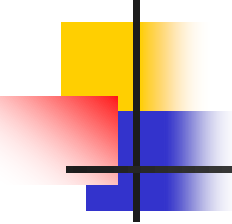


STUDI KASUS KONTROL/KOHORT

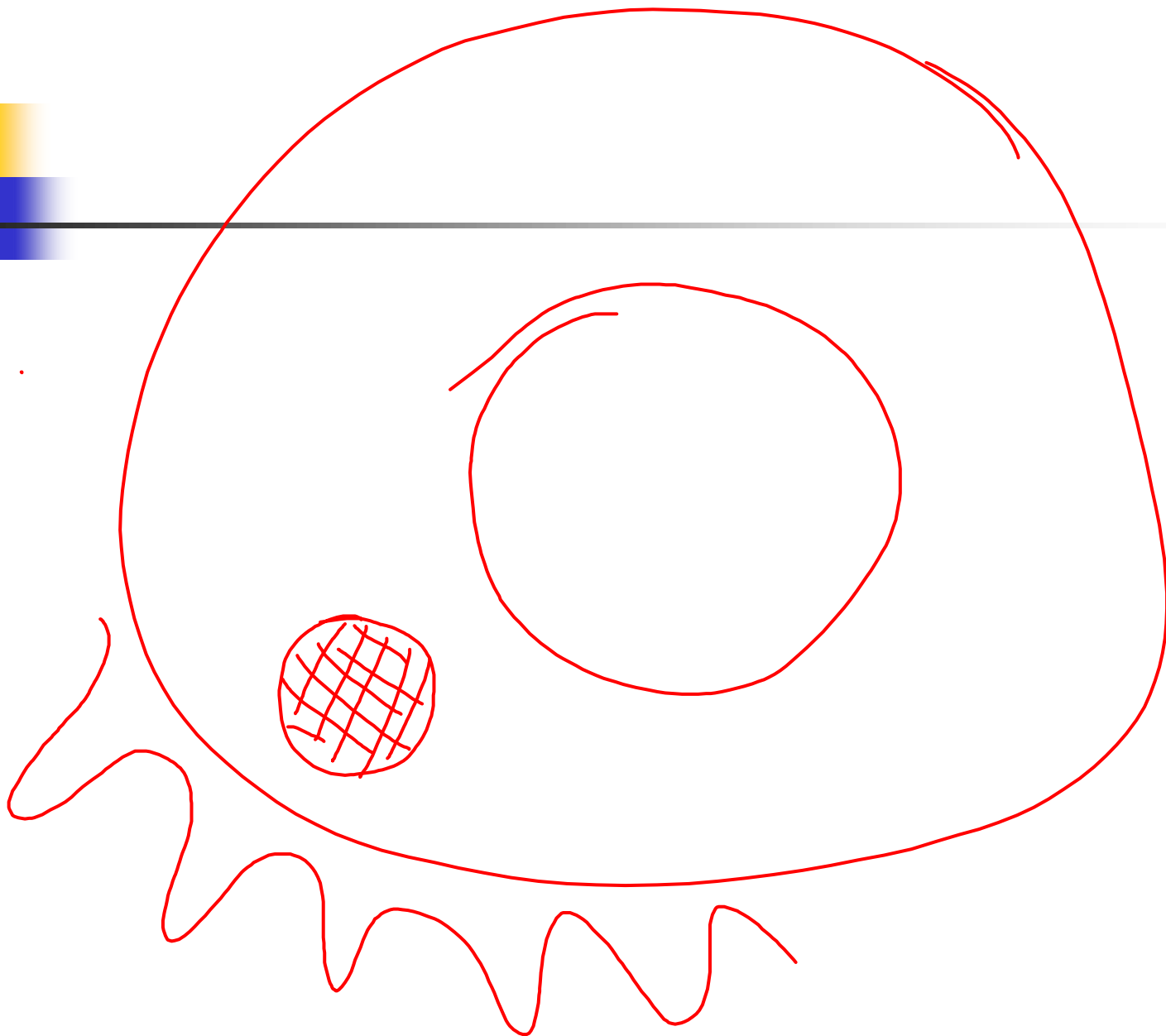
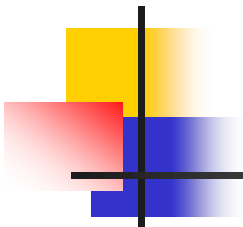
Aria Kekalih

