

Air data exploration

```
store_inf <- read.csv('air_store_info.csv')
reserve <- read.csv('air_reserve.csv')
visit <- read.csv('air_visit_data.csv')
conc <- read.csv('air_reserve_concatenated.csv')
visit_with_weekday <- read.csv('air_visit_with_weekday.csv')
```

```
visit_with_info <- read.csv('air_visit_with_info.csv')
```

```
head(visit_with_info)
```

```
##           air_store_id      date holiday visitors  weekday
## 1 air_ba937bf13d40fb24 2016-01-13      0        25 Wednesday
## 2 air_ba937bf13d40fb24 2016-01-14      0        32 Thursday
## 3 air_ba937bf13d40fb24 2016-01-15      0        29 Friday
## 4 air_ba937bf13d40fb24 2016-01-16      0        22 Saturday
## 5 air_ba937bf13d40fb24 2016-01-18      0         6 Monday
## 6 air_ba937bf13d40fb24 2016-01-19      0         9 Tuesday
##   air_genre_name                air_area_name
## 1      Dining bar T\305\215ky\305\215-to Minato-ku Shibak\305\215en
## 2      Dining bar T\305\215ky\305\215-to Minato-ku Shibak\305\215en
## 3      Dining bar T\305\215ky\305\215-to Minato-ku Shibak\305\215en
## 4      Dining bar T\305\215ky\305\215-to Minato-ku Shibak\305\215en
## 5      Dining bar T\305\215ky\305\215-to Minato-ku Shibak\305\215en
## 6      Dining bar T\305\215ky\305\215-to Minato-ku Shibak\305\215en
##   latitude longitude
## 1 35.65807  139.7516
## 2 35.65807  139.7516
## 3 35.65807  139.7516
## 4 35.65807  139.7516
## 5 35.65807  139.7516
## 6 35.65807  139.7516
```

```
library(ggplot2)
```

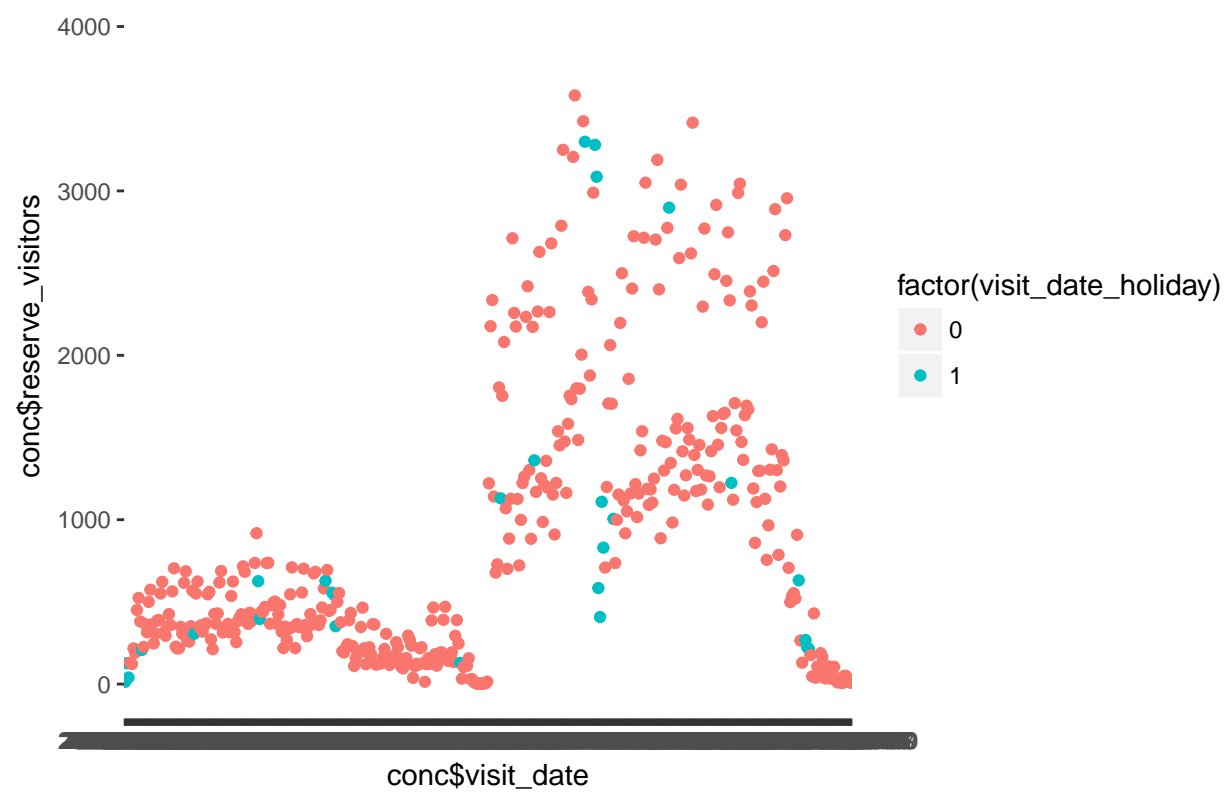
```
head(visit_with_weekday)
```

```
##           air_store_id      date holiday visitors  weekday
## 1 air_ba937bf13d40fb24 2016-01-13      0        25 Wednesday
## 2 air_ba937bf13d40fb24 2016-01-14      0        32 Thursday
## 3 air_ba937bf13d40fb24 2016-01-15      0        29 Friday
## 4 air_ba937bf13d40fb24 2016-01-16      0        22 Saturday
## 5 air_ba937bf13d40fb24 2016-01-18      0         6 Monday
## 6 air_ba937bf13d40fb24 2016-01-19      0         9 Tuesday
```

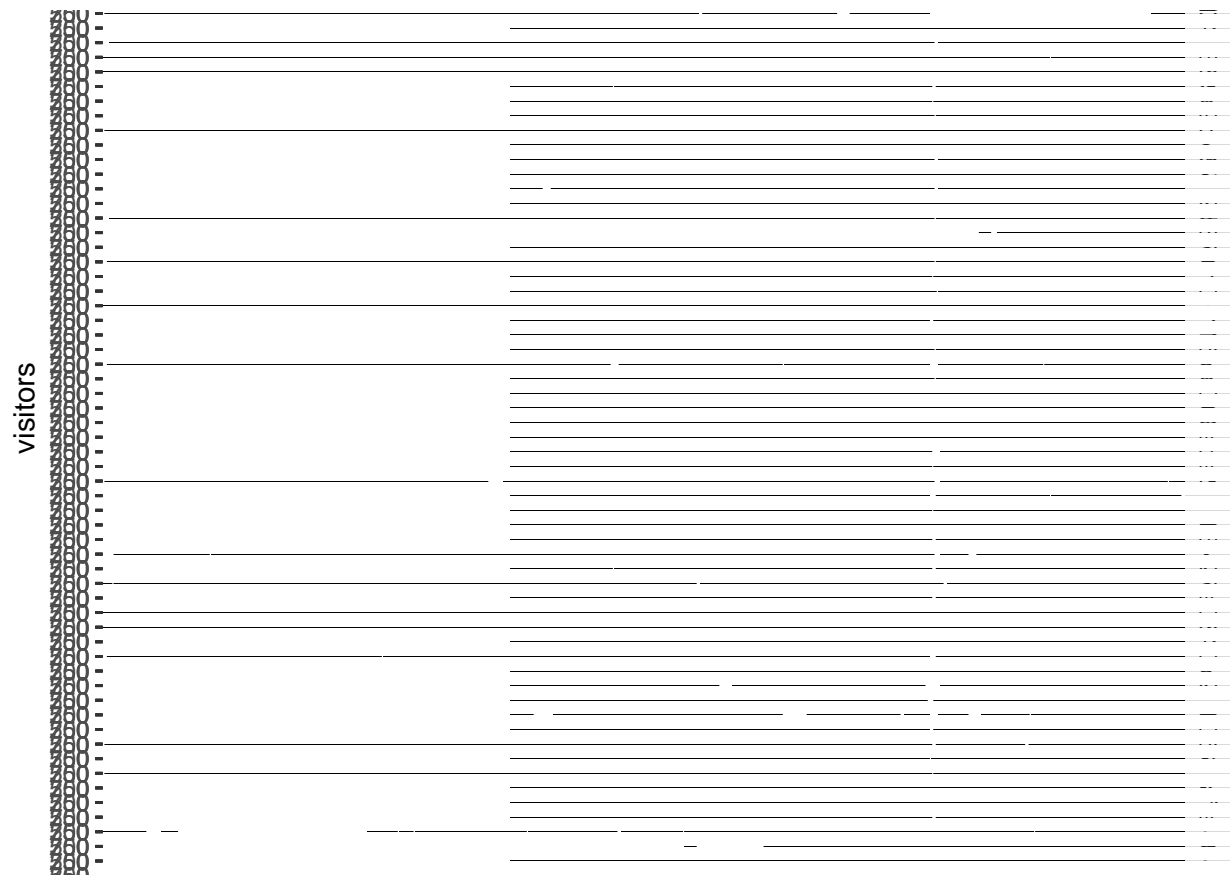
```
head(visit)
```

```
##           air_store_id visit_date visitors
## 1 air_ba937bf13d40fb24 2016-01-13        25
## 2 air_ba937bf13d40fb24 2016-01-14        32
## 3 air_ba937bf13d40fb24 2016-01-15        29
## 4 air_ba937bf13d40fb24 2016-01-16        22
## 5 air_ba937bf13d40fb24 2016-01-18         6
## 6 air_ba937bf13d40fb24 2016-01-19         9
```

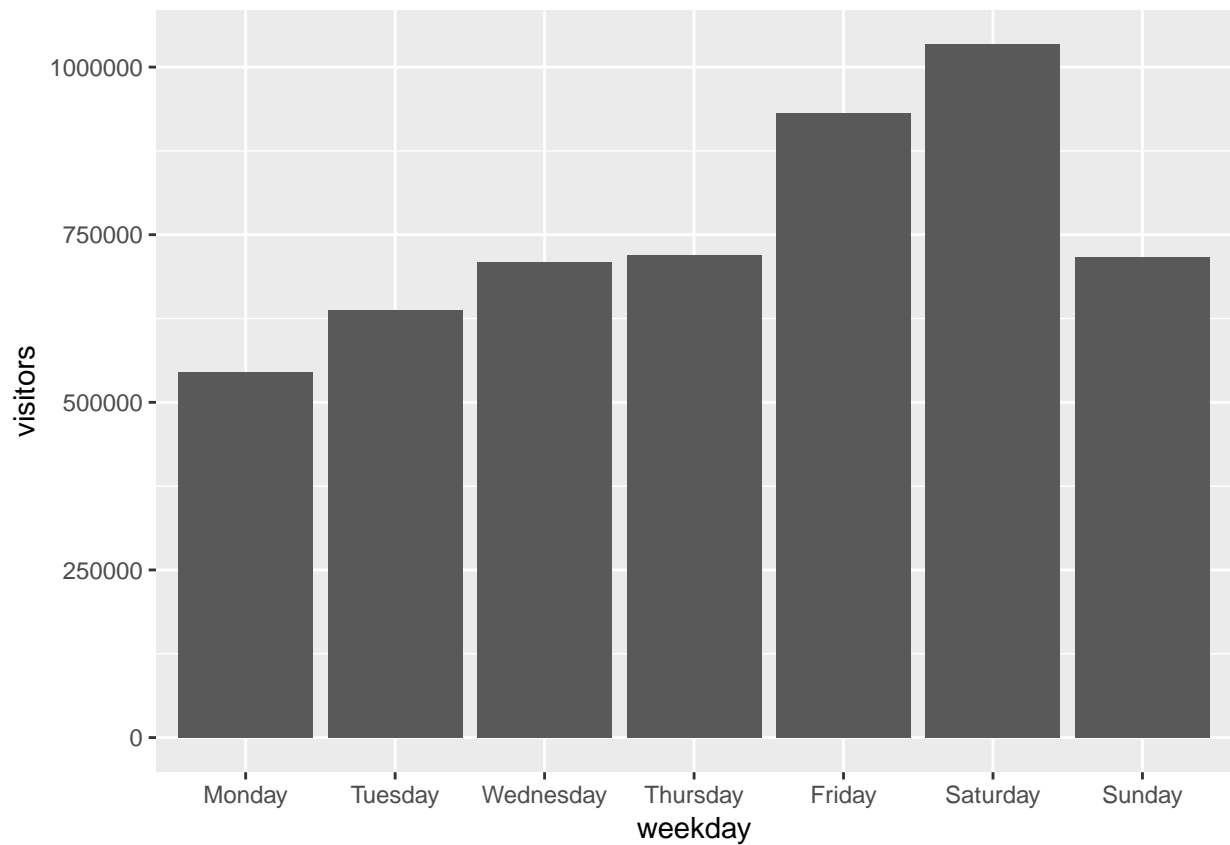
```
ggplot(conc, aes(conc$visit_date, conc$reserve_visitors)) + geom_point(aes(colour= factor(visit_date_ho.
```



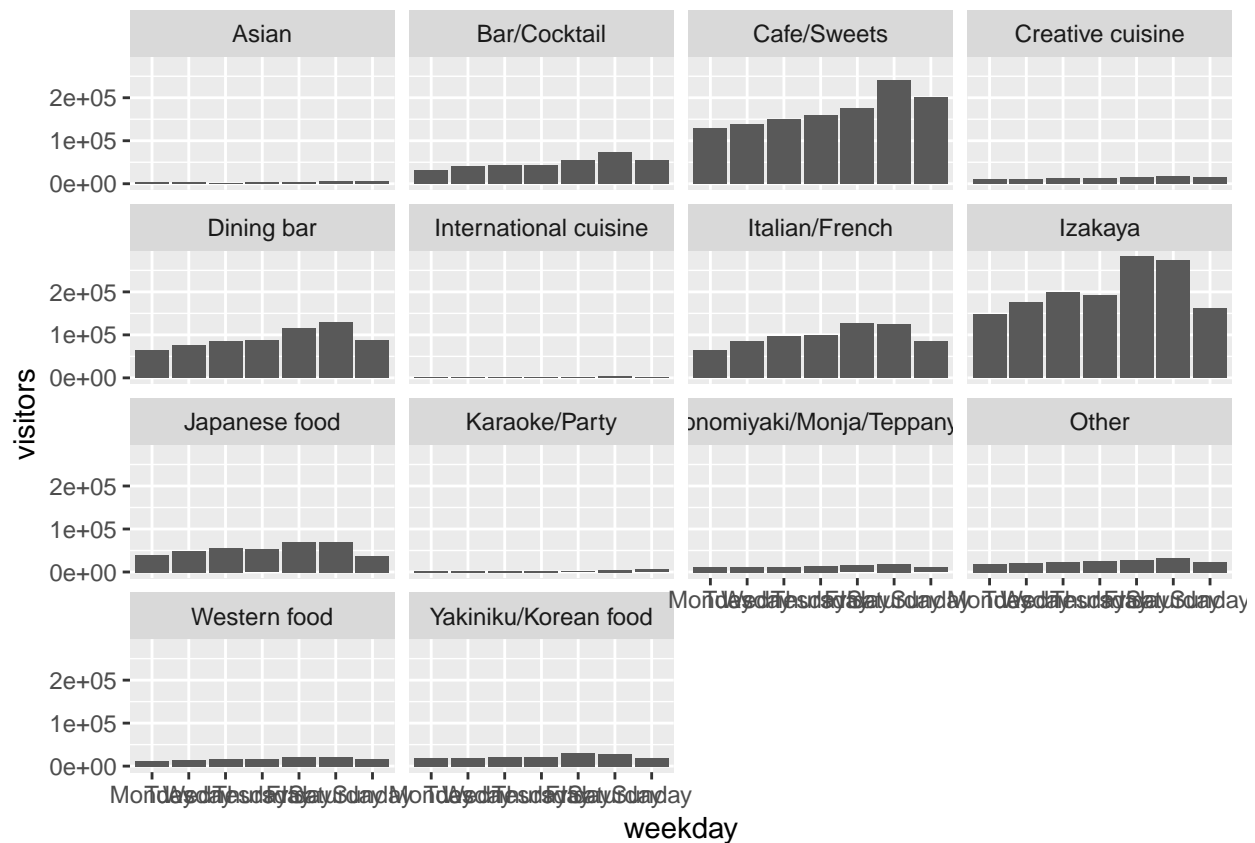
```
ggplot(visit, aes(visit_date, visitors)) + geom_point() + facet_grid(air_store_id ~.)
```



```
visit_with_weekday$weekday <- factor(visit_with_weekday$weekday, levels = c("Monday", "Tuesday", "Wednesday", "Thursday", "Friday", "Saturday", "Sunday"))
ggplot(visit_with_weekday, aes(weekday, visitors)) + geom_bar(stat="identity")
```



```
visit_with_info$weekday <- factor(visit_with_info$weekday, levels = c("Monday", "Tuesday", "Wednesday",  
ggplot(visit_with_info, aes(weekday, visitors)) + geom_bar(stat="identity") + facet_wrap(~air_genre_name
```

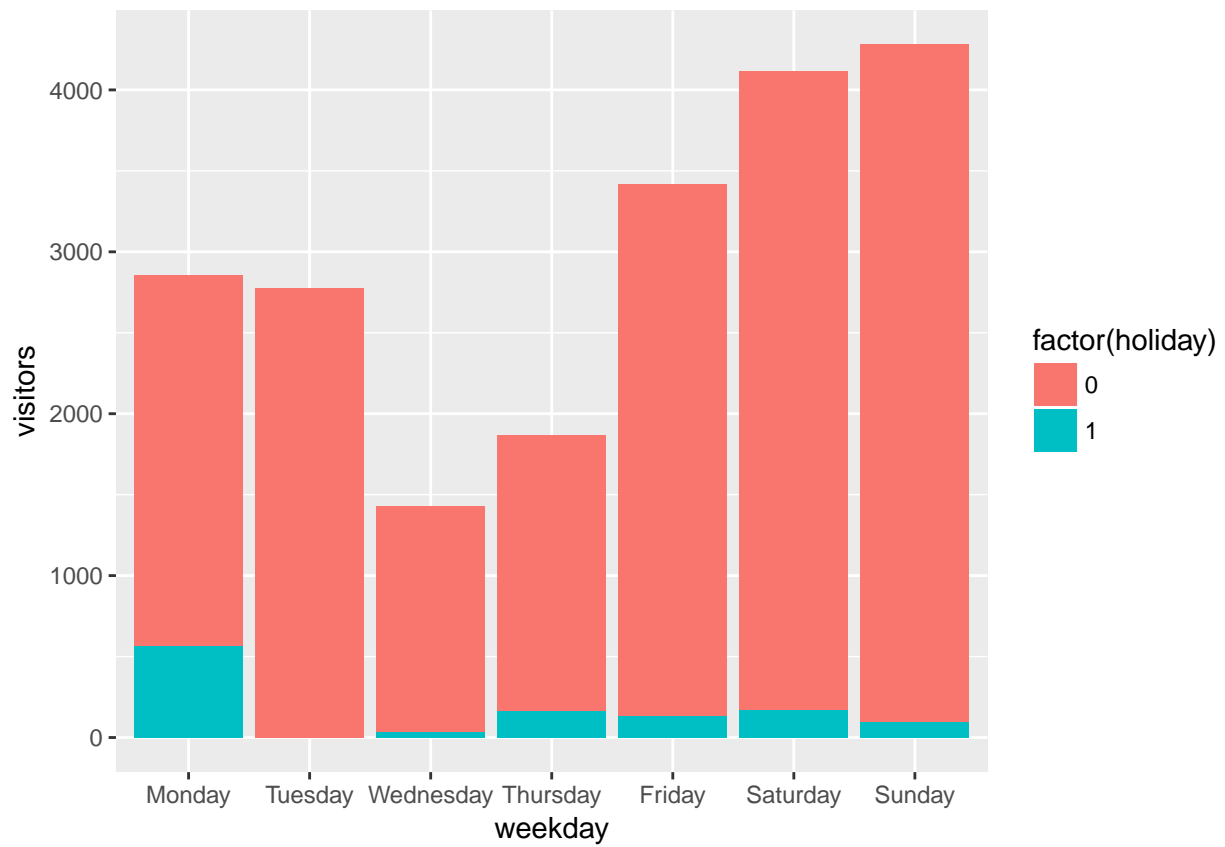


```
summary(visit_with_info$air_genre_name)
```

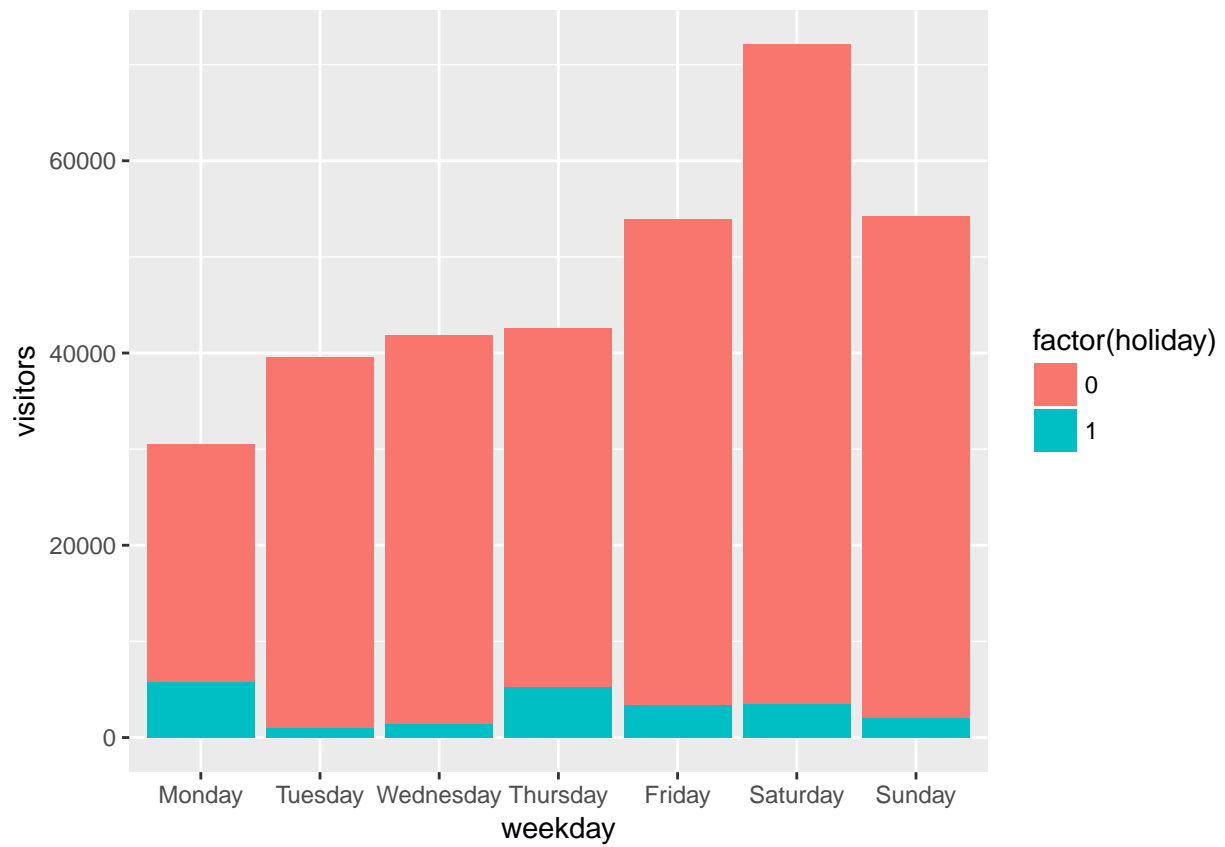
```
##          Asian          Bar/Cocktail
##          535          25135
##      Cafe/Sweets      Creative cuisine
##      52764          3868
##      Dining bar      International cuisine
##      34192          372
##      Italian/French      Izakaya
##      30011          62052
##      Japanese food      Karaoke/Party
##      18789          516
## Okonomiyaki/Monja/Teppanyaki      Other
##      3706          8246
##      Western food      Yakiniiku/Korean food
##      4897          7025
```

