

## Class 3: Pivot tables

```
In [1]: import pandas as pd
import numpy as np
```

```
In [2]: %ls datasets/
```

```
adult.csv          census.csv         movies.csv
airline_data.csv   coches.csv        nhanes_2015_2016.csv
antropometria00.csv cwurData.csv      pokemon.csv
antropometria-dataset.csv data.csv          reg_data.csv
Book3.csv          headbrain.csv     sample_pivot.csv
Canada.xlsx        mic2.xlsx         tips.csv
Cartwheeldata.csv  mic.xlsx          weight-height.csv
```

```
In [3]: df = pd.read_csv("datasets/census.csv")
df.head(2)
```

```
Out[3]:
```

	SUMLEV	REGION	DIVISION	STATE	COUNTY	STNAME	CTYNAME	CENSUS2010POP	ESTIM
0	40	3	6	1	0	Alabama	Alabama	4779736	
1	50	3	6	1	1	Alabama	Autauga County	54571	

2 rows × 100 columns

```
In [4]: df.describe()
```

```
Out[4]:
```

	SUMLEV	REGION	DIVISION	STATE	COUNTY	CENSUS2010POP	ES
count	3193.000000	3193.000000	3193.000000	3193.000000	3193.000000	3.193000e+03	
mean	49.840276	2.668650	5.191356	30.259004	101.918572	1.933871e+05	
std	1.253884	0.807513	1.973991	15.153897	107.626583	1.176201e+06	
min	40.000000	1.000000	1.000000	1.000000	0.000000	8.200000e+01	
25%	50.000000	2.000000	4.000000	18.000000	33.000000	1.129900e+04	
50%	50.000000	3.000000	5.000000	29.000000	77.000000	2.642400e+04	
75%	50.000000	3.000000	7.000000	45.000000	133.000000	7.140400e+04	
max	50.000000	4.000000	9.000000	56.000000	840.000000	3.725396e+07	

8 rows × 98 columns

```
In [12]: x = df.columns.tolist()
x.sort()
x
```

```
Out[12]: ['BIRTHS2010',
```

```

'BIRTHS2011',
'BIRTHS2012',
'BIRTHS2013',
'BIRTHS2014',
'BIRTHS2015',
'CENSUS2010POP',
'COUNTY',
'CTYNAME',
'DEATHS2010',
'DEATHS2011',
'DEATHS2012',
'DEATHS2013',
'DEATHS2014',
'DEATHS2015',
'DIVISION',
'DOMESTICMIG2010',
'DOMESTICMIG2011',
'DOMESTICMIG2012',
'DOMESTICMIG2013',
'DOMESTICMIG2014',
'DOMESTICMIG2015',
'ESTIMATESBASE2010',
'GQESTIMATES2010',
'GQESTIMATES2011',
'GQESTIMATES2012',
'GQESTIMATES2013',
'GQESTIMATES2014',
'GQESTIMATES2015',
'GQESTIMATESBASE2010',
'INTERNATIONALMIG2010',
'INTERNATIONALMIG2011',
'INTERNATIONALMIG2012',
'INTERNATIONALMIG2013',
'INTERNATIONALMIG2014',
'INTERNATIONALMIG2015',
'NATURALINC2010',
'NATURALINC2011',
'NATURALINC2012',
'NATURALINC2013',
'NATURALINC2014',
'NATURALINC2015',
'NETMIG2010',
'NETMIG2011',
'NETMIG2012',
'NETMIG2013',
'NETMIG2014',
'NETMIG2015',
'NPOPCHG_2010',
'NPOPCHG_2011',
'NPOPCHG_2012',
'NPOPCHG_2013',
'NPOPCHG_2014',
'NPOPCHG_2015',
'POPESTIMATE2010',
'POPESTIMATE2011',
'POPESTIMATE2012',
'POPESTIMATE2013',
'POPESTIMATE2014',
'POPESTIMATE2015',
'RBIRTH2011',
'RBIRTH2012',
'RBIRTH2013',
'RBIRTH2014',
'RBIRTH2015',
'RDEATH2011',

