:01 PM	7:55 PM		54 Frisco	Residential
11	7/7/2017	\$41.89	\$5.00	11.94%	7:15 PM	8:04 PM		49 Frisco	Residential
12	7/8/2017	\$19.49	\$3.00	15.39%	4:44 PM	5:09 PM		25 Frisco	Residential
13	7/8/2017	\$25.93	\$4.07	15.70%	5:37 PM	5:52 PM		15 Plano	Residential
14	7/8/2017	\$34.59	\$4.41	12.75%	6:19 PM	6:43 PM		24 Frisco	Residential
15	7/8/2017	\$29.77	\$5.00	16.80%	6:49 PM	7:12 PM		23 Frisco	Apartment
16	7/8/2017	\$27.33	\$5.67	20.75%	7:44 PM	8:06 PM		22 Frisco	Residential
17	7/9/2017	\$25.66	\$5.00	19.49%	5:12 PM	5:46 PM		34 Frisco	Residential
18	7/9/2017	\$36.16	\$3.84	10.62%	5:22 PM	6:02 PM		40 Frisco	Residential
19	7/9/2017	\$17.54	\$5.00	28.51%	5:23 PM	6:13 PM		50 Frisco	Apartment
20	7/9/2017	\$35.40	\$5.00	14.12%	6:34 PM	7:02 PM		28 Frisco	Residential
21	7/9/2017	\$54.61	\$6.00	10.99%	6:52 PM	7:34 PM		42 Frisco	Residential
22	7/9/2017	\$33.24	\$4.00	12.03%	6:53 PM	7:45 PM		52 Frisco	Residential
23	7/9/2017	\$56.45	\$13.00	23.03%	7:03 PM	7:57 PM		54 Frisco	Residential
24	7/9/2017	\$47.41	\$3.59	7.57%	7:50 PM	8:31 PM		41 Plano	Residential
25	7/9/2017	\$55.10	\$10.00	18.15%	8:16 PM	9:04 PM		48 Frisco	Hotel
26	7/9/2017	\$56.51	\$4.00	7.08%	8:23 PM	9:47 PM		84 Frisco	Residential
27	7/10/2017	\$41.30	\$6.00	14.53%	5:55 PM	6:34 PM		39 Frisco	Residential
28	7/10/2017	\$37.56	\$5.44	14.48%	6:48 PM	7:09 PM		21 Frisco	Residential
29	7/10/2017	\$59.65	\$10.00	16.76%	7:50 PM	8:13 PM		23 The Colony	Residential
30	7/11/2017	\$31.83	\$7.00	21.99%	5:15 PM	5:50 PM		35 The Colony	Residential
31	7/11/2017	\$59.38	\$15.00	25.26%	6:32 PM	7:01 PM		29 Frisco	Residential
32	7/11/2017	\$53.75	\$5.00	9.30%	7:30 PM	7:50 PM		20 Frisco	Residential
33	7/11/2017	\$39.40	\$10.60	26.90%	7:43 PM	8:24 PM		41 Plano	Apartment