Let's take a closer look at each individually

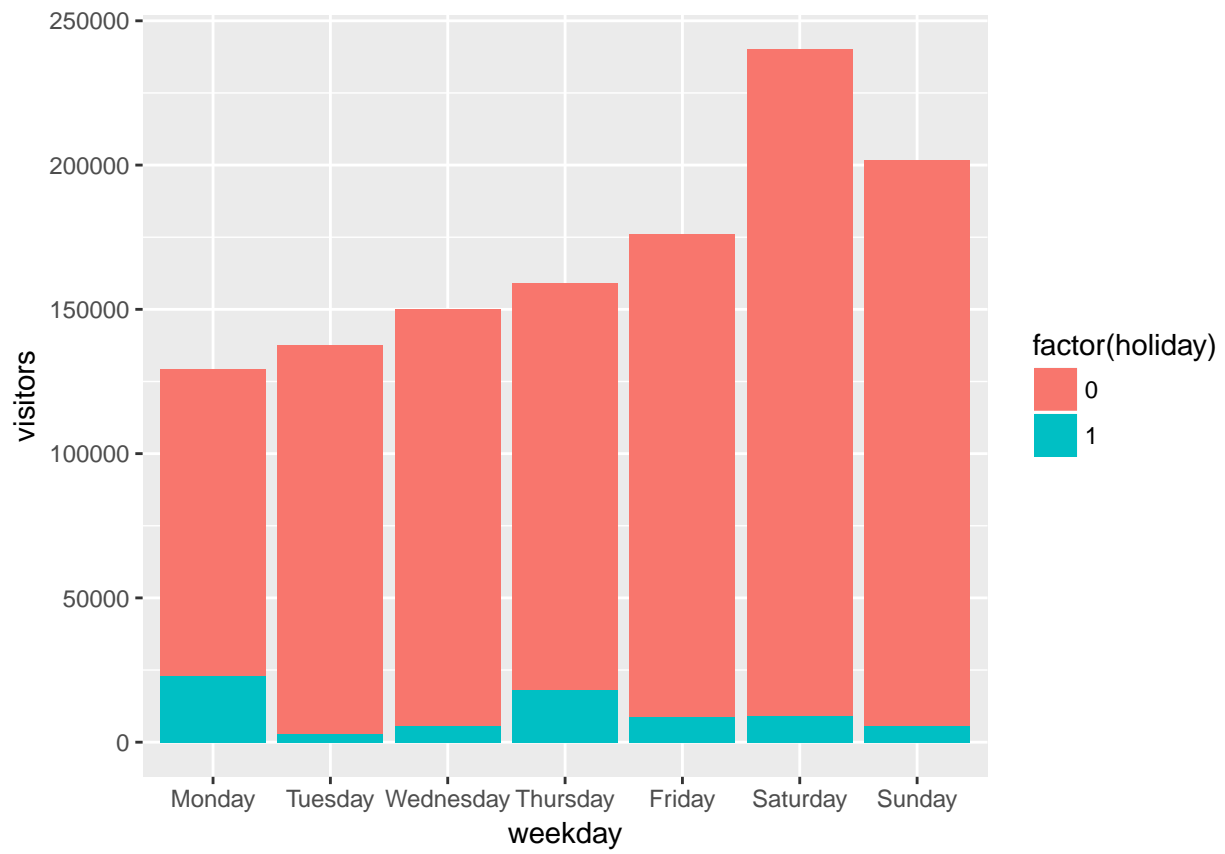
```
ggplot(visit_with_info[visit_with_info$air_genre_name == "Asian",], aes(weekday, visitors, fill=factor(
```



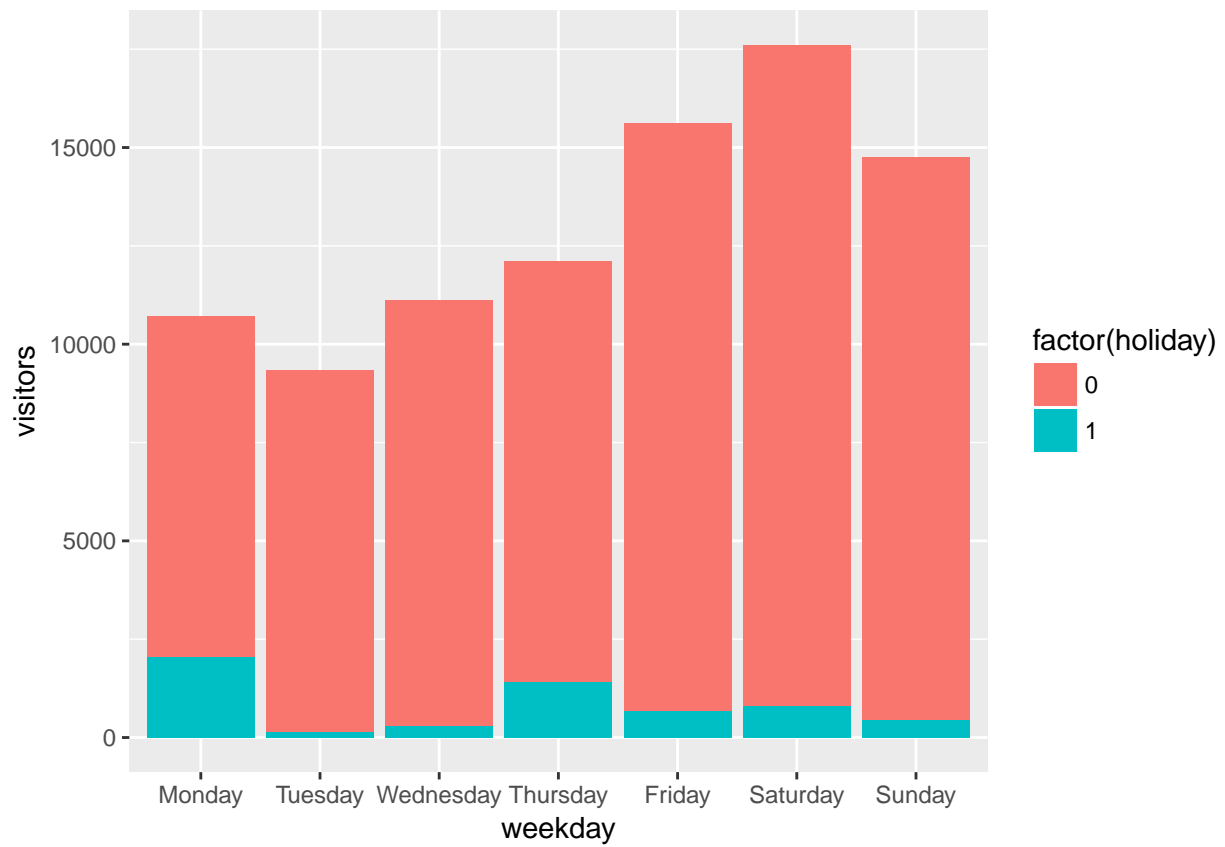
```
ggplot(visit_with_info[visit_with_info$air_genre_name == "Bar/Cocktail",], aes(weekday, visitors, fill=factor(holiday)))
```



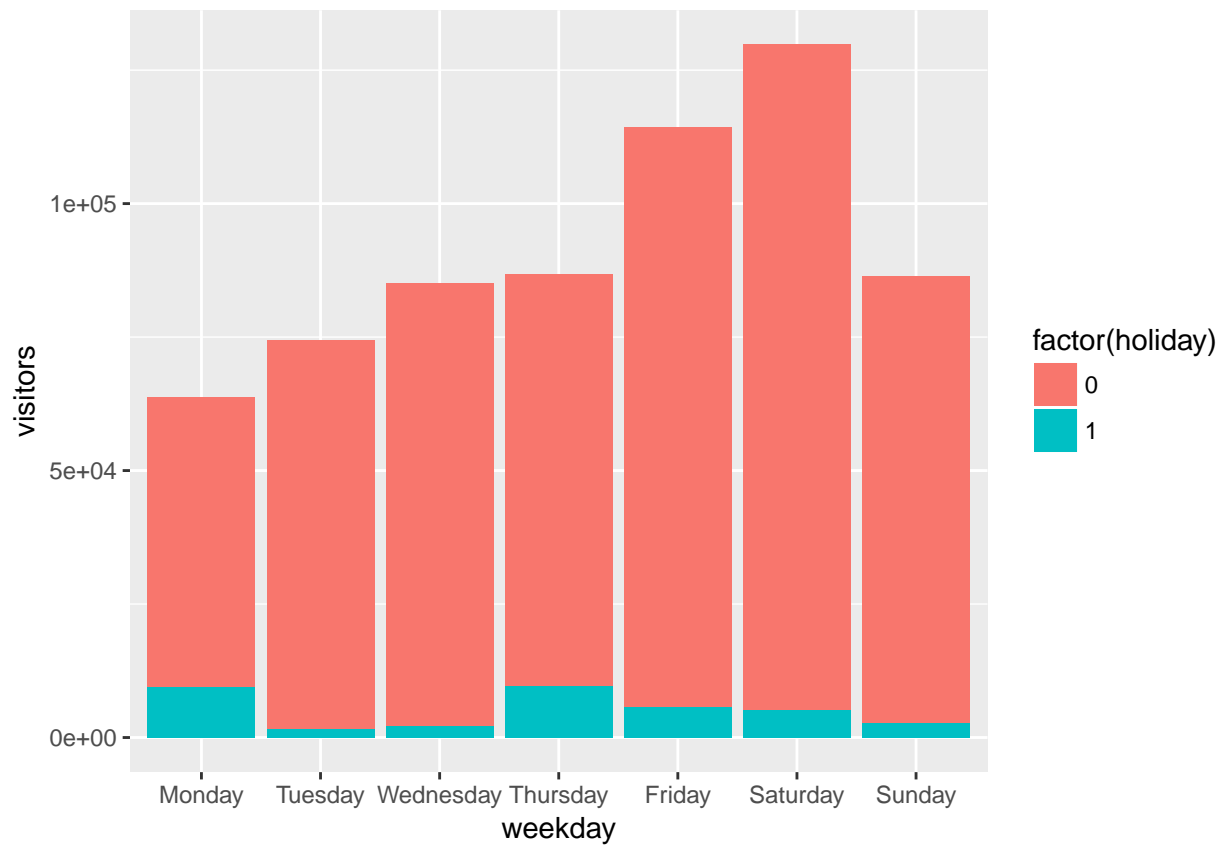
```
ggplot(visit_with_info[visit_with_info$air_genre_name == "Cafe/Sweets",], aes(weekday, visitors, fill=factor(holiday)))
```



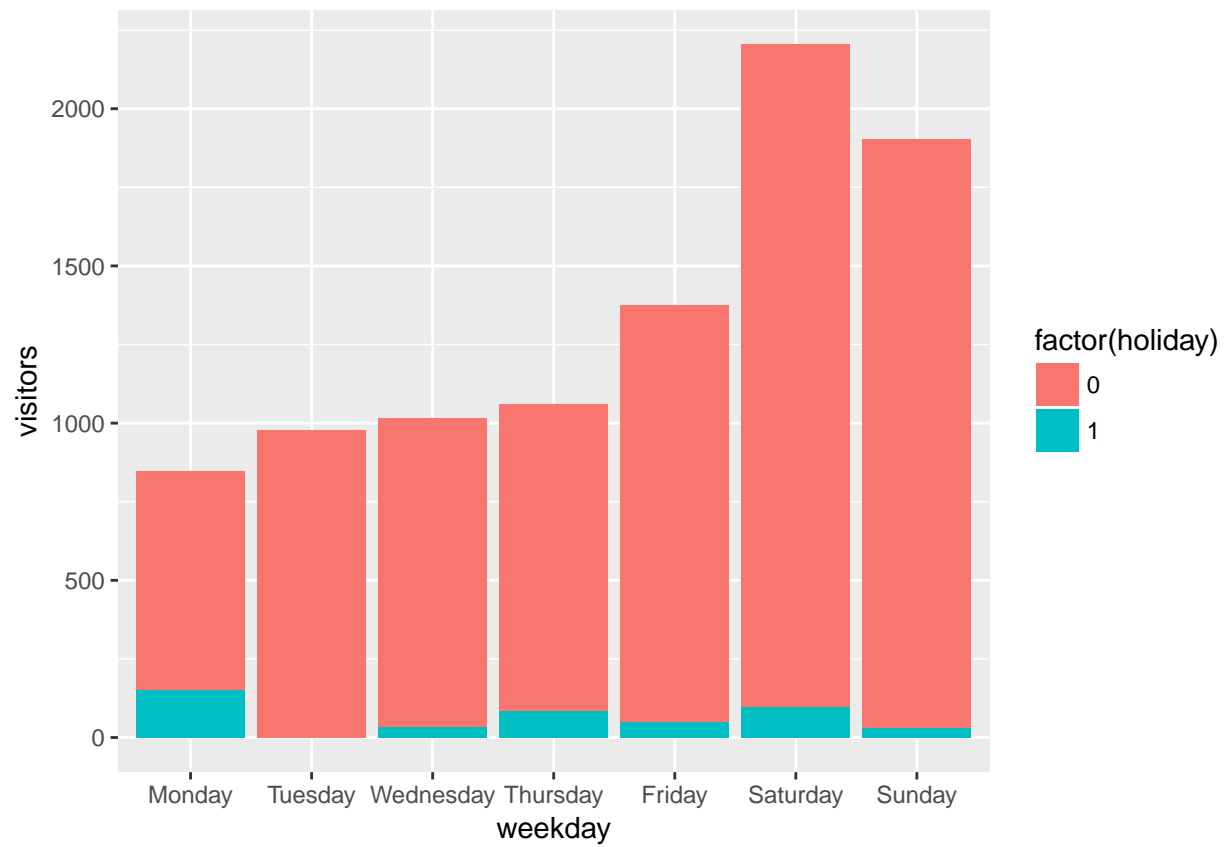
```
ggplot(visit_with_info[visit_with_info$air_genre_name == "Creative cuisine",], aes(weekday, visitors, factor(holiday)))
```

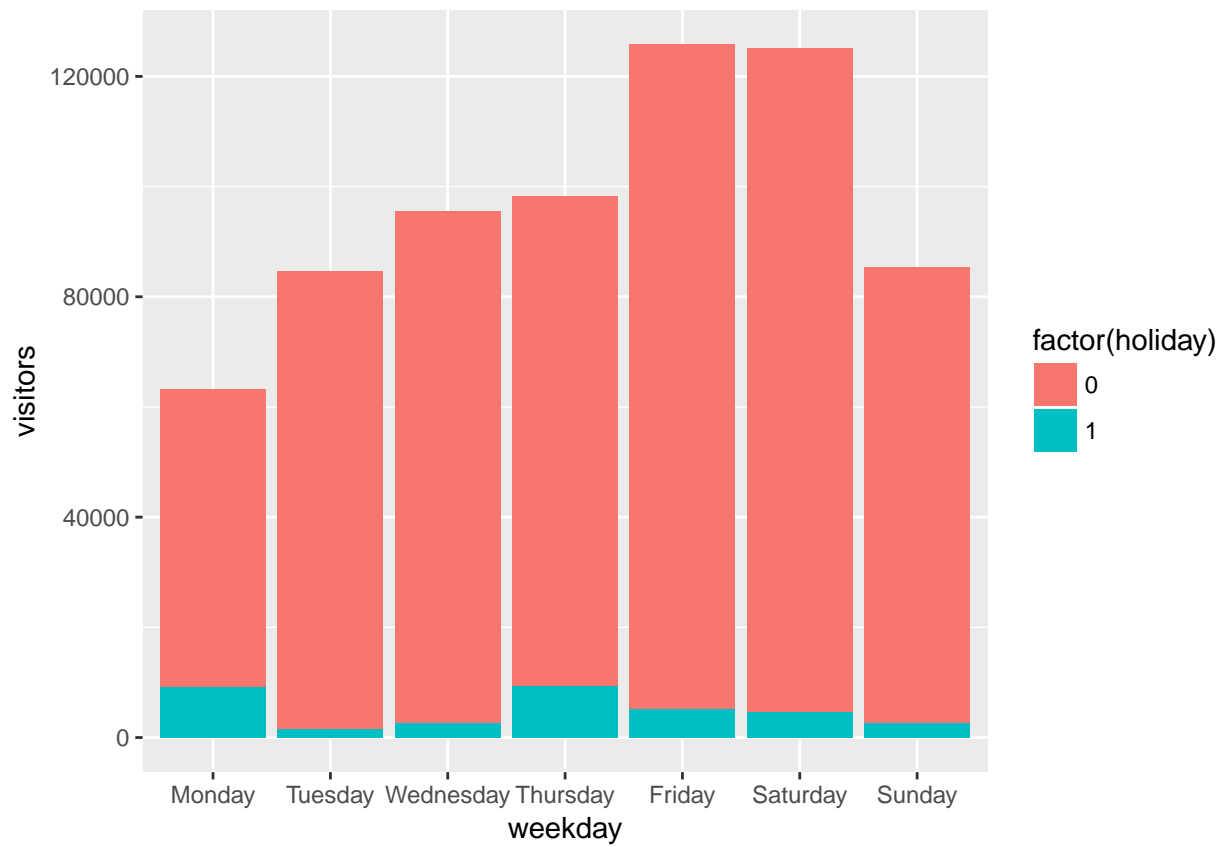
```
ggplot(visit_with_info[visit_with_info$air_genre_name == "Dining bar",], aes(weekday, visitors, fill=factor(holiday)))
```



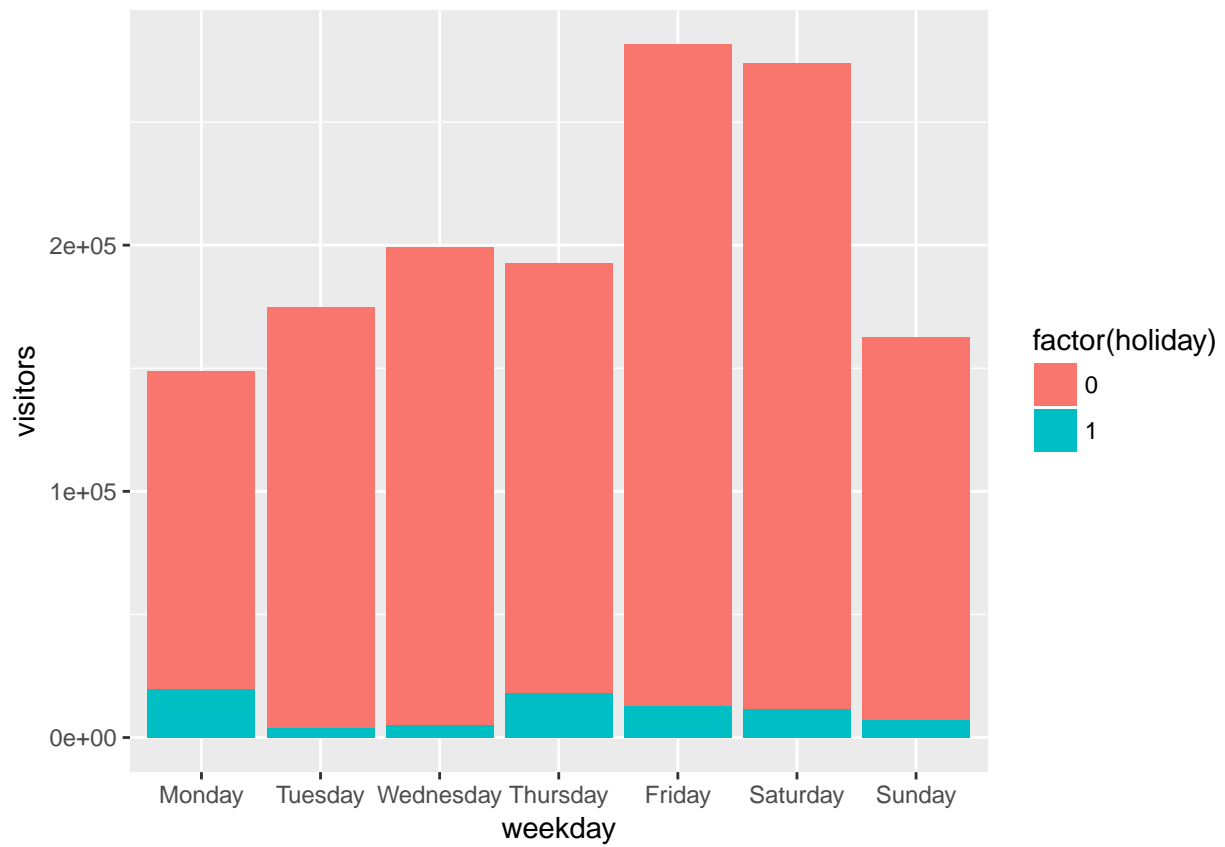
```
ggplot(visit_with_info[visit_with_info$air_genre_name == "International cuisine",], aes(weekday, visitors))
```



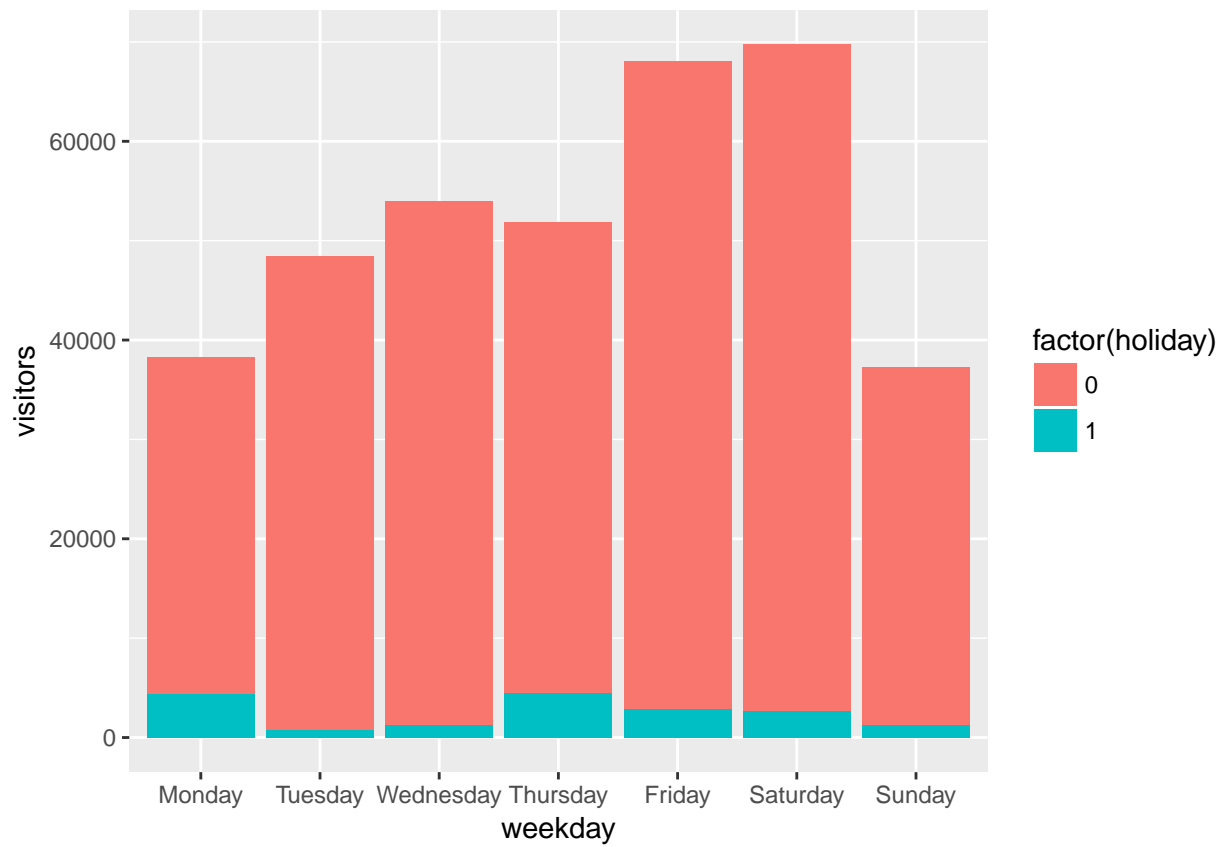
```
ggplot(visit_with_info[visit_with_info$air_genre_name == "Italian/French",], aes(weekday, visitors, fill = factor(holiday)))
```



