forecast_timeseries_egjohnson

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```
# read in data as character
tcdat <- fread("app_data.csv",colClasses=c("character"))
tcdat %>% head
```

begin_time	average_response_time	throughput
1508025600	203.20011539812356	119586
1508025660	144.14319113189268	112493
1508025720	127.0975367190018	108595
1508025780	134.4365023956849	104563
1508025840	127.95972196725687	119842
1508025900	138.5803969580254	111901

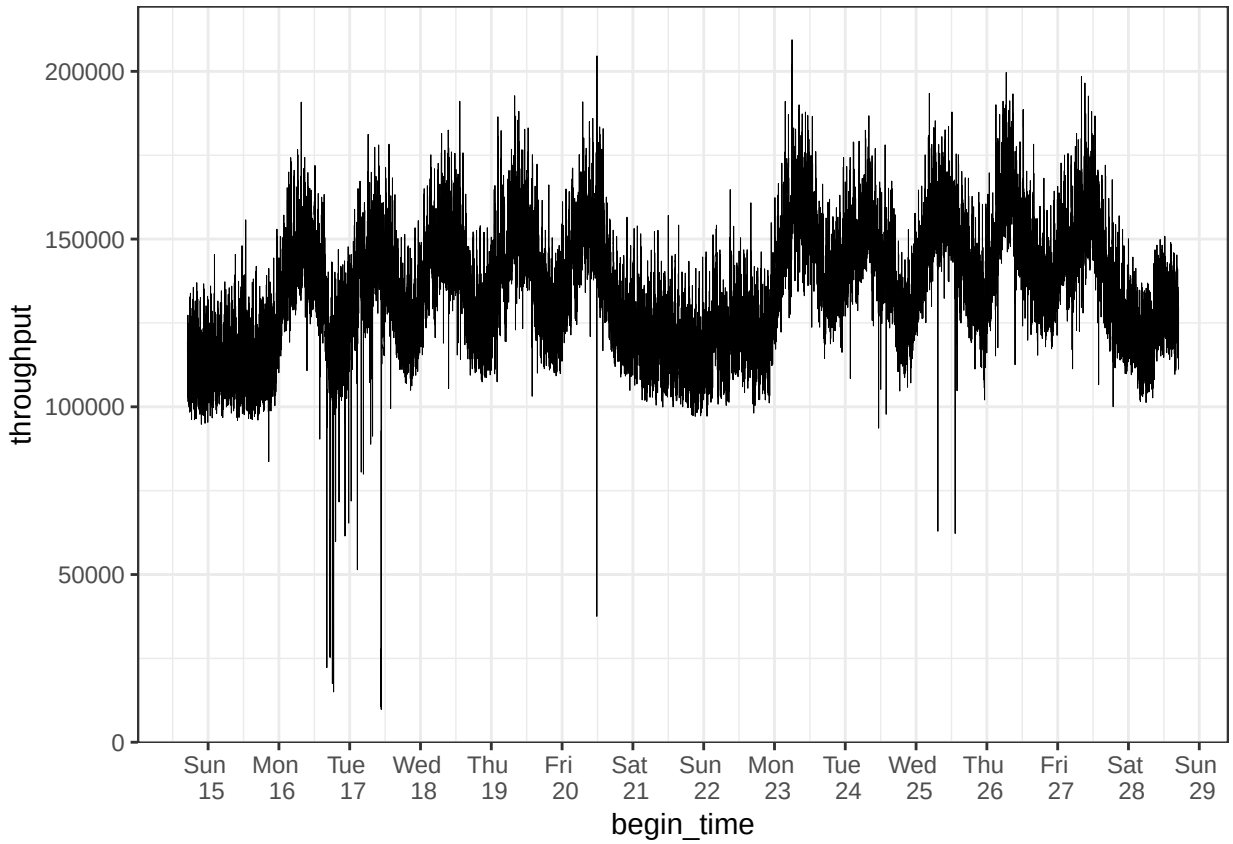
```
#change UNIX timestamp to actual date
#seconds since Jan 01 1970. (UTC)
#convert characters to numeric
library(tidyr)
tcdat %>% dplyr::mutate(begin_time=anytime(as.integer(begin_time))) %>% dplyr::mutate_if(is.character,as

