```
import pandas as pd
import numpy as np
import seaborn as sns
```

```
ind_food_df = pd.read_csv('/content/Indian food eda.zip')
ind_food_df
```

	name	ingredients	diet	prep_time	cook_time	flavor_profile	course	state	region
0	Balu shahi	Maida flour, yogurt, oil, sugar	vegetarian	45	25	sweet	dessert	West Bengal	East
1	Boondi	Gram flour, ghee, sugar	vegetarian	80	30	sweet	dessert	Rajasthan	West
2	Gajar ka halwa	Carrots, milk, sugar, ghee, cashews, raisins	vegetarian	15	60	sweet	dessert	Punjab	North
3	Ghevar	Flour, ghee, kewra, milk, clarified butter, su...	vegetarian	15	30	sweet	dessert	Rajasthan	West
4	Gulab jamun	Milk powder, plain flour, baking powder, ghee,...	vegetarian	15	40	sweet	dessert	West Bengal	East
...	...	...	...	...	...	...	...	...	...
250	Til Pitha	Glutinous rice, black sesame seeds, gur	vegetarian	5	30	sweet	dessert	Assam	North East
251	Bebinca	Coconut milk, egg yolks, clarified butter, all...	vegetarian	20	60	sweet	dessert	Goa	West
252	Shufta	Cottage cheese, dry dates, dried rose petals, ...	vegetarian	-1	-1	sweet	dessert	Jammu & Kashmir	North
253	Mawa Bati	Milk powder, dry fruits, arrowroot powder, all...	vegetarian	20	45	sweet	dessert	Madhya Pradesh	Central
254	Pinaca	Brown rice, fennel seeds, grated coconut, blac...	vegetarian	-1	-1	sweet	dessert	Goa	West

255 rows × 9 columns

```
ind_food_df.head(20)
```

	name	ingredients	diet	prep_time	cook_time	flavor_profile	course	state	region
0	Balu shahi	Maida flour, yogurt, oil, sugar	vegetarian	45	25	sweet	dessert	West Bengal	East
1	Boondi	Gram flour, ghee, sugar	vegetarian	80	30	sweet	dessert	Rajasthan	West
2	Gajar ka halwa	Carrots, milk, sugar, ghee, cashews, raisins	vegetarian	15	60	sweet	dessert	Punjab	North
3	Ghevar	Flour, ghee, kewra, milk, clarified butter, su...	vegetarian	15	30	sweet	dessert	Rajasthan	West
4	Gulab jamun	Milk powder, plain flour, baking powder, ghee,...	vegetarian	15	40	sweet	dessert	West Bengal	East
5	Imarti	Sugar syrup, lentil flour	vegetarian	10	50	sweet	dessert	West Bengal	East

```
ind_food_df.shape
```

```
(255, 9)
```

```
dfshape = ind_food_df.shape
type(dfshape)
```

```
tuple
```

```
ind_food_df.columns
```

```
Index(['name', 'ingredients', 'diet', 'prep_time', 'cook_time',
       'flavor_profile', 'course', 'state', 'region'],
      dtype='object')
```

```
ind_food_df.isna().sum()
```

```
name              0
ingredients       0
diet              0
prep_time         0
cook_time         0
flavor_profile    0
course            0
state             0
region            1
dtype: int64
```

```
ind_food_df.describe()
```

	prep_time	cook_time
count	255.000000	255.000000
mean	31.105882	34.529412
std	72.554409	48.265650
min	-1.000000	-1.000000

```
ind_food_df.info
```

```
<bound method DataFrame.info of                name                                        ingredients  \
0        Balu shahi                    Maida flour, yogurt, oil, sugar
1            Boondi                                Gram flour, ghee, sugar
2    Gajar ka halwa       Carrots, milk, sugar, ghee, cashews, raisins
3            Ghevar  Flour, ghee, kewra, milk, clarified butter, su...
4       Gulab jamun  Milk powder, plain flour, baking powder, ghee,...
..              ...                                                ...
250       Til Pitha            Glutinous rice, black sesame seeds, gur
251         Bebinca  Coconut milk, egg yolks, clarified butter, all...
252          Shufta  Cottage cheese, dry dates, dried rose petals, ...
253       Mawa Bati  Milk powder, dry fruits, arrowroot powder, all...
254          Pinaca  Brown rice, fennel seeds, grated coconut, blac...

           diet  prep_time  cook_time flavor_profile   course  \
0    vegetarian         45         25          sweet  dessert
1    vegetarian         80         30          sweet  dessert
2    vegetarian         15         60          sweet  dessert
3    vegetarian         15         30          sweet  dessert
4    vegetarian         15         40          sweet  dessert
..          ...        ...        ...            ...      ...
250  vegetarian          5         30          sweet  dessert
251  vegetarian         20         60          sweet  dessert
252  vegetarian         -1         -1          sweet  dessert
253  vegetarian         20         45          sweet  dessert
254  vegetarian         -1         -1          sweet  dessert

                state      region
0        West Bengal        East
1          Rajasthan        West
2             Punjab       North
3          Rajasthan        West
4        West Bengal        East
..               ...         ...
250            Assam  North East
251              Goa        West
252  Jammu & Kashmir       North
253   Madhya Pradesh     Central
254              Goa        West

[255 rows x 9 columns]>
```

```
ind_food_df.head(50)
```