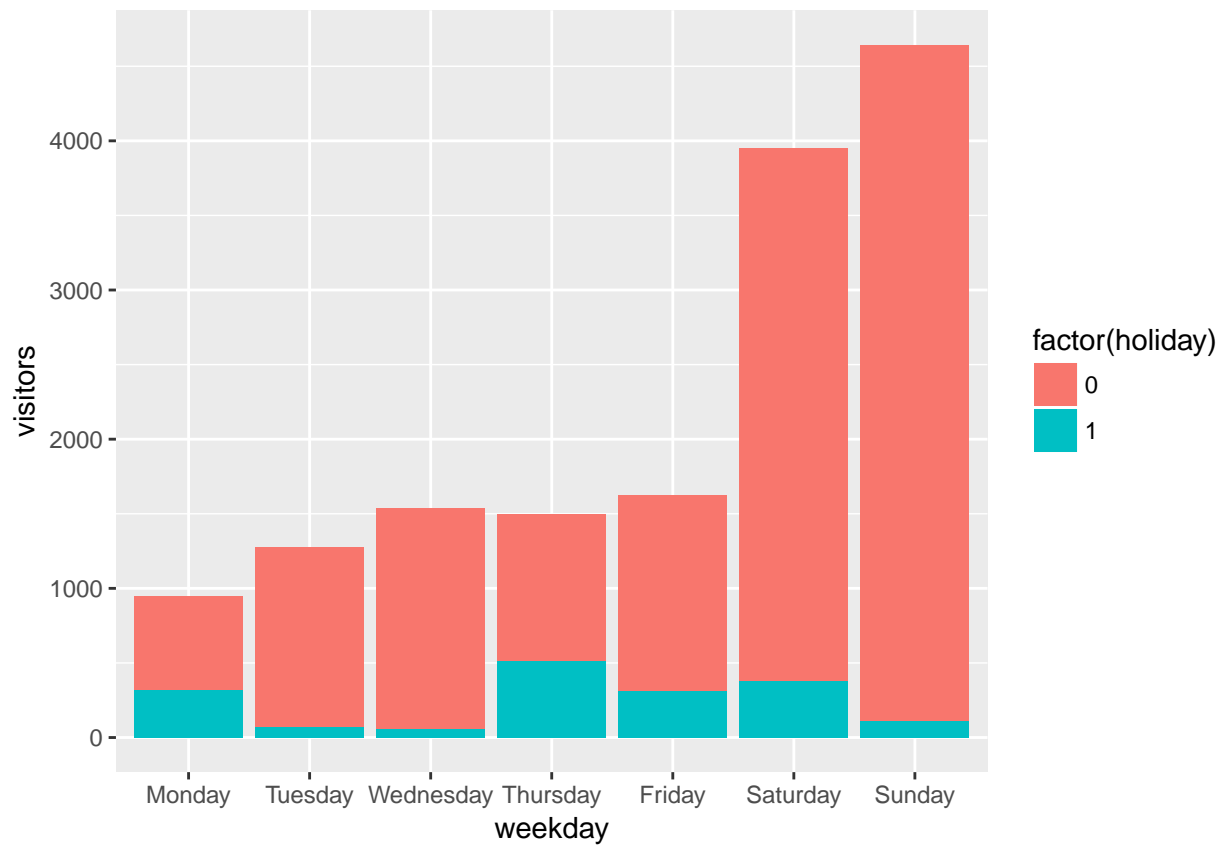
```
ggplot(visit_with_info[visit_with_info$air_genre_name == "Izakaya",], aes(weekday, visitors, fill=factor(holiday)))
```



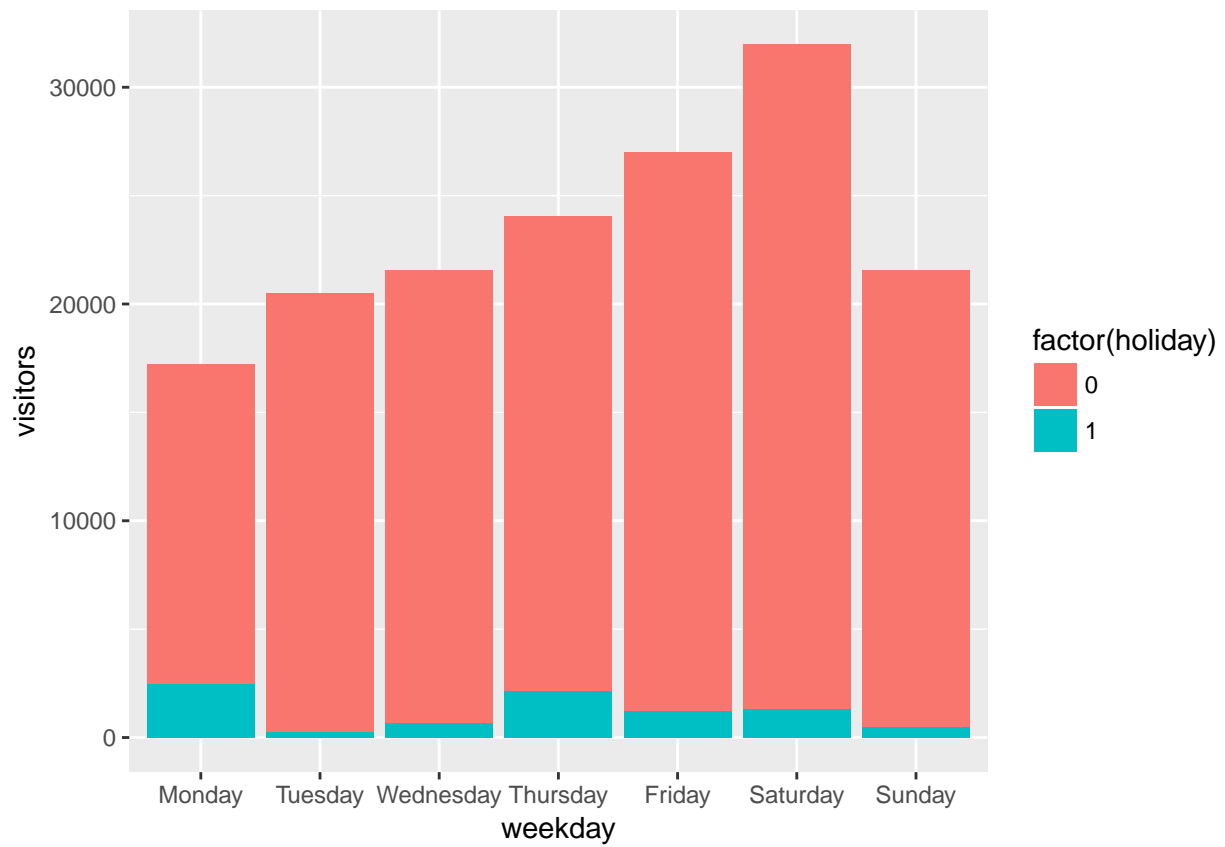
```
ggplot(visit_with_info[visit_with_info$air_genre_name == "Japanese food",], aes(weekday, visitors, fill = factor(holiday)))
```



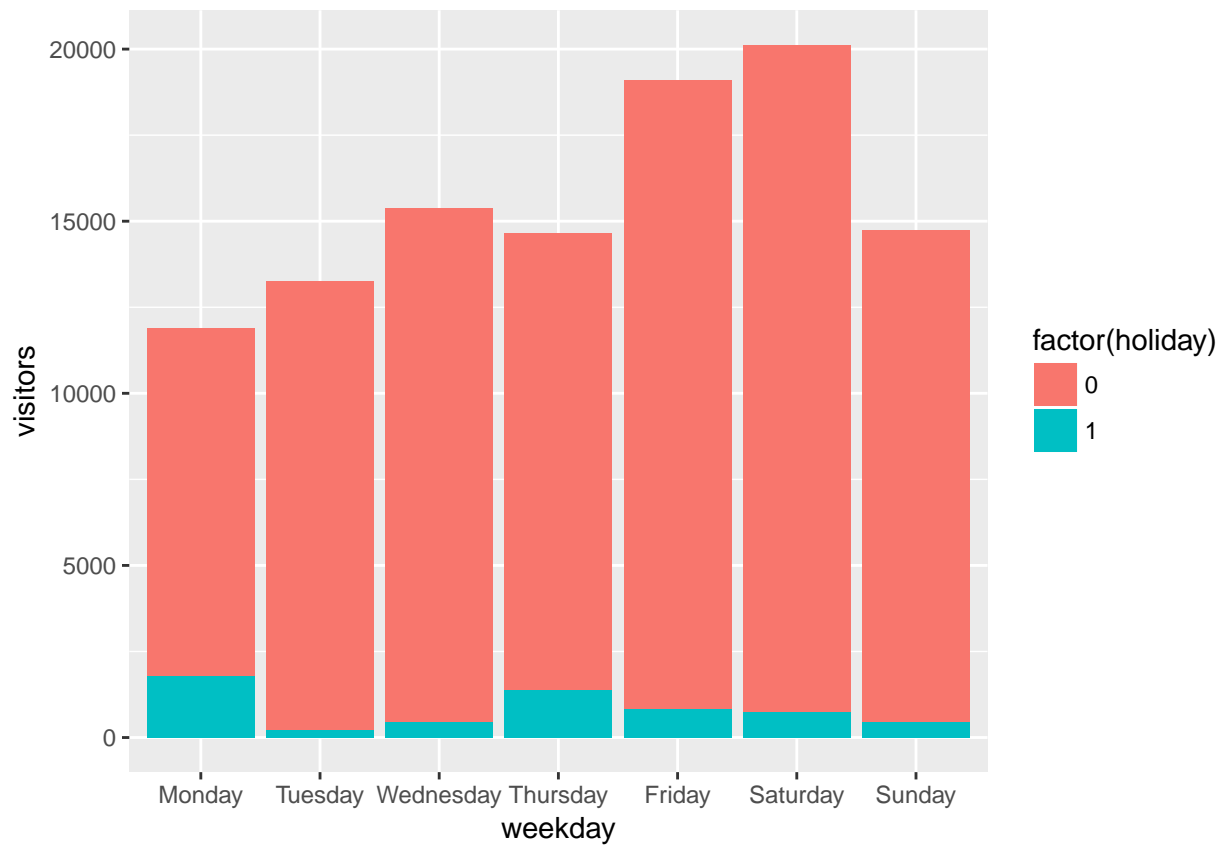
```
ggplot(visit_with_info[visit_with_info$air_genre_name == "Karaoke/Party",], aes(weekday, visitors, fill = factor(holiday)))
```



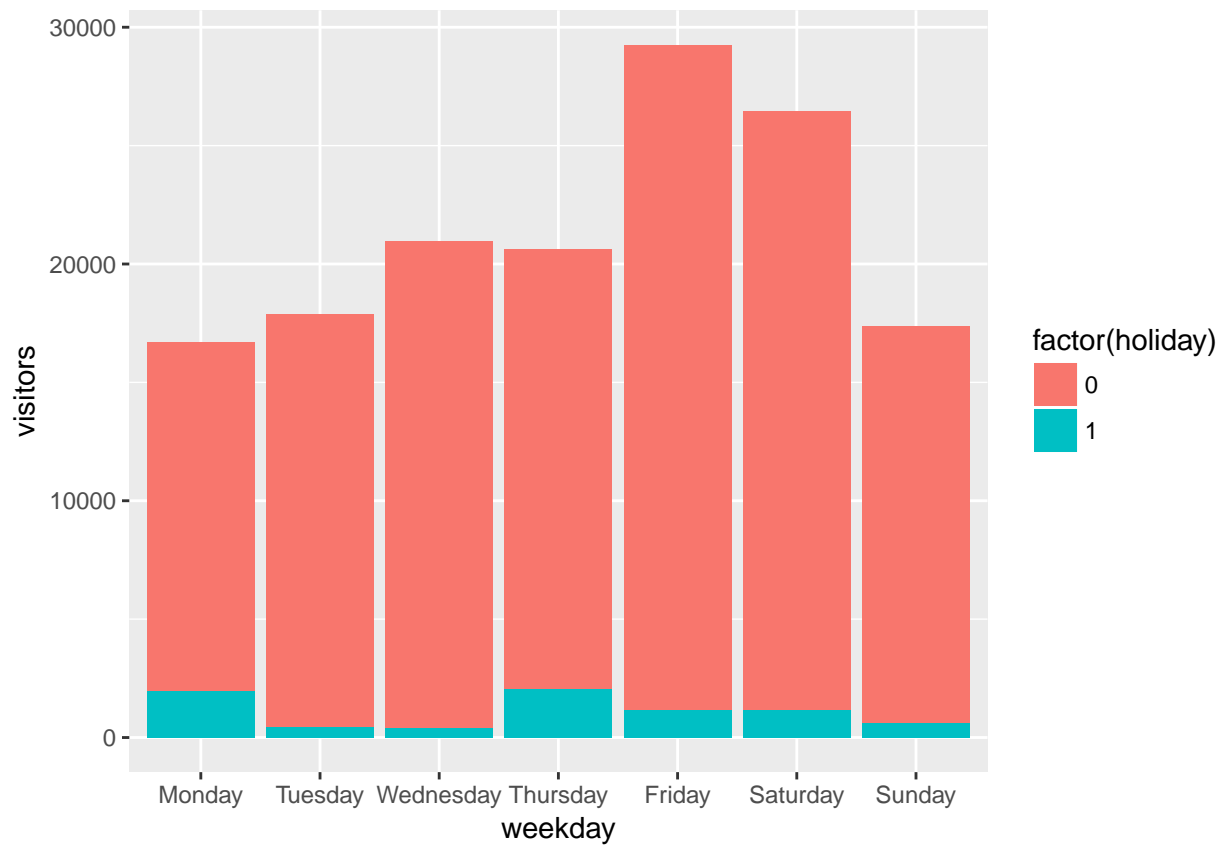
```
ggplot(visit_with_info[visit_with_info$air_genre_name == "Other",], aes(weekday, visitors, fill=factor(holiday)))
```



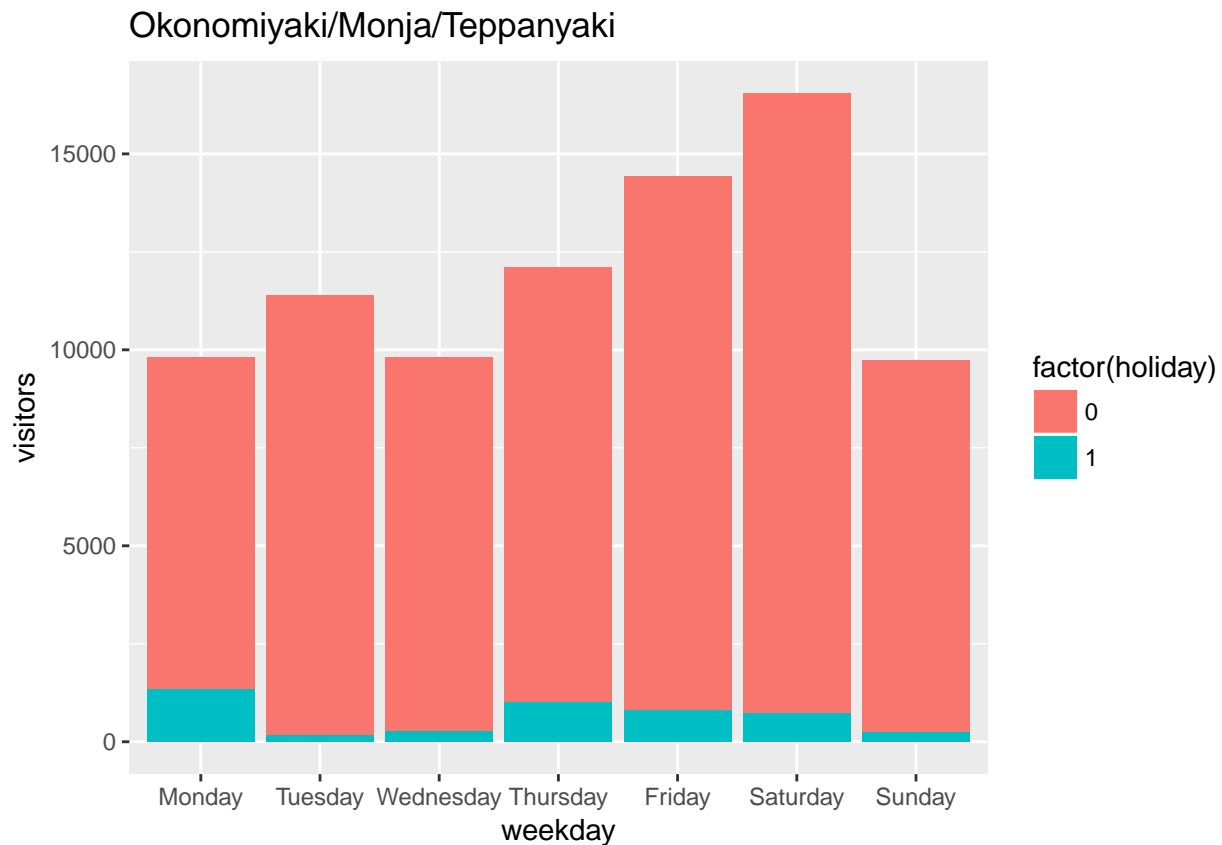
```
ggplot(visit_with_info[visit_with_info$air_genre_name == "Western food",], aes(weekday, visitors, fill=
```

```
ggplot(visit_with_info[visit_with_info$air_genre_name == "Yakiniku/Korean food",], aes(weekday, visitors))
```



```
ggplot(visit_with_info[visit_with_info$air_genre_name == "Okonomiyaki/Monja/Teppanyaki",], aes(weekday,
```



Now let's look at the different areas and whether they show different patterns for different day

```
visit_with_info$weekday <- factor(visit_with_info$weekday, levels = c("Monday", "Tuesday", "Wednesday",
plot_this <- function(area_name) {
  g <- ggplot(visit_with_info[visit_with_info$air_area_name == area_name,], aes(weekday, visitors, fill=
  return(g)
}
u <- unique(visit_with_info$air_area_name)
#plot_this(u[1])

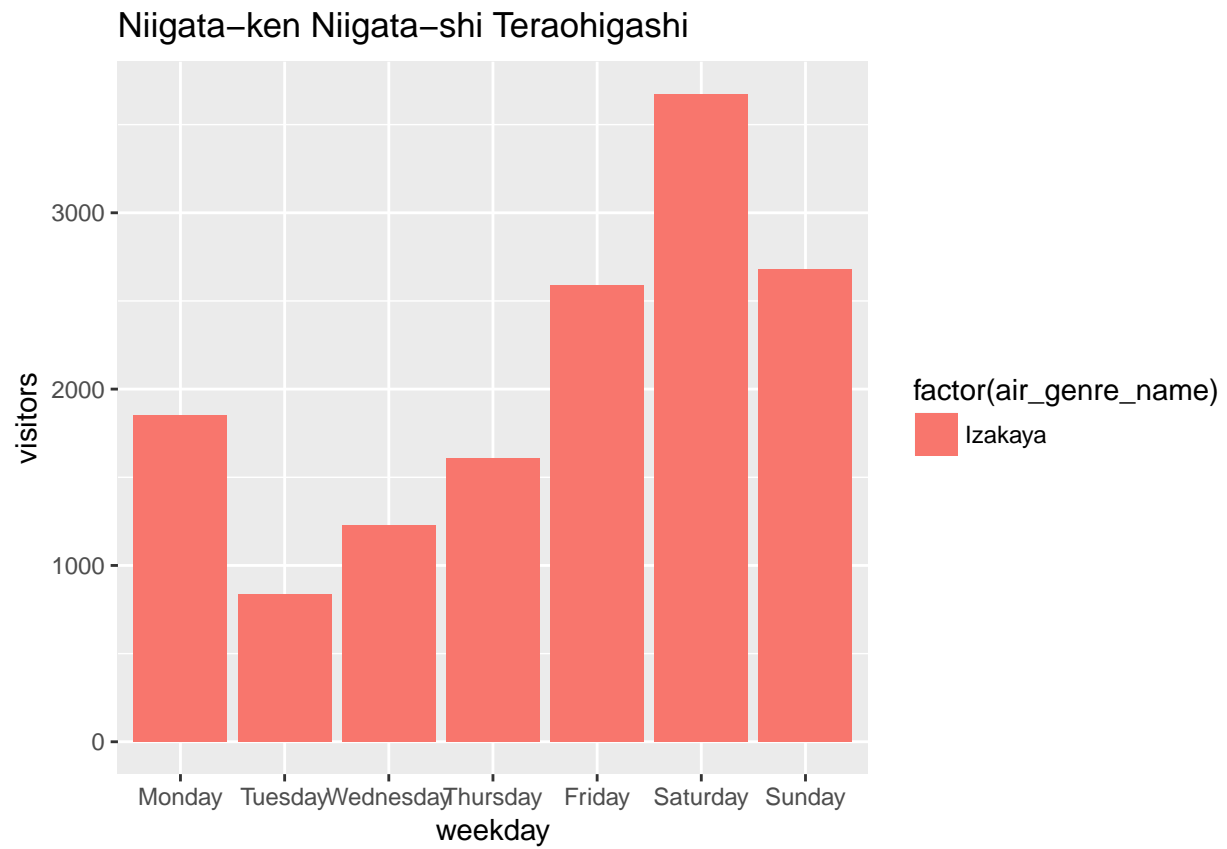
plot_this('T??ky??-to K??t??-ku Tomioka')
```

T??ky??-to K??t??-ku Tomioka

visitors

weekday

```
plot_this('Niigata-ken Niigata-shi Teraohigashi')
```



```
plot_this('Hyogo-ken Kakogawa-shi Kakogawach?? Kitazaike')
```