tcdat %>% head
```

begin_time	average_response_time	throughput
2017-10-14 17:00:00	203.2001	119586
2017-10-14 17:01:00	144.1432	112493
2017-10-14 17:02:00	127.0975	108595
2017-10-14 17:03:00	134.4365	104563
2017-10-14 17:04:00	127.9597	119842
2017-10-14 17:05:00	138.5804	111901

Throughput peaks in the middle of the day - but only on weekdays

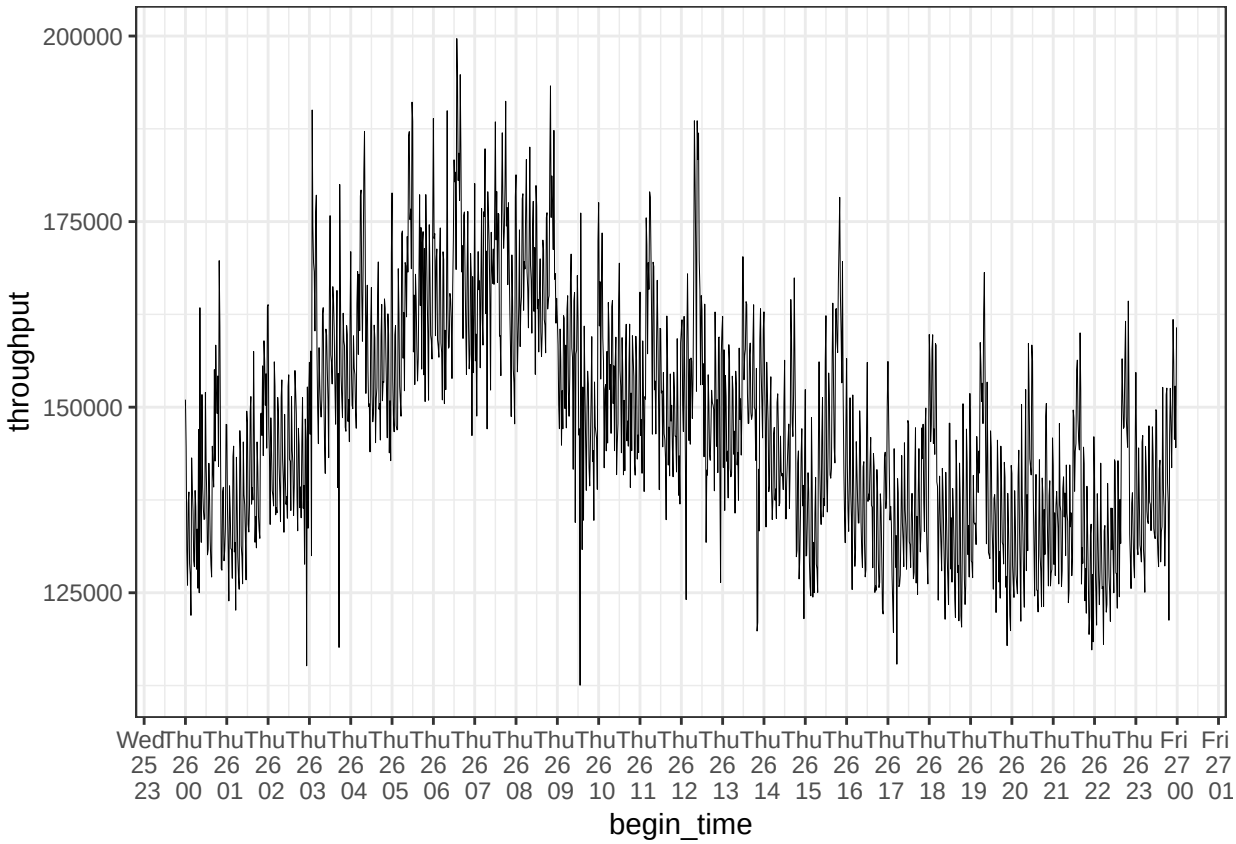
```
#labels = date_format("%a-%d\n%H:%M"
ggplot(tcdat, aes(x = begin_time, y = throughput)) +
  geom_line(size =0.1) +
  scale_x_datetime(breaks = date_breaks("1 day"), labels=date_format("%a \n %d",tz=Sys.timezone()))+
  theme_bw()
```



On a weekday throughput typically peaks prior to noon then tapers off.