	name	ingredients	diet	prep_time	cook_time	flavor_profile	course	state	region
0	Balu shahi	Maida flour, yogurt, oil, sugar	vegetarian	45	25	sweet	dessert	West Bengal	East
1	Boondi	Gram flour, ghee, sugar	vegetarian	80	30	sweet	dessert	Rajasthan	West
2	Gajar ka halwa	Carrots, milk, sugar, ghee, cashews, raisins	vegetarian	15	60	sweet	dessert	Punjab	North
3	Ghevar	Flour, ghee, kewra, milk, clarified butter, su...	vegetarian	15	30	sweet	dessert	Rajasthan	West
4	Gulab jamun	Milk powder, plain flour, baking powder, ghee,...	vegetarian	15	40	sweet	dessert	West Bengal	East
5	Imarti	Sugar syrup, lentil flour	vegetarian	10	50	sweet	dessert	West Bengal	East
6	Jalebi	Maida, corn flour, baking soda, vinegar, curd,...	vegetarian	10	50	sweet	dessert	Uttar Pradesh	North
7	Kaju katli	Cashews, ghee, cardamom, sugar	vegetarian	10	20	sweet	dessert	-1	-1
8	Kalakand	Milk, cottage cheese, sugar	vegetarian	20	30	sweet	dessert	West Bengal	East
9	Kheer	Milk, rice, sugar, dried fruits	vegetarian	10	40	sweet	dessert	-1	-1
10	Laddu	Gram flour, ghee, sugar	vegetarian	10	40	sweet	dessert	-1	-1
11	Lassi	Yogurt, milk, nuts, sugar	vegetarian	5	5	sweet	dessert	Punjab	North
12	Nankhatai	Refined flour, besan, ghee, powdered sugar, yo...	vegetarian	20	30	sweet	dessert	-1	-1
13	Petha	Firm white pumpkin, sugar, kitchen lime, alum ...	vegetarian	10	30	sweet	dessert	Uttar Pradesh	North
14	Phirni	Rice, sugar, nuts	vegetarian	30	20	sweet	dessert	Odisha	East
15	Rabri	Condensed milk, sugar, spices, nuts	vegetarian	10	45	sweet	dessert	Uttar Pradesh	North
16	Sheera	Semolina, ghee, nuts, milk	vegetarian	10	25	sweet	dessert	Maharashtra	West
17	Singori	Khoa, coconut, molu leaf	vegetarian	10	20	sweet	dessert	Uttarakhand	North
18	Sohan halwa	Corn flour, ghee, dry fruits	vegetarian	10	60	sweet	dessert	Uttar Pradesh	North
19	Sohan papdi	Gram flour, ghee, sugar, milk, cardamom	vegetarian	-1	60	sweet	dessert	Maharashtra	West
20	Chhena jalebi	Chhena, sugar, ghee	vegetarian	10	50	sweet	dessert	Odisha	East
21	Chhena kheeri	Chhena, sugar, milk	vegetarian	-1	60	sweet	dessert	Odisha	East
22	Chhena poda	Sugar, chenna cheese	vegetarian	10	45	sweet	dessert	Odisha	East
23	Cham cham	Flour, cream, sugar, saffron, lemon juice, coc...	vegetarian	40	60	sweet	dessert	West Bengal	East
24	Kheer sagar	Chenna, condensed milk, sugar, saffron, cardamom	vegetarian	25	60	sweet	dessert	Odisha	East
25	Ledikeni	Chhena, sugar, ghee	vegetarian	45	45	sweet	dessert	West Bengal	East
		Flour, fried milk power							North