Hy??go-ken Kakogawa-shi Kakogawach?? Kitazaike

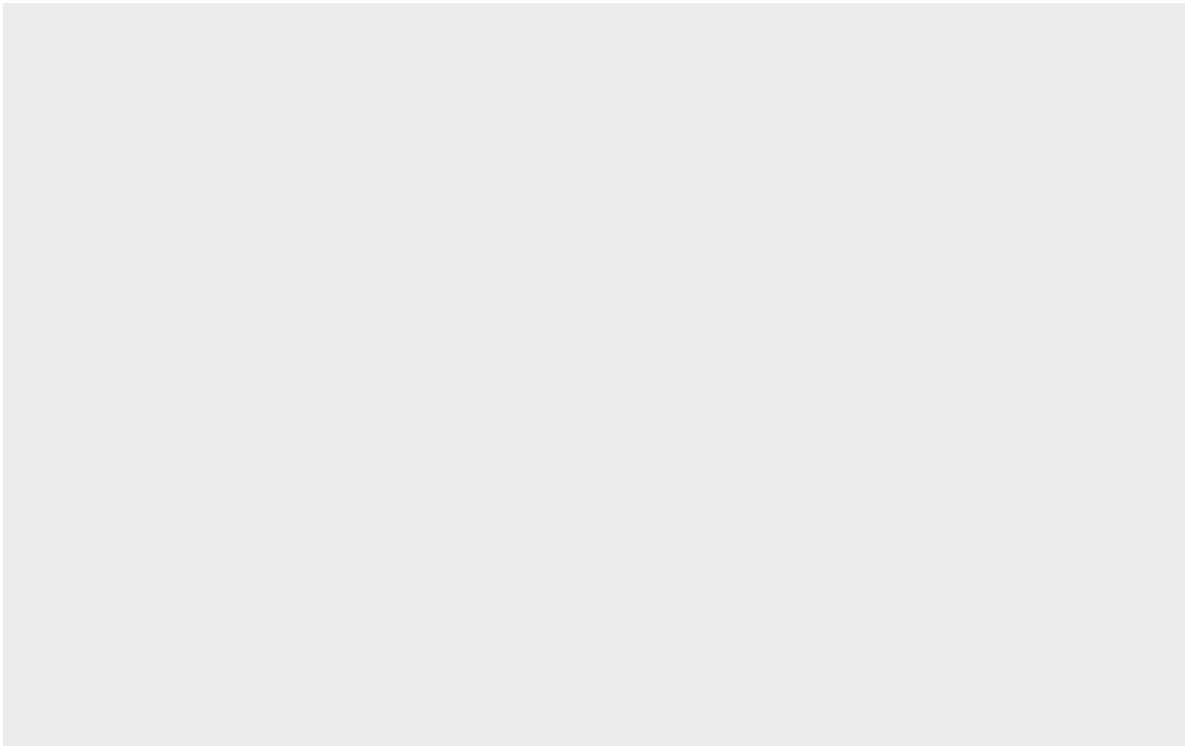
visitors

weekday

```
plot_this('Hy??go-ken Amagasaki-shi Higashinamatsuch??')
```

Hyogo-ken Amagasaki-shi Higashinamatsuchi

visitors

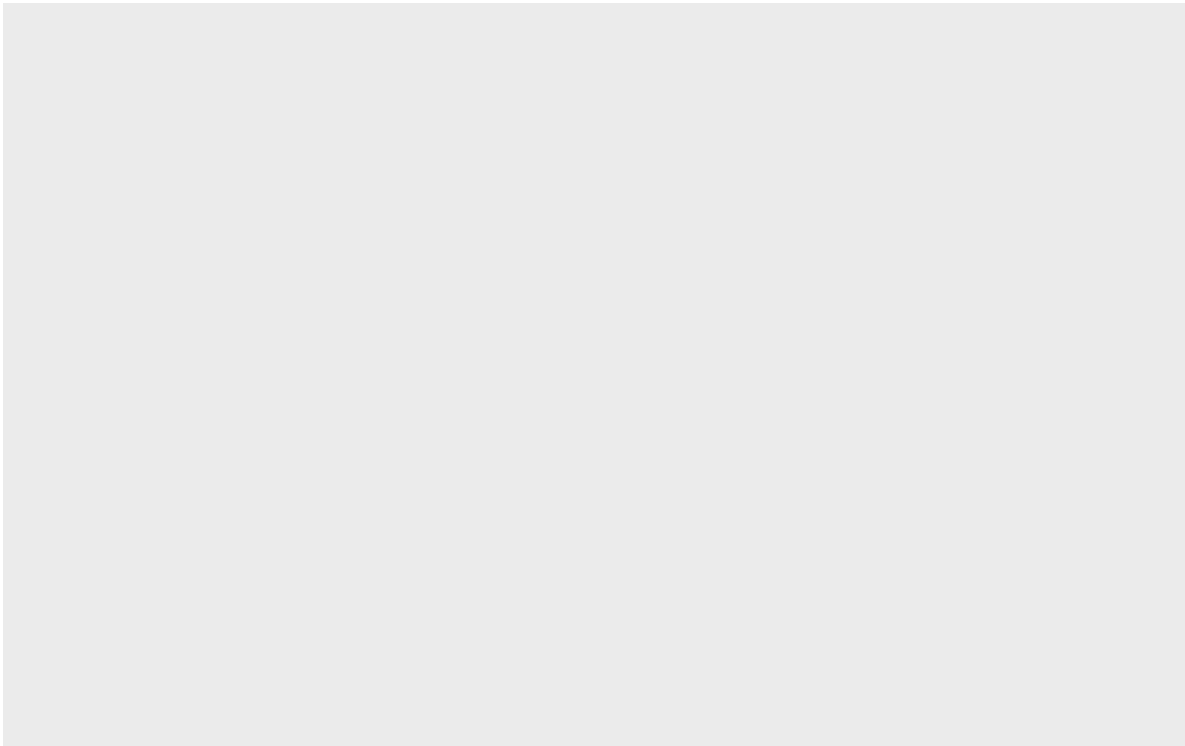


weekday

```
plot_this('Hyogo-ken Kobe-shi Sumiyoshi Higashimachi')
```

Hyogo-ken Kobe-shi Sumiyoshi Higashimachi

visitors

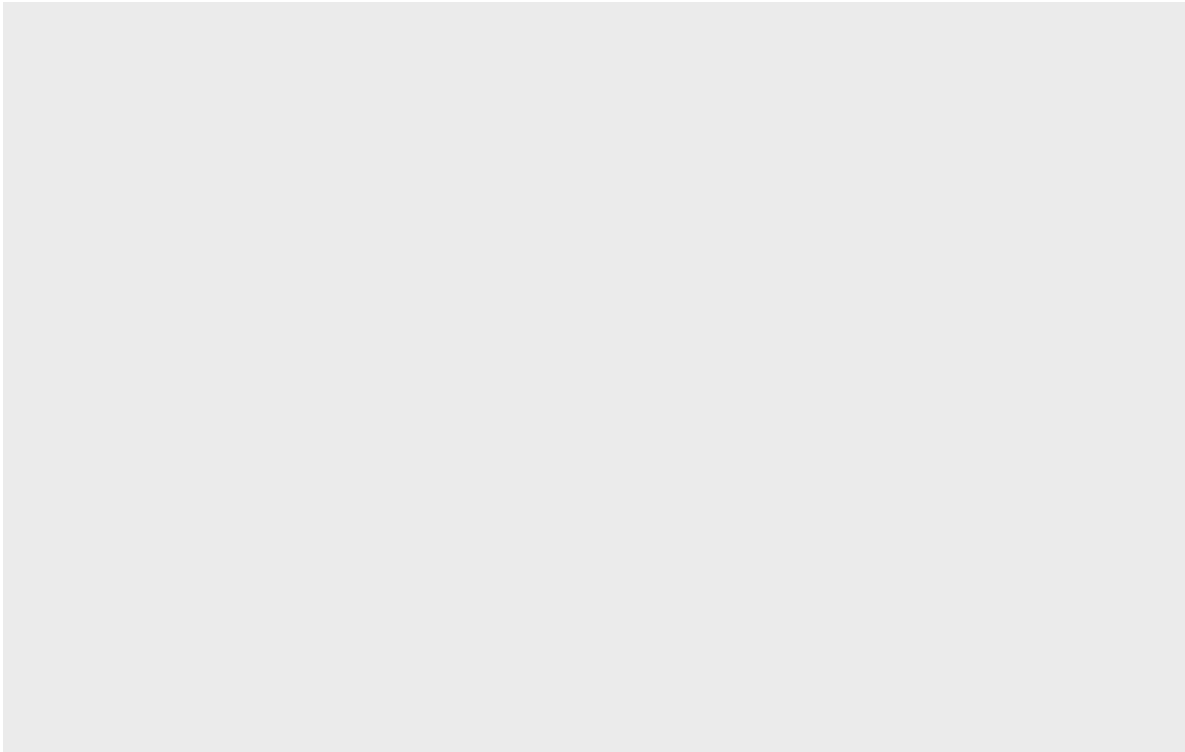


weekday

```
plot_this('saka-fu Suita-shi Izumich')
```


??saka-fu Suita-shi Izumich??

visitors



weekday

```
plot_this('T??ky??-to Setagaya-ku Okusawa')
```

T??ky??-to Setagaya-ku Okusawa

visitors

weekday

```
plot_this('T??ky??-to Tait??-ku Higashiueno')
```

Tokyo-to Taitoh-ku Higashiueno

visitors

weekday

```
plot_this('Hiroshima-ken Hiroshima-shi Nagarekawachoh')
```

Hiroshima-ken Hiroshima-shi Nagarekawach??

visitors

weekday

```
plot_this('Hy??go-ken K??be-shi Motomachid??ri')
```

Hyogo-ken Kobe-shi Motomachidori

visitors

weekday

```
plot_this('Hokkaido Sapporo-shi Kotoni 2 J')
```

Hokkaido Sapporo-shi Kotoni 2 J

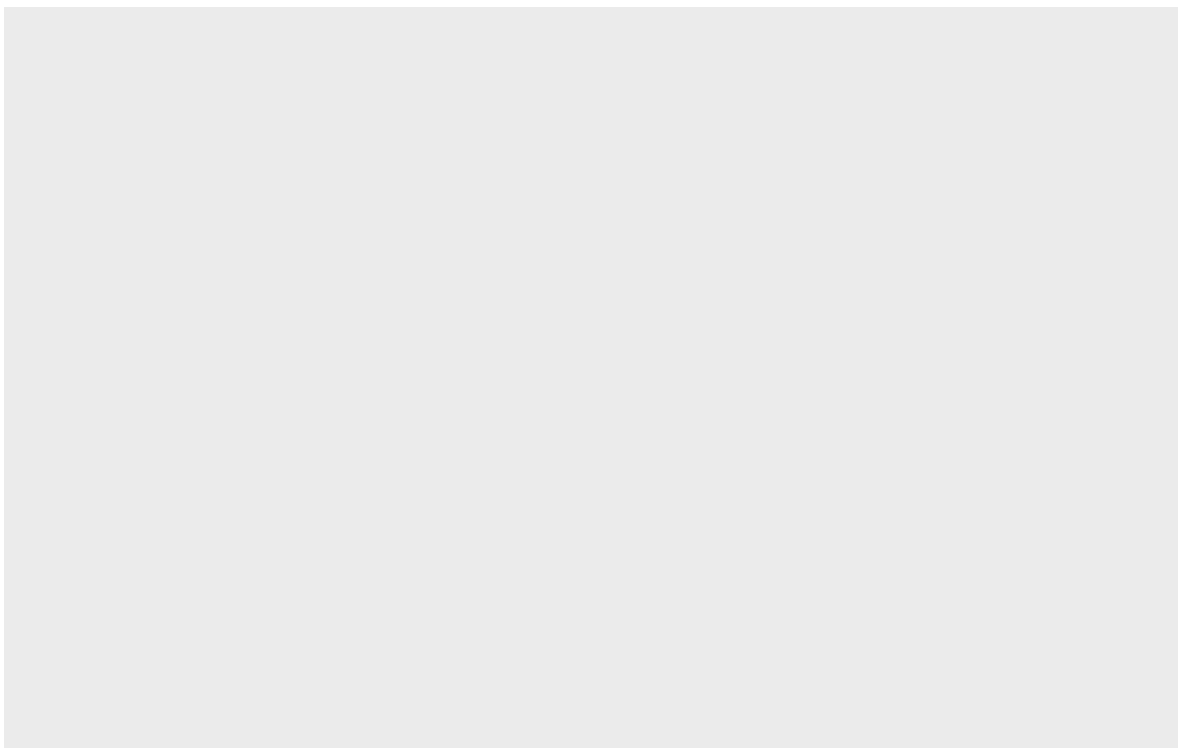
visitors

weekday

```
plot_this('Tokyo-to Shibuya-ku Jingmae')
```

T??ky??-to Shibuya-ku Jing??mae

visitors



weekday

```
plot_this('Shizuoka-ken Shizuoka-shi ??temachi')
```

Shizuoka-ken Shizuoka-shi ??temachi

visitors

weekday

```
plot_this('T??ky??-to Nakano-ku Nakano')
```


T??ky??-to Nakano-ku Nakano

visitors

weekday

```
plot_this('T??ky??-to Shinagawa-ku Hiromachi')
```

Tokyo-to Shinagawa-ku Hiromachi

visitors

weekday

```
plot_this('Hokkaido Asahikawa-shi 6 Judo-ri')
```

Hokkaido Asahikawa-shi 6 Joudori

visitors

weekday

```
plot_this('saka-fu saka-shi Nakanoch')
```

??saka-fu ??saka-shi Nakanoch??

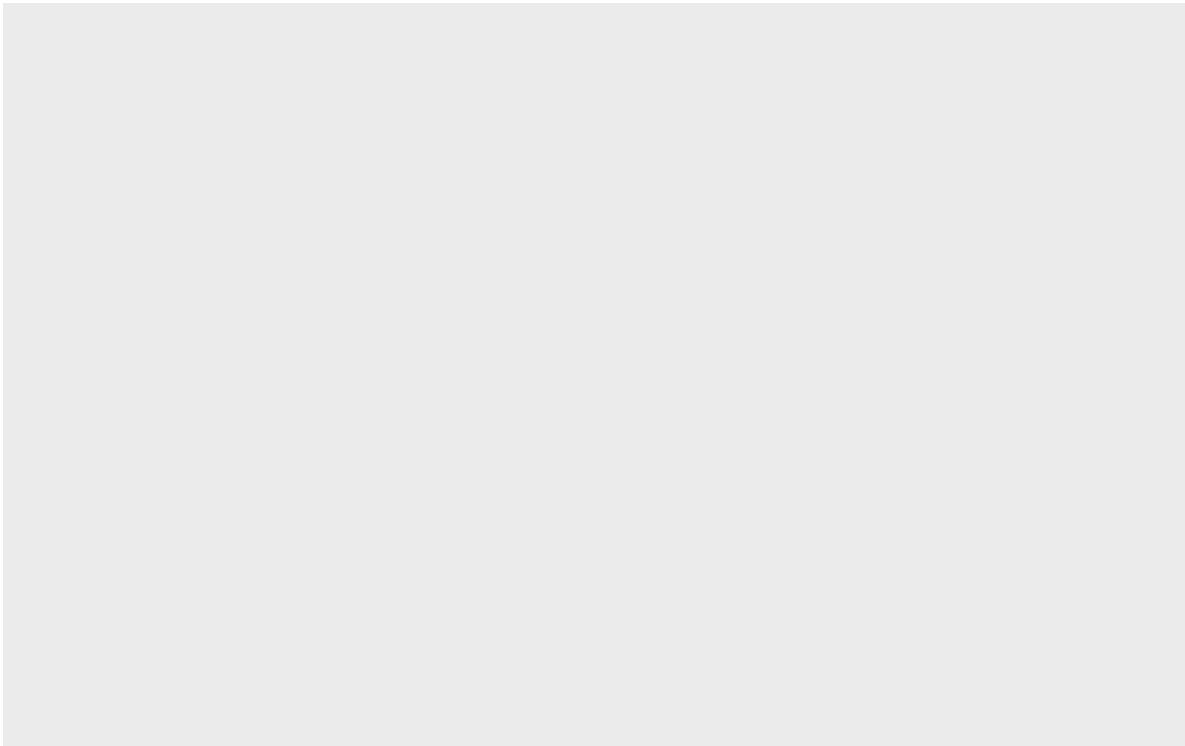
visitors

weekday

```
plot_this('Hy??go-ken Nishinomiya-shi Rokutanjich??')
```

Hyogo-ken Nishinomiya-shi Rokutanjichu

visitors

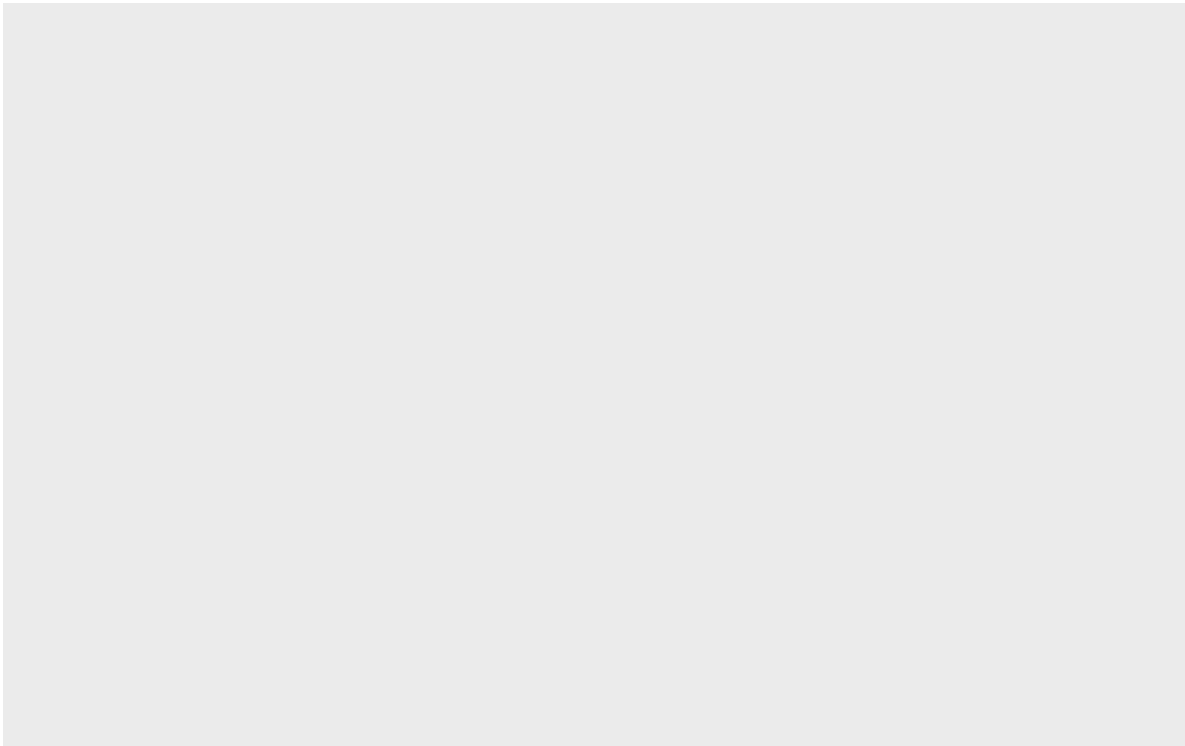


weekday

```
plot_this('Tokyo-to Minato-ku Roppongi')
```

Tokyo-to Minato-ku Roppongi

visitors



weekday

```
plot_this('saka-fu saka-shi hiraki')
```

??saka-fu ??saka-shi ??hiraki

visitors

weekday

```
plot_this('T??ky??-to Tachikawa-shi Izumich??')
```

Tokyo-to Tachikawa-shi Izumichu

visitors

weekday

```
plot_this('Hokkaido Sapporo-shi Minami 3 Junishi')
```


Hokkaido Sapporo-shi Minami 3 Jishi

visitors

weekday

```
plot_this('Tokyo-to Meguro-ku Takaban')
```

T??ky??-to Meguro-ku Takaban

visitors

weekday

```
plot_this('T??ky??-to Meguro-ku Kamimeguro')
```

T??ky??-to Meguro-ku Kamimeguro

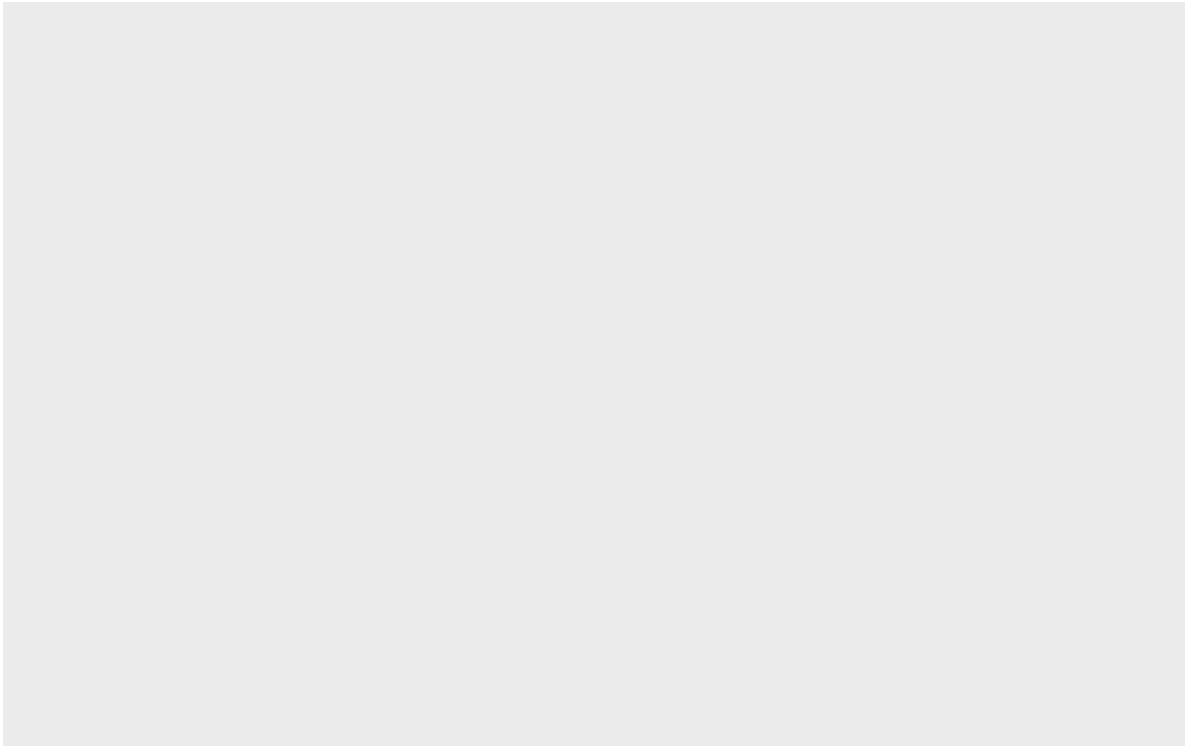
visitors

weekday

```
plot_this('T??ky??-to Shinjuku-ku Nishishinjuku')
```

T??ky??-to Shinjuku-ku Nishishinjuku

visitors

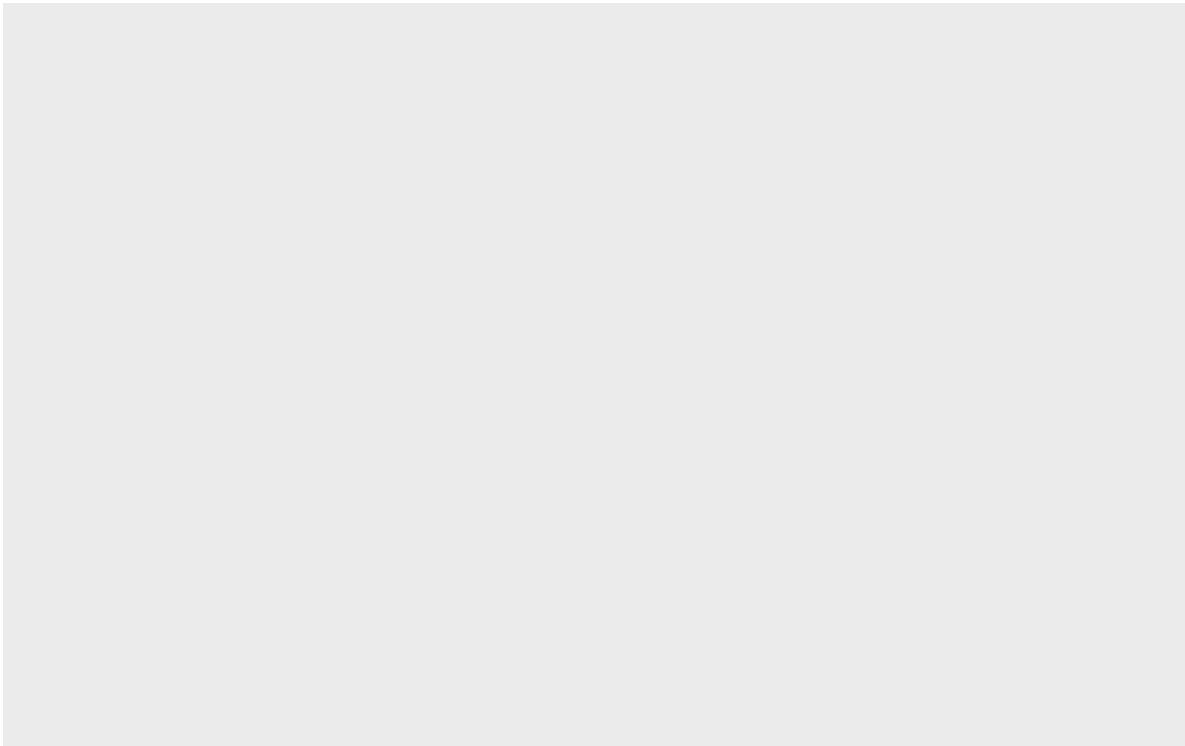


weekday

```
plot_this('T??ky??-to Bunky??-ku Kasuga')
```

T??ky??-to Bunky??-ku Kasuga

visitors



weekday

```
plot_this('T??ky??-to Tait??-ku Kuramae')
```

Tokyo-to Taito-ku Kuramae

visitors

weekday

```
plot_this('Hokkaido Sapporo-shi Kita 24 Jounishi')
```

Hokkaido Sapporo-shi Kita 24 Jishi

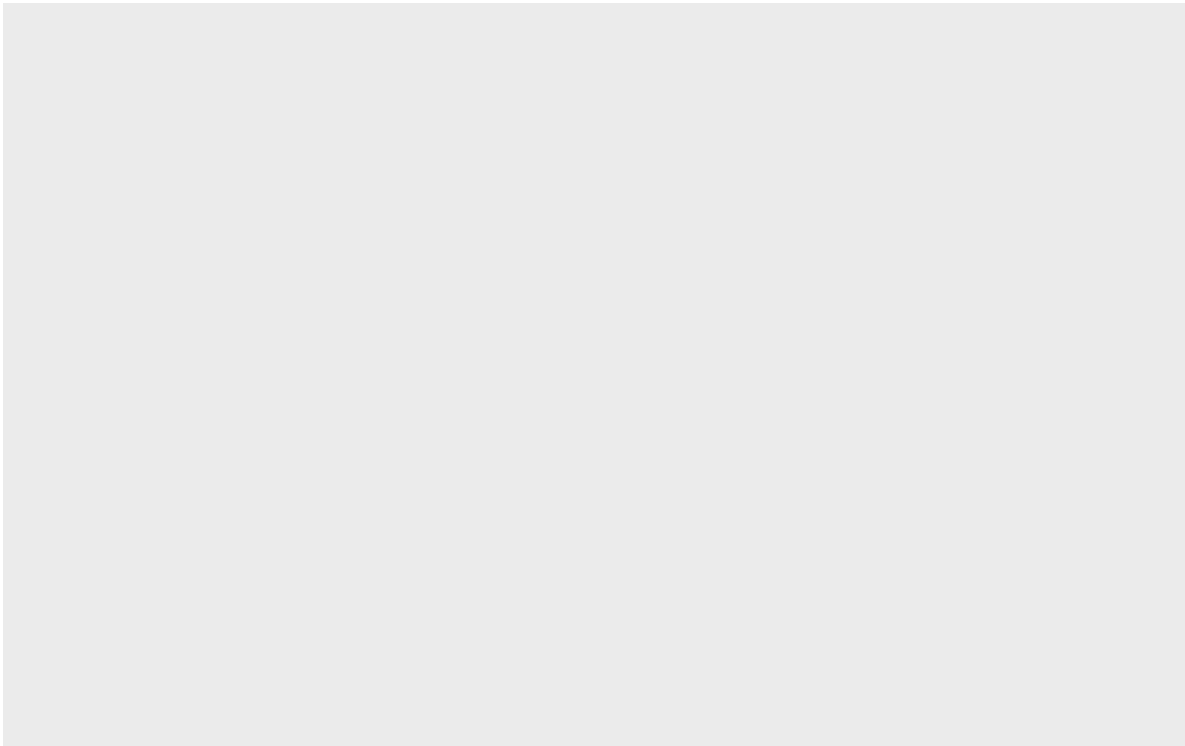
visitors

weekday

```
plot_this('saka-fu Higashi saka-shi Aramotokita')
```

??saka-fu Higashi??saka-shi Aramotokita

visitors

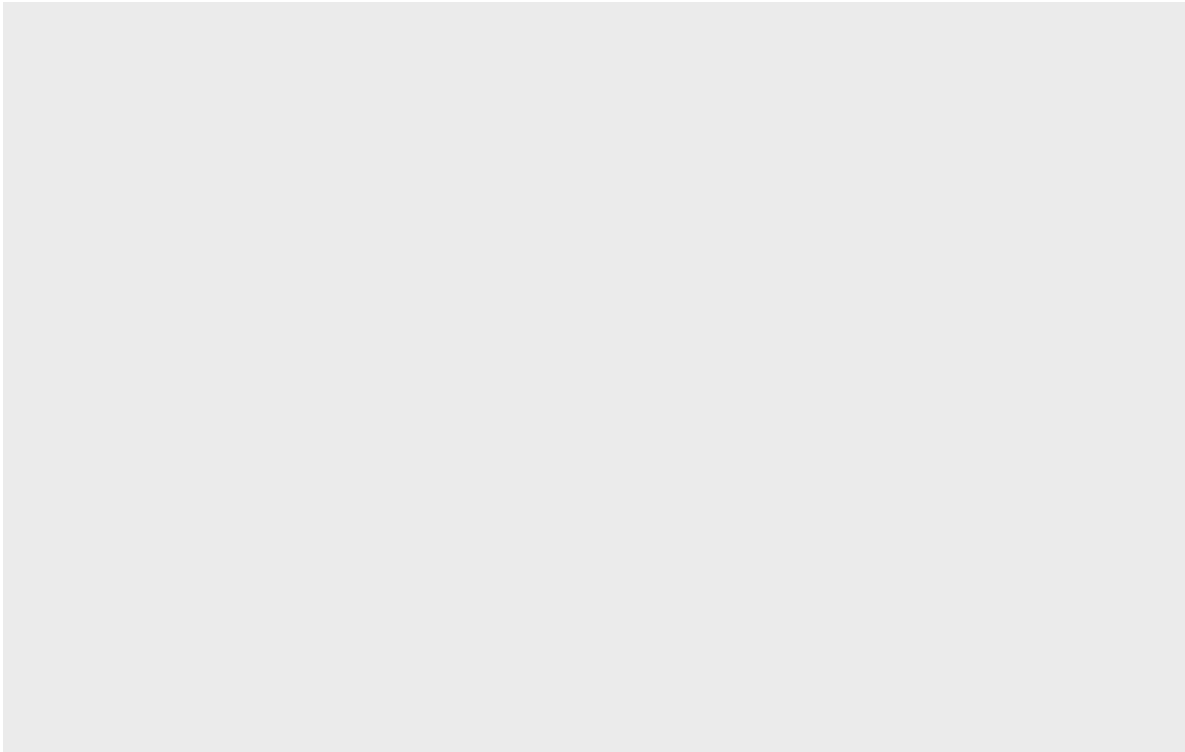


weekday

```
plot_this('Fukuoka-ken Kurume-shi J??nanmachi')
```


Fukuoka-ken Kurume-shi J?nanmachi

visitors



weekday

```
plot_this('T??ky?-to Tait?-ku Asakusa')
```

T??ky??-to Tait??-ku Asakusa

visitors

weekday

```
plot_this('T??ky??-to Shinjuku-ku Kabukich??')
```

T??ky??-to Shinjuku-ku Kabukich??

