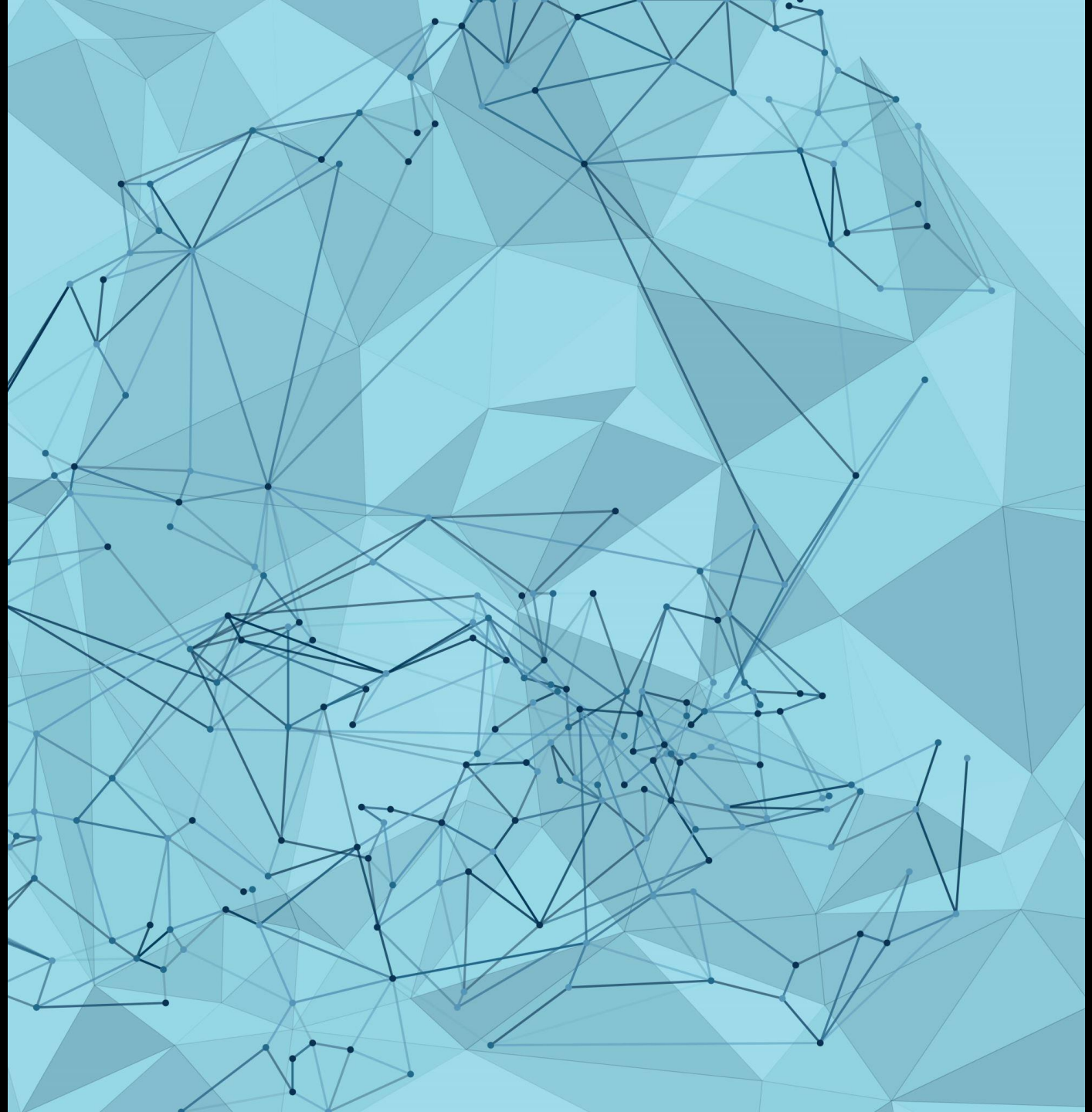
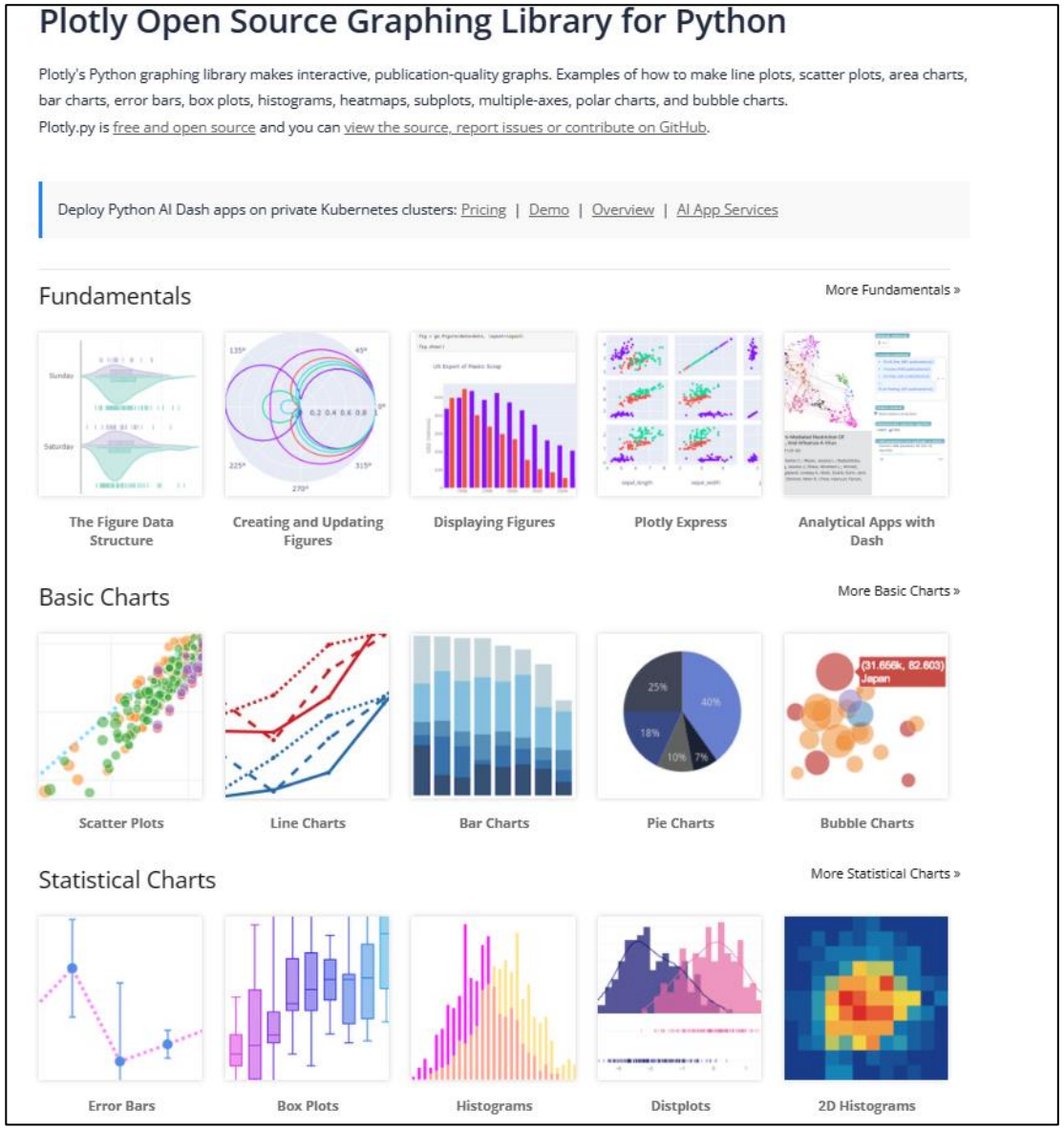
Interactive Graph