# Merged Weather/Delivery Data

OrderNum	Date	Cost	Tip	Tip Percentage	Order Time	Delivery Time	Total Delivery Time (Minutes)	City	Housing	Rain (Inches)	Max Temp	Min Temp
1	7/5/2017	\$42.83	\$10.00	23.35%	6:08 PM	6:32 PM		24 Frisco	Residential	1.21	89	71
2	7/5/2017	\$22.14	\$10.00	45.17%	7:24 PM	7:56 PM		32 Lewisville	Residential	1.21	89	71
3	7/5/2017	\$39.67	\$8.00	20.17%	8:01 PM	8:49 PM		48 Frisco	Residential	1.21	89	71
4	7/5/2017	\$61.86	\$10.00	16.17%	8:10 PM	9:05 PM		55 Frisco	Residential	1.21	89	71
5	7/5/2017	\$41.35	\$6.00	14.51%	8:14 PM	9:18 PM		64 Frisco	Residential	1.21	89	71
6	7/7/2017	\$30.90	\$7.00	22.65%	6:00 PM	6:00 PM		0 Plano	Residential	0	94	74
7	7/7/2017	\$33.02	\$6.98	21.14%	5:58 PM	6:36 PM		38 The Colony	Residential	0	94	74
8	7/7/2017	\$38.32	\$5.00	13.05%	6:14 PM	6:50 PM		36 Frisco	Residential	0	94	74
9	7/7/2017	\$24.09	\$5.91	24.53%	7:06 PM	7:38 PM		32 Frisco	Residential	0	94	74
10	7/7/2017	\$33.77	\$11.00	32.57%	7:01 PM	7:55 PM		54 Frisco	Residential	0	94	74
11	7/7/2017	\$41.89	\$5.00	11.94%	7:15 PM	8:04 PM		49 Frisco	Residential	0	94	74
12	7/8/2017	\$19.49	\$3.00	15.39%	4:44 PM	5:09 PM		25 Frisco	Residential	1.19	93	73
13	7/8/2017	\$25.93	\$4.07	15.70%	5:37 PM	5:52 PM		15 Plano	Residential	1.19	93	73
14	7/8/2017	\$34.59	\$4.41	12.75%	6:19 PM	6:43 PM		24 Frisco	Residential	1.19	93	73
15	7/8/2017	\$29.77	\$5.00	16.80%	6:49 PM	7:12 PM		23 Frisco	Apartment	1.19	93	73
16	7/8/2017	\$27.33	\$5.67	20.75%	7:44 PM	8:06 PM		22 Frisco	Residential	1.19	93	73
17	7/9/2017	\$25.66	\$5.00	19.49%	5:12 PM	5:46 PM		34 Frisco	Residential	0.45	89	73
18	7/9/2017	\$36.16	\$3.84	10.62%	5:22 PM	6:02 PM		40 Frisco	Residential	0.45	89	73
19	7/9/2017	\$17.54	\$5.00	28.51%	5:23 PM	6:13 PM		50 Frisco	Apartment	0.45	89	73
20	7/9/2017	\$35.40	\$5.00	14.12%	6:34 PM	7:02 PM		28 Frisco	Residential	0.45	89	73
21	7/9/2017	\$54.61	\$6.00	10.99%	6:52 PM	7:34 PM		42 Frisco	Residential	0.45	89	73
22	7/9/2017	\$33.24	\$4.00	12.03%	6:53 PM	7:45 PM		52 Frisco	Residential	0.45	89	73
23	7/9/2017	\$56.45	\$13.00	23.03%	7:03 PM	7:57 PM		54 Frisco	Residential	0.45	89	73
24	7/9/2017	\$47.41	\$3.59	7.57%	7:50 PM	8:31 PM		41 Plano	Residential	0.45	89	73
25	7/9/2017	\$55.10	\$10.00	18.15%	8:16 PM	9:04 PM		48 Frisco	Hotel	0.45	89	73
26	7/9/2017	\$56.51	\$4.00	7.08%	8:23 PM	9:47 PM		84 Frisco	Residential	0.45	89	73
27	7/10/2017	\$41.30	\$6.00	14.53%	5:55 PM	6:34 PM		39 Frisco	Residential	0	90	71
28	7/10/2017	\$37.56	\$5.44	14.48%	6:48 PM	7:09 PM		21 Frisco	Residential	0	90	71
29	7/10/2017	\$59.65	\$10.00	16.76%	7:50 PM	8:13 PM		23 The Colony	Residential	0	90	71
30	7/11/2017	\$31.83	\$7.00	21.99%	5:15 PM	5:50 PM		35 The Colony	Residential	0	94	74
31	7/11/2017	\$59.38	\$15.00	25.26%	6:32 PM	7:01 PM		29 Frisco	Residential	0	94	74
32	7/11/2017	\$53.75	\$5.00	9.30%	7:30 PM	7:50 PM		20 Frisco	Residential	0	94	74
33	7/11/2017	\$39.40	\$10.60	26.90%	7:43 PM	8:24 PM		41 Plano	Apartment	0	94	74
34	7/12/2017	\$23.82	\$5.00	20.99%	5:11 PM	5:40 PM		29 Plano	Residential	0	92	75
35	7/12/2017	\$30.53	\$5.00	16.38%	6:05 PM	6:33 PM		28 Frisco	Business	0	92	75
36	7/12/2017	\$36.21	\$5.00	13.81%	6:09 PM	6:53 PM		44 Frisco	Residential	0	92	75
37	7/12/2017	\$46.98	\$5.00	10.64%	6:13 PM	7:06 PM		53 Frisco	Residential	0	92	75
38	7/12/2017	\$27.06	\$6.00	22.17%	8:28 PM	8:55 PM		27 Frisco	Residential	0	92	75
39	7/15/2017	\$15.70	\$3.00	19.11%	4:11 PM	5:03 PM		52 Plano	Residential	0.11	90	74
40	7/15/2017	\$52.12	\$5.00	9.59%	4:26 PM	5:07 PM		41 Plano	Residential	0.11	90	74
41	7/15/2017	\$128.06	\$12.00	9.37%	6:22 PM	6:56 PM		34 Frisco	Residential	0.11	90	74
42	7/15/2017	\$21.87	\$3.00	13.72%	6:33 PM	7:11 PM		38 Frisco	Residential	0.11	90	74
43	7/15/2017	\$50.61	\$8.00	15.81%	7:12 PM	7:50 PM		38 Frisco	Residential	0.11	90	74
44	7/15/2017	\$68.31	\$7.00	10.25%	7:16 PM	8:01 PM		45 Frisco	Residential	0.11	90	74
45	7/15/2017	\$38.42	\$8.00	20.82%	7:50 PM	8:36 PM		46 Frisco	Residential	0.11	90	74
46	7/15/2017	\$38.65	\$4.00	10.35%	8:37 PM	9:10 PM		33 Plano	Residential	0.11	90	74