26	Lyangcha	Flour, fried milk powder, sugar syrup	vegetarian	20	30	sweet	dessert	Assam	North East
27	Malapua	Yoghurt, refined flour, ghee, fennel seeds	vegetarian	10	120	sweet	dessert	Bihar	North
28	Mihidana	Besan flour, sugar, ghee	vegetarian	15	30	sweet	dessert	West Bengal	East
29	Misti doi	Milk, jaggery	vegetarian	480	30	sweet	dessert	West Bengal	East
30	Pantua	Chhena, sugar, ghee, flour	vegetarian	45	45	sweet	dessert	West Bengal	East
31	Pithe	Rice flour, wheat flour	vegetarian	15	35	sweet	dessert	Assam	North East
32	Rasabali	Chenna, sweetened milk	vegetarian	15	30	sweet	dessert	Odisha	East
33	Ras malai	Chhena, reduced milk, pistachio	vegetarian	180	60	sweet	dessert	West Bengal	East
34	Rasgulla	Chhena, sugar, cardamom	vegetarian	10	90	sweet	dessert	West Bengal	East
35	Sandesh	Milk, sugar, saffron, cardamom	vegetarian	30	20	sweet	dessert	West Bengal	East
36	Adhirasam	Rice flour, jaggery, ghee, vegetable oil, elachi	vegetarian	10	50	sweet	dessert	West Bengal	East

```
ind_food_df['region']==-1
```

```
0      False
1      False
2      False
3      False
4      False
       ...
250    False
251    False
252    False
253    False
254    False
Name: region, Length: 255, dtype: bool
```

```
ind_food_df[ind_food_df['region']=='-1']
```

	name	ingredients	diet	prep_time	cook_time	flavor_profile	course	state	region
7	Kaju katli	Cashews, ghee, cardamom, sugar	vegetarian	10	20	sweet	dessert	-1	-1
9	Kheer	Milk, rice, sugar, dried fruits	vegetarian	10	40	sweet	dessert	-1	-1
10	Laddu	Gram flour, ghee, sugar	vegetarian	10	40	sweet	dessert	-1	-1
12	Nankhatai	Refined flour, besan, ghee, powdered sugar, yo...	vegetarian	20	30	sweet	dessert	-1	-1

```
ind_food_df.loc[ind_food_df['region']=='-1', 'region'] = 'West'
ind_food_df[:10]
```

	name	ingredients	diet	prep_time	cook_time	flavor_profile	course	state	region
0	Balu shahi	Maida flour, yogurt, oil, sugar	vegetarian	45	25	sweet	dessert	West Bengal	East
1	Boondi	Gram flour, ghee, sugar	vegetarian	80	30	sweet	dessert	Rajasthan	West
2	Gajar ka halwa	Carrots, milk, sugar, ghee, cashews, raisins	vegetarian	15	60	sweet	dessert	Punjab	North
3	Ghevar	Flour, ghee, kewra, milk, clarified butter, su...	vegetarian	15	30	sweet	dessert	Rajasthan	West
4	Gulab jamun	Milk powder, plain flour, baking powder, ghee,...	vegetarian	15	40	sweet	dessert	West Bengal	East
5	Imarti	Sugar syrup, lentil flour	vegetarian	10	50	sweet	dessert	West Bengal	East
6	Jalebi	Maida, corn flour, baking soda, vinegar, curd,...	vegetarian	10	50	sweet	dessert	Uttar Pradesh	North
7	Kaju katli	Cashews, ghee, cardamom, sugar	vegetarian	10	20	sweet	dessert	-1	West
8	Kalakand	Milk, cottage cheese, sugar	vegetarian	20	30	sweet	dessert	West Bengal	East
9	Kheer	Milk, rice, sugar, dried fruits	vegetarian	10	40	sweet	dessert	-1	West

```
ind_food_df[ind_food_df['region']=='-1']
```

name	ingredients	diet	prep_time	cook_time	flavor_profile	course	state	region

```
type(ind_food_df)
```

```
pandas.core.frame.DataFrame
```

```
ind_food_df['region'].value_counts()
```

```
West          87
South         59
North         49
East          31
North East    25
Central        3
Name: region, dtype: int64
```

```
import seaborn as sns
import matplotlib
import matplotlib.pyplot as plt
%matplotlib inline

sns.set_style('darkgrid')
matplotlib.rcParams['font.size'] = 14
matplotlib.rcParams['figure.figsize'] = (9, 5)
matplotlib.rcParams['figure.facecolor'] = '#00000000'
```

```
ind_food_df
```