인터랙티브 그래프

- 마우스의 움직임에 반응하여 실시간으로 모양이 변하는 그래프
- 그래프를 자유롭게 조작하면서 관심 있는 부분을 자세히 살펴볼 수 있음
- 그래프를 HTML포맷으로 저장하면 일반 사용자도 웹브라우저에서 그래프 조작



인터랙티브 그래프

- 패키지 설치 : plotly, jupyter-dash 패키지 설치하기

Anaconda Prompt (anaconda3) - pip install jupyter-dash

```
(base) C:₩Users₩LG>pip install plotly
WARNING: Ignoring invalid distribution -ypel (c:₩users₩lg₩anaconda3₩lib₩site-packages)
Collecting plotly
  Using cached plotly-5.15.0-py2.py3-none-any.whl (15.5 MB)
Collecting tenacity>=6.2.0 (from plotly)
  Using cached tenacity-8.2.2-py3-none-any.whl (24 kB)
Requirement already satisfied: packaging in c:₩users₩lg₩anaconda3₩lib₩site-packages (from plotly) (20.9)
Requirement already satisfied: pyparsing>=2.0.2 in c:₩users₩lg₩anaconda3₩lib₩site-packages (from packaging->plotly) (2.4
.7)
WARNING: Ignoring invalid distribution -ypel (c:₩users₩lg₩anaconda3₩lib₩site-packages)
Installing collected packages: tenacity, plotly
Successfully installed plotly-5.15.0 tenacity-8.2.2
```

Anaconda Prompt (anaconda3)