```

```
'RDEATH2012',
'RDEATH2013',
'RDEATH2014',
'RDEATH2015',
'RDOMESTICMIG2011',
'RDOMESTICMIG2012',
'RDOMESTICMIG2013',
'RDOMESTICMIG2014',
'RDOMESTICMIG2015',
'REGION',
'RESIDUAL2010',
'RESIDUAL2011',
'RESIDUAL2012',
'RESIDUAL2013',
'RESIDUAL2014',
'RESIDUAL2015',
'RINTERNATIONALMIG2011',
'RINTERNATIONALMIG2012',
'RINTERNATIONALMIG2013',
'RINTERNATIONALMIG2014',
'RINTERNATIONALMIG2015',
'RNATURALINC2011',
'RNATURALINC2012',
'RNATURALINC2013',
'RNATURALINC2014',
'RNATURALINC2015',
'RNETMIG2011',
'RNETMIG2012',
'RNETMIG2013',
'RNETMIG2014',
'RNETMIG2015',
'STATE',
'STNAME',
'SUMLEV']
```

In [17]:

```
pd.pivot_table(df,
                index = ['STNAME', 'CTYNAME'],
                aggfunc = ['median', 'mean'],
                values = ['BIRTHS2010', 'BIRTHS2011'],
                margins = True,
                columns = 'SUMLEV'
                )
```

Out[17]:

		median								
		BIRTHS2010			BIRTHS2011					
		SUMLEV	40	50	All	40	50	All	40	50
STNAME	CTYNAME									
Alabama	Alabama	14226.0	NaN	14226	59689.0	NaN	59689	14226.000000	NaN	
	Autauga County	NaN	151.0	151	NaN	636.0	636	NaN	151.000000	
	Baldwin County	NaN	517.0	517	NaN	2187.0	2187	NaN	517.000000	
	Barbour County	NaN	70.0	70	NaN	335.0	335	NaN	70.000000	
	Bibb County	NaN	44.0	44	NaN	266.0	266	NaN	44.000000	

		BIRTHS2010			BIRTHS2011			median	
	SUMLEV	40	50	All	40	50	All	40	50
STNAME	CTYNAME								
...	...	...	...	...	...	...	...	...	...
Wyoming	Uinta County	NaN	73.0	73	NaN	324.0	324	NaN	73.000000
	Washakie County	NaN	26.0	26	NaN	108.0	108	NaN	26.000000
	Weston County	NaN	26.0	26	NaN	81.0	81	NaN	26.000000
	Wyoming	1995.0	NaN	1995	7471.0	NaN	7471	1995.000000	NaN
All		13752.0	76.0	78	55313.0	304.0	311	19369.333333	314.397199

3193 rows × 12 columns

```
In [16]: df['BIRTHS2011'].describe()
```

```
Out[16]: count      3193.000000
mean        2488.872534
std         15630.223486
min           0.000000
25%         129.000000
50%         311.000000
75%         858.000000
max        509767.000000
Name: BIRTHS2011, dtype: float64
```

```
In [18]: %ls datasets/
```

```
adult.csv          census.csv         movies.csv
airline_data.csv   coches.csv        nhanes_2015_2016.csv
antropometria00.csv  cwurData.csv     pokemon.csv
antropometria-dataset.csv data.csv          reg_data.csv
Book3.csv          headbrain.csv    sample_pivot.csv
Canada.xlsx        mic2.xlsx        tips.csv
Cartwheeldata.csv  mic.xlsx         weight-height.csv
```

```
In [23]: adf = pd.read_csv('datasets/airline_data.csv', low_memory = False)
```

```
In [24]: adf.describe()
```

```
Out[24]:
```