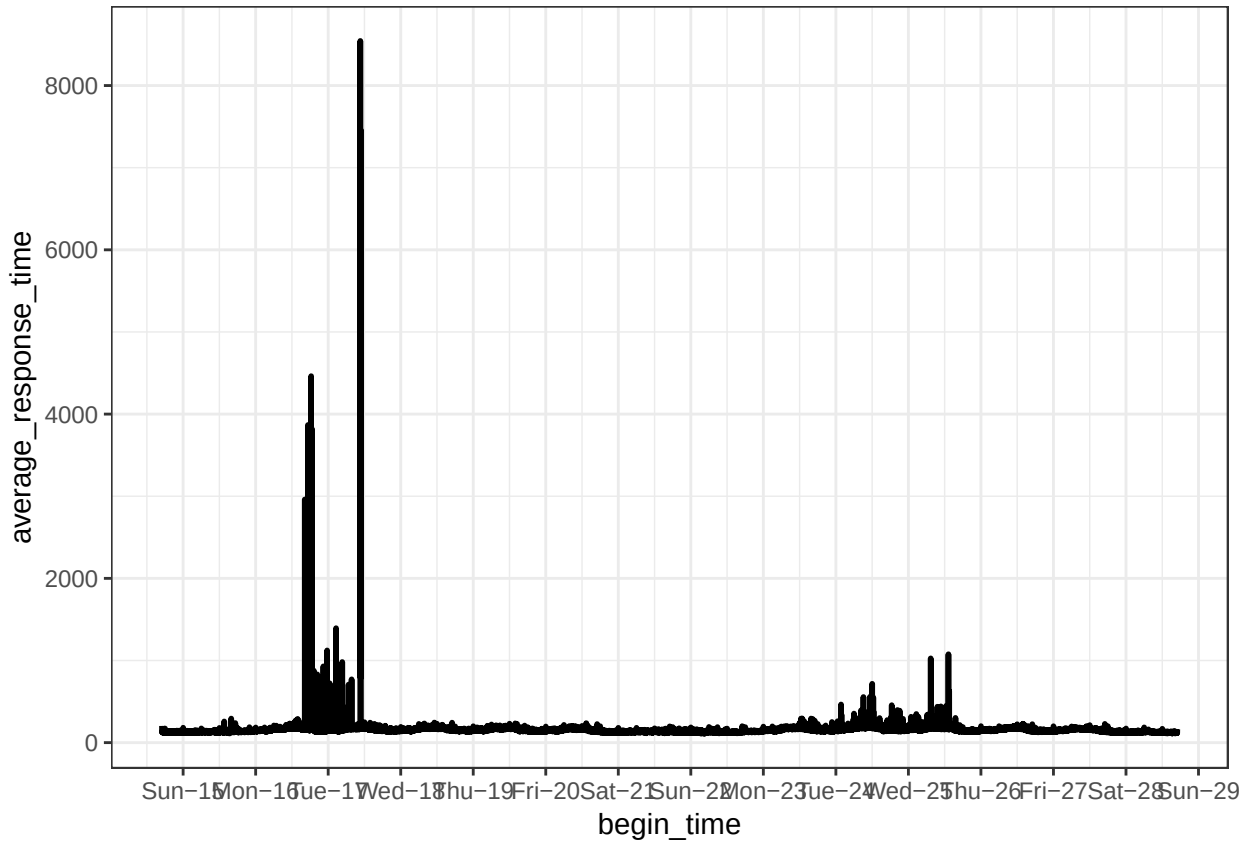
```
tcdat %>% dplyr::filter(day(begin_time) ==26)->tc.plot

ggplot(tc.plot, aes(x = begin_time, y = throughput)) +
  geom_line(size =0.1) +
  scale_x_datetime(breaks = date_breaks("1 hour"),labels=time_format("%a \n %d \n %H",tz=Sys.timezone()))
  theme_bw()
```



response time spikes on some weekdays with random random slow-downs

```
ggplot(tcdat, aes(x = begin_time, y = average_response_time)) +
  geom_line(size = 1) +
  scale_x_datetime(breaks = date_breaks("1 day"), labels=date_format("%a-%d",tz=Sys.timezone()))+
  theme_bw()
```


8000
6000
4000
2000
0
average_response_time
Sun−15
Mon−16
Tue−17
Wed−18
Thu−19
Fri−20
Sat−21
Sun−22
Mon−23
Tue−24
Wed−25
Thu−26
Fri−27
Sat−28
Sun−29
begin_time

“‘