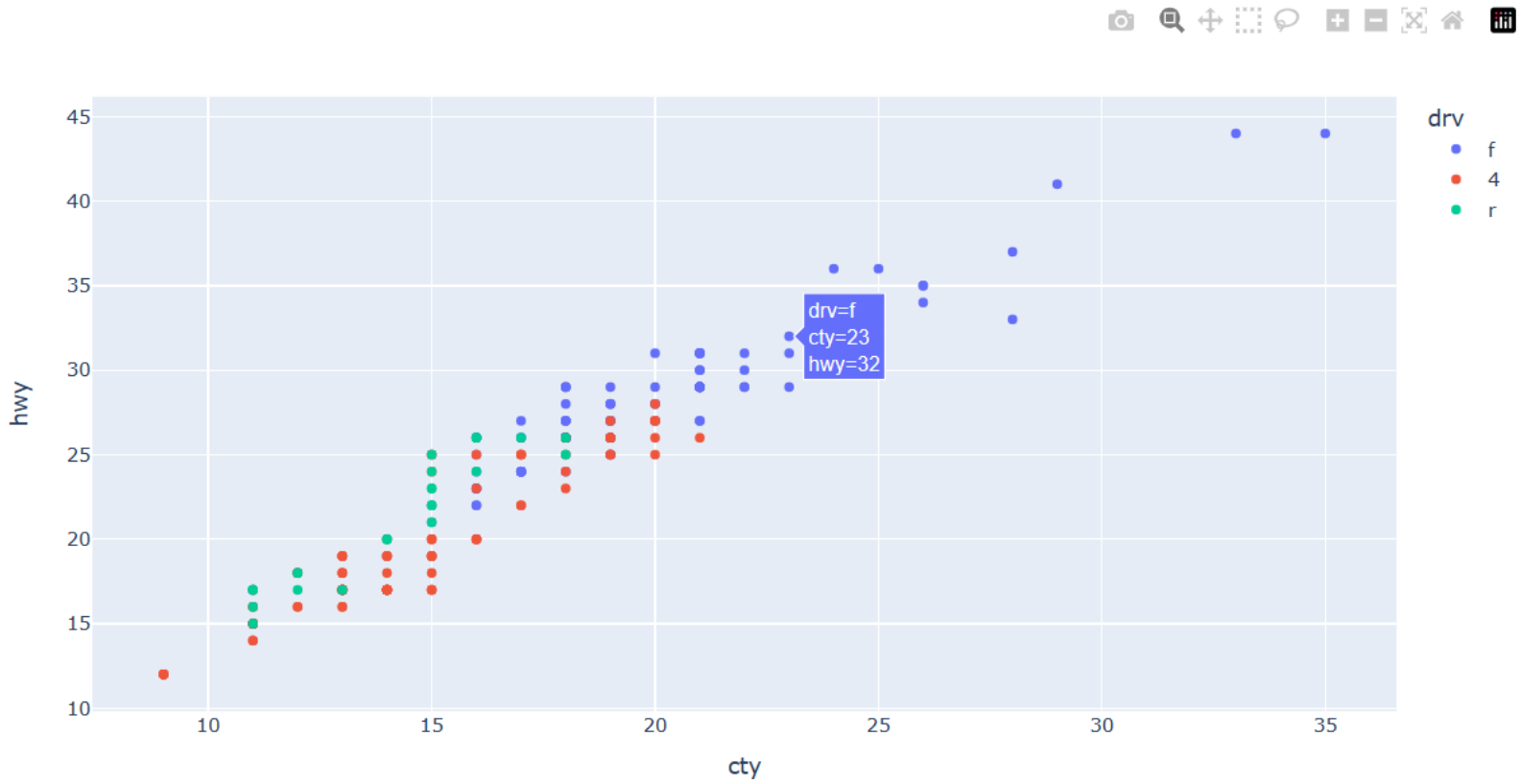
```
(base) C:₩Users₩LG>pip install jupyter-dash
WARNING: Ignoring invalid distribution -ypel (c:₩users₩lg₩anaconda3₩lib₩site-packages)
Collecting jupyter-dash
  Using cached jupyter_dash-0.4.2-py3-none-any.whl (23 kB)
Collecting dash (from jupyter-dash)
  Using cached dash-2.10.2-py3-none-any.whl (10.3 MB)
Requirement already satisfied: requests in c:₩users₩lg₩anaconda3₩lib₩site-packages (from jupyter-dash) (2.25.1)
Requirement already satisfied: flask in c:₩users₩lg₩anaconda3₩lib₩site-packages (from jupyter-dash) (1.1.2)
Collecting retrying (from jupyter-dash)
  Using cached retrying-1.3.4-py3-none-any.whl (11 kB)
Requirement already satisfied: ipython in c:₩users₩lg₩anaconda3₩lib₩site-packages (from jupyter-dash) (7.22.0)