	Unnamed: 0	Year	Quarter	Month	DayofMonth	DayOfWeek	DOT_
count	9.442000e+03	9442.000000	9442.000000	9442.000000	9442.000000	9442.000000	
mean	1.002191e+06	2004.410294	2.525736	6.568630	15.695086	3.948422	
std	5.750812e+05	9.140586	1.114095	3.452402	8.870576	1.995809	
min	3.100000e+02	1987.000000	1.000000	1.000000	1.000000	1.000000	

	Unnamed: 0	Year	Quarter	Month	DayofMonth	DayOfWeek	DOT_
<b>25%</b>	5.122065e+05	1997.000000	2.000000	4.000000	8.000000	2.000000	
<b>50%</b>	1.008876e+06	2005.000000	3.000000	7.000000	16.000000	4.000000	
<b>75%</b>	1.496591e+06	2012.000000	4.000000	10.000000	23.000000	6.000000	
<b>max</b>	1.999844e+06	2020.000000	4.000000	12.000000	31.000000	7.000000	

8 rows × 93 columns

In [25]:

```
df.head(2)
```

Out[25]:

	SUMLEV	REGION	DIVISION	STATE	COUNTY	STNAME	CTYNAME	CENSUS2010POP	ESTIM
<b>0</b>	40	3	6	1	0	Alabama	Alabama	4779736	
<b>1</b>	50	3	6	1	1	Alabama	Autauga County	54571	

2 rows × 100 columns

In [26]:

```
x = adf.columns.tolist()
x.sort()
x
```

Out[26]:

```
['ActualElapsedTime',
 'AirTime',
 'ArrDel15',
 'ArrDelay',
 'ArrDelayMinutes',
 'ArrTime',
 'ArrTimeBlk',
 'ArrivalDelayGroups',
 'CRSArrTime',
 'CRSDepTime',
 'CRSElapsedTime',
 'CancellationCode',
 'Cancelled',
 'CarrierDelay',
 'DOT_ID_Reporting_Airline',
 'DayOfWeek',
 'DayofMonth',
 'DepDel15',
 'DepDelay',
 'DepDelayMinutes',
 'DepTime',
 'DepTimeBlk',
 'DepartureDelayGroups',
 'Dest',
 'DestAirportID',
 'DestAirportSeqID',
 'DestCityMarketID',
 'DestCityName',
 'DestState',
 'DestStateFips',
 'DestStateName',
 'DestWac',
 'Distance',
```

```
'DistanceGroup',
'Div1Airport',
'Div1AirportID',
'Div1AirportSeqID',
'Div1LongestGTime',
'Div1TailNum',
'Div1TotalGTime',
'Div1WheelsOff',
'Div1WheelsOn',
'Div2Airport',
'Div2AirportID',
'Div2AirportSeqID',
'Div2LongestGTime',
'Div2TailNum',
'Div2TotalGTime',
'Div2WheelsOff',
'Div2WheelsOn',
'Div3Airport',
'Div3AirportID',
'Div3AirportSeqID',
'Div3LongestGTime',
'Div3TailNum',
'Div3TotalGTime',
'Div3WheelsOff',
'Div3WheelsOn',
'Div4Airport',
'Div4AirportID',
'Div4AirportSeqID',
'Div4LongestGTime',
'Div4TailNum',
'Div4TotalGTime',
'Div4WheelsOff',
'Div4WheelsOn',
'Div5Airport',
'Div5AirportID',
'Div5AirportSeqID',
'Div5LongestGTime',
'Div5TailNum',
'Div5TotalGTime',
'Div5WheelsOff',
'Div5WheelsOn',
'DivActualElapsedTime',
'DivAirportLandings',
'DivArrDelay',
'DivDistance',
'DivReachedDest',
'Diverted',
'FirstDepTime',
'FlightDate',
'Flight_Number_Reporting_Airline',
'Flights',
'IATA_CODE_Reporting_Airline',
'LateAircraftDelay',
'LongestAddGTime',
'Month',
'NASDelay',
'Origin',
'OriginAirportID',
'OriginAirportSeqID',
'OriginCityMarketID',
'OriginCityName',
'OriginState',
'OriginStateFips',
'OriginStateName',
'OriginWac',
```

```
'Quarter',
'Reporting_Airline',
'SecurityDelay',
'Tail_Number',
'TaxiIn',
'TaxiOut',
'TotalAddGTime',
'Unnamed: 0',
'WeatherDelay',
'WheelsOff',
'WheelsOn',
'Year']
```