	name	ingredients	diet	prep_time	cook_time	flavor_profile	course	state	region
0	Balu shahi	Maida flour, yogurt, oil, sugar	vegetarian	45	25	sweet	dessert	West Bengal	East
1	Boondi	Gram flour, ghee, sugar	vegetarian	80	30	sweet	dessert	Rajasthan	West
2	Gajar ka halwa	Carrots, milk, sugar, ghee, cashews, raisins	vegetarian	15	60	sweet	dessert	Punjab	North
3	Ghevar	Flour, ghee, kewra, milk, clarified butter, su...	vegetarian	15	30	sweet	dessert	Rajasthan	West
4	Gulab jamun	Milk powder, plain flour, baking powder, ghee,...	vegetarian	15	40	sweet	dessert	West Bengal	East
...	...	...	...	...	...	...	...	...	...
250	Til Pitha	Glutinous rice, black sesame seeds, gur	vegetarian	5	30	sweet	dessert	Assam	North East
251	Bebinca	Coconut milk, egg yolks, clarified butter, all...	vegetarian	20	60	sweet	dessert	Goa	West
252	Shufta	Cottage cheese, dry dates, dried rose petals, ...	vegetarian	-1	-1	sweet	dessert	Jammu & Kashmir	North
253	Mawa Bati	Milk powder, dry fruits, arrowroot powder, all...	vegetarian	20	45	sweet	dessert	Madhya Pradesh	Central
254	Pinaca	Brown rice, fennel seeds, grated coconut, blac...	vegetarian	-1	-1	sweet	dessert	Goa	West

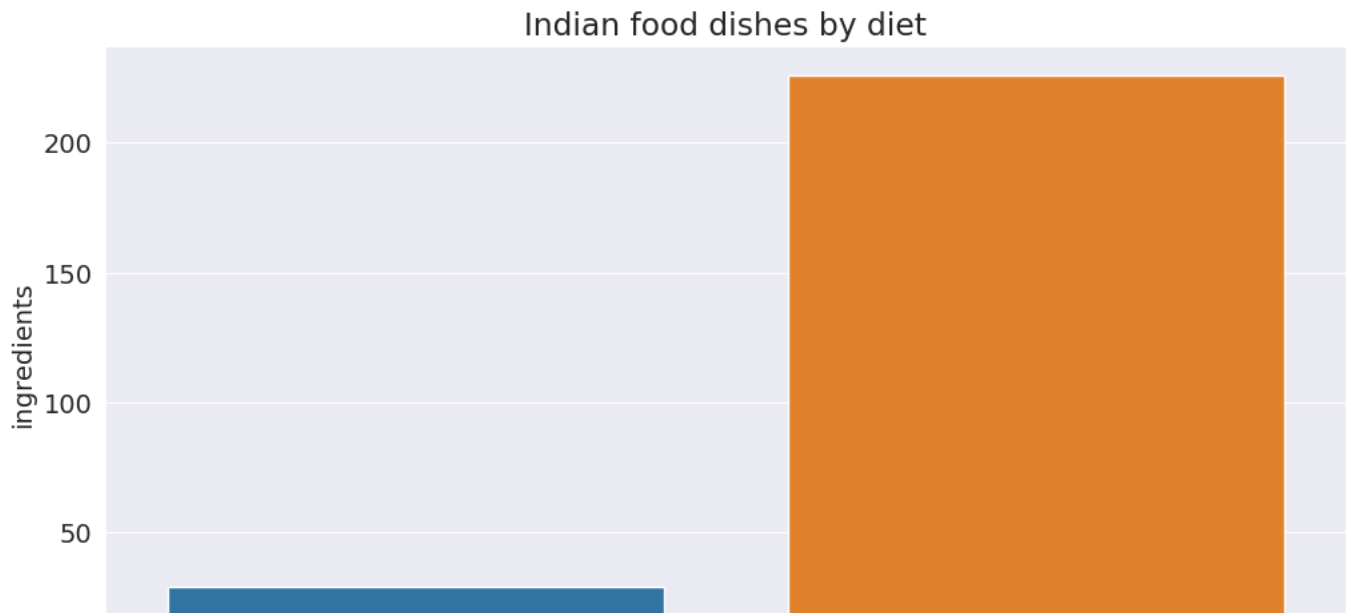
255 rows × 9 columns

```
food_by_diet = ind_food_df.groupby(by=['diet'])['ingredients'].count()
```

```
food_by_diet
```

```
diet
non vegetarian     29
vegetarian        226
Name: ingredients, dtype: int64
```

```
plt.figure(figsize=(12,6))
plt.title('Indian food dishes by diet')
sns.barplot(x=food_by_diet.index, y=food_by_diet);
```