## Descriptive Statistics

<b><i>Cost</i></b>		<b><i>Tips</i></b>		<b><i>Total Delivery Time (Minutes)</i></b>	
Mean	41.76593925	Mean	7.141079137	Mean	40.4372502
Standard Error	0.722672483	Standard Error	0.1279243	Standard Error	0.416306952
Median	36.14	Median	6	Median	40
Mode	22.41	Mode	5	Mode	40
Standard Deviation	25.56054876	Standard Deviation	4.524615753	Standard Deviation	14.72455973
Sample Variance	653.3416528	Sample Variance	20.47214771	Sample Variance	216.8126593
Kurtosis	16.35971271	Kurtosis	6.249268757	Kurtosis	1.864393174
Skewness	3.165619796	Skewness	2.093916512	Skewness	0.069966024
Range	237.61	Range	40	Range	135
Minimum	5.41	Minimum	0	Minimum	0
Maximum	243.02	Maximum	40	Maximum	135
Sum	52249.19	Sum	8933.49	Sum	50587
Count	1251	Count	1251	Count	1251
<b><i>Rain (Inches)</i></b>		<b><i>Max Temp</i></b>		<b><i>Min Temp</i></b>	
Mean	0.16793765	Mean	80.17026379	Mean	59.03357314
Standard Error	0.017046764	Standard Error	0.439044624	Standard Error	0.473639304
Median	0	Median	84	Median	67
Mode	0	Mode	97	Mode	72
Standard Deviation	0.60293514	Standard Deviation	15.52877932	Standard Deviation	16.75237511
Sample Variance	0.363530783	Sample Variance	241.1429871	Sample Variance	280.6420719
Kurtosis	47.74059605	Kurtosis	-0.55377408	Kurtosis	-0.80787786
Skewness	6.373326232	Skewness	-0.6491418	Skewness	-0.73363848
Range	5.64	Range	68	Range	60
Minimum	0	Minimum	40	Minimum	19
Maximum	5.64	Maximum	108	Maximum	79
Sum	210.09	Sum	100293	Sum	73851
Count	1251	Count	1251	Count	1251