## 1. What is the minimum and maximum delay of airlines?

```
In [35]: # 'DepDelay', 'DepartureDelayGroups'
adf.loc[:, 'DepDelay'].max()
```

Out[35]: 988.0

```
In [34]: adf.loc[:, 'DepDelay'].min()
```

Out[34]: -23.0

```
In [36]: #pd.set_option('display.max_rows' , 5000)
```

```
In [37]: adf.groupby(['DepDelay', 'DepartureDelayGroups']).size()
```

```
Out[37]: DepDelay  DepartureDelayGroups
-23.0          -2.0                      1
-19.0          -2.0                      2
-18.0          -2.0                      1
-17.0          -2.0                      3
-16.0          -2.0                      6
-15.0          -1.0                     12
-14.0          -1.0                     11
-13.0          -1.0                     20
-12.0          -1.0                     20
-11.0          -1.0                     42
-10.0          -1.0                    112
-9.0           -1.0                    131
-8.0           -1.0                    181
-7.0           -1.0                    240
-6.0           -1.0                    350
-5.0           -1.0                    495
-4.0           -1.0                    538
-3.0           -1.0                    601
-2.0           -1.0                    705
-1.0           -1.0                    673
0.0            0.0                   1468
1.0            0.0                    324
2.0            0.0                    264
3.0            0.0                    222
4.0            0.0                    189
5.0            0.0                    181
6.0            0.0                    133
7.0            0.0                    119
```

8.0	0.0	126
9.0	0.0	94
10.0	0.0	104
11.0	0.0	79
12.0	0.0	76
13.0	0.0	72
14.0	0.0	68
15.0	1.0	69
16.0	1.0	59
17.0	1.0	51
18.0	1.0	48
19.0	1.0	51
20.0	1.0	62
21.0	1.0	43
22.0	1.0	52
23.0	1.0	32
24.0	1.0	22
25.0	1.0	40
26.0	1.0	33
27.0	1.0	30
28.0	1.0	37
29.0	1.0	26
30.0	2.0	36
31.0	2.0	17
32.0	2.0	18
33.0	2.0	29
34.0	2.0	22
35.0	2.0	28
36.0	2.0	23
37.0	2.0	17
38.0	2.0	15
39.0	2.0	16
40.0	2.0	27
41.0	2.0	15
42.0	2.0	15
43.0	2.0	26
44.0	2.0	23
45.0	3.0	22
46.0	3.0	10
47.0	3.0	11
48.0	3.0	11
49.0	3.0	15
50.0	3.0	14
51.0	3.0	11
52.0	3.0	17
53.0	3.0	12
54.0	3.0	15
55.0	3.0	15
56.0	3.0	9
57.0	3.0	12
58.0	3.0	12
59.0	3.0	9
60.0	4.0	15
61.0	4.0	8
62.0	4.0	9
63.0	4.0	11
64.0	4.0	9
65.0	4.0	11
66.0	4.0	8
67.0	4.0	7
68.0	4.0	9
69.0	4.0	8
70.0	4.0	14
71.0	4.0	6
72.0	4.0	7