Requirement already satisfied: ipykernel in c:₩users₩lg₩anaconda3₩lib₩site-packages (from jupyter-dash) (5.3.4)
Collecting ansi2html (from jupyter-dash)
  Using cached ansi2html-1.8.0-py3-none-any.whl (16 kB)
Requirement already satisfied: nest-asyncio in c:₩users₩lg₩anaconda3₩lib₩site-packages (from jupyter-dash) (1.5.1)
Requirement already satisfied: Werkzeug<2.3.0 in c:₩users₩lg₩anaconda3₩lib₩site-packages (from dash->jupyter-dash) (1.0.
1)
Requirement already satisfied: plotly>=5.0.0 in c:₩users₩lg₩anaconda3₩lib₩site-packages (from dash->jupyter-dash) (5.15.
0)
Collecting dash-html-components==2.0.0 (from dash->jupyter-dash)
```

인터랙티브 그래프

- 산점도 그래프

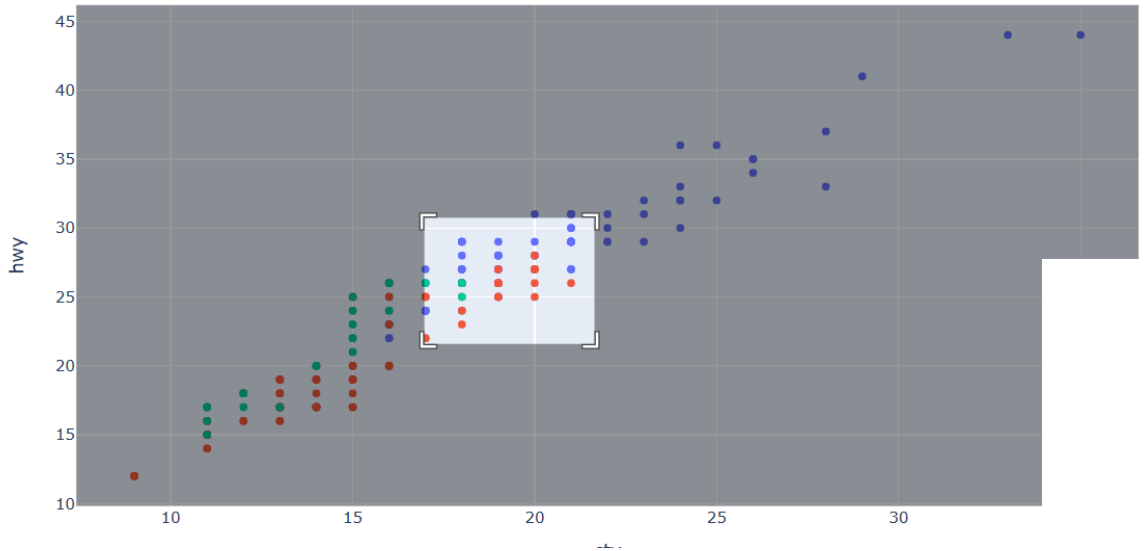
In [10]:
```
1 import pandas as pd
2 mpg = pd.read_csv('mpg.csv')
```