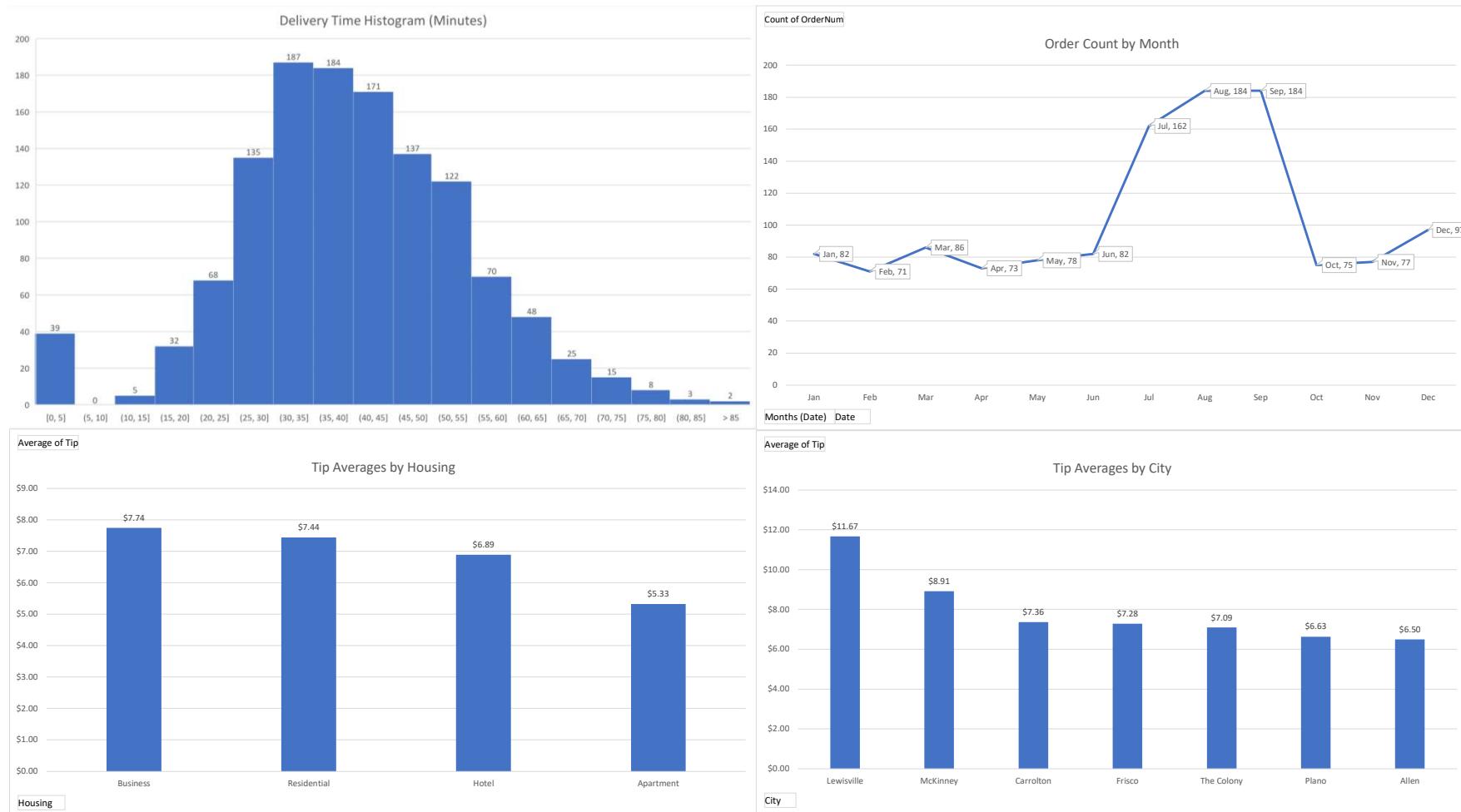
# Pivot Tables

Row Labels	Average of Tip
Lewisville	\$11.67
McKinney	\$8.91
Carrolton	\$7.36
Frisco	\$7.28
The Colony	\$7.09
Plano	\$6.63
Allen	\$6.50
<b>Grand Total</b>	<b>\$7.14</b>

Row Labels	Average of Tip
Business	\$7.74
Residential	\$7.44
Hotel	\$6.89
Apartment	\$5.33
<b>Grand Total</b>	<b>\$7.14</b>