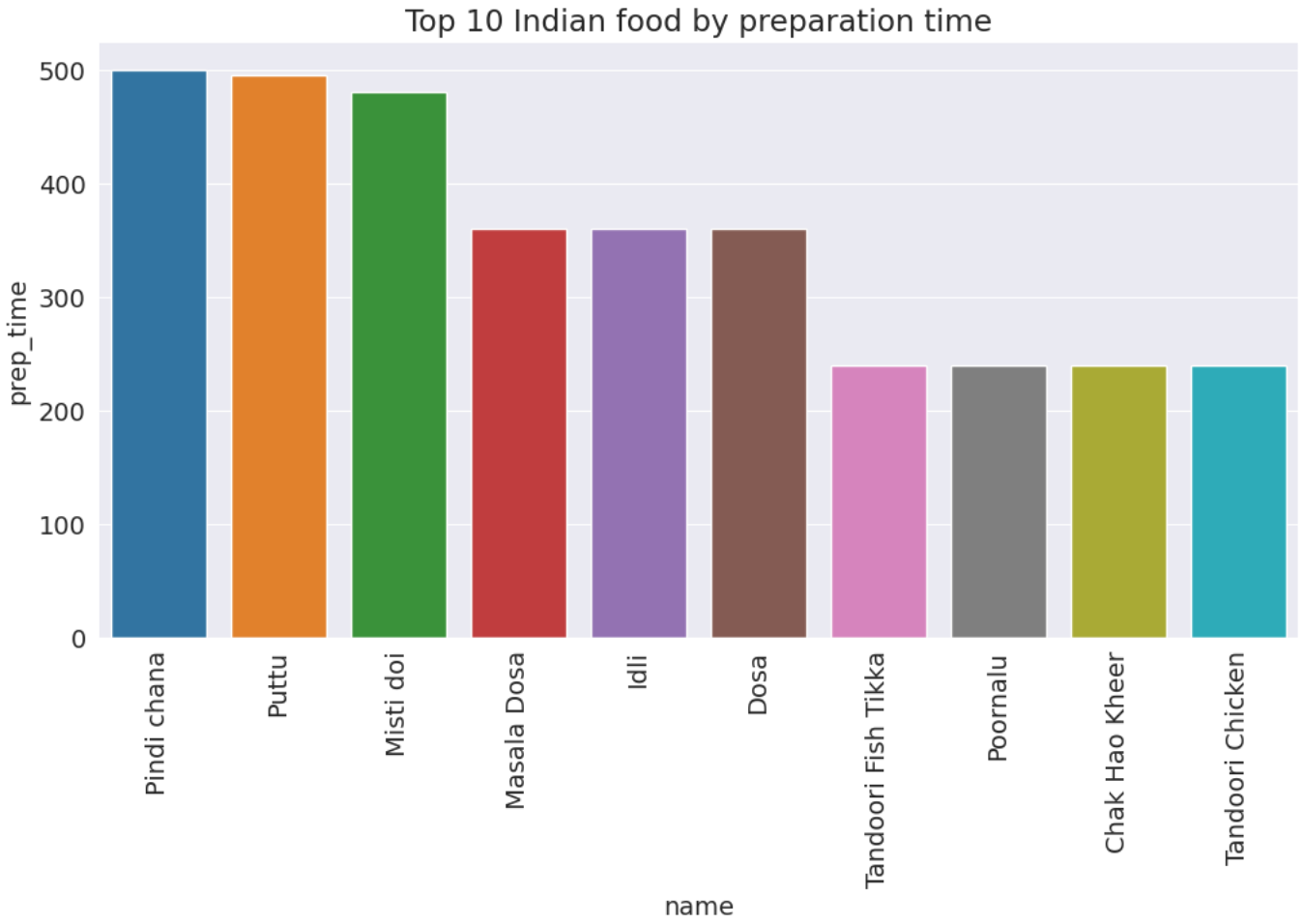



```
top_10_food_by_prep_time = ind_food_df[['name','prep_time']].set_index('name').sort_values(
    by='prep_time', ascending=False).head(10)
top_10_food_by_prep_time
```

name	prep_time
Pindi chana	500
Puttu	495
Misti doi	480
Masala Dosa	360
Idli	360
Dosa	360
Tandoori Fish Tikka	240
Poornalu	240
Chak Hao Kheer	240
Tandoori Chicken	240

```
plt.figure(figsize=(12,6))
plt.xticks(rotation=90)
plt.title('Top 10 Indian food by preparation time')
plt.xlabel('Indian Food')
plt.ylabel('Preparation Time')
```