73.0	4.0	6
74.0	4.0	8
75.0	5.0	7
76.0	5.0	2
77.0	5.0	6
78.0	5.0	8
79.0	5.0	4
80.0	5.0	6
81.0	5.0	6
82.0	5.0	3
83.0	5.0	7
84.0	5.0	6
85.0	5.0	6
86.0	5.0	6
87.0	5.0	7
88.0	5.0	3
89.0	5.0	3
90.0	6.0	7
91.0	6.0	3
93.0	6.0	2
94.0	6.0	2
95.0	6.0	7
96.0	6.0	2
97.0	6.0	5
98.0	6.0	7
99.0	6.0	6
100.0	6.0	3
101.0	6.0	1
102.0	6.0	1
103.0	6.0	6
104.0	6.0	4
106.0	7.0	2
107.0	7.0	3
108.0	7.0	4
109.0	7.0	2
110.0	7.0	5
111.0	7.0	3
112.0	7.0	1
113.0	7.0	5
114.0	7.0	4
115.0	7.0	1
116.0	7.0	3
117.0	7.0	4
118.0	7.0	2
119.0	7.0	3
120.0	8.0	2
121.0	8.0	5
122.0	8.0	1
123.0	8.0	2
124.0	8.0	4
125.0	8.0	2
126.0	8.0	1
128.0	8.0	2
129.0	8.0	1
130.0	8.0	1
131.0	8.0	1
132.0	8.0	2
133.0	8.0	1
134.0	8.0	1
137.0	9.0	1
138.0	9.0	2
139.0	9.0	1
140.0	9.0	4
141.0	9.0	2
143.0	9.0	2

144.0	9.0	2
145.0	9.0	1
146.0	9.0	2
147.0	9.0	1
149.0	9.0	3
150.0	10.0	5
151.0	10.0	1
153.0	10.0	1
155.0	10.0	3
156.0	10.0	2
157.0	10.0	1
158.0	10.0	4
159.0	10.0	1
160.0	10.0	2
161.0	10.0	1
162.0	10.0	2
164.0	10.0	1
165.0	11.0	2
168.0	11.0	2
170.0	11.0	2
171.0	11.0	2
172.0	11.0	2
174.0	11.0	1
177.0	11.0	2
179.0	11.0	1
180.0	12.0	3
181.0	12.0	1
183.0	12.0	1
184.0	12.0	1
185.0	12.0	1
187.0	12.0	1
189.0	12.0	2
191.0	12.0	1
193.0	12.0	1
196.0	12.0	1
197.0	12.0	1
198.0	12.0	1
199.0	12.0	1
205.0	12.0	1
207.0	12.0	1
208.0	12.0	1
214.0	12.0	1
220.0	12.0	1
221.0	12.0	1
223.0	12.0	1
224.0	12.0	2
233.0	12.0	1
238.0	12.0	1
241.0	12.0	1
248.0	12.0	1
263.0	12.0	1
267.0	12.0	2
282.0	12.0	1
289.0	12.0	1
308.0	12.0	1
330.0	12.0	1
339.0	12.0	1
346.0	12.0	1
365.0	12.0	1
376.0	12.0	1
400.0	12.0	1
403.0	12.0	1
460.0	12.0	1
600.0	12.0	1
732.0	12.0	1

988.0      12.0  
dtype: int64

1

In [49]:

```
pd.pivot_table(adf,
                index = ['Year', 'Quarter'],
                values = 'DepDelay',
                aggfunc = 'sum',
                columns = 'DepartureDelayGroups',
                margins = True
                )#.tail(3)
```

Out[49]:

DepartureDelayGroups		-2.0	-1.0	0.0	1.0	2.0	3.0	4.0	5.0
Year	Quarter								
1987	4	NaN	-20.0	81.0	145.0	36.0	97.0	NaN	NaN
	1	NaN	-15.0	121.0	131.0	NaN	97.0	63.0	82.0
	2	NaN	-11.0	84.0	119.0	105.0	52.0	NaN	78.0
	3	NaN	-23.0	89.0	21.0	39.0	NaN	NaN	NaN
1988	4	NaN	-15.0	91.0	137.0	119.0	NaN	63.0	85.0
	1	NaN	-31.0	97.0	155.0	113.0	97.0	135.0	NaN
	2	NaN	-18.0	99.0	109.0	39.0	NaN	NaN	75.0
	3	NaN	-25.0	181.0	65.0	37.0	NaN	200.0	80.0
1989	4	NaN	-10.0	73.0	88.0	42.0	99.0	NaN	NaN
	1	NaN	-33.0	98.0	139.0	NaN	NaN	67.0	NaN
	2	NaN	-42.0	89.0	105.0	NaN	NaN	NaN	NaN
	3	NaN	-28.0	72.0	33.0	NaN	49.0	137.0	NaN
1990	4	NaN	-32.0	91.0	106.0	112.0	NaN	64.0	NaN
	1	NaN	-33.0	64.0	49.0	151.0	48.0	NaN	NaN
	2	NaN	-36.0	91.0	120.0	33.0	NaN	NaN	NaN
	3	NaN	-26.0	152.0	103.0	113.0	161.0	NaN	88.0
1991	4	NaN	-25.0	118.0	19.0	64.0	NaN	62.0	NaN
	1	NaN	-43.0	97.0	39.0	43.0	50.0	NaN	NaN
	2	NaN	-35.0	71.0	75.0	NaN	NaN	NaN	NaN
	3	NaN	-26.0	90.0	43.0	102.0	59.0	NaN	NaN
1992	4	NaN	-36.0	71.0	169.0	NaN	55.0	NaN	NaN
	1	NaN	-34.0	127.0	66.0	118.0	160.0	70.0	NaN
	2	NaN	-44.0	101.0	16.0	82.0	50.0	NaN	NaN
	3	NaN	-45.0	97.0	58.0	33.0	47.0	NaN	NaN
1993	4	NaN	-38.0	56.0	127.0	38.0	48.0	NaN	NaN
	1	NaN	-15.0	71.0	83.0	40.0	54.0	62.0	NaN
	2	NaN	-35.0	110.0	50.0	NaN	45.0	NaN	NaN

DepartureDelayGroups		-2.0	-1.0	0.0	1.0	2.0	3.0	4.0	5.0
Year	Quarter								
1995	3	NaN	-33.0	99.0	109.0	NaN	NaN	NaN	81.0
	4	NaN	-37.0	122.0	95.0	255.0	59.0	NaN	NaN
	1	NaN	-40.0	110.0	195.0	NaN	149.0	NaN	82.0
	2	NaN	-59.0	82.0	43.0	107.0	NaN	NaN	NaN
1996	3	NaN	-48.0	148.0	133.0	74.0	45.0	61.0	NaN
	4	NaN	-36.0	150.0	62.0	75.0	205.0	72.0	77.0
	1	NaN	-11.0	81.0	75.0	34.0	NaN	66.0	NaN
	2	NaN	-45.0	106.0	71.0	41.0	144.0	132.0	NaN
1997	3	NaN	-47.0	170.0	139.0	101.0	100.0	132.0	85.0
	4	NaN	-74.0	70.0	72.0	189.0	168.0	NaN	NaN
	1	NaN	-35.0	61.0	69.0	73.0	50.0	198.0	NaN
	2	NaN	-57.0	126.0	83.0	30.0	NaN	NaN	81.0
1998	3	NaN	-61.0	121.0	84.0	86.0	NaN	61.0	NaN
	4	NaN	-71.0	79.0	48.0	75.0	150.0	62.0	86.0
	1	NaN	-79.0	65.0	66.0	78.0	52.0	NaN	NaN
	2	NaN	-39.0	107.0	78.0	112.0	48.0	NaN	NaN
1999	3	NaN	-81.0	78.0	114.0	NaN	164.0	64.0	NaN
	4	NaN	-64.0	104.0	92.0	112.0	NaN	NaN	NaN
	1	NaN	-66.0	86.0	92.0	64.0	162.0	60.0	NaN
	2	NaN	-70.0	88.0	110.0	36.0	45.0	70.0	87.0
2000	3	-18.0	-87.0	117.0	96.0	107.0	53.0	134.0	NaN
	4	NaN	-104.0	90.0	54.0	134.0	101.0	68.0	84.0
	1	NaN	-72.0	139.0	58.0	65.0	NaN	133.0	NaN
	2	NaN	-60.0	77.0	130.0	177.0	103.0	74.0	85.0
2001	3	NaN	-97.0	99.0	140.0	217.0	51.0	271.0	NaN
	4	NaN	-94.0	101.0	116.0	74.0	102.0	NaN	85.0
	1	NaN	-112.0	63.0	62.0	222.0	99.0	72.0	83.0
	2	NaN	-159.0	107.0	26.0	219.0	NaN	205.0	79.0
2002	3	NaN	-117.0	81.0	76.0	204.0	NaN	NaN	NaN
	4	NaN	-110.0	82.0	41.0	119.0	97.0	65.0	NaN
	1	NaN	-87.0	73.0	111.0	120.0	NaN	71.0	NaN
	2	NaN	-159.0	61.0	128.0	110.0	100.0	NaN	80.0
	3	NaN	-157.0	38.0	28.0	69.0	103.0	64.0	NaN
	4	NaN	-143.0	62.0	125.0	35.0	104.0	65.0	NaN