Row Labels	Count of OrderNum
Jan	82
Feb	71
Mar	86
Apr	73
May	78
Jun	82
Jul	162
Aug	184
Sep	184
Oct	75
Nov	77
Dec	97
<b>Grand Total</b>	<b>1251</b>

# Visualizations



## Noteworthy Insights

Delivery time is normally distributed

Order counts more than double from summer to early fall

Businesses have the highest average tips

The city of Lewisville has the highest average tips

# Correlation Matrix

	<i>Cost</i>	<i>Tip</i>	<i>Tip Percentage</i>	<i>Total Delivery Time (Minutes)</i>	<i>Rain (Inches)</i>	<i>Max Temp</i>	<i>Min Temp</i>
<i>Cost</i>	1.0000						
<i>Tip</i>	0.6181	1.0000					
<i>Tip Percentage</i>	-0.2160	0.4149	1.0000				
<i>Total Delivery Time</i>	-0.0620	-0.0290	0.0221	1.0000			
<i>Rain (Inches)</i>	-0.0456	-0.0029	0.0365	0.1410	1.0000		
<i>Max Temp</i>	-0.0160	-0.0192	0.0034	-0.0586	-0.0118	1.0000	
<i>Min Temp</i>	0.0043	-0.0121	-0.0055	-0.0167	0.1041	0.9043	1.0000

## Noteworthy Insights

### Cost and Tip

A correlation of 0.6181 indicates a strong positive relationship. As the cost of the order increases, the tip tends to increase as well.

### Cost and Tip Percentage

The correlation of -0.2160 indicates a weak negative relationship. As the cost increases, the tip percentage tends to decrease slightly.

### Total Delivery Time and Rain (Inches)

The correlation is 0.1410, which indicates a slight positive relationship. This suggests that delivery times may be slightly longer when it's raining.

### Max Temp and Min Temp

The correlation is 0.9043, indicating a very strong positive relationship, as expected since both are related to the day's weather.

### Total Delivery Time and Tip

A correlation of -.0290 indicates there is no correlation between how long the delivery takes and the total tip.

### Total Delivery Time and Tip Percentage

A correlation of .0221 indicates there is no correlation between how long the delivery takes and what percentage is tipped.

# Analysis of Mean Tips in Apartments and Residential Housing

t-Test: Two-Sample Assuming Unequal Variances

	<i>Apartment</i>	<i>Residential</i>
Mean	5.325123457	7.438306613
Variance	5.074064891	22.06720064
Observations	162	998
Hypothesized Mean Difference	0	
df	434	
t Stat	-9.141829694	
P(T<=t) one-tail	1.19196E-18	
t Critical one-tail	1.648372168	
P(T<=t) two-tail	2.38392E-18	
t Critical two-tail	1.965445064	

## Hypothesis Testing

**Null Hypothesis (H0)** There is no difference in the mean tip between apartments and residential housing.

**Alternative Hypothesis (H1)** There is a difference in the mean tip between apartments and residential housing.

**Analysis** Given that our calculated t-statistic far exceeds the critical t-value and our p-value is well below 0.05, we reject the null hypothesis.

**Conclusion** There is a statistically significant difference in the average tip between apartments and residential housing.

# Regression Analysis of Tip, Cost, Total Delivery Time, Rain, Max Temp, and Min Temp

## SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.619111576
R Square	0.383299143
Adjusted R Square	0.380822433
Standard Error	3.560322263
Observations	1251

## ANOVA

	df	SS	MS	F	Significance F
Regression	5	9808.695845	1961.739169	154.7613978	5.8516E-128
Residual	1245	15781.4888	12.67589462		
Total	1250	25590.18464			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	2.340652105	0.716450895	3.267009812	0.001116536	0.935067695	3.746236515
Cost	0.109893055	0.003958347	27.76236343	1.9666E-132	0.102127289	0.117658821
Total Delivery Time (Minutes)	0.002056606	0.006940679	0.296311971	0.767041264	-0.011560112	0.015673325
Rain (Inches)	0.230669802	0.174968828	1.318347989	0.187629665	-0.11259651	0.573936114
Max Temp	0.012170132	0.015759831	0.772224818	0.440127845	-0.018748626	0.043088891
Min Temp	-0.0150244	0.014668051	-1.024294171	0.305895326	-0.043801228	0.013752429