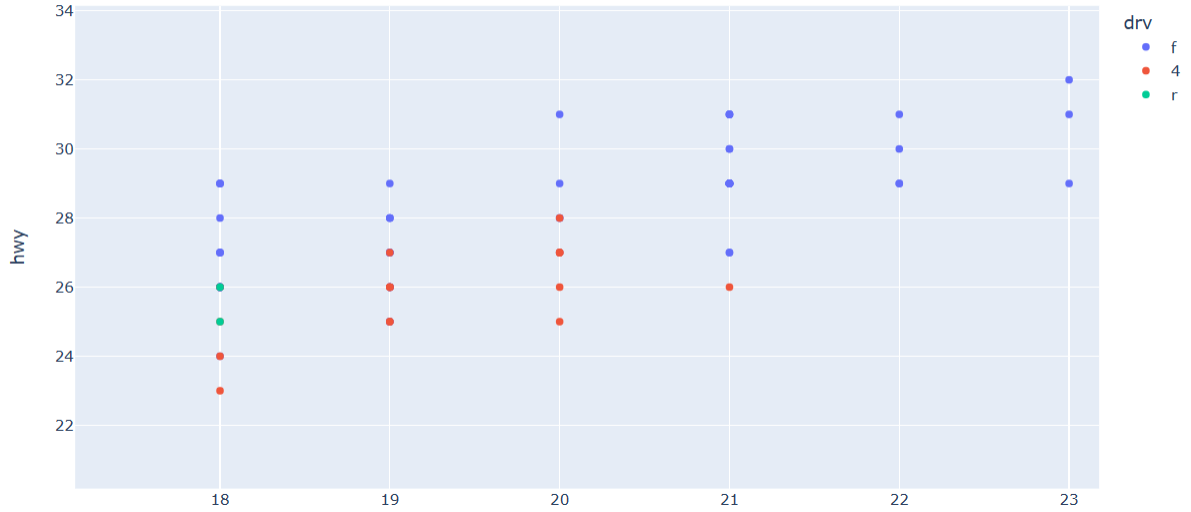
In [11]:
```
1 # 산점도 만들기
2 import plotly.express as px
3 px.scatter(data_frame = mpg, x = 'cty', y = 'hwy', color = 'drv')
```