DepartureDelayGroups		-2.0	-1.0	0.0	1.0	2.0	3.0	4.0	5.0
Year	Quarter								
2003	1	NaN	-262.0	67.0	45.0	40.0	96.0	60.0	162.0
	2	NaN	-173.0	54.0	89.0	86.0	NaN	NaN	NaN
	3	NaN	-172.0	33.0	139.0	111.0	48.0	NaN	NaN
	4	NaN	-176.0	39.0	120.0	NaN	103.0	143.0	NaN
2004	1	NaN	-140.0	15.0	152.0	151.0	109.0	68.0	NaN
	2	NaN	-206.0	70.0	92.0	103.0	58.0	135.0	171.0
	3	NaN	-207.0	74.0	51.0	73.0	52.0	188.0	NaN
	4	NaN	-190.0	93.0	64.0	76.0	53.0	60.0	82.0
2005	1	NaN	-199.0	81.0	88.0	245.0	NaN	130.0	319.0
	2	NaN	-133.0	97.0	94.0	117.0	248.0	60.0	311.0
	3	NaN	-159.0	105.0	146.0	30.0	209.0	253.0	85.0
	4	NaN	-208.0	101.0	182.0	111.0	204.0	136.0	87.0
2006	1	NaN	-105.0	85.0	88.0	137.0	56.0	192.0	NaN
	2	NaN	-199.0	77.0	122.0	87.0	197.0	72.0	NaN
	3	NaN	-200.0	106.0	88.0	114.0	158.0	330.0	79.0
	4	NaN	-269.0	72.0	193.0	43.0	56.0	NaN	NaN
2007	1	NaN	-194.0	116.0	221.0	79.0	156.0	65.0	87.0
	2	NaN	-166.0	123.0	142.0	179.0	54.0	329.0	NaN
	3	NaN	-182.0	134.0	37.0	100.0	161.0	133.0	NaN
	4	NaN	-173.0	150.0	224.0	74.0	255.0	70.0	NaN
2008	1	-16.0	-167.0	126.0	220.0	30.0	52.0	61.0	NaN
	2	NaN	-163.0	105.0	114.0	75.0	NaN	69.0	NaN
	3	-39.0	-197.0	82.0	139.0	143.0	NaN	66.0	171.0
	4	NaN	-239.0	70.0	25.0	102.0	100.0	131.0	80.0
2009	1	NaN	-232.0	74.0	112.0	44.0	NaN	60.0	78.0
	2	NaN	-250.0	74.0	105.0	173.0	93.0	141.0	173.0
	3	NaN	-240.0	93.0	139.0	114.0	116.0	NaN	84.0
	4	NaN	-185.0	123.0	59.0	78.0	NaN	NaN	NaN
2010	1	NaN	-228.0	41.0	61.0	107.0	153.0	70.0	77.0
	2	NaN	-221.0	88.0	146.0	64.0	55.0	NaN	83.0
	3	NaN	-249.0	157.0	145.0	187.0	49.0	130.0	75.0
	4	NaN	-234.0	108.0	173.0	191.0	111.0	NaN	NaN
2011	1	NaN	-206.0	68.0	126.0	35.0	50.0	72.0	154.0
	2	NaN	-162.0	111.0	68.0	82.0	105.0	67.0	87.0

