b1-fremontbridge

November 14, 2024

[ ]:
```
Explore the bicycle counts on Seattle's Fremont Bridge Data with respect to
i) Average daily bicycle counts
ii) Average hourly bicycle counts by weekday and weekend
```

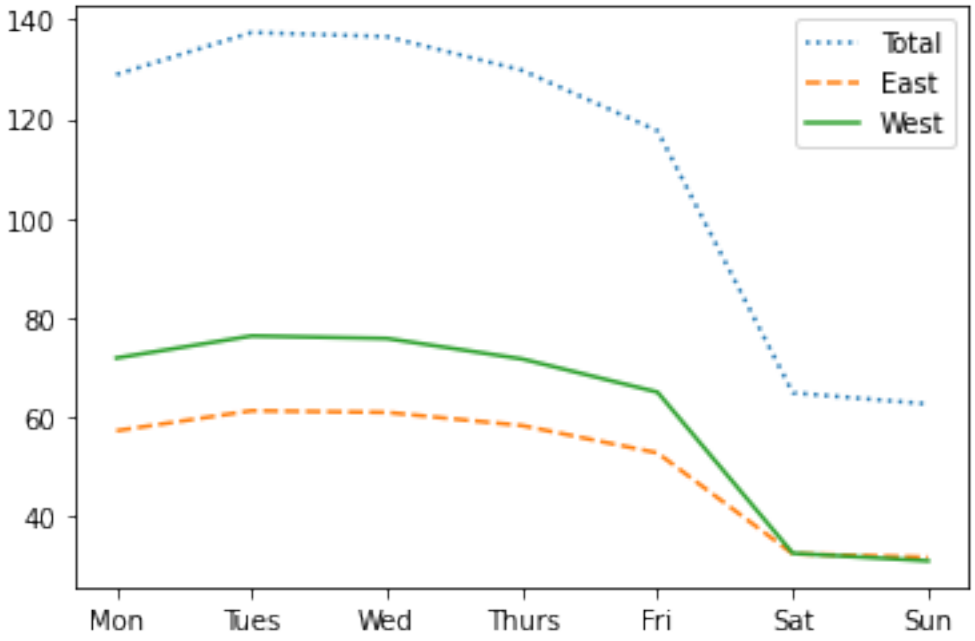
[ ]:
```
import pandas as pd
import matplotlib.pyplot as plt
data = pd.read_csv('FremontBridge.csv', index_col='Date', parse_dates=True)

#index column is a time series object

data.columns = ['Total', 'East', 'West']
data.head()
```

```
C:\Users\Administrator\AppData\Local\Temp\ipykernel_632\1582325263.py:3:
UserWarning: Could not infer format, so each element will be parsed
individually, falling back to `dateutil`. To ensure parsing is consistent and
as-expected, please specify a format.
  data = pd.read_csv('FremontBridge.csv', index_col='Date', parse_dates=True)
```

[7]:
```
by_weekday = data.groupby(data.index.dayofweek).mean()
print(by_weekday)
by_weekday.index = ['Mon', 'Tues', 'Wed', 'Thurs', 'Fri', 'Sat', 'Sun']
by_weekday.plot(style=[':', '--', '-'])
```

```
           Total       East       West
Date
0     128.942967  57.141598  71.801369
1     137.427155  61.175774  76.251381
2     136.576050  60.836447  75.739603
3     129.781730  58.179309  71.602420
4     117.590246  52.669803  64.920443
5      64.786742  32.339293  32.447449
6      62.538935  31.630508  30.908428
```