인터랙티브 그래프

- 인터랙티브 기능 활용
  - 마우스 드래그하면 축의 범위가 바뀜(선택 영역이 확대됨)
  - 더블클릭을 하면 다시 원래대로 되돌아 옴





인터랙티브 그래프

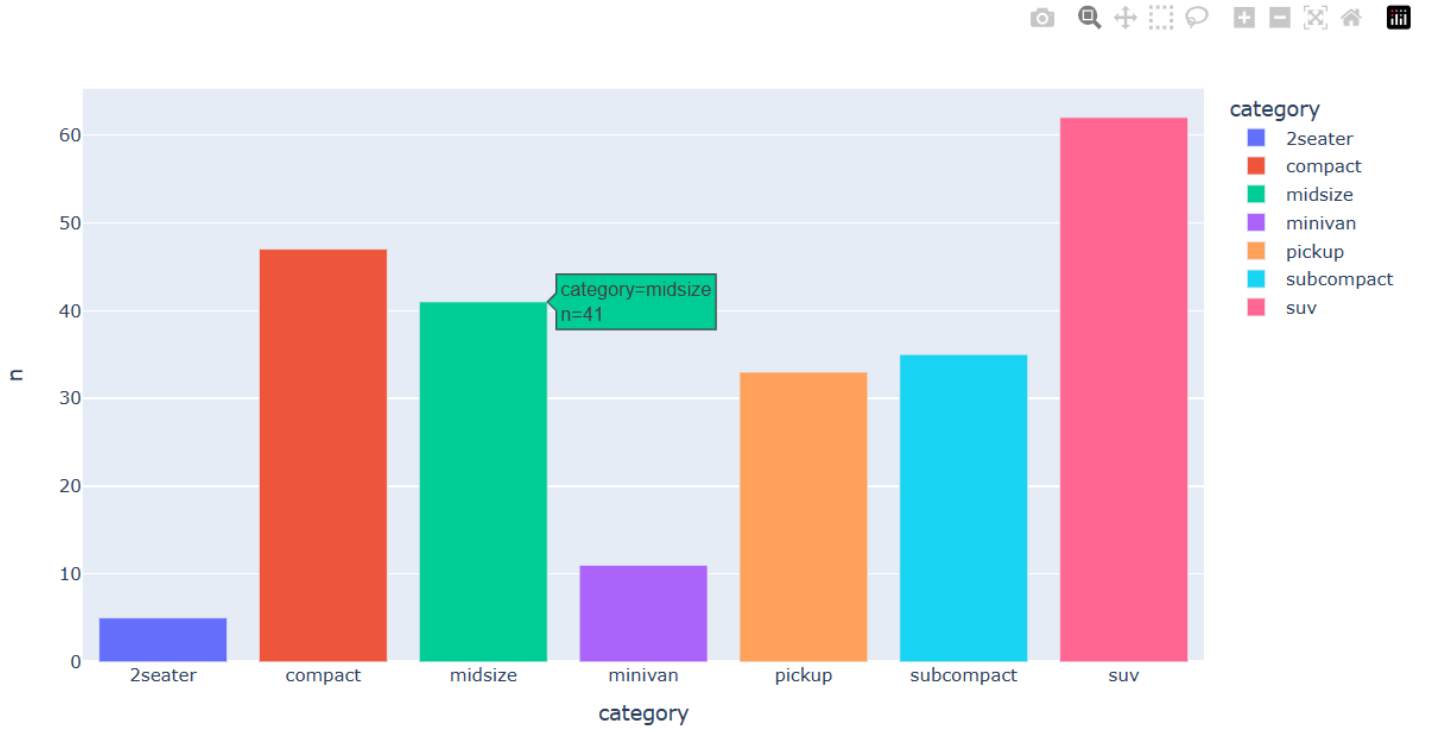
- 막대그래프(자동차 종류별 구매율)

In [12]:
```
# 자동차 종류별 빈도 구하기
df = mpg.groupby('category', as_index = False) \
        .agg(n = ('category', 'count'))
df
```

Out[12]:

	category	n
0	2seater	5
1	compact	47
2	midsize	41
3	minivan	11
4	pickup	33
5	subcompact	35
6	suv	62

