Case study: Using stents to prevent strokes

Import data

In [1]:

```
import pandas as pd

df = pd.read_csv("https://raw.githubusercontent.com/kirenz/modern-statistics/main/data/stent.csv")
df.head()
```

Out[1]:

	group	outcome	time
0	treatment	stroke	30 days
1	treatment	stroke	30 days
2	treatment	stroke	30 days
3	treatment	stroke	30 days
4	treatment	stroke	30 days

Create a crosstable

In [2]:

```
pd.crosstab(df.group, [df.time, df.outcome],  margins=True)
```

Out[2]:

time	30 days		365 days		All
outcome	no event	stroke	no event	stroke	
group					
control	214	13	199	28	454
treatment	191	33	179	45	448
All	405	46	378	73	902

Guided practice

Strokes in treatment group

Task A: Compute the proportion of patients in the treatment group who had a stroke by the end of their first year.

1) Calculate **group of interest**:

- Patients in treatment group with stroke after 365 days

In [3]:

```
treatment_stroke_365 = df[(df["group"] == "treatment") &
                          (df["outcome"] == "stroke") &
                          (df["time"] == "365 days")].count()

print("Patients in treatment group with stroke after 365 days:",
      treatment_stroke_365["outcome"])
```

```
Patients in treatment group with stroke after 365 days: 45
```

1. Calculate **reference group**:

- All patients in treatment group after 365 days

In [4]:

```
treatment_365 = df[(df["group"] == "treatment") &
                   (df["time"] == "365 days")].count()

print("All patients in treatment group after 365 days:",
      treatment_365["outcome"])
```

```
All patients in treatment group after 365 days: 224
```

1. Calculate **proportion**:

- Proportion of patients in the treatment group who had a stroke by the end of their first year

In [5]:

```
proportion = (treatment_stroke_365["outcome"]/treatment_365["outcome"]) * 100

print("Proportion with stroke:", proportion.round(0), "%")
```

```
Proportion with stroke: 20.0 %
```

Practice

Strokes in control group

Task B: Compute the proportion of patients in the control group who had a stroke by the end of their first year.

Your Turn

1. Use the code examples from task A to compute the proportion.
2. Compare the results of A and B. Are the results surprising?