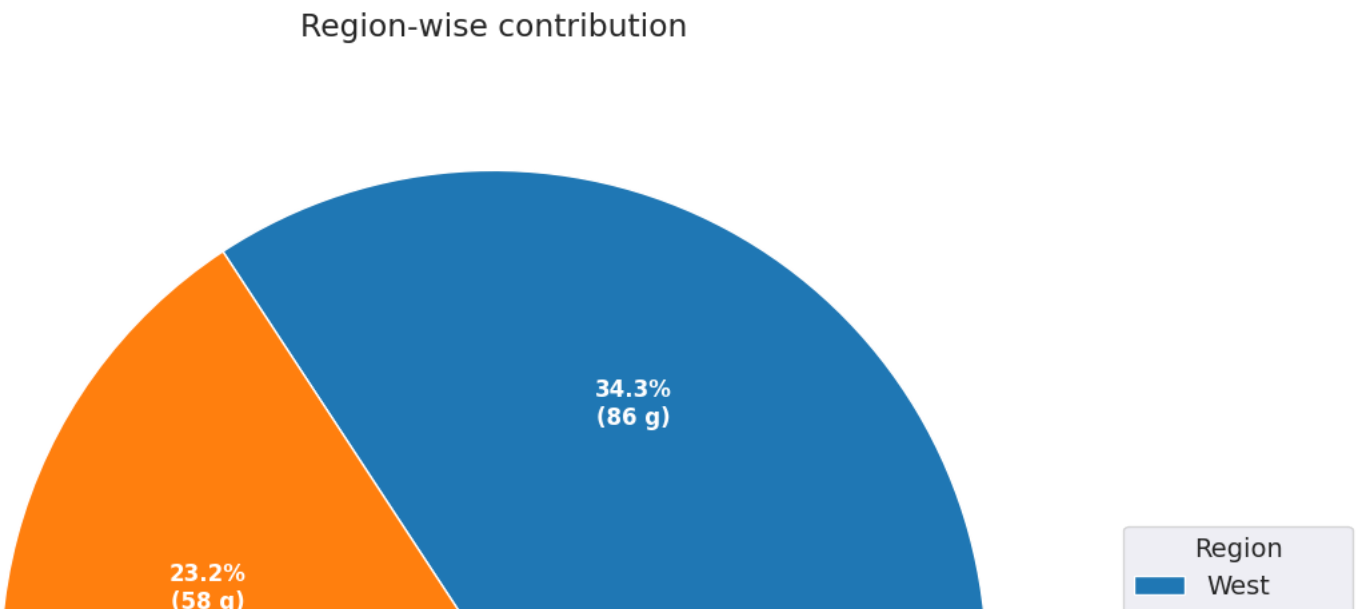
```
sns.barplot(x=top_10_food_by_prep_time.index, y=top_10_food_by_prep_time.prep_time);
```




```
region_count = ind_food_df.region.value_counts()
region_count
```

```
West          87
South         59
North         49
East          31
North East    25
Central        3
Name: region, dtype: int64
```

```
import matplotlib.pyplot as plt

fig, ax = plt.subplots(figsize=(12, 12), subplot_kw=dict(aspect="equal"))

data = region_count.values
ingredients = region_count.index


def func(pct, allvals):
    absolute = int(pct/100.*np.sum(allvals))
    return "{:.1f}%\n({:d} g)".format(pct, absolute)


wedges, texts, autotexts = ax.pie(data, autopct=lambda pct: func(pct, region_count),
                                  textprops=dict(color="w"))

ax.legend(wedges, ingredients,
          title="Region",
          loc="center left",
          bbox_to_anchor=(1, 0, 0.5, 1))

plt.setp(autotexts, size=12, weight="bold")

ax.set_title("Region-wise contribution")

plt.show()
```




```
ind_food_df.columns
```

```
Index(['name', 'ingredients', 'diet', 'prep_time', 'cook_time',
       'flavor_profile', 'course', 'state', 'region'],
      dtype='object')
```