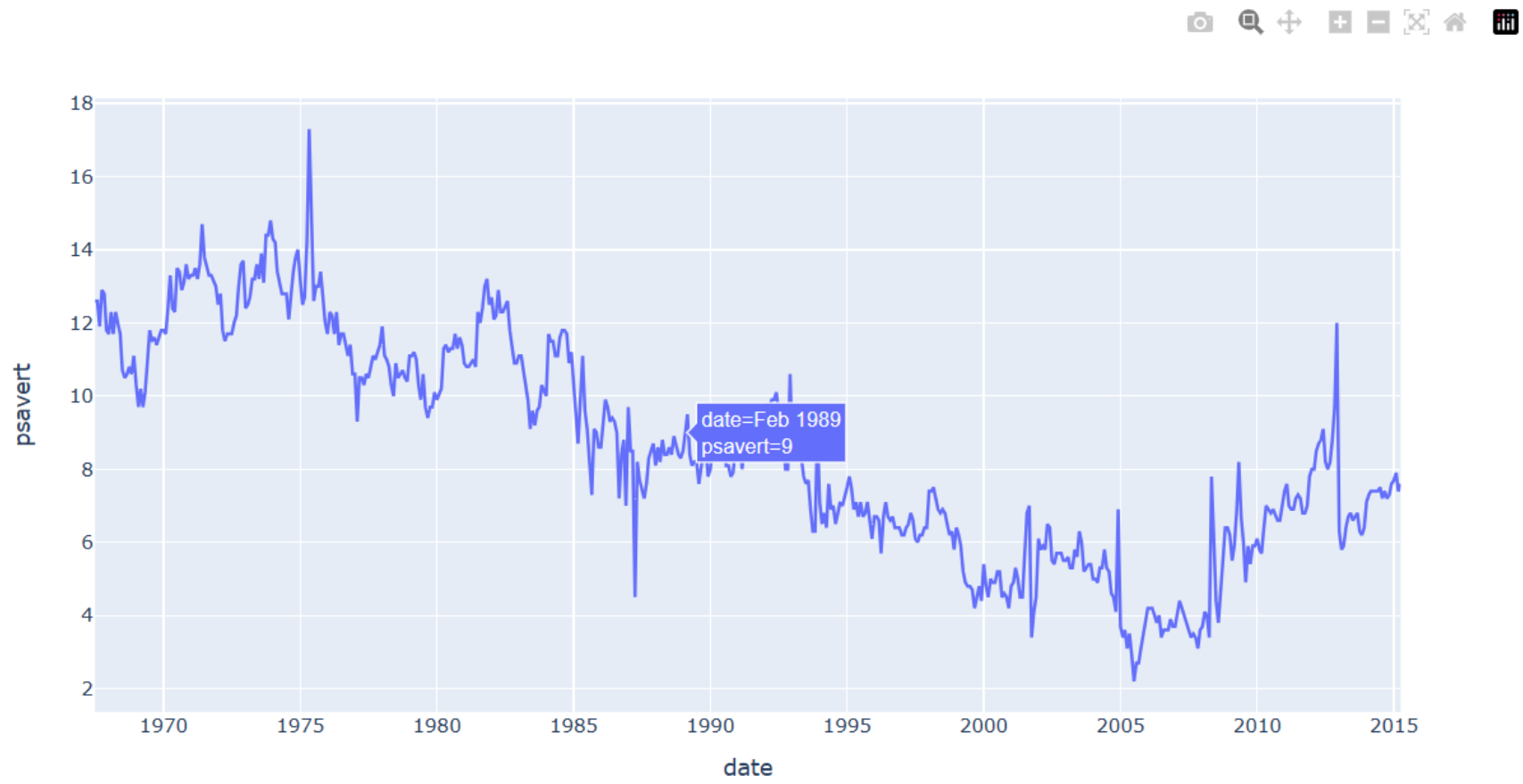
In [13]:
```
# 막대 그래프 만들기
px.bar(data_frame = df, x = 'category', y = 'n', color = 'category')
```



인터랙티브 그래프

- 선 그래프(일자별 저축률)

