Spearman's rank corr. coeff.
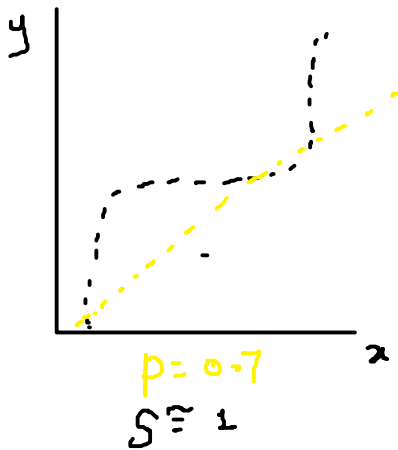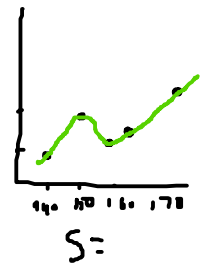

y

$p = 0.7$

$S \cong 1$

$(-1 \ to \ 1)$

$$r_{xy} = \frac{cov}{\sigma_x \ \sigma_y} \quad (x, y).$$

ht & wt .	(ht) x	(wt) y	$r_{(x)}$	$r_{(y)}$ → Ranks
S1	160	52	4	3
S2	150	66	2	4
S3	170	68	5	5
S4	140	46	1	1
S5	158	51	3	2

$S =$

when we have increasing x, y strictly increasing

whether linear or non-linear

$r \cong 1$

$r \cong -1$

$p \cong 1$ linear $x \uparrow$ $y \uparrow$ linear or non-linear
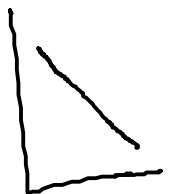
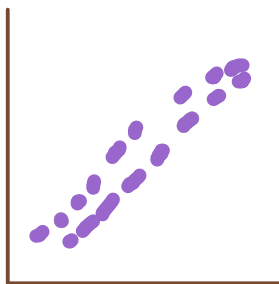$p \cong -1$ linear $x \uparrow$ $y \downarrow$ linear or non-linear

# df.corr(method='spearman')
df.corr(method='kendall')
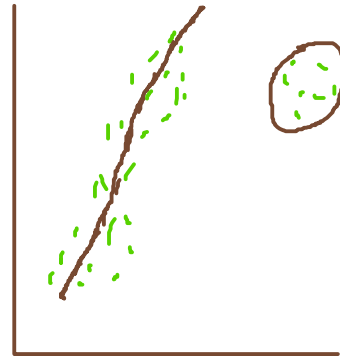
$p = 0.52$

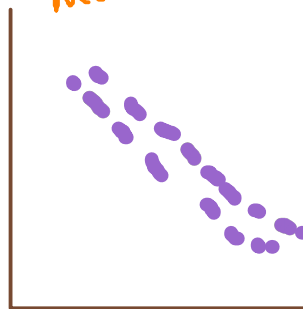$S = 0.85$

Monotonic

monotonic

Non-monotonic

Kendall tau   corr coff.

decreasing

increasing

Non-parametric :- kendall

$$\text{kendall tau} = \frac{C - D}{C + D}$$

$C =$ # Concordance pair

$D =$ # Discordant pair.

$$\text{kendall tau} = \frac{C-D}{C+D}$$

$C = $ concor...

$D = \#$ discordant pair.

$$x_i \, y_i \quad \& \quad x_j \, y_j$$

	x	y
	1	1
	2	2
	3	5
	4	8
	5	4

Concordance :-

if $x_i > x_j \quad \& \quad y_i > y_j$ OR

$\longrightarrow$ if $x_i < x_j \quad \& \quad y_i < y_j$

$1 < 2 \quad \& \quad 1 < 2$

ordered in a same way

$\#$ Discordant :- ordered different.

if $x_i > x_j \quad \& \quad y_i < y_j$ OR

if $x_i < x_j \quad \& \quad y_i > y_j$

Player	Rank(city1) x	Rank(city2) y	Concordant $n-1$	discordant
A	1	1	11	0
B	2	2	10	0
C	3	4	8	1
D	4	3	8	0
E	5	6	6	1
F	6	5	6	0
G	7	8	4	1
H	8	7	4	0
I	9	10	2	1
J	10	9	2	0
K	11	12	0	1
L	12	11	0	

$n = 12$

$C = 61$ $D = 5$

$$K(tau) \quad \gamma = \frac{C - D}{C + b} = \frac{61 - 5}{61 + 5} = \frac{56}{66} = \underline{0.8b}$$

Mutual Info

H(A)
Entropy (A)
H(A|B)

H(B)
H(B|A)

A   B
$I(x:y)$ ·
Mutual
Info

$$I(x:y) = H(A) - H(A|B)$$

$$I(y:x) = H(B) - H(B|A)$$

$$IG = H(s) - (wt \times H(s_v))$$

$$IG(s, a) =$$

grish   HR
               Name   appli   position

{ A
  B
  c
  p
  :
  e

A
B
C
D
.
.
.
e i
C :
C
Answer