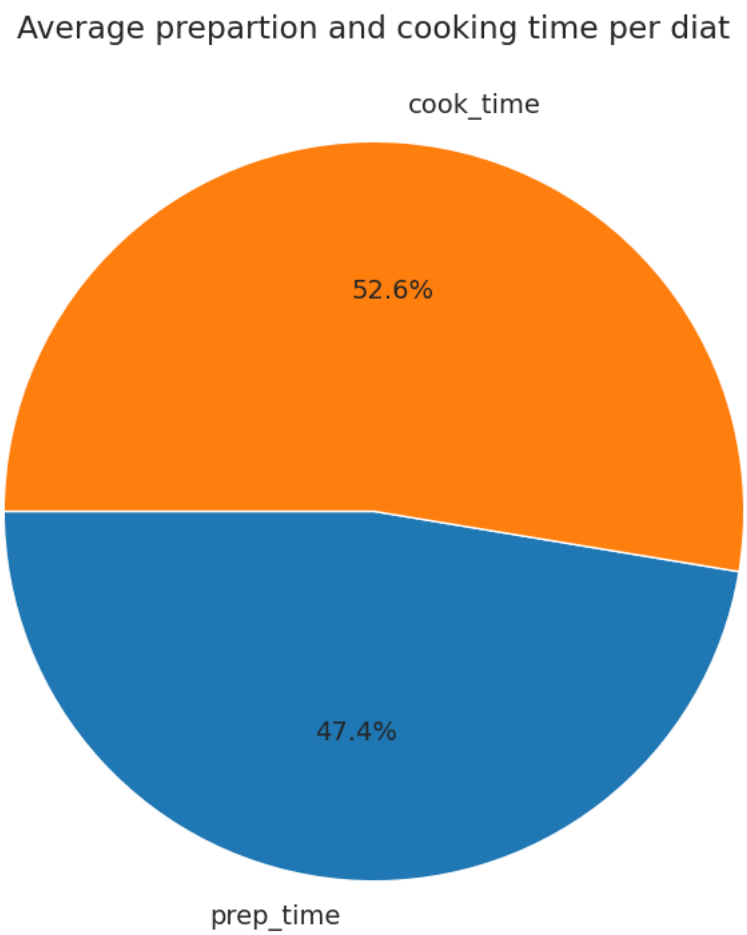
```
ind_food_df[['diet','prep_time','cook_time']].mean()
```

```
<ipython-input-46-bcd0121e7ab5>:1: FutureWarning: The default value of numeric_only in DataFrame.mean is deprecated. In a future version, it will default to False. In addition, specifying 'numeric
  ind_food_df[['diet','prep_time','cook_time']].mean()
prep_time    31.105882
cook_time    34.529412
dtype: float64
```

```
diat_data = ind_food_df[['diet','prep_time','cook_time']].mean()
diat_data
```

```
<ipython-input-47-f0a258fa254d>:1: FutureWarning: The default value of numeric_only in DataFrame.mean is deprecated. In a future version, it will default to False. In addition, specifying 'numeric
  diat_data = ind_food_df[['diet','prep_time','cook_time']].mean()
prep_time    31.105882
cook_time    34.529412
dtype: float64
```

```
plt.figure(figsize=(12,9))
plt.title('Average prepartion and cooking time per diat')
plt.pie(diat_data, labels=diat_data.index, autopct='%1.1f%%', startangle=180);
```




```
dish_per_flavorProfile = ind_food_df[['name','flavor_profile']]
dish_per_flavorProfile
```

	name	flavor_profile
0	Balu shahi	sweet
1	Boondi	sweet
2	Gajar ka halwa	sweet
3	Ghevar	sweet
4	Gulab jamun	sweet

```
flavorProfiles = dish_per_flavorProfile['flavor_profile'].unique()
flavorProfiles
```

```
array(['sweet', 'spicy', 'bitter', '-1', 'sour'], dtype=object)
```

```
Mydict = {}

for i in flavorProfiles:
    Mydict[i] = []

print(Mydict)

for ind in dish_per_flavorProfile.index:
    Mydict[dish_per_flavorProfile['flavor_profile'][ind]].append(dish_per_flavorProfile['name'][ind])
```

```
{'sweet': [], 'spicy': [], 'bitter': [], '-1': [], 'sour': []}
```

```
for i in flavorProfiles:
    print(i, '\n', "-"*25, '\n', Mydict[i])
```