## Regression equation

	Values
Intercept (Base Tip Value)	N/A
Cost	\$40.00
Total Delivery Time (Minutes)	40
Rain (Inches)	2
Max Temp	80
Min Temp	70

Predicted Tip	\$7.20
Predicted Tip Upper 95% Value	\$14.64
Predicted Tip Lower 95% Value	\$0.00

## Hypothesis Testing

### Intercept

**Null Hypothesis (H0)** The intercept equals 0.

**Alternative Hypothesis (H1)** The intercept is not equal to 0.

**Analysis** Given a p-value of ~0.001, I would reject the null hypothesis.

**Conclusion** This suggests the intercept is significantly different from 0.

### Cost

**Null Hypothesis (H0)** There is no relationship between cost and tip.

**Alternative Hypothesis (H1)** There is a relationship between cost and tip.

**Analysis** Given a p-value of almost 0, I would reject the null hypothesis.

**Conclusion** This suggests that cost is a significant predictor of tip.

### Total Delivery Time

**Null Hypothesis (H0)** There is no relationship between total delivery time and tip.

**Alternative Hypothesis (H1)** There is a relationship between total delivery time and tip.

**Analysis** Given a p-value of ~.767, I would fail to reject the null hypothesis.

**Conclusion** This suggests that total delivery time is not a significant predictor of tip.

### Rain (Inches)

**Null Hypothesis (H0)** There is no relationship between rain and tip.

**Alternative Hypothesis (H1)** There is a relationship between rain and tip.

**Analysis** Given a p-value of ~.188, I would fail to reject the null hypothesis.

**Conclusion** This suggests that rain is not a significant predictor of tip.

### Max Temp

**Null Hypothesis (H0)** There is no relationship between max temp and tip

**Alternative Hypothesis (H1)** There is a relationship between max temp and tip.

**Analysis** Given a p-value of ~.44, I would fail to reject the null hypothesis.

**Conclusion** This suggests that max temp is not a significant predictor of tip.

### Min Temp

**Null Hypothesis (H0)** There is no relationship between min temp and tip.

**Alternative Hypothesis (H1)** There is a relationship between min temp and tip.

**Analysis** Given a p-value of ~.306, I would fail to reject the null hypothesis.

**Conclusion** This suggests that min temp is not a significant predictor of tip.

## Conclusion

The data analysis indicates a pronounced positive correlation of 0.6181 between the order cost and the tip amount. In simpler terms, as the order cost increases, we can expect the tip amount to rise correspondingly. Interestingly, the analysis presents a contrasting picture when it comes to the tip percentage, where a minor negative relationship with the order cost is observed. This implies that while larger orders might yield higher tip amounts, they could potentially lead to a slight drop in the tip percentage.

The influence of weather on delivery times is also noteworthy, as there is a mild positive correlation (0.1410) between rainfall and delivery duration. This correlation indicates that during rainy periods, delivery times may extend marginally. This data could prove crucial when strategizing delivery schedules and resource allocation, especially in areas with regular or seasonal precipitation.

The tipping behavior varies significantly between apartment dwellers and residents of houses. Data suggests a notable difference in the average tip from these two groups, with house residents giving a higher mean tip (\$7.44) compared to apartment residents (\$5.33).

The order count trend, particularly as seen in the line chart, carries substantial implications for strategic planning. With order counts more than doubling in the summer and early fall seasons, this trend could indicate the need for increased staffing, resources, and equipment during these peak periods.

The regression analysis reveals that while the order cost is a significant determinant of the tip, other factors like total delivery time, rainfall, maximum and minimum temperatures do not hold substantial predictive value. It's also important to note that these factors account for only 38% of the variance in the tip, indicating that other unaccounted factors are influencing the tipping behavior. Future research could focus on introducing variables like city demographics and housing types to the analysis for a more comprehensive understanding of the tipping behavior.