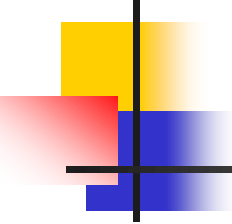
Departemen Ilmu Kedokteran Komunitas
Fakultas Kedokteran Universitas Indonesia



CIRI ST KASUS KONTROL

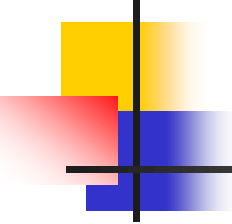
- Desain observasional analitik
- Statistik efisien murah dibanding st.kohort
- Dua jenis kelompok kel.kasus dan kontrol
- Basis lapangan dan basis rumah sakit
- matching utk elim. Efek perancu
- Hasil akhir Odd Ratio





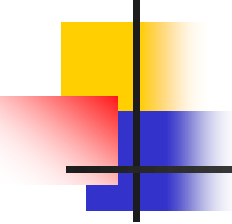
KEUNTUNGAN/KEKUATAN

- BANYAK INFORMASI UNTUK KASUS
- KASUS YANG LANGKA
- KASUS YANG NASA LATENT PANJANG
- FAKTOR RISIKO LAIN PADA KASUS
- REKRUTMEN RELATIF MUDAH
- MURAH DAN JANGKA WAKTU PENDEK
- OR adalah estimasi RR

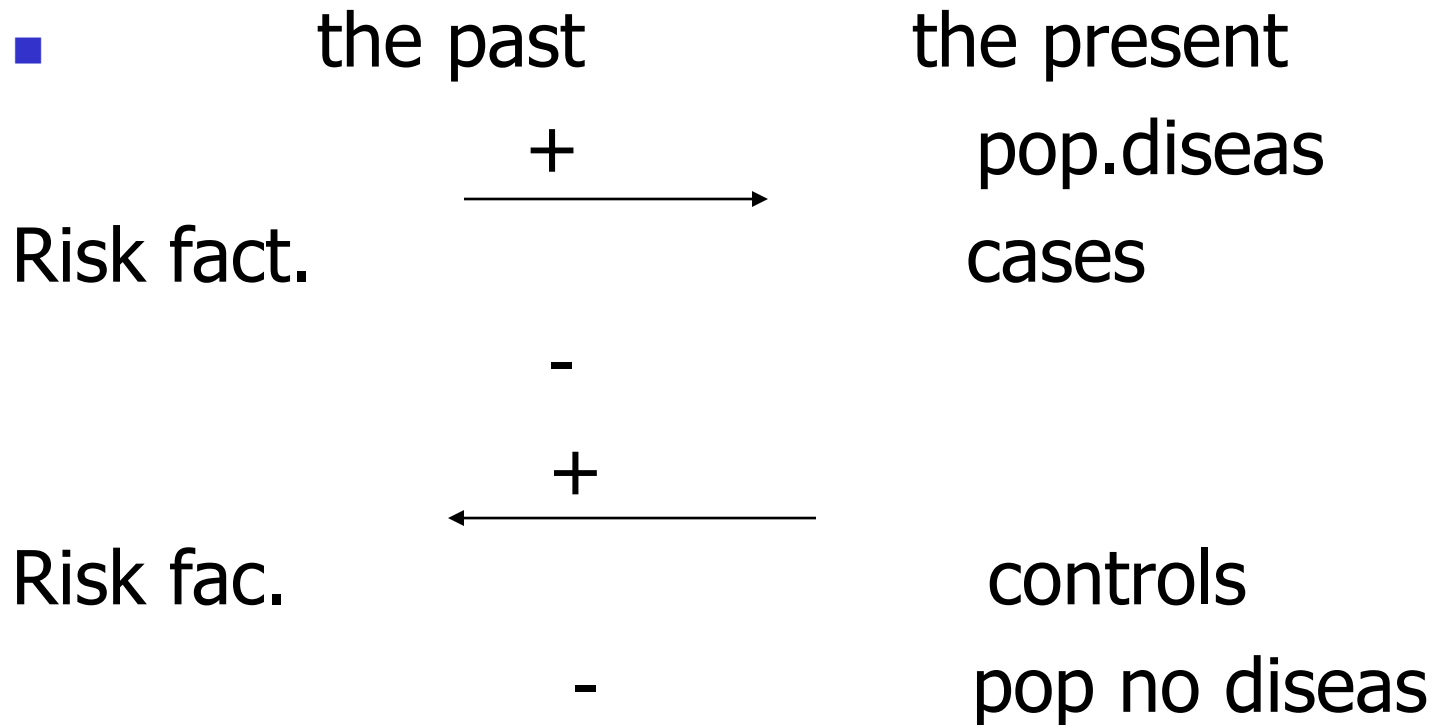


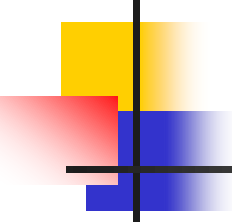
KERUGIAN/KETERBATASAN

- INFORMASI HANYA TERBATAS KASUS
- BUKAN STUDI INSIDENS ATAU PREVALENSI
- KELEMAHAN UTAMA BIAS ; BIAS SELEKSI DAN PENGUKURAN



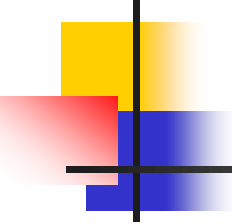
STRUKTUR





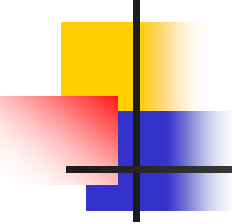
CONTOH

- Pabrik semen , 50 karyawan gangguan fungsi paru
- Jumlah karyawan 200 karyawan high exposed
- $> = 5$ thn



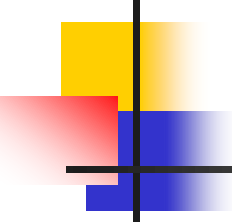
Pertanyaan penelitian

- Faktor penyebab
- Faktor risiko
- Gangguan fungsi paru dan debu semen



Kerangka konsep

- DV = GANGGUAN FUNGSI PARU
- IV = UMUR, LAMA KERJA, LAMA TERPAJAN, RIW PENYAKIT
- SURVEI LINGKUNGAN : KADAR DEBU SEMEN



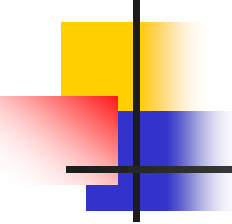
Usia *

lama hij *

Abru

*)

6 PF



BESAR SAMPEL

$$n_1=n_2 = \frac{(p_0q_0 + p_1q_1) (z_{1-\alpha})(z_{1-\beta})^2}{(p_1-p_0)^2}$$

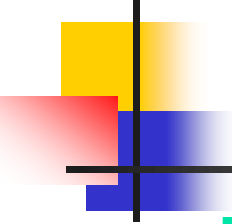
p_0 = prop.kasus pada kel.kontrol
 p_1 = prop.kasus pada kel.kasus
 $Z_{1-\alpha} = 1.96$; $z_{1-\beta} = 0.84$
 $n_1=n_2 = 20.47 = 21$ (sampel minimum)

Kohort

		Gangguan Fungsi Paru		
		Yes	No	
Paparan Debu	Tinggi	P1 = 200 ^A	300 ^B	500
	Rendah	P2 = 100 ^C	400 ^D	500
Keseluruhan		300		1000

$$RR = \frac{A / (A+B)}{C / (C+D)}$$

$$OR = \frac{A/B}{C/D} = \frac{AD}{BC}$$



Kasus Kontrol

		Gangguan Fungsi Paru		
		Yes	No	Keseluruhan
Paparan Debu	Tinggi	P1 = 200	P2 = 100	300
	Rendah			
		500	500	1000

Kasus Kontrol

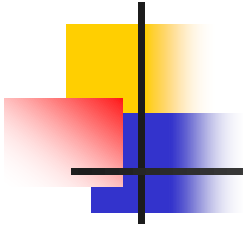
		Gangguan Fungsi Paru		
		Yes	No	Keseluruhan
Paparan Debu	Tinggi	P1 = 200 <i>A</i>	P2 = 100 <i>B</i>	300
	Rendah	300 <i>C</i>	400 <i>D</i>	
		500	500	1000

OR

$$= (200/100) / (300/400)$$
$$= 2,66$$

$$OR = \frac{AD}{BC} = \frac{A/C}{B/D}$$

$$RR =$$



Kanker $\ominus$ Kanker $\oplus$

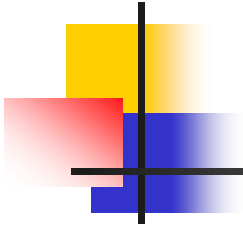
tidak
masalah

masalah

Kanker $\oplus$ Kanker $\ominus$

tidak
masalah

masalah



	(+)	(-)	
(-)	20		100
(+)	40		100

$$RR = \frac{20\%}{40\%} = 1/2 \times$$

MI

$\oplus$

$\ominus$

Shiftwahl

$\oplus$

10

90

100

$\ominus$

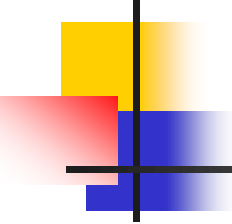
15

185

200

$$OR = 1,37 \text{ (wegen } 1,3 - 1,5)$$

$$RR = 1,33 \text{ (wegen } 1,29 - 1,37)$$



	$\oplus$	$\ominus$	
$\oplus$	1	9	10
$\ominus$	15	185	200

$OR = 1,37$ (1495% 0,97 - 1,76)
 $RR = 1,33$ (1495% 0,98 - 1,6)

MI

⊕

⊖

Shift
Woh

⊕

60

40

100

⊖

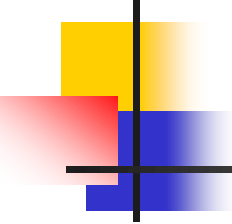
50

150

200

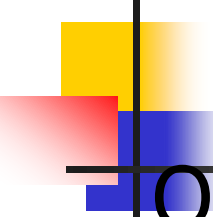
$$OR = 4,5$$

$$RR = 2,4$$



Rekrutmen subjek

- Kelompok studi = kel.kasus = 50
- Kelompok kontrol = bukan kasus dapat acak atau matching 50 subjek
 - Bersedia mengikuti penelitian



ANALISIS STATISTIK

ODD RATIO (OR)

DV (gang. f paru)

+

-

■ IV (Lama kerj.-----

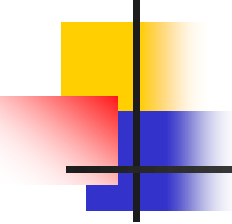
≥ 5 thn	50(a)	10(b)	60
--------------	-------	-------	----

< 5 thn	10(c)	50(d)	60
-----------	-------	-------	----

60

60

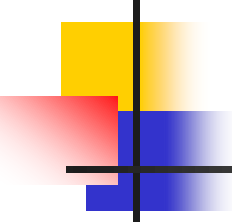
120



ANALISIS ST (2)

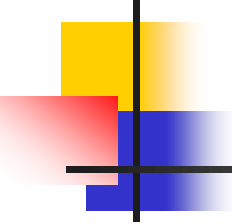
- $OR = ad/bc = 50 \times 50 : 10 \times 10 = 25$
- Confidence Interval (CI)+/- 95% (12.3 – 33.9)

Bermakna tidak melalui angka 1
= OR bermakna :



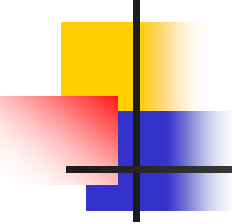
Odd Ratio

- $OR < 1$ – hubungan protektif
- $OR = 1$ tidak ada hubungan
- $OR > 1$ = hubungan risiko
- $OR = 2$ = HUBUNGAN RISIKO
- $OR = 5$ Hubungan risiko berarti
- Dihubungkan dengan Kriteria Hill



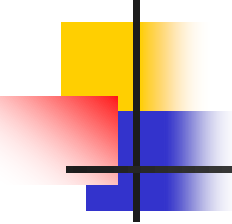
Confidence Interval

- Dapat dihitung
- $CI = OR \text{ pangkat } (1 \pm z \sqrt{\chi^2})$
- Bila CI tidak melalui angka 1 hubungan bermakna



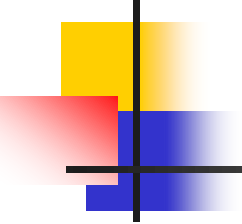
ARTI OR BERMAKNA

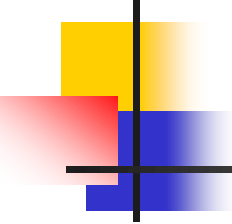
- KARYAWAN YANG BEKERJA ≥ 5 THN
BERISIKO 25 KALI MENDAPATKAN
GANGGUAN F.PARU DIBANDINGKAN
DENGAN KARYAWAN YANG BERKERJA
 < 5 THN



ATTRIBUTABLE RISK

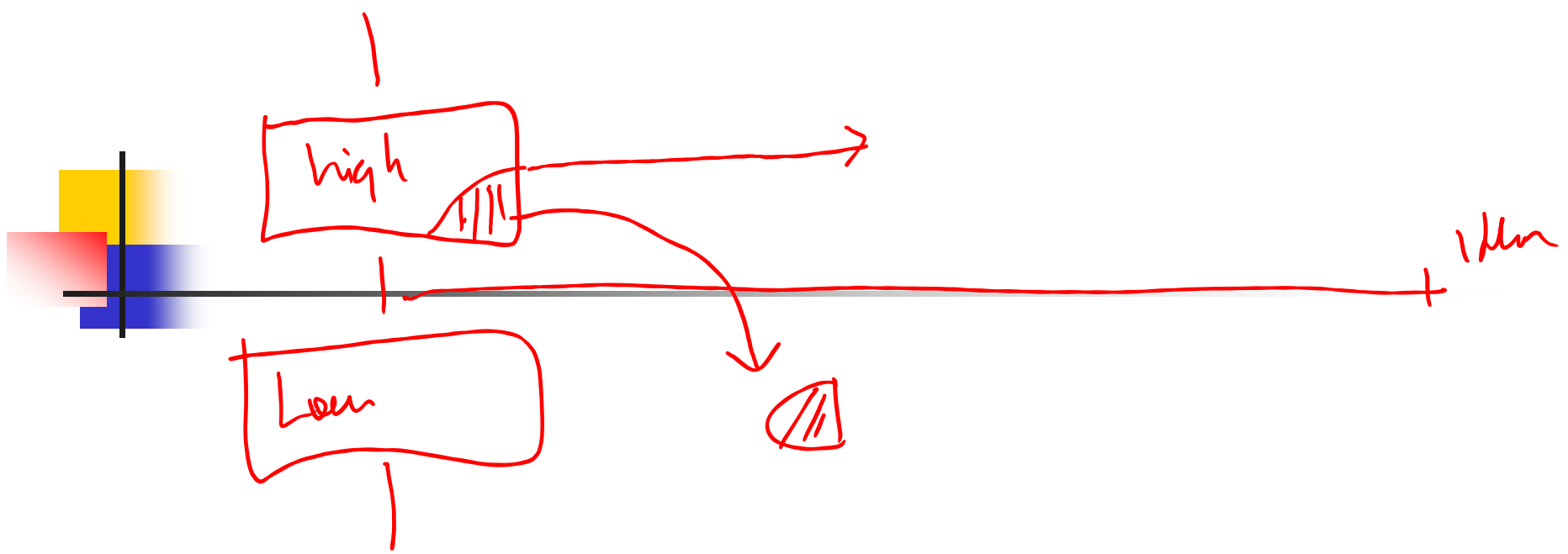
- DIHUBUNGKAN DENGAN DAMPAK PADA KESMAS
- $AR = I_e - I_n$
- I_e = proporsi kasus kelompok pajanan tinggi
- I_n = proporsi kasus kelompok pajanan rendah

- 
-
- 1. Buat contoh pertanyaan penelitian yang sesuai dengan desain kasus control
 - 2. Tentukan variable bebas dan tergantung
 - 3. buatlah hipotesis



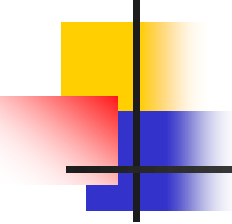
Studi kohort

- 1. observasional analitik
- 2. pembentukan kel berdasarkan terpajan = kel studi dan tidak terpajan = kel.kontrol
- 3. kel studi dan kontrol diikuti sampai terjadi outcome yg diteliti
- 4. prospektif dan retrospektif



≠ ada yg
sali!

Kriteria inilah
evolusi
drop out !



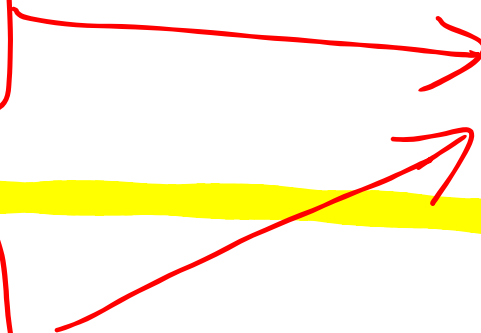
Keuntungan/kekuatan

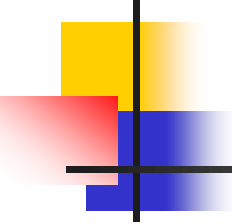
- Pengob.pada org yg diinginkan
- Prospektif ada kontrol pengump.data
- Sejarah perkemb.penyakit
- Manuv.lain terkontrol pada prospektif
- Prospektif dapat matching
- Masalah kes sehari-hari
- Studi insidensi

Doerach kerja
High/Low Nose

NIHL

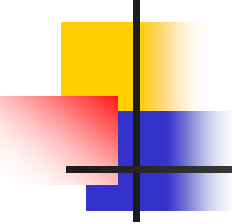
Ap O





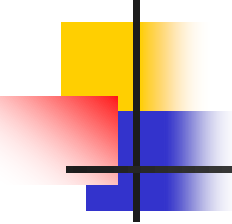
Kerugian /keterbatasan

- Faktor perancu
- Analisis statistik rumit
- Mahal dan lama



Jenis kohort

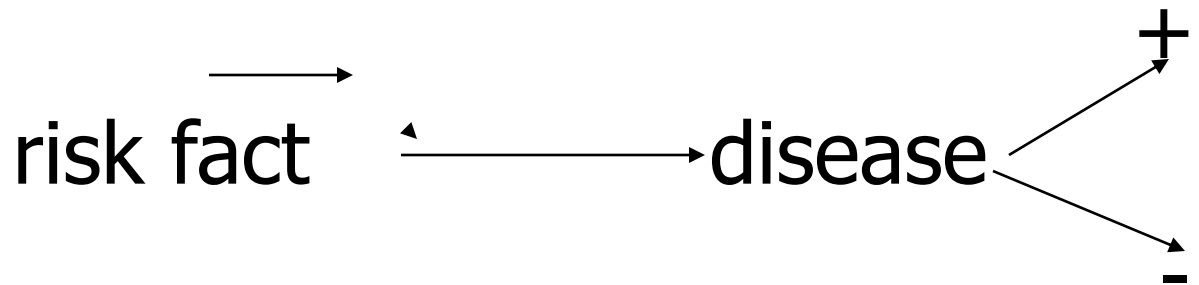
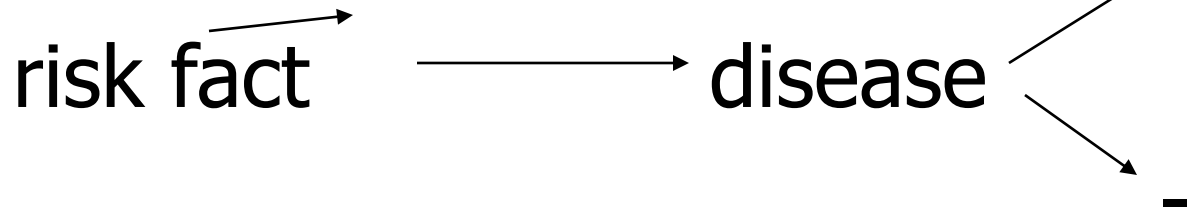
- Prospektif
- Retrospektif
- Nested case control
- Prognostik
- Multiple/double cohort



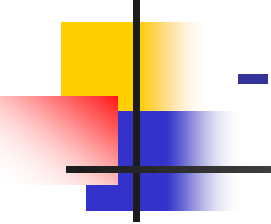
struktur

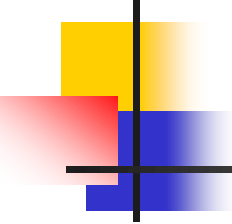
present

future



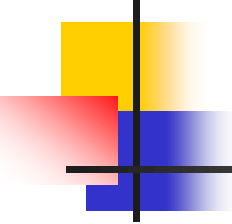
CONTOH

- 
- Masyarakat pinggiran sungai Ciliwung
 - Pabrik aki
 - Cd / kelainan /gangguan ginjal



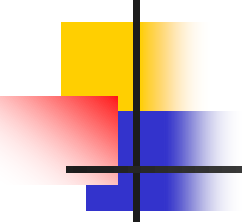
langkah

- Kerangka konsep
- Populasi/subjek
- Kerangka sampel
- Besar sampel
- Rekrutmen subjek



Sampling

- Random / Probability
 - Simple
 - Sistematis
 - Stratifikasi
 - Cluster
 - Proportional
- Non Random / Non Probability
 - Konsekatif
 - Purposive
 - Convenient


$$n = 100$$

→ total.

$$N = 90$$

$$n = 100$$

Sampling

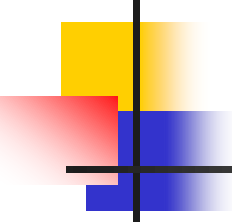
$$N_1 = \frac{90}{100}$$

$$N_2 = 200$$

$$\frac{300}{}$$

$$n_1 = \frac{1}{3} \times 100 = 33$$

$$n_2 = \frac{2}{3} \times 100 = 67$$



ANALISIS STATISTIK

- RELATIVE RISK
- CONFIDENCE INTERVAL
- ATTRIBUTABLE RISK
- IDR
- LOGISTIC REGRESSION FUNCTION
- SURVIVAL ANALYSIS



	M/M		
	⊕	⊖	
HN	60	40	100
LN	15	85	100

60	2
15	85

$$OR = 8,5$$

RR (1K 95%)

$$RR = \frac{60\%}{15\%} = 4$$

1. 4 (1,3 - 6,8)
2. 4 (0,89 - 6,8)
3. 4 (1,3 - 100,8)

The diagram illustrates two NIML (Net Interest Margin Loss) tables, one for the APD bank and one for the long position. Each table is a 2x2 grid with columns labeled $\oplus$ and $\ominus$ under the heading NIML. The rows are labeled 100 and 100 on the right side. The APD bank table has values 15 and 60 in the $\oplus$ column. The long table has values 30 and 60 in the $\oplus$ column. The labels HN and LN are placed between the two tables. A small graphic with a black crosshair and colored quadrants (yellow, red, blue) is located to the left of the APD bank table.

NIML		
$\oplus$	$\ominus$	
15		100
60		100

APD bank

long

HN

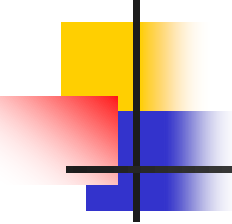
LN

NIML		
$\oplus$	$\ominus$	
30		100
60		100

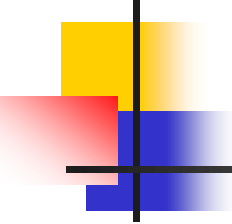
$$RR = 0,25$$

$$1 - RR = 1 - 0,25 = \text{redução / ganho}$$

75%



Kesimpulan



Terima kasih