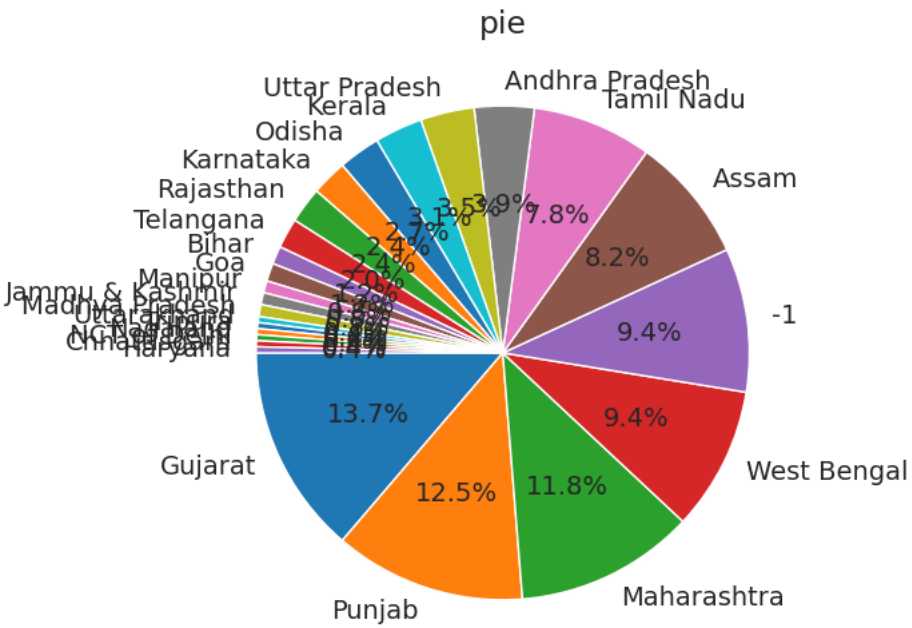
```
sweet
 -------------------------
 ['Balu shahi', 'Boondi', 'Gajar ka halwa', 'Ghevar', 'Gulab jamun', 'Imarti', 'Jalebi', 'Kaju katli', 'Kalakand', 'Kheer', 'Laddu', 'Lassi', 'Nankhatai', 'Petha', 'Phirni', 'Rabri', 'Sheera', 'Si
spicy
 -------------------------
 ['Maach Jhol', 'Pork Bharta', 'Galho', 'Aloo gobi', 'Aloo tikki', 'Aloo matar', 'Aloo shimla mirch', 'Bhatura', 'Bhindi masala', 'Biryani', 'Butter chicken', 'Chana masala', 'Chicken razala', 'Ch
bitter
 -------------------------
 ['Aloo methi', 'Karela bharta', 'Methi na Gota', 'Muthiya']
-1
 -------------------------
 ['Chapati', 'Naan', 'Rongi', 'Kanji', 'Pachadi', 'Paniyaram', 'Paruppu sadam', 'Puli sadam', 'Puttu', 'Sandige', 'Sevai', 'Thayir sadam', 'Theeyal', 'Bhakri', 'Copra paak', 'Dahi vada', 'Dalithoy
sour
 -------------------------
 ['Keri no ras']
```

```
state_wise_counts = ind_food_df.state.value_counts()
state_wise_counts
```

```
Gujarat           35
Punjab            32
Maharashtra       30
West Bengal       24
-1                24
```

```
Assam             21
Tamil Nadu        20
Andhra Pradesh    10
Uttar Pradesh      9
Kerala             8
Odisha             7
Karnataka          6
Rajasthan          6
Telangana          5
Bihar              3
Goa                3
Manipur            2
Jammu & Kashmir    2
Madhya Pradesh     2
Uttarakhand        1
Tripura            1
Nagaland           1
NCT of Delhi       1
Chhattisgarh       1
Haryana            1
Name: state, dtype: int64
```

```
plt.figure(figsize=(12,6))
plt.title('pie')
plt.pie(state_wise_counts.values, labels=state_wise_counts.index, autopct='%1.1f%%', startangle=180);
```




```
sns.countplot(y=ind_food_df.state)
plt.xticks(rotation=75);
```

```
plt.title('EdLevel')
plt.ylabel(None);
```