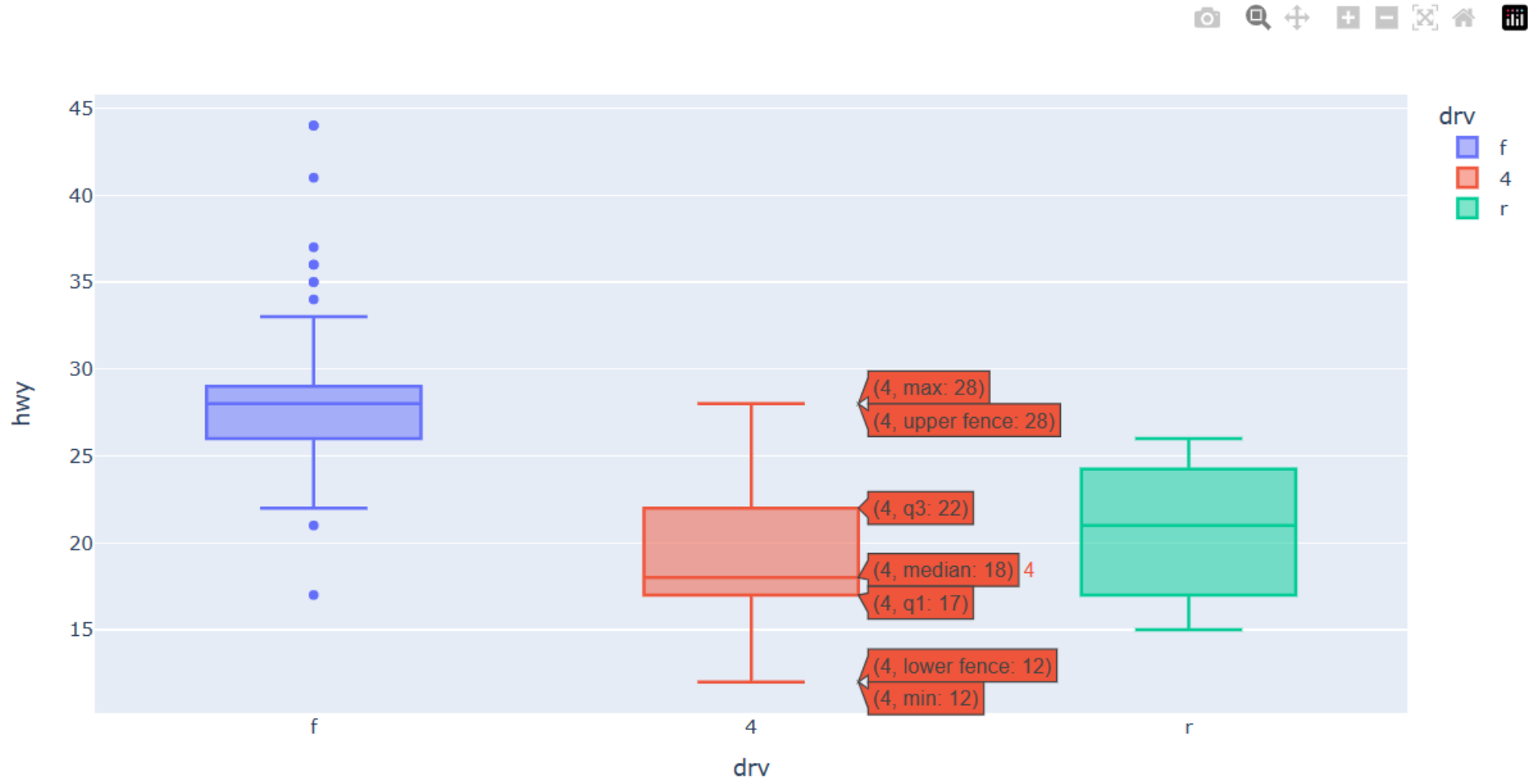
```
1 # economics 불러오기
2 economics = pd.read_csv('economics.csv')
3
4 # 선 그래프 만들기
5 px.line(data_frame = economics, x = 'date', y = 'psavert')
```



인터랙티브 그래프

- 상자그림 그래프(자동차 구동방식 구분에 따른 고속도로 연비)

```
# 상자 그림 만들기
px.box(data_frame = mpg, x = 'drv', y = 'hwy', color = 'drv')
```



인터랙티브 그래프

- HTML파일로 저장하기

```
1 fig=px.scatter(data_frame=mpg, x='cty',y='hwy') #산점도 그래프 만들어서 파일로 저장
2 fig.write_html('scatter_plot1.html') #html로 표현
```

scatter_plot1.html 2023-06-10 오후 5:54 Microsoft Edge H... 3,512KB