[7]: <AxesSubplot:>

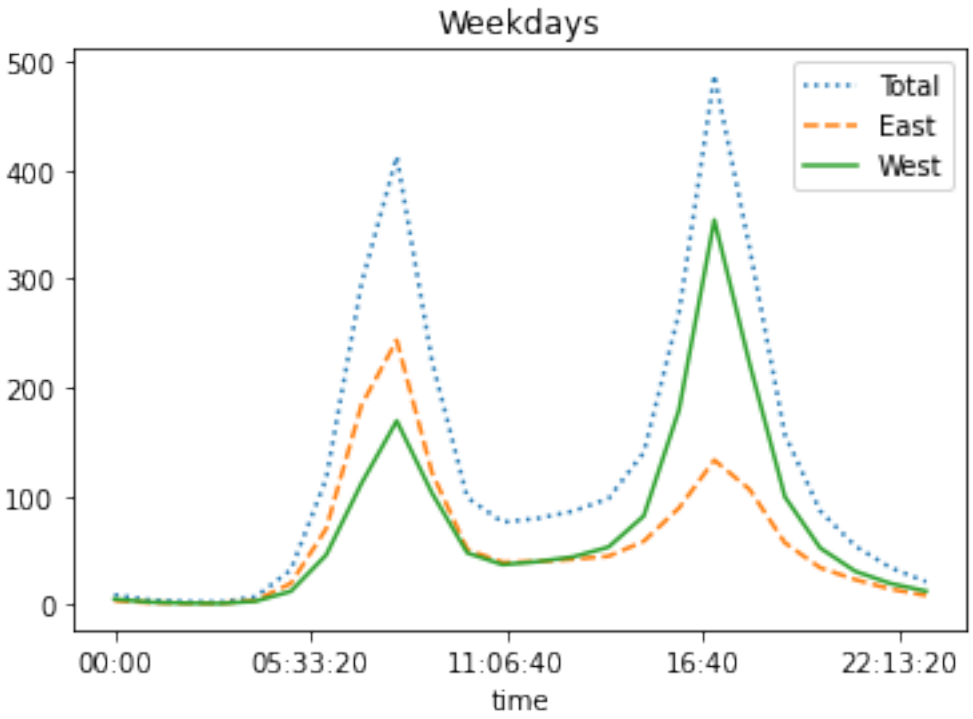


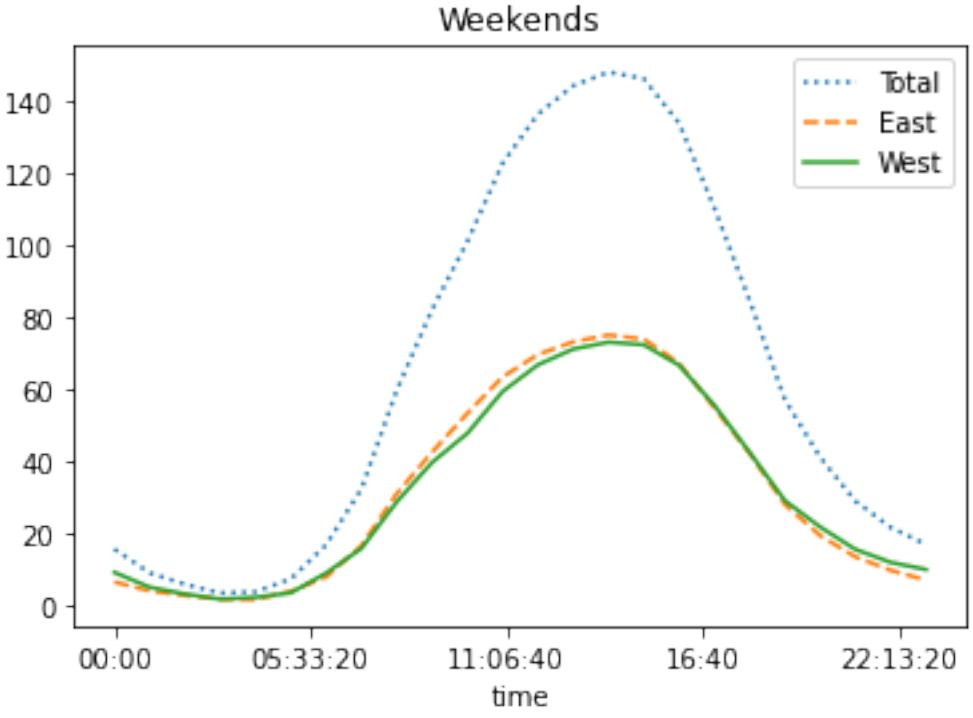
[13]:
```
import numpy as np
weekend_array = np.where(data.index.dayofweek < 5, 'Weekday', 'Weekend')

print(weekend_array)
#dayofweek---> Monday =0 , Sunday = 6

by_time = data.groupby([weekend_array, data.index.time]).mean()


print(by_time)

by_time.loc['Weekday'].plot(title='Weekdays', style=[':', '--', '-'])
by_time.loc['Weekend'].plot(title='Weekends', style=[':', '--', '-'])


#fig, ax = plt.subplots(1, 2, figsize=(14, 5))
#by_time.loc['Weekday'].plot(ax=ax[0], title='Weekdays', style=[':', '--', '-'])
#by_time.loc['Weekend'].plot(ax=ax[1], title='Weekends', style=[':', '--', '-'])
```

```
['Weekday' 'Weekday' 'Weekday' … 'Weekday' 'Weekday' 'Weekday']
                        Total        East        West
Weekday 00:00:00     9.192817    3.934074    5.258743
        01:00:00     4.555293    2.039698    2.515595
        02:00:00     3.034972    1.489130    1.545841
        03:00:00     2.602316    1.355860    1.246456
        04:00:00     7.428403    4.074669    3.353733
```