visitors

weekday

```
plot_this('??saka-fu ??saka-shi Nanbasennichimae')
```

??saka-fu ??saka-shi Nanbasennichimae

visitors

weekday

```
plot_this('T??ky??-to Itabashi-ku Itabashi')
```

T??ky??-to Itabashi-ku Itabashi

visitors

weekday

```
plot_this('Niigata-ken Kashiwazaki-shi Ch????ch??')
```

Niigata-ken Kashiwazaki-shi Ch????ch??

visitors

weekday

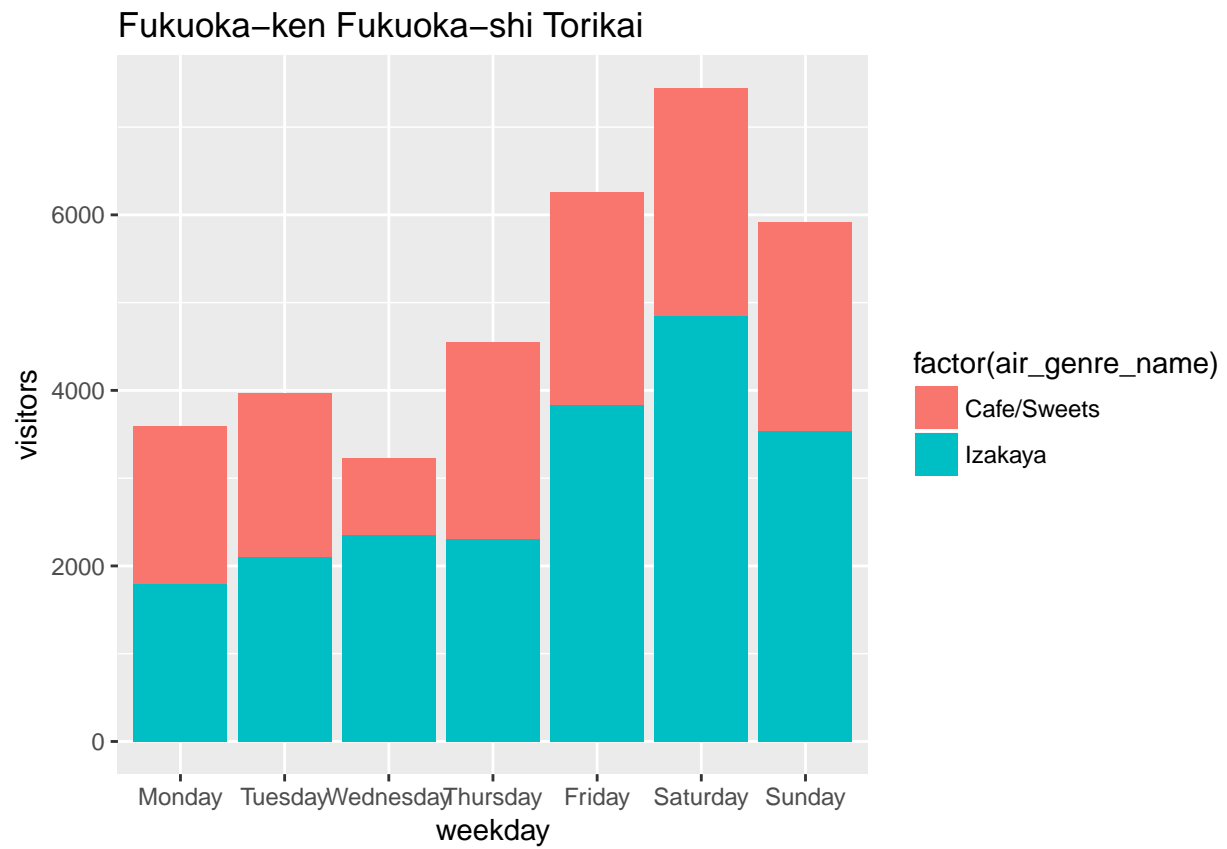
```
plot_this('??saka-fu Sakai-shi Minamikawaramachi')
```

??saka-fu Sakai-shi Minamikawaramachi

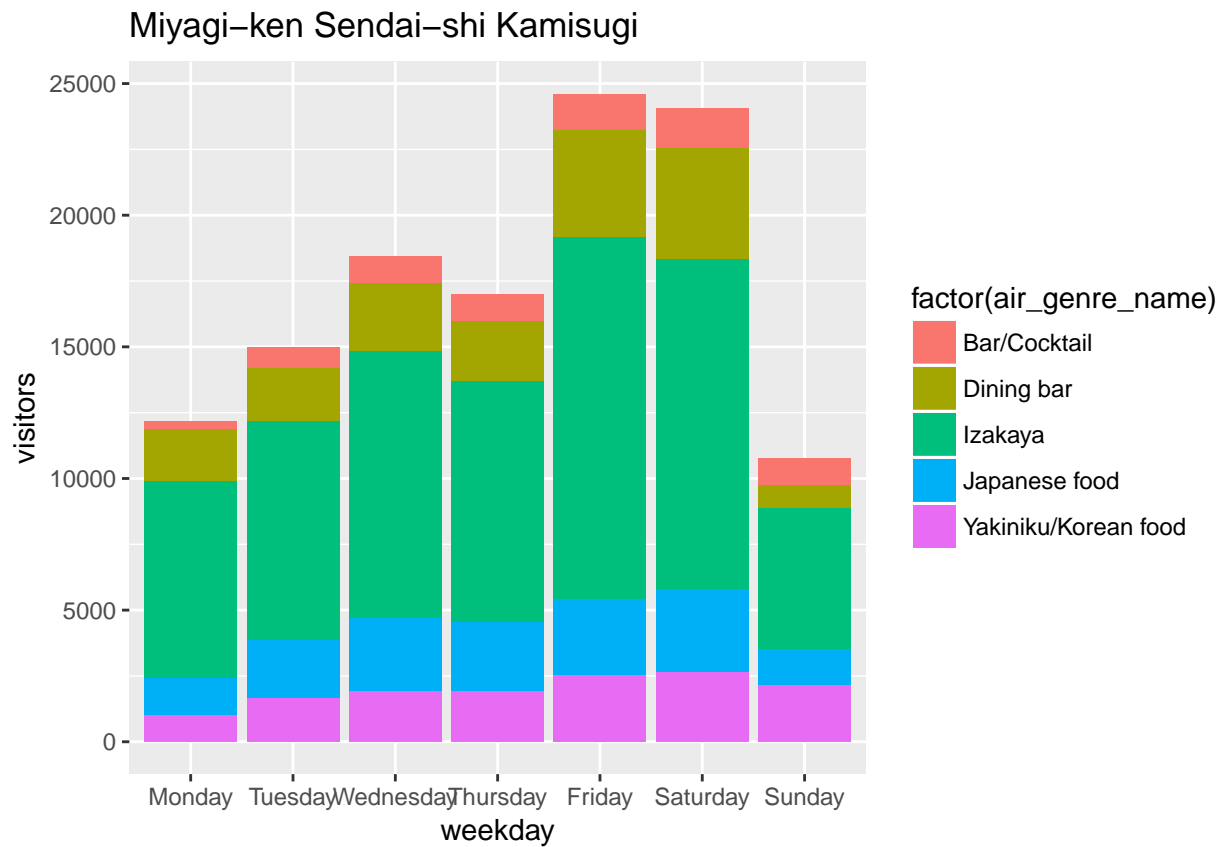
visitors

weekday

```
plot_this('Fukuoka-ken Fukuoka-shi Torikai')
```



```
plot_this('Miyagi-ken Sendai-shi Kamisugi')
```

```
plot_this('T??ky??-to Shinagawa-ku Higashigotanda')
```

T??ky??-to Shinagawa-ku Higashigotanda

visitors

weekday

```
plot_this('T??ky??-to Toshima-ku Mejiro')
```

Tokyo-to Toshima-ku Mejiro

visitors

weekday

```
plot_this('saka-fu Neyagawa-shi Honmachi')
```

??saka-fu Neyagawa-shi Honmachi

visitors

weekday

```
plot_this('Shizuoka-ken Numazu-shi Miyukich??')
```

Shizuoka-ken Numazu-shi Miyukich??

visitors

weekday

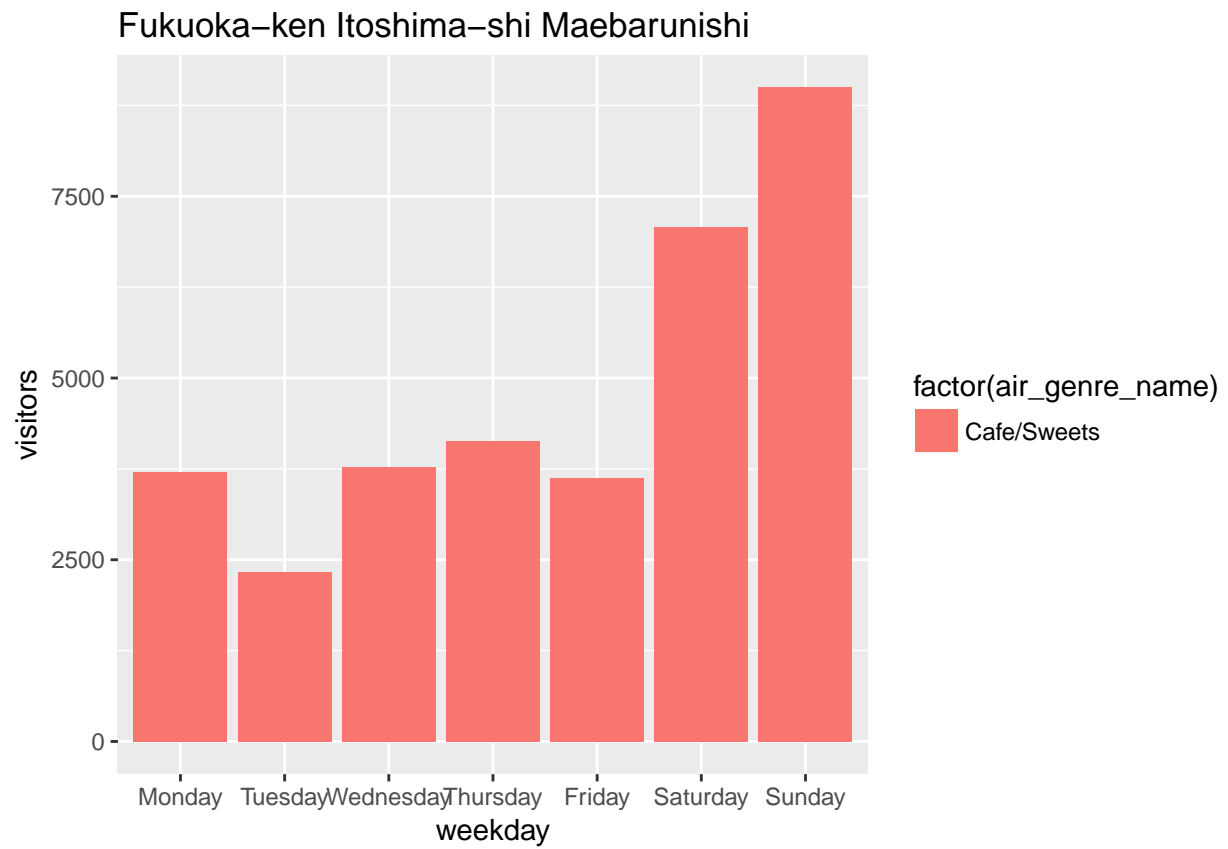
```
plot_this('T??ky??-to Nerima-ku Toyotamakita')
```

T??ky??-to Nerima-ku Toyotamakita

visitors

weekday

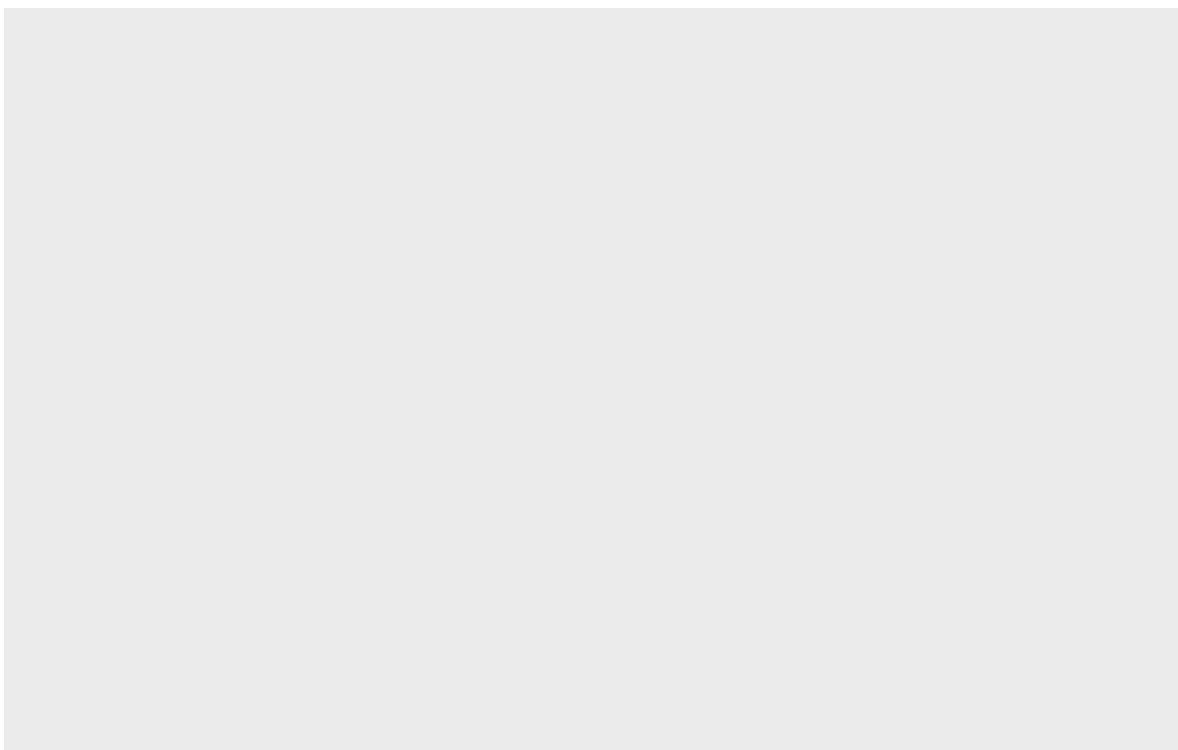
```
plot_this('Fukuoka-ken Itoshima-shi Maebarunishi')
```



```
plot_this('T??ky??-to Machida-shi Morino')
```

T??ky??-to Machida-shi Morino

visitors



weekday

```
plot_this('T??ky??-to Ch????-ku Ginza')
```


T??ky??-to Ch????-ku Ginza

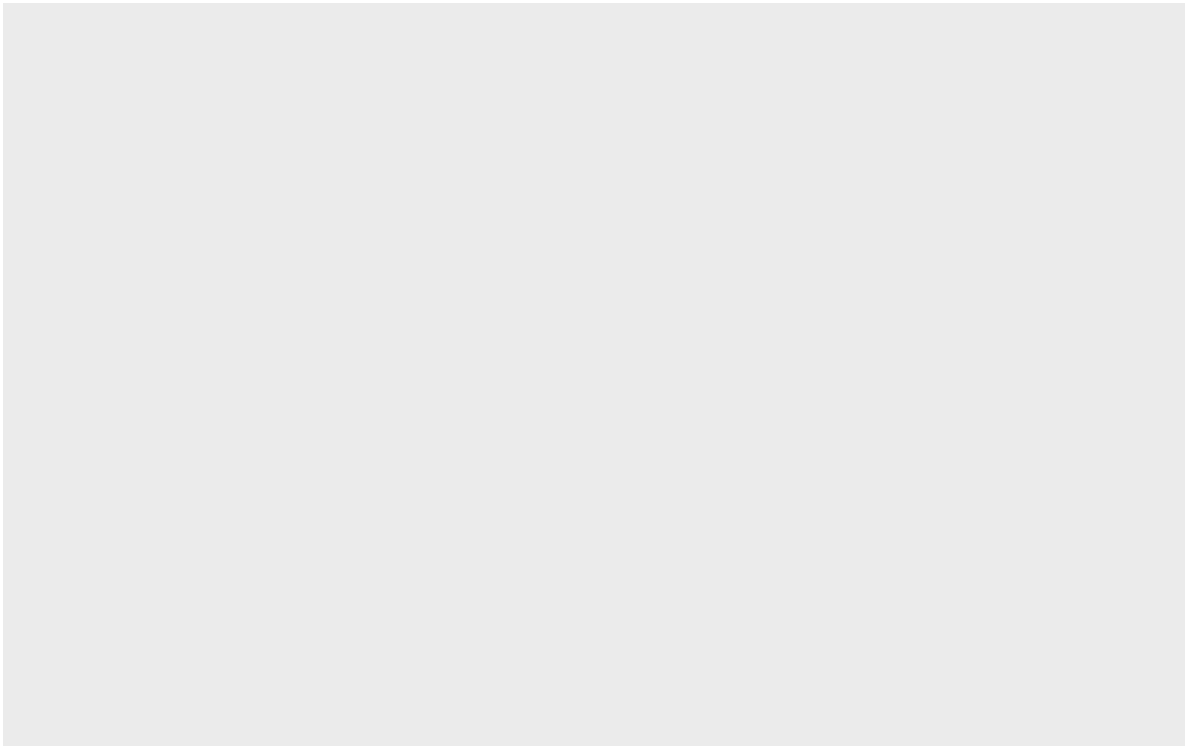
visitors

weekday

```
plot_this('T??ky??-to Meguro-ku Jiy??gaoka')
```

T??ky??-to Meguro-ku Jiy??gaoka

visitors

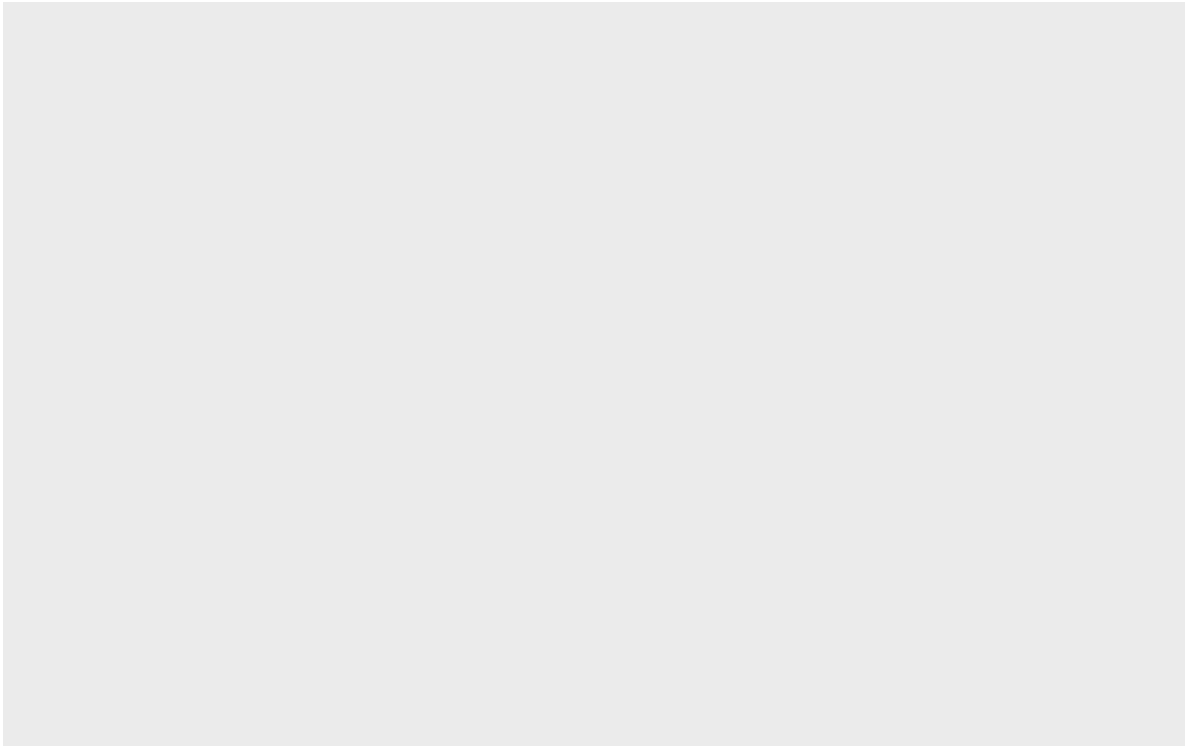


weekday

```
plot_this('T??ky??-to Minato-ku Akasaka')
```

T??ky??-to Minato-ku Akasaka

visitors



weekday

```
plot_this('T??ky??-to Musashino-shi Kichij??ji Honch??')
```

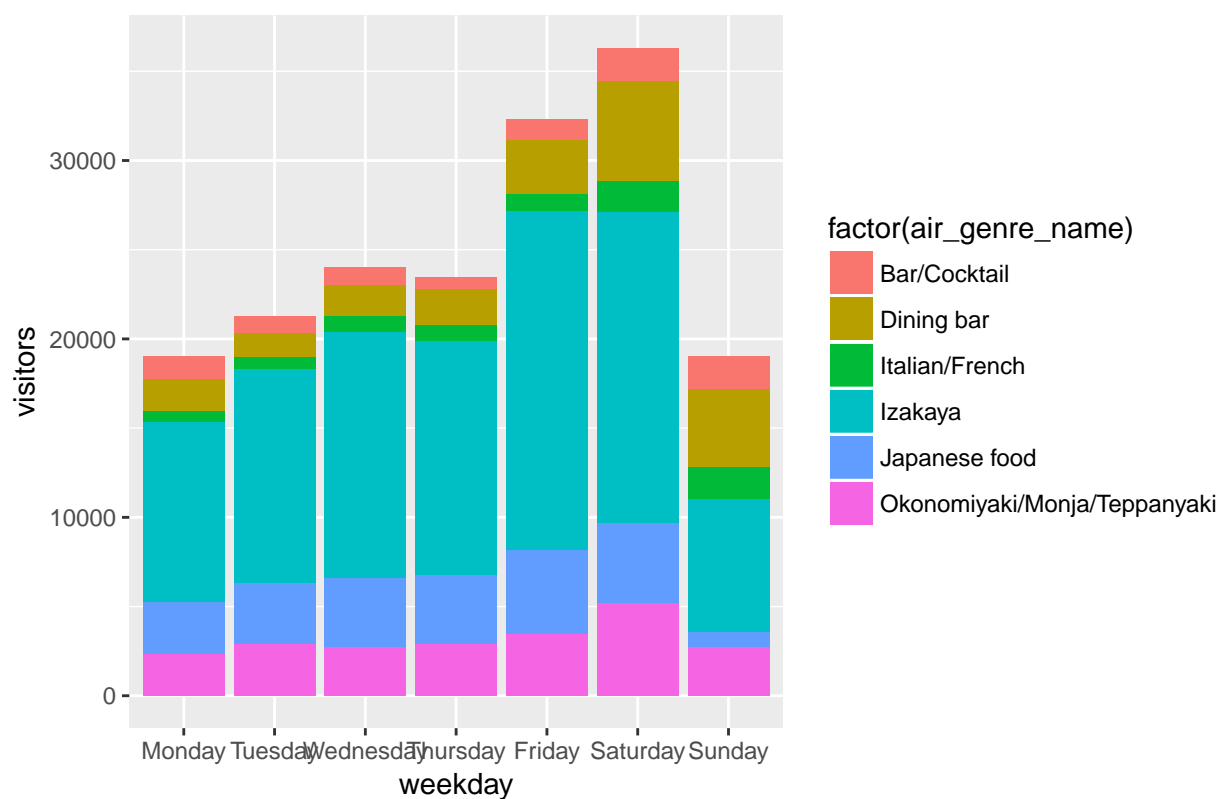
Tokyo-to Musashino-shi Kichijoji Honcho

visitors

weekday

```
plot_this('Hiroshima-ken Hiroshima-shi Kokutaijimachi')
```

Hiroshima-ken Hiroshima-shi Kokutaijimachi



```
plot_this('T??ky??-to ??ta-ku Kamiikedai')
```

