Comparing RR to OR: (Sec. 2.3.4) 2/3/22

$$OR = \frac{\pi_1/(1-\pi_1)}{\pi_2/(1-\pi_2)}$$ $\pi_1/(1-\pi_1)$: Odds of $Y=1$ for $X=1$; $\pi_2/(1-\pi_2)$: Odds of $Y=1$ for $X=2$

$$= \left(\frac{\pi_1}{\pi_2}\right)\left(\frac{1-\pi_2}{1-\pi_1}\right)$$

$$= RR \times \left(\frac{1-\pi_2}{1-\pi_1}\right)$$

When does $OR \approx RR \longrightarrow \pi_i \approx .5$

↓ Both π_1 & π_2 very small

If $\pi_1 \approx \pi_2$

Sampling options – X (1, 2) / Y (1, 2)

① Both row totals & col. totals random (unknown prior to data collection) (e.g. multinomial or Poisson sampling)
→ Cross-sectional or Cross-classification design.

– Values of X & Y unknown prior to data.

⇒ Both RR and OR estimable.