	05:00:00	32.180766	19.745747	12.435019
	06:00:00	115.899102	70.033554	45.865548
	07:00:00	295.413516	183.724008	111.689509
	08:00:00	412.670605	243.398866	169.271739
	09:00:00	224.206619	121.508747	102.697872
	10:00:00	98.592435	50.811584	47.780851
	11:00:00	76.071158	39.116785	36.954374
	12:00:00	79.582979	39.792908	39.790071
	13:00:00	86.116966	41.961248	44.155718
	14:00:00	97.841409	44.694398	53.147010
	15:00:00	140.192862	58.452848	81.740014
	16:00:00	268.633893	89.173481	179.460411
	17:00:00	487.315528	133.151028	354.164500
	18:00:00	328.060506	106.142283	221.918223
	19:00:00	156.417868	57.060978	99.356890
	20:00:00	86.377688	34.086504	52.291184
	21:00:00	53.922713	23.171827	30.750886
	22:00:00	34.047743	14.460648	19.587095
	23:00:00	21.257386	8.650201	12.607185
Weekend	00:00:00	15.555556	6.446217	9.109338
	01:00:00	8.965130	3.982861	4.982270
	02:00:00	5.795590	2.680572	3.115018
	03:00:00	3.364066	1.684988	1.679078
	04:00:00	3.722813	1.537234	2.185579
	05:00:00	7.294326	3.855792	3.438534
	06:00:00	16.761229	7.844563	8.916667
	07:00:00	32.286052	16.521277	15.764775
	08:00:00	59.615839	30.942671	28.673168
	09:00:00	82.055556	42.452128	39.603428
	10:00:00	100.900118	53.221040	47.679078
	11:00:00	122.648936	63.338652	59.310284
	12:00:00	136.280733	69.575650	66.705083
	13:00:00	144.159574	73.086879	71.072695
	14:00:00	147.959811	74.962175	72.997636
	15:00:00	146.135343	73.854019	72.281324
	16:00:00	133.787825	67.186170	66.601655
	17:00:00	110.265957	54.763002	55.502955
	18:00:00	84.546690	42.114657	42.432033
	19:00:00	57.014184	27.992317	29.021868
	20:00:00	41.019504	19.315012	21.704492
	21:00:00	28.886525	13.406028	15.480496
	22:00:00	21.548463	9.671395	11.877069
	23:00:00	16.868794	6.962766	9.906028

[13]: <AxesSubplot:title={'center':'Weekends'}, xlabel='time'>


Weekdays
500
400
300
200
100
0
Total
East
West
00:00
05:33:20
11:06:40
16:40
22:13:20
time


Weekends
140
120
100
80
60
40
20
0
Total
East
West
00:00
05:33:20
11:06:40
16:40
22:13:20
time