T??ky??-to ??ta-ku Kamiikedai

visitors

weekday

```
plot_this('T??ky??-to Suginami-ku Asagayaminami')
```

T??ky??-to Suginami-ku Asagayaminami

visitors

weekday

```
plot_this('Niigata-ken Nagaoka-shi ??ted??ri')
```

Niigata-ken Nagaoka-shi Tatedate-ri

visitors

weekday

```
plot_this('Tatedate-ri to Katsushika-ku Tateishi')
```


T??ky??-to Katsushika-ku Tateishi

visitors

weekday

```
plot_this('T??ky??-to Chiyoda-ku Kanda Jinb??ch??')
```

Tokyo-to Chiyoda-ku Kanda Jinbanchi

visitors

weekday

```
plot_this('Fukuoka-ken Kitakyushu-shi Yamaguchi')
```

Fukuoka-ken Kitakyushu-shi Kitamachi

visitors

weekday

```
plot_this('saka-fu saka-shi Ky-machibori')
```

??saka-fu ??saka-shi Ky??machibori

visitors

weekday

```
plot_this('Hy??go-ken Takarazuka-shi T??y??ch??')
```

Hyogo-ken Takarazuka-shi Takyochi

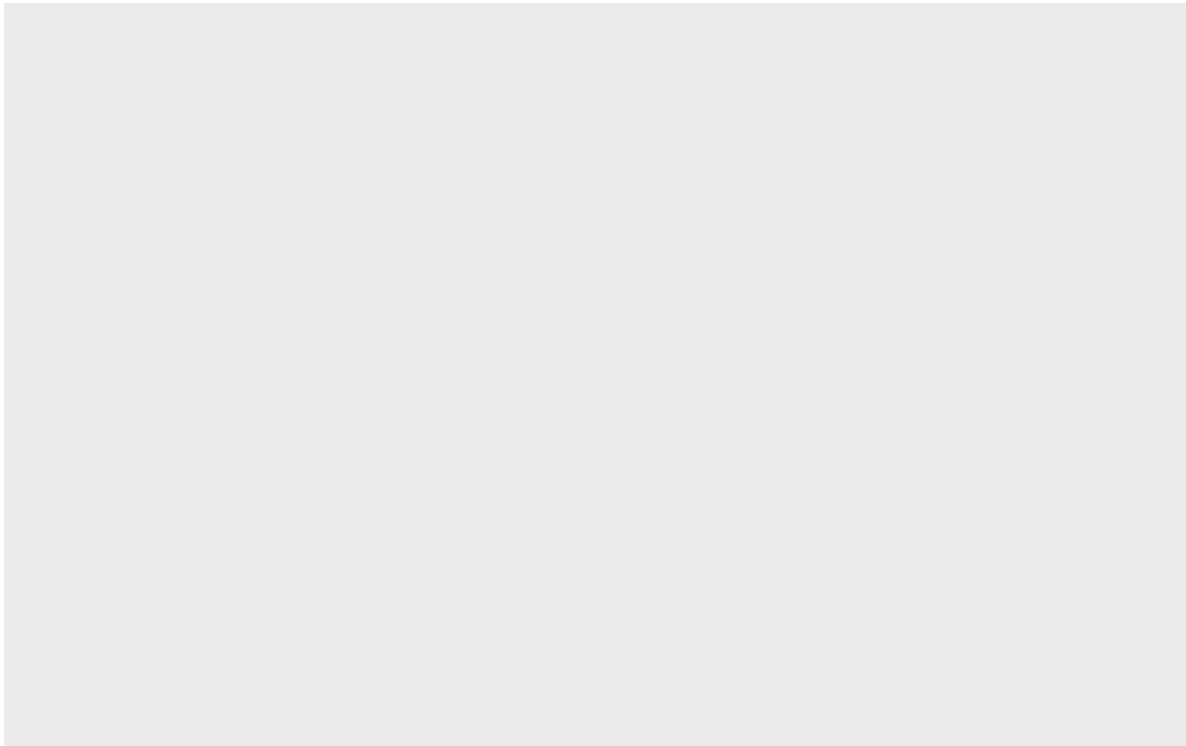
visitors

weekday

```
plot_this('Takyochi-to Setagaya-ku Setagaya')
```

Tokyo-to Setagaya-ku Setagaya

visitors



weekday

```
plot_this('Hokkaido Sapporo-shi Atsubetsuchuu 1 J')
```

Hokkaido Sapporo-shi Atsubetsuchou 1 J

visitors

weekday

```
plot_this('Hyogo-ken Kobe-shi Kumoidori')
```

Hyogo-ken Kobe-shi Kumoidori

visitors

weekday

```
plot_this('Tokyo-to Shibuya-ku Dogenzaka')
```


T??ky??-to Shibuya-ku D??genzaka

visitors

weekday

```
plot_this('T??ky??-to Toshima-ku Higashiikebukuro')
```

T??ky??-to Toshima-ku Higashiikebukuro

visitors

weekday

```
plot_this('T??ky??-to Minato-ku Shibak??en')
```

T??ky??-to Minato-ku Shibak??en

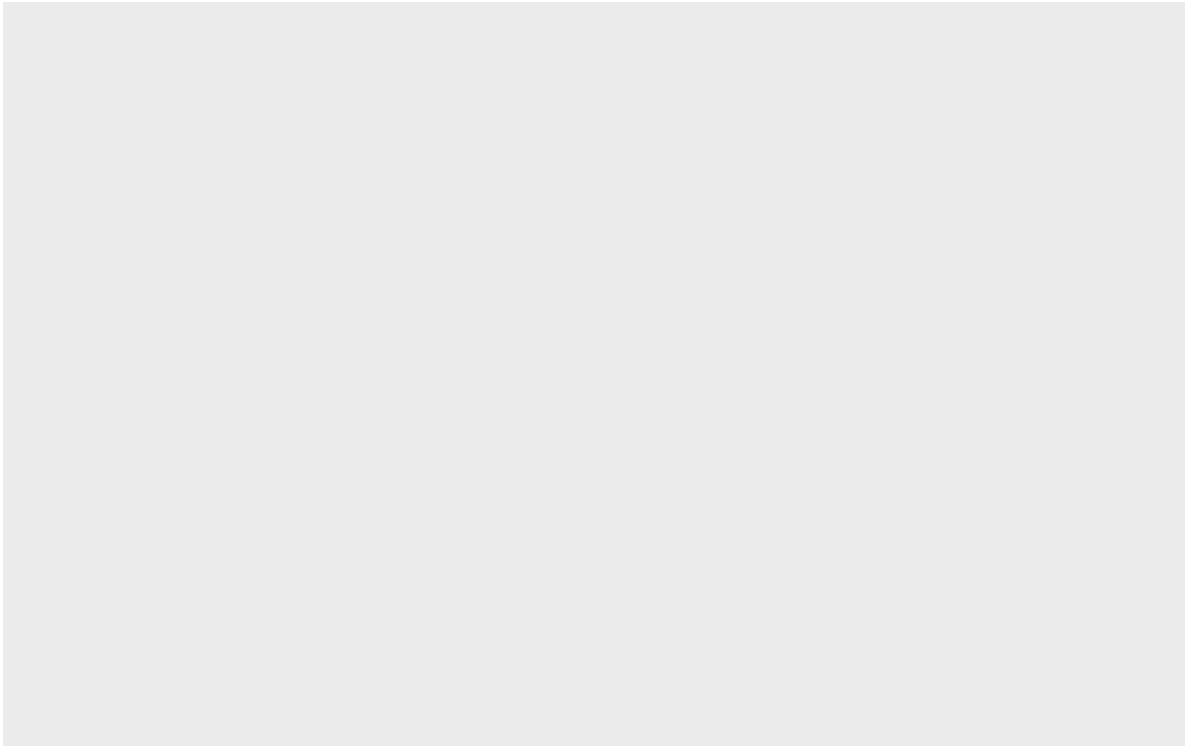
visitors

weekday

```
plot_this('T??ky??-to Toshima-ku Minamiikebukuro')
```

T??ky??-to Toshima-ku Minamiikebukuro

visitors



weekday

```
plot_this('T??ky??-to Musashino-shi Midorich??')
```

Tokyo-to Musashino-shi Midorichu

visitors

weekday

```
plot_this('Hokkaido Abashiri-shi Minami 6 Chuugasaki')
```

Hokkaido Abashiri-shi Minami 6 Jichigashira

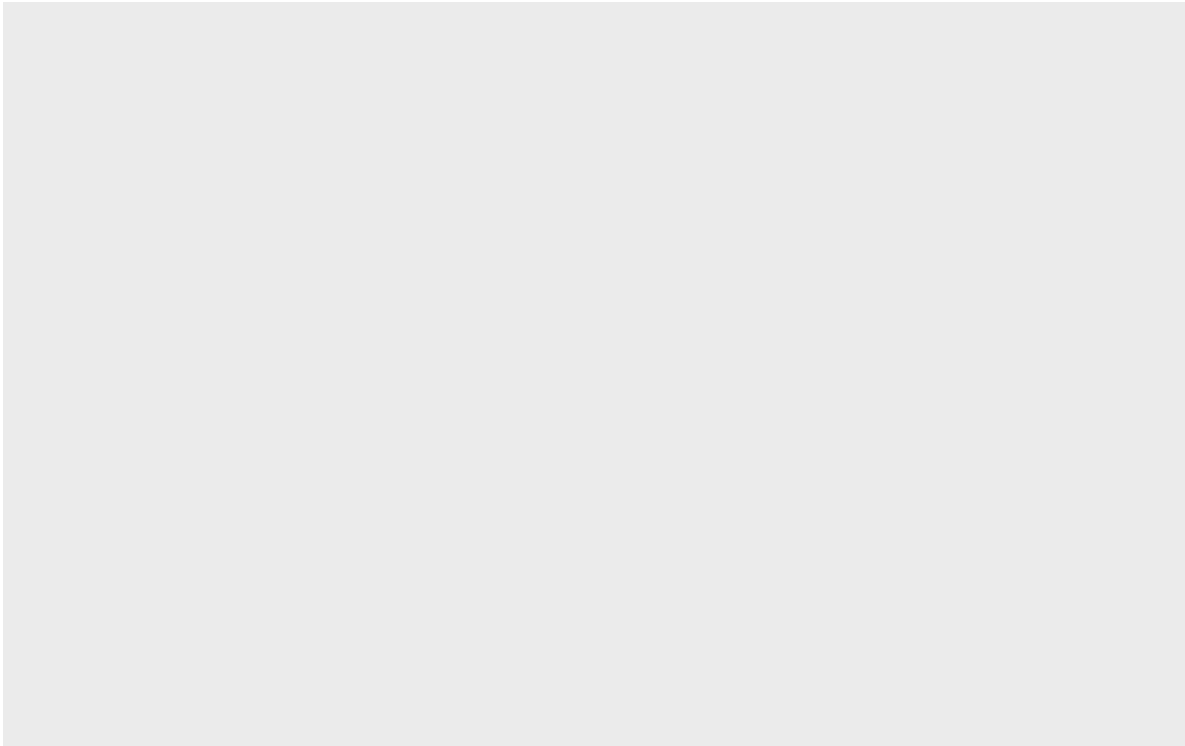
visitors

weekday

```
plot_this('Fukuoka-ken Kitakyushu-shi None')
```

Fukuoka-ken Kitakyushu-shi None

visitors



weekday

```
plot_this('Hokkaido Katana-gun Motomachi')
```

Hokkaido Katana-gun Motomachi

visitors

weekday

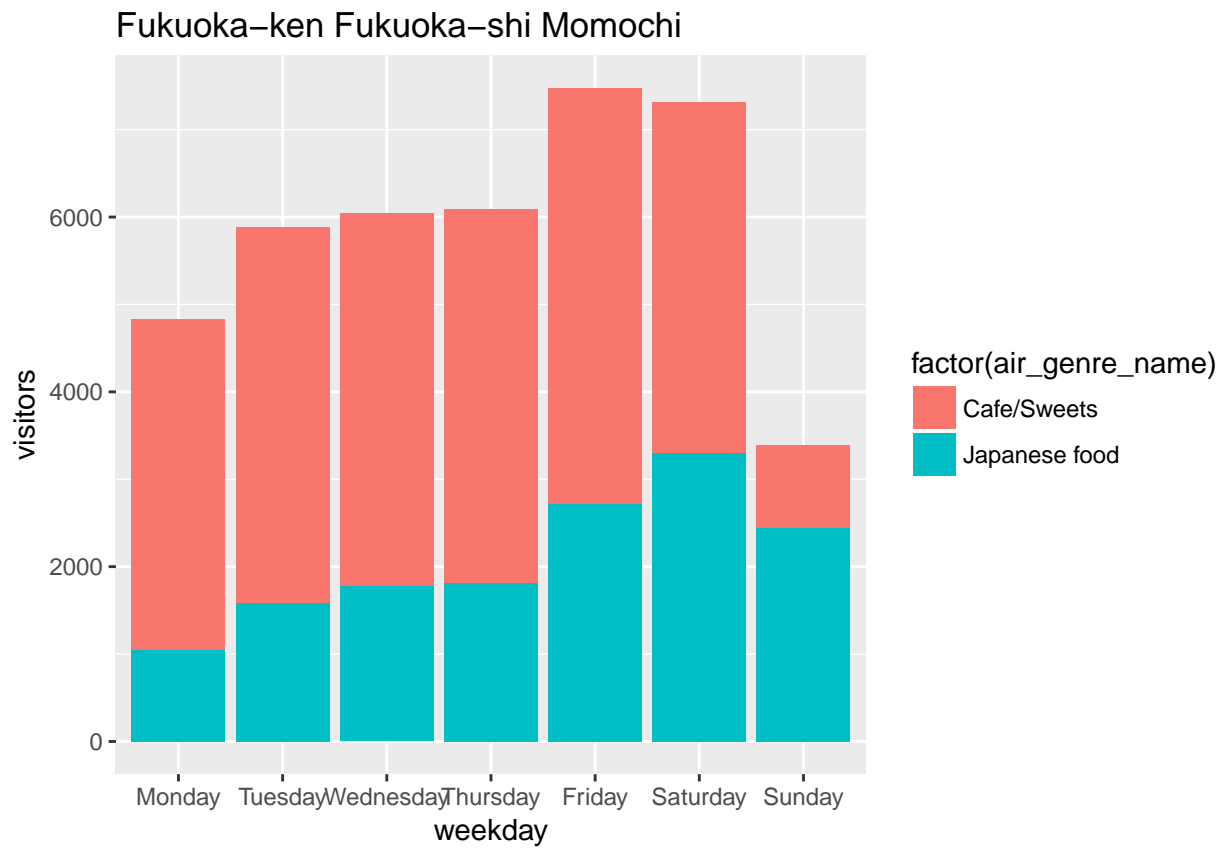
```
plot_this('Tokyo-to Koganei-shi Honcho')
```


T??ky??-to Koganei-shi Honch??

visitors

weekday

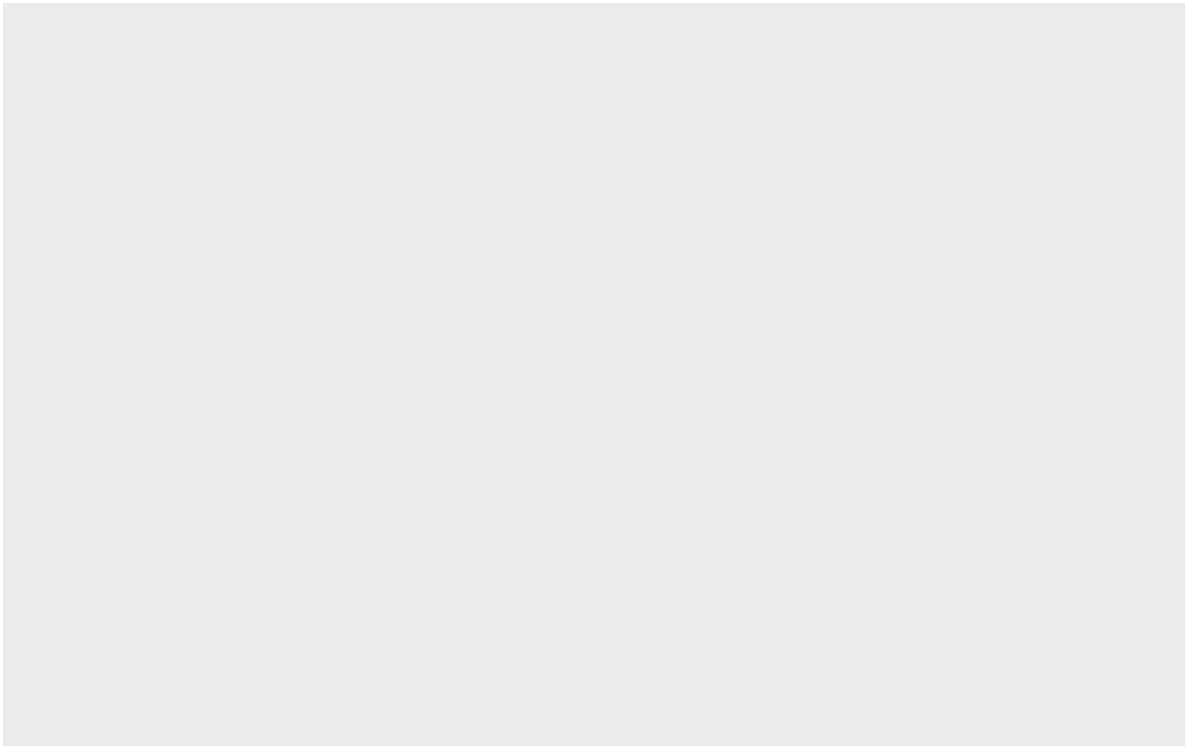
```
plot_this('Fukuoka-ken Fukuoka-shi Momochi')
```



```
plot_this('Hyogo-ken Himeji-shi Yasuda')
```

Hyogo-ken Himeji-shi Yasuda

visitors



weekday

```
plot_this('Tokyo-to Shibuya-ku Higashi')
```

T??ky??-to Shibuya-ku Higashi

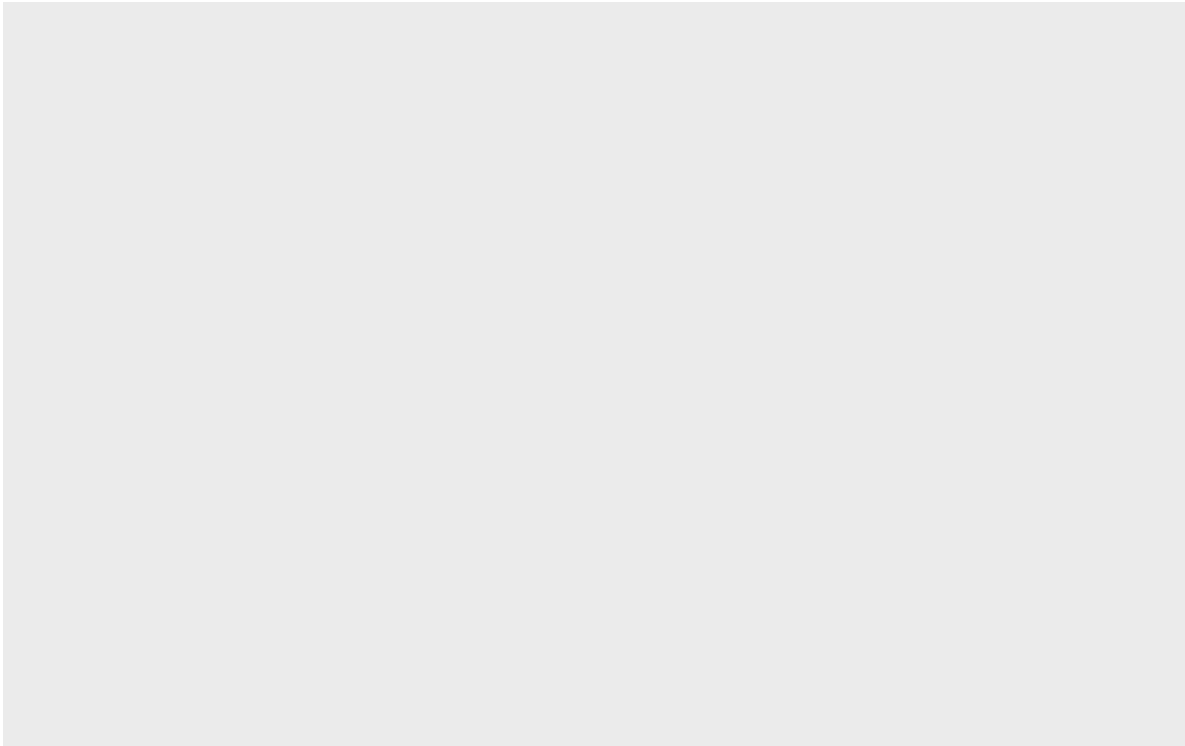
visitors

weekday

```
plot_this('Fukuoka-ken Fukuoka-shi Daimy??')
```

Fukuoka-ken Fukuoka-shi Daimy??

visitors



weekday

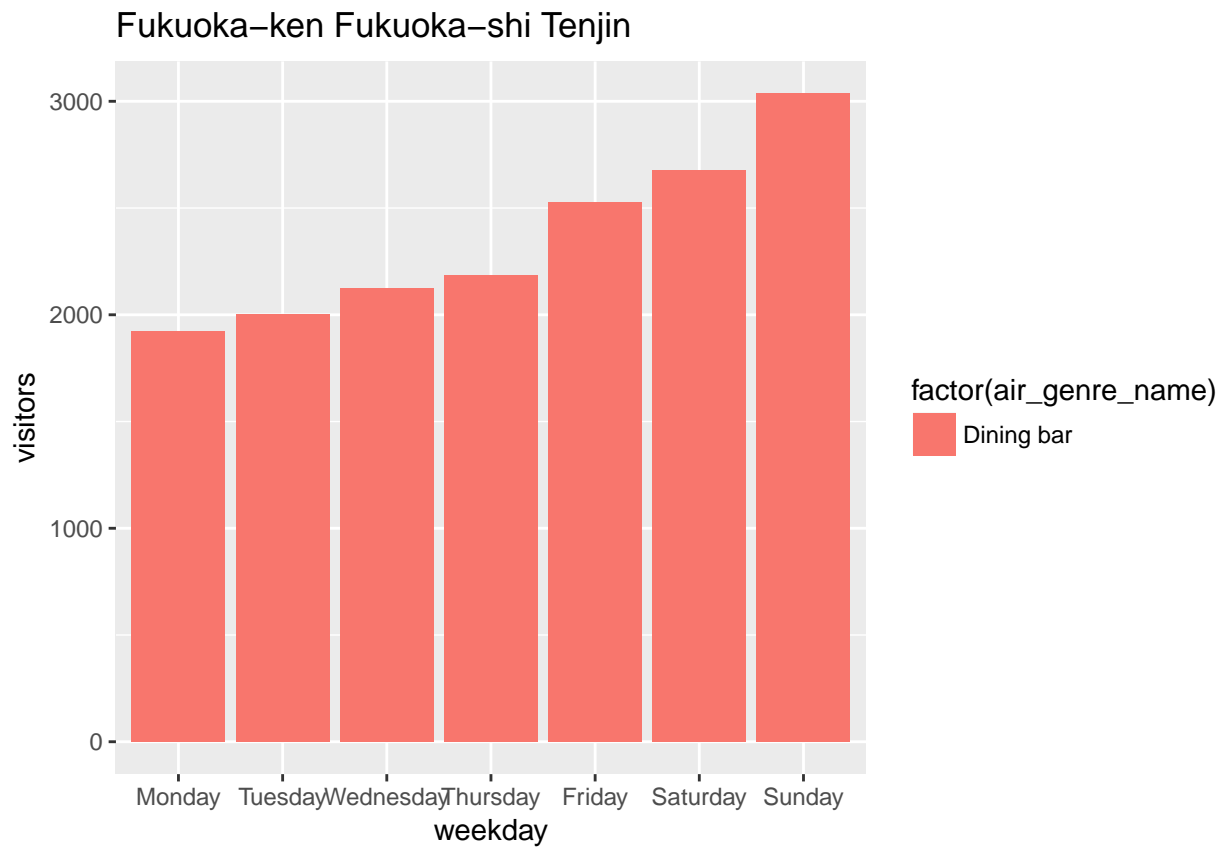
```
plot_this('T??ky??-to Fuch??-shi Miyanishich??')
```