DepartureDelayGroups		-2.0	-1.0	0.0	1.0	2.0	3.0	4.0	5.0
Year	Quarter								
2012	3	NaN	-208.0	63.0	66.0	140.0	47.0	69.0	166.0
	4	-19.0	-200.0	64.0	73.0	NaN	55.0	NaN	NaN
	1	NaN	-219.0	62.0	96.0	76.0	45.0	66.0	NaN
	2	NaN	-246.0	52.0	78.0	77.0	109.0	71.0	NaN
2013	3	NaN	-116.0	54.0	220.0	139.0	58.0	145.0	172.0
	4	-16.0	-178.0	76.0	81.0	113.0	NaN	NaN	NaN
	1	-17.0	-142.0	78.0	62.0	30.0	207.0	132.0	NaN
	2	NaN	-235.0	83.0	249.0	215.0	59.0	145.0	156.0
2014	3	NaN	-178.0	47.0	101.0	128.0	159.0	61.0	NaN
	4	NaN	-195.0	118.0	143.0	140.0	105.0	NaN	81.0
	1	-16.0	-160.0	33.0	155.0	33.0	99.0	74.0	246.0
	2	NaN	-202.0	101.0	112.0	36.0	55.0	195.0	162.0
2015	3	NaN	-188.0	101.0	213.0	151.0	150.0	133.0	160.0
	4	NaN	-200.0	125.0	203.0	160.0	154.0	NaN	87.0
	1	-16.0	-170.0	84.0	141.0	215.0	209.0	NaN	75.0
	2	NaN	-153.0	96.0	128.0	38.0	51.0	62.0	252.0
2016	3	NaN	-179.0	88.0	43.0	106.0	45.0	67.0	NaN
	4	NaN	-214.0	69.0	223.0	157.0	99.0	135.0	NaN
	1	NaN	-163.0	49.0	114.0	70.0	NaN	61.0	NaN
	2	NaN	-174.0	76.0	88.0	76.0	47.0	NaN	86.0
2017	3	NaN	-125.0	40.0	133.0	205.0	98.0	NaN	89.0
	4	NaN	-219.0	53.0	89.0	110.0	156.0	NaN	81.0
	1	NaN	-185.0	33.0	138.0	35.0	172.0	NaN	78.0
	2	NaN	-193.0	61.0	137.0	64.0	58.0	203.0	NaN
2018	3	NaN	-167.0	73.0	72.0	116.0	46.0	67.0	NaN
	4	NaN	-231.0	65.0	87.0	35.0	NaN	63.0	NaN
	1	-34.0	-213.0	88.0	171.0	74.0	56.0	60.0	NaN
	2	-16.0	-252.0	67.0	154.0	146.0	147.0	NaN	NaN
2019	3	NaN	-277.0	51.0	107.0	62.0	105.0	NaN	161.0
	4	NaN	-244.0	58.0	35.0	75.0	52.0	279.0	NaN
	1	NaN	-309.0	77.0	124.0	32.0	220.0	NaN	80.0
	2	-19.0	-326.0	117.0	208.0	185.0	162.0	193.0	169.0
	3	NaN	-254.0	88.0	67.0	197.0	53.0	131.0	150.0
	4	NaN	-236.0	92.0	133.0	176.0	47.0	70.0	NaN

DepartureDelayGroups		-2.0	-1.0	0.0	1.0	2.0	3.0	4.0	5.0
Year	Quarter								
2020	1	NaN	-314.0	54.0	44.0	108.0	57.0	135.0	83.0
All		-226.0	-17336.0	11373.0	13688.0	11974.0	10061.0	9031.0	6542.0

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