

# Statistics for Public Health Research

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## Lecture 6

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# Correlation Analysis

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- Correlation analysis is used to study the relationship between two continuous variables, the values of the correlation coefficient may lie between ( +1 & -1 ).

+1 means a perfect positive relationship,

0.00 means no relationship

-1 means a perfect negative relationship.

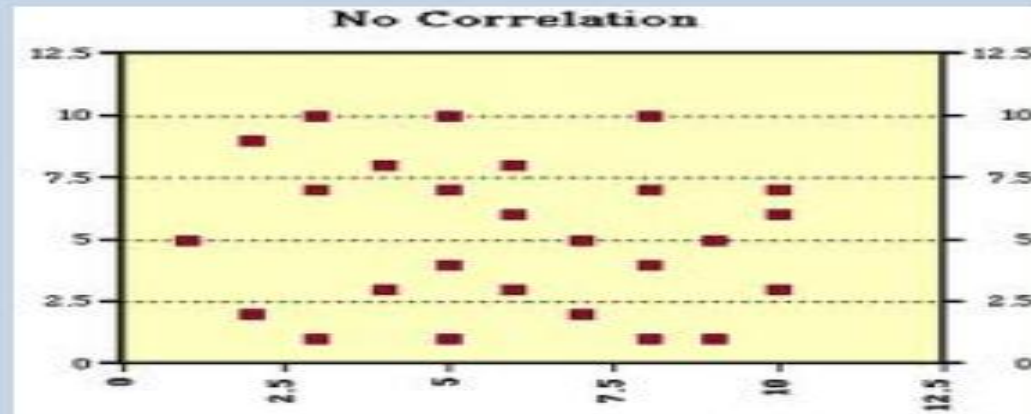