Tokyo-to Fuchushi Miyanishich

visitors

weekday

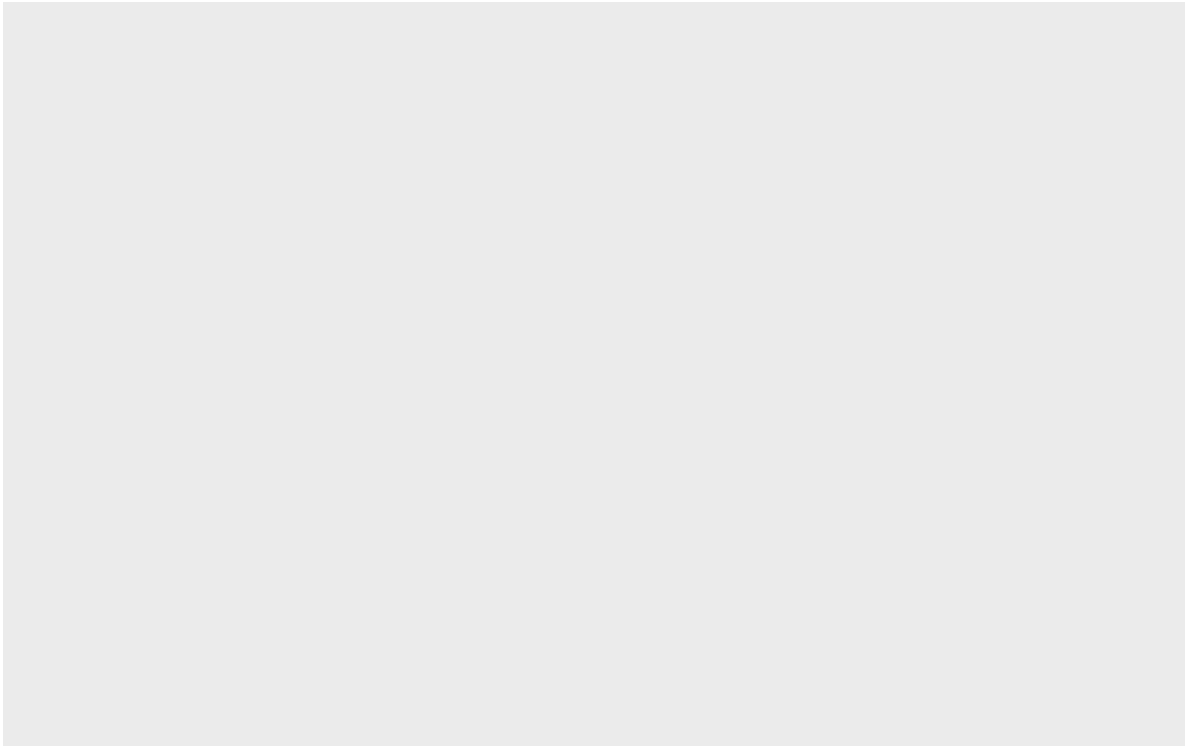
```
plot_this('Fukuoka-ken Fukuoka-shi Tenjin')
```



```
plot_this('T??ky??-to Kita-ku ??jihonch??')
```

T??ky??-to Kita-ku ??jihonch??

visitors

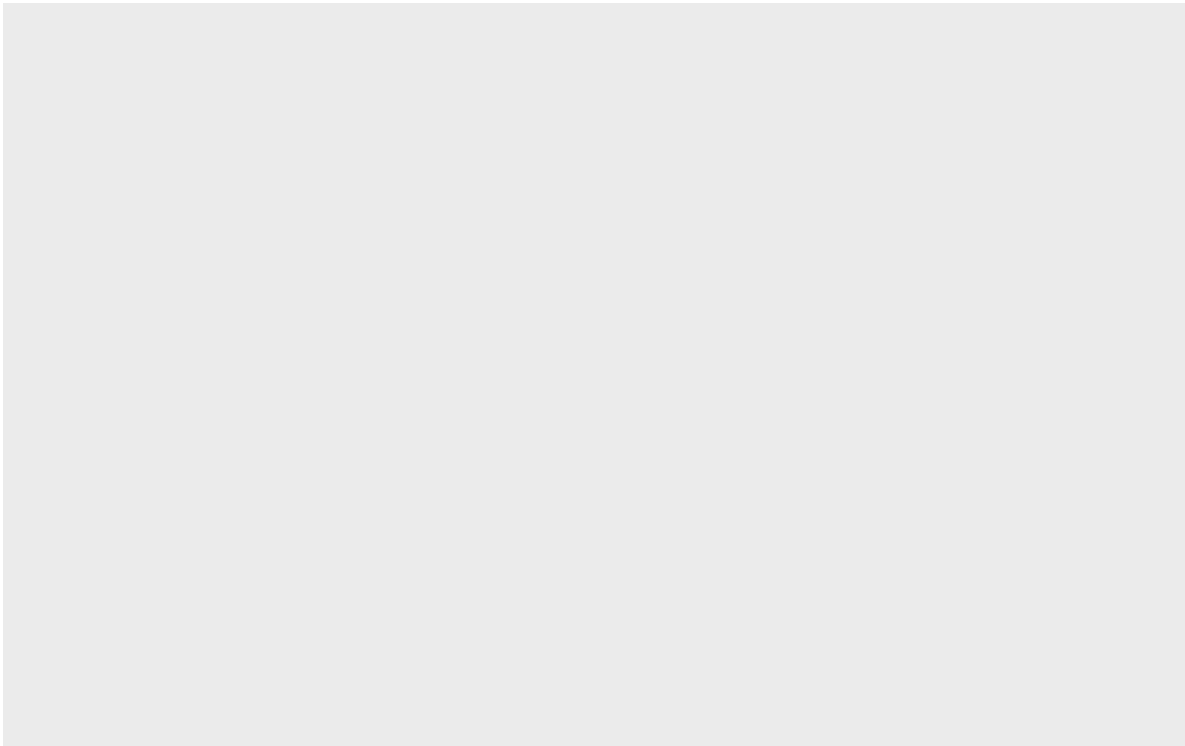


weekday

```
plot_this('T??ky??-to Bunky??-ku Sendagi')
```


T??ky??-to Bunky??-ku Sendagi

visitors

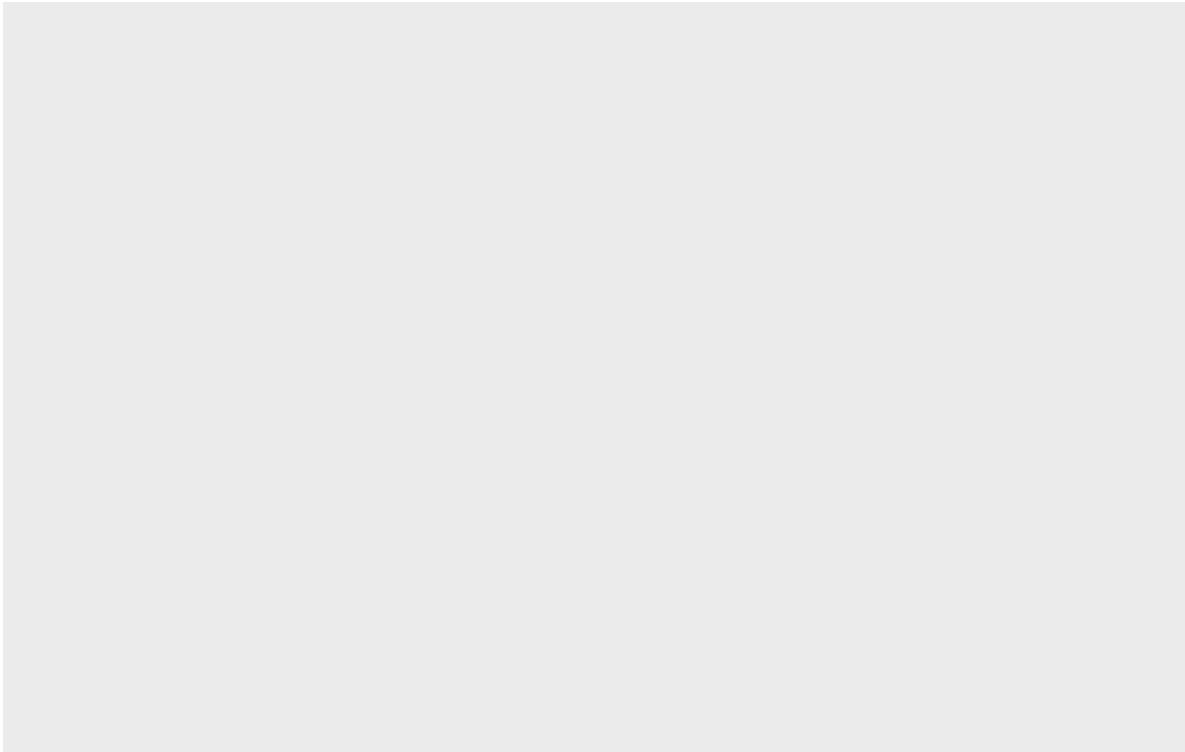


weekday

```
plot_this('??saka-fu ??saka-shi Shinmachi')
```

??saka-fu ??saka-shi Shinmachi

visitors



weekday

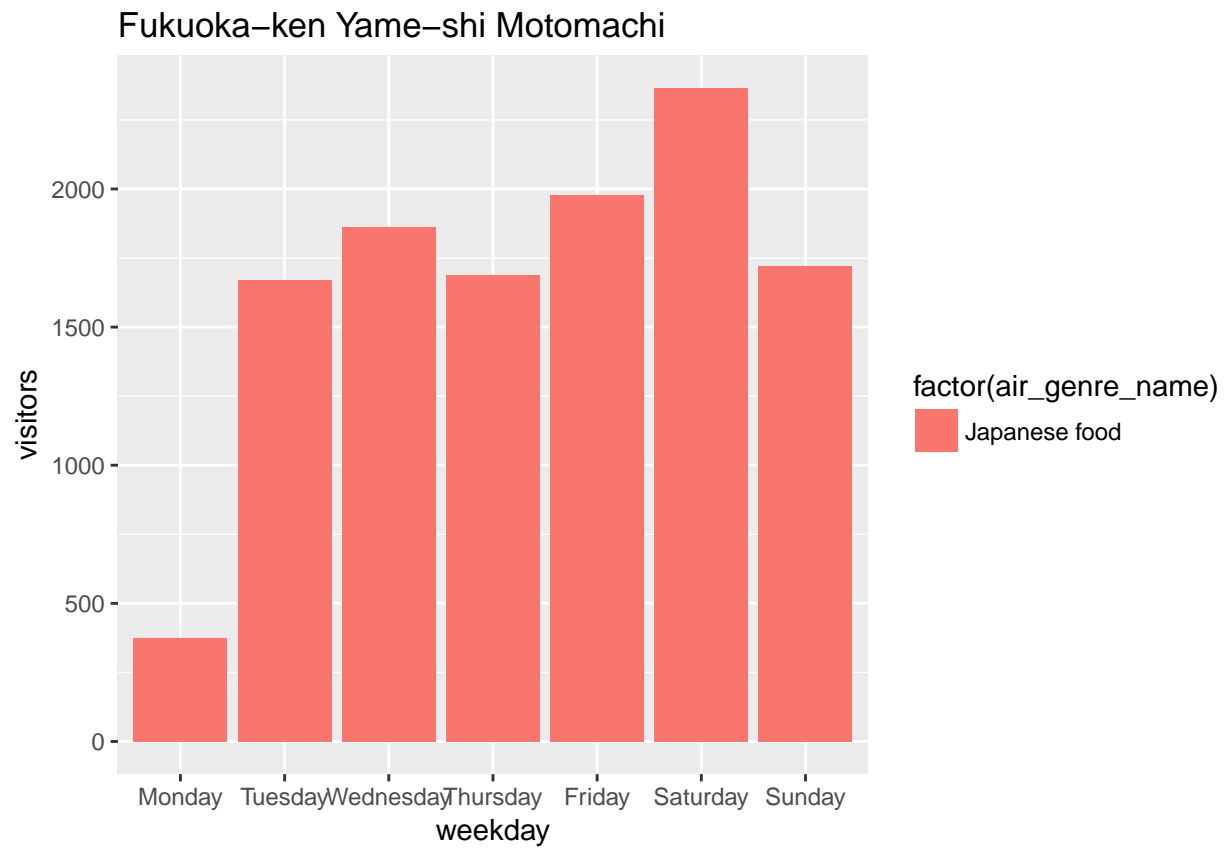
```
plot_this('Niigata-ken Niigata-shi Gakk??ch??d??ri 1 Banch??')
```

Niigata-ken Niigata-shi Gakkochodori 1 Banchi

visitors

weekday

```
plot_this('Fukuoka-ken Yame-shi Motomachi')
```



```
plot_this('Shizuoka-ken Hamamatsu-shi Motoshiroch??')
```

Shizuoka-ken Hamamatsu-shi Motoshiroch??

visitors

weekday

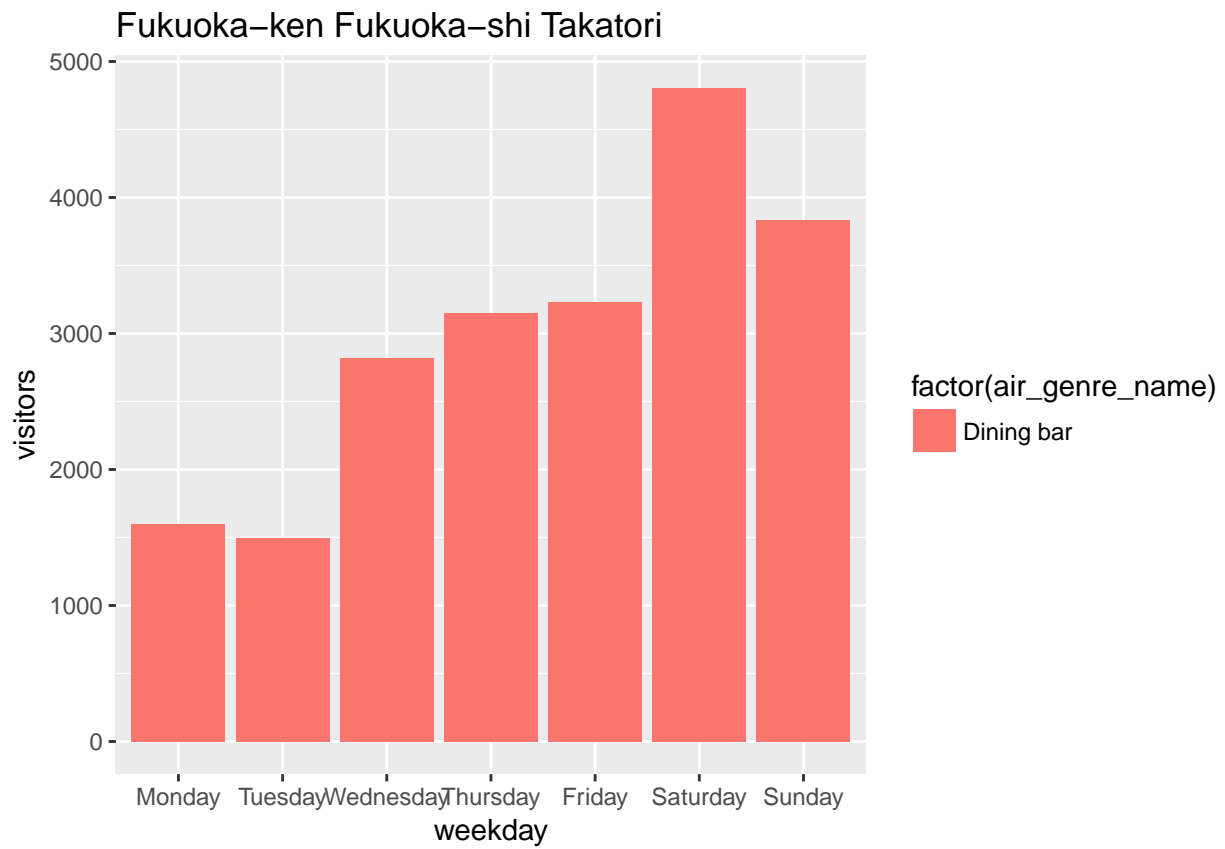
```
plot_this('??saka-fu ??saka-shi Fuminosato')
```

??saka-fu ??saka-shi Fuminosato

visitors

weekday

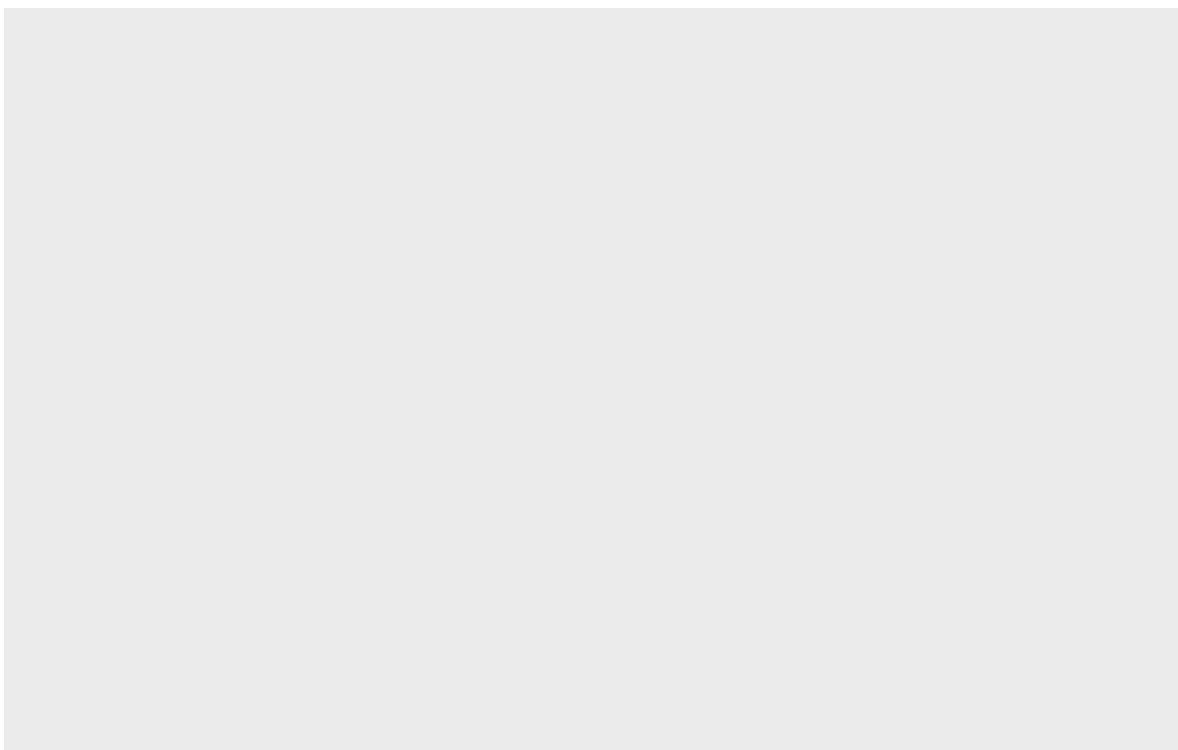
```
plot_this('Fukuoka-ken Fukuoka-shi Takatori')
```



```
plot_this('T??ky??-to Toshima-ku Nishiikebukuro')
```

T??ky??-to Toshima-ku Nishiikebukuro

visitors

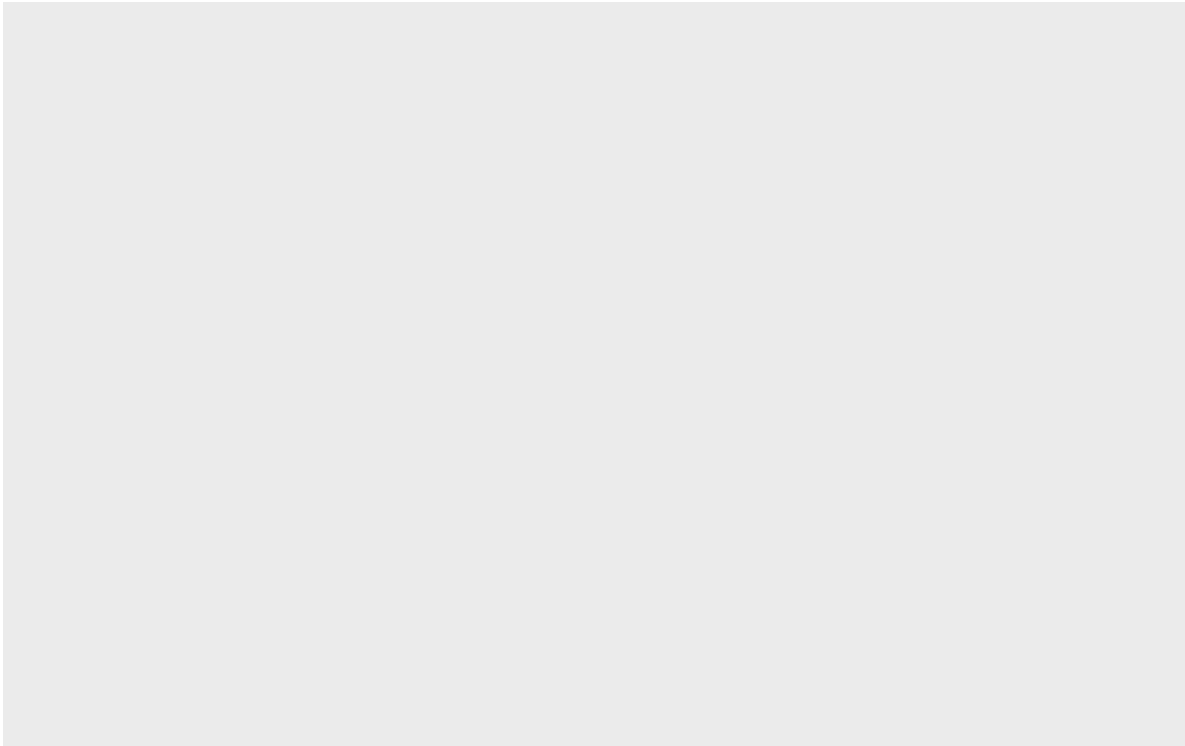


weekday

```
plot_this('??saka-fu ??saka-shi Ky??tar??machi')
```


??saka-fu ??saka-shi Ky??tar??machi

visitors



weekday

```
plot_this('T??ky??-to Chiyoda-ku Kudanminami')
```

T??ky??-to Chiyoda-ku Kudanminami

visitors

weekday

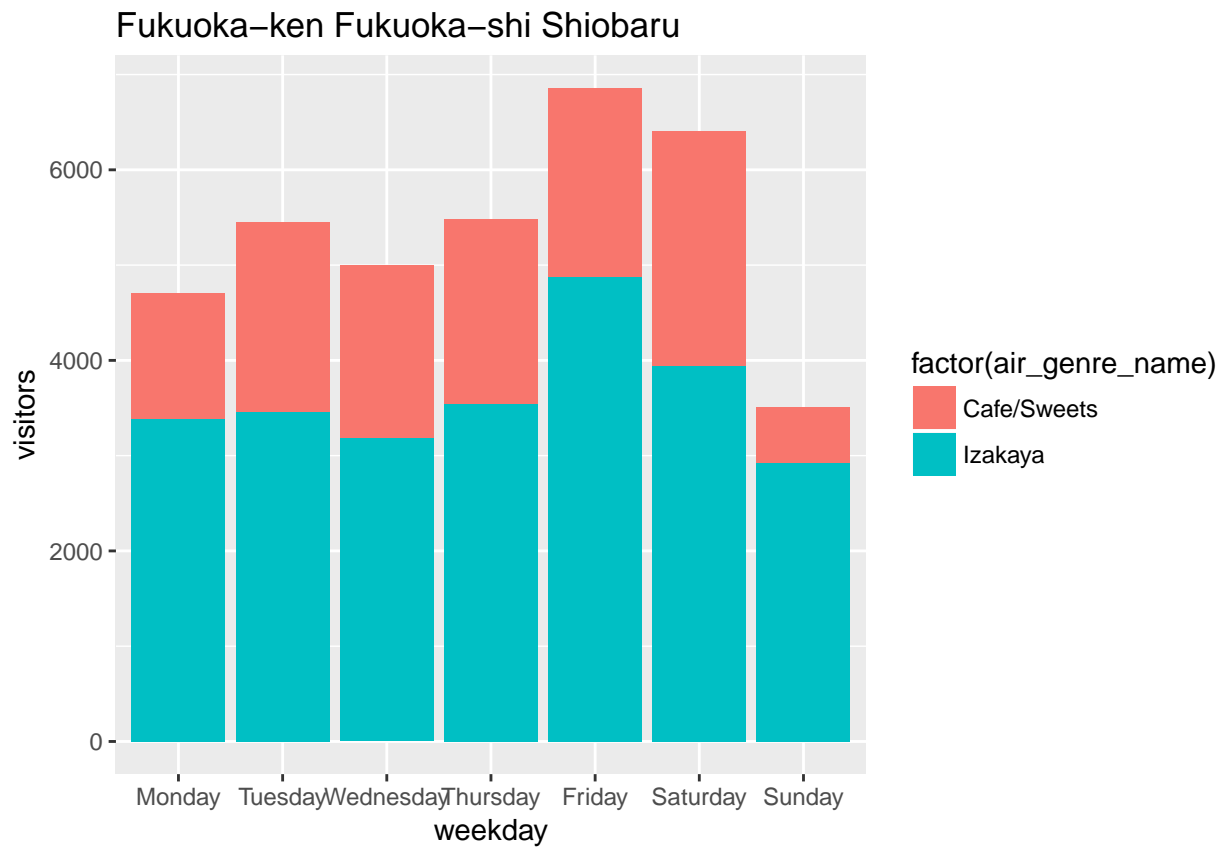
```
plot_this('Fukuoka-ken Kitaky??sh??-shi Konyamachi')
```

Fukuoka-ken Kitakyushu-shi Konyamachi

visitors

weekday

```
plot_this('Fukuoka-ken Fukuoka-shi Shiobaru')
```



```
plot_this('??saka-fu ??saka-shi ??gimachi')
```

??saka-fu ??saka-shi ??gimachi

visitors

weekday

```
plot_this('T??ky??-to Ch????-ku Tsukiji')
```

T??ky??-to Ch????-ku Tsukiji

visitors

weekday

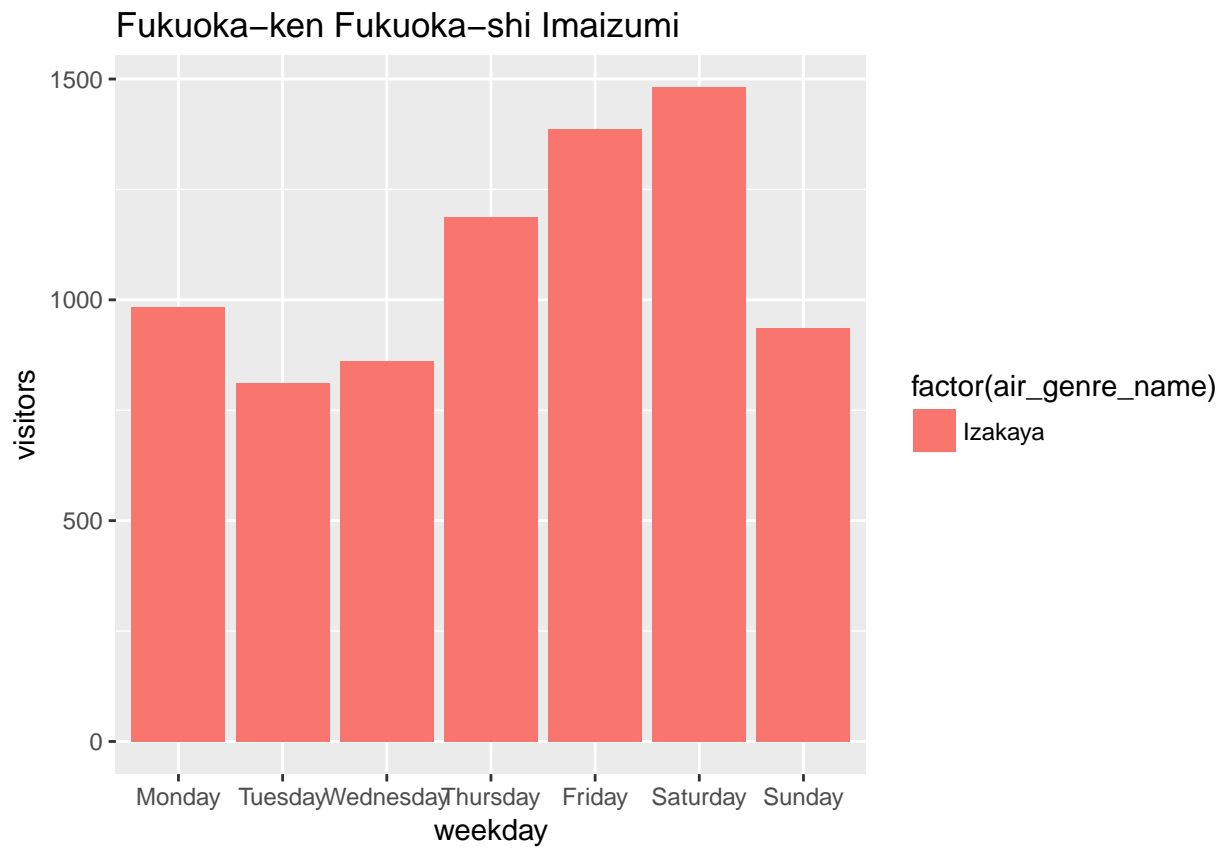
```
plot_this('T??ky??-to Setagaya-ku Sangenjaya')
```

T??ky??-to Setagaya-ku Sangenjaya

visitors

weekday

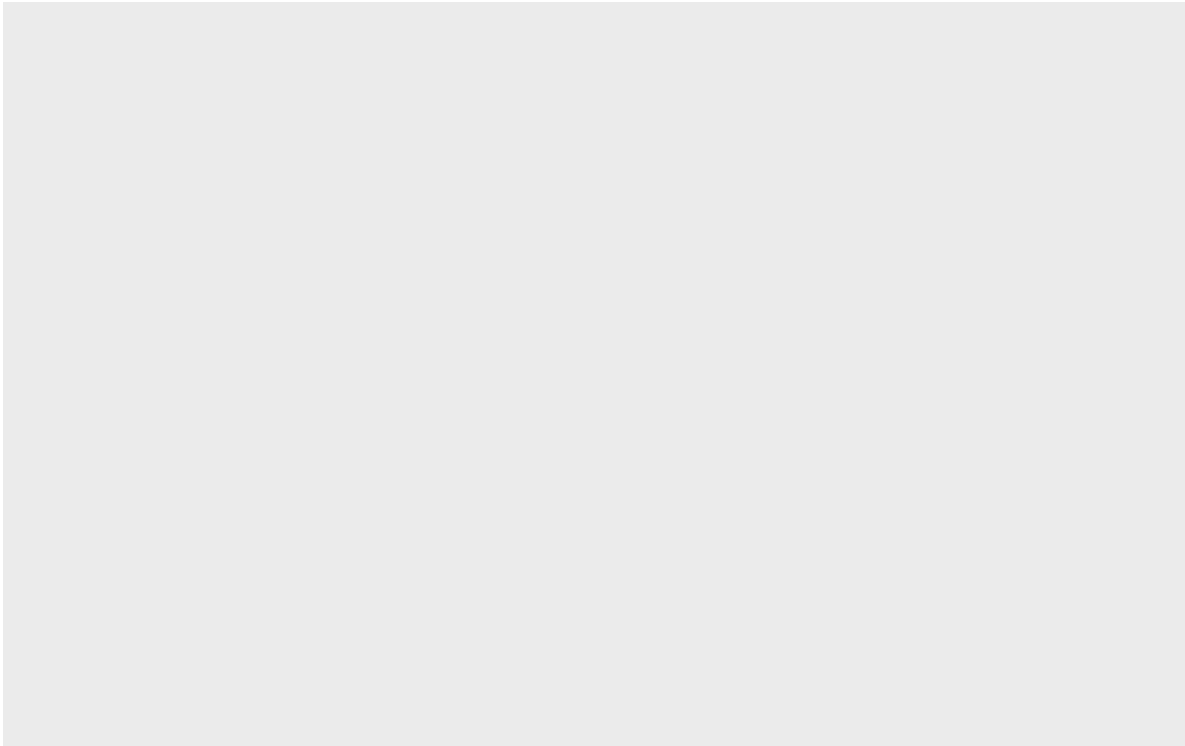
```
plot_this('Fukuoka-ken Fukuoka-shi Imaizumi')
```



```
plot_this('T??ky??-to K??t??-ku T??y??')
```


T??ky??-to K??t??-ku T??y??

visitors



weekday

```
plot_this('T??ky??-to K??t??-ku Kameido')
```

T??ky??-to K??t??-ku Kameido

visitors

weekday

```
plot_this('T??ky??-to Setagaya-ku Kitazawa')
```

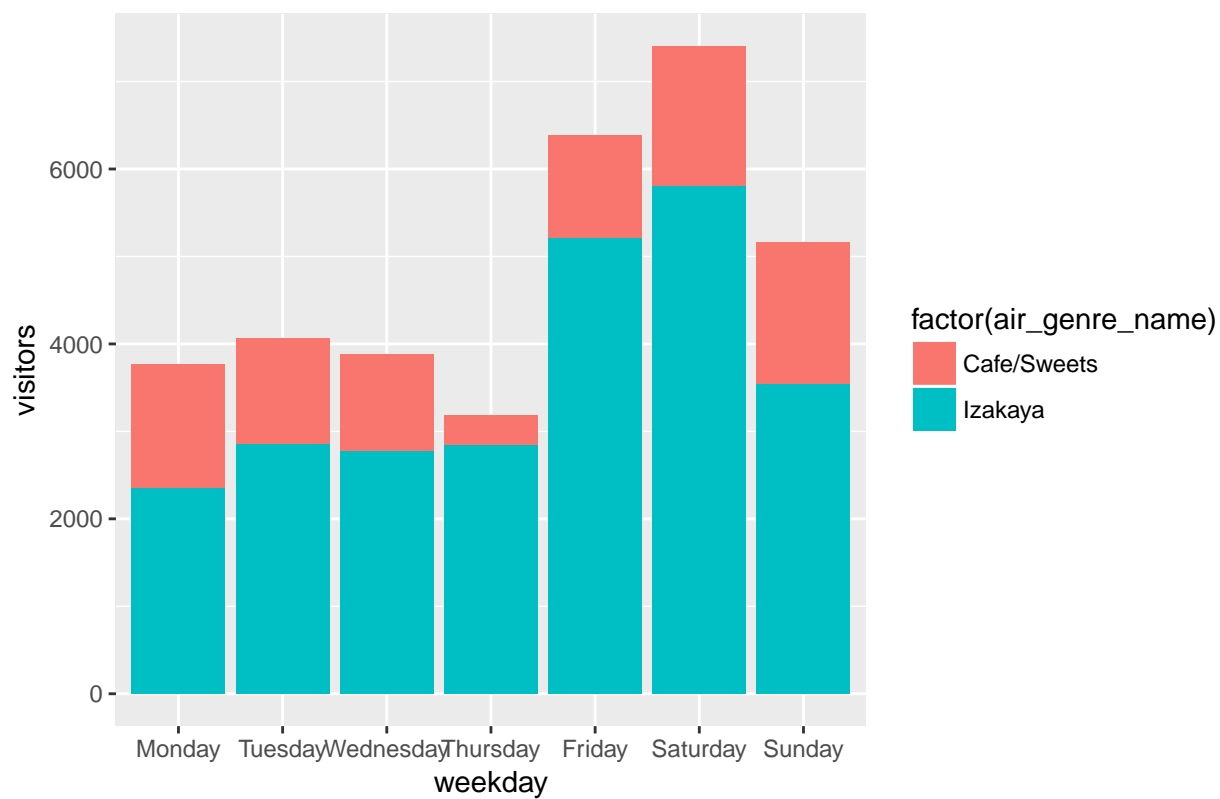
Tokyo-to Setagaya-ku Kitazawa

visitors

weekday

```
plot_this('Hiroshima-ken Fukuyama-shi Higashisakuramachi')
```

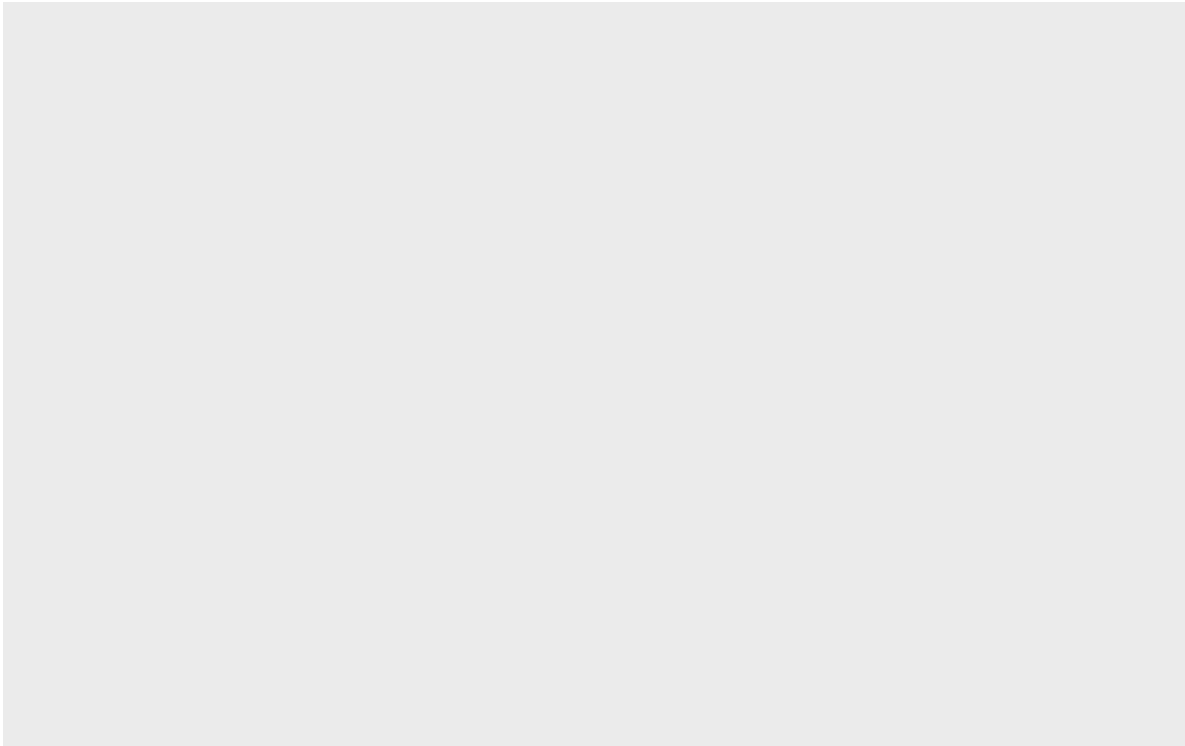
Hiroshima-ken Fukuyama-shi Higashisakuramachi



```
plot_this('T??ky??-to ??ta-ku Kamata')
```

T??ky??-to ??ta-ku Kamata

visitors



weekday

```
plot_this('T??ky??-to Shibuya-ku Shibuya')
```

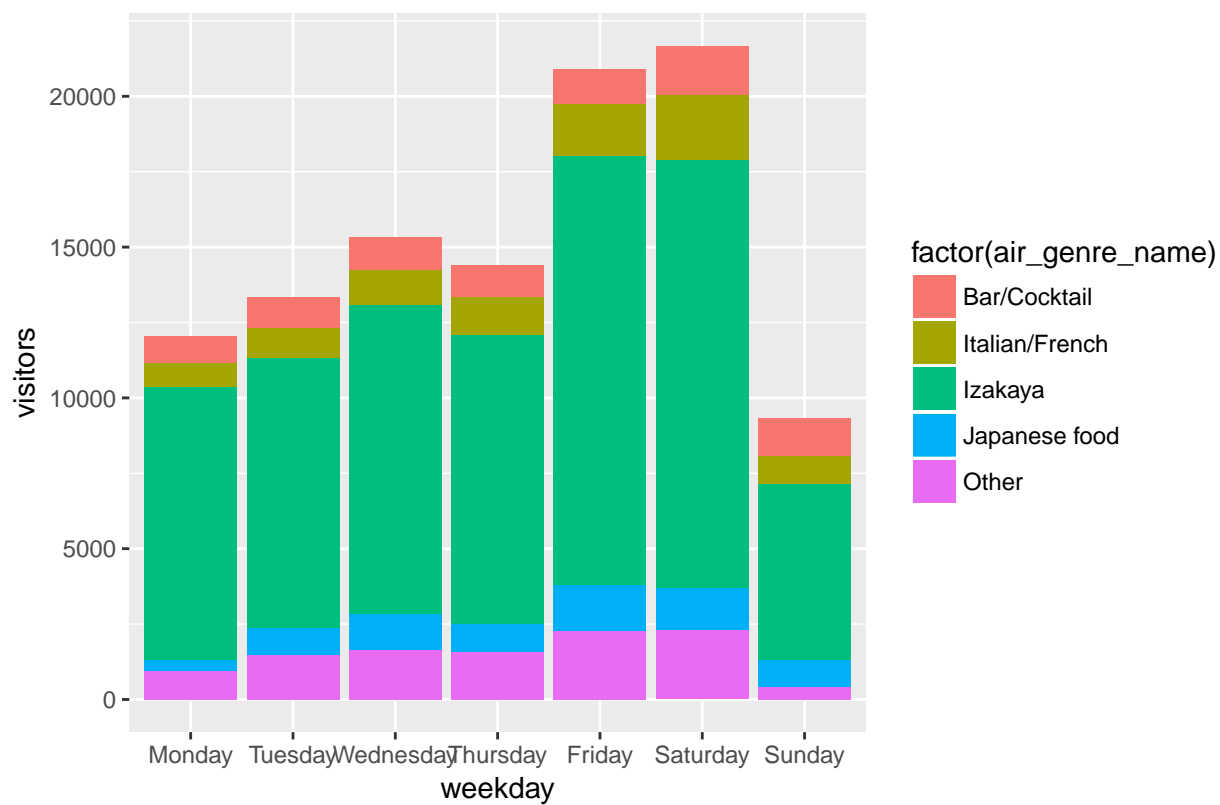
Tokyo-to Shibuya-ku Shibuya

visitors

weekday

```
plot_this('Fukuoka-ken Fukuoka-shi Hakata Ekimae')
```

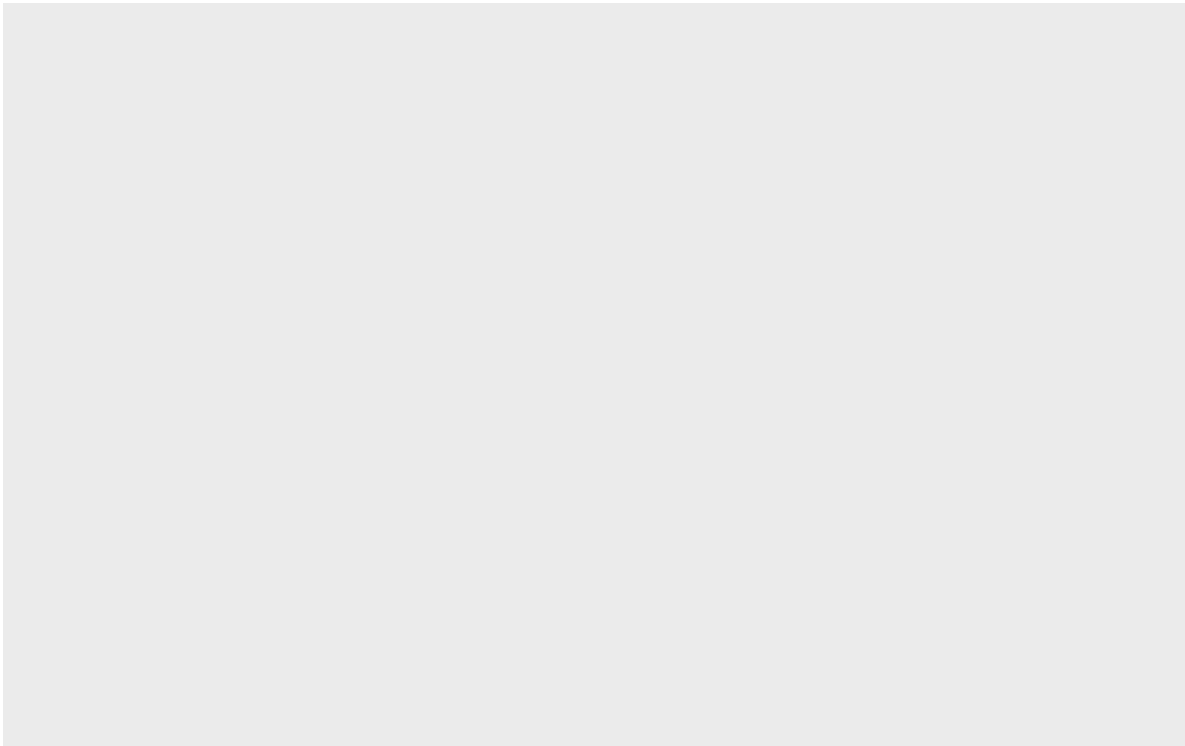
Fukuoka-ken Fukuoka-shi Hakata Ekimae



```
plot_this('T??ky??-to Toshima-ku Sugamo')
```

T??ky??-to Toshima-ku Sugamo

visitors

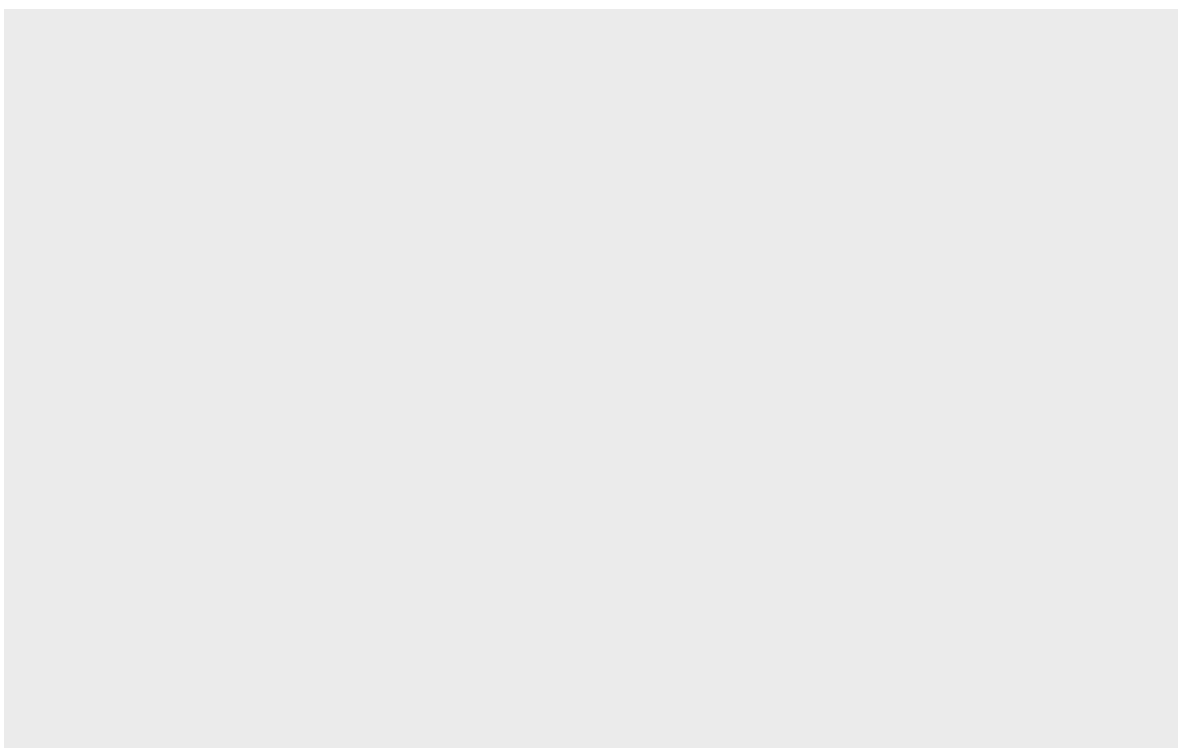


weekday

```
plot_this('T??ky??-to Edogawa-ku Ch????')
```


T??ky??-to Edogawa-ku Ch????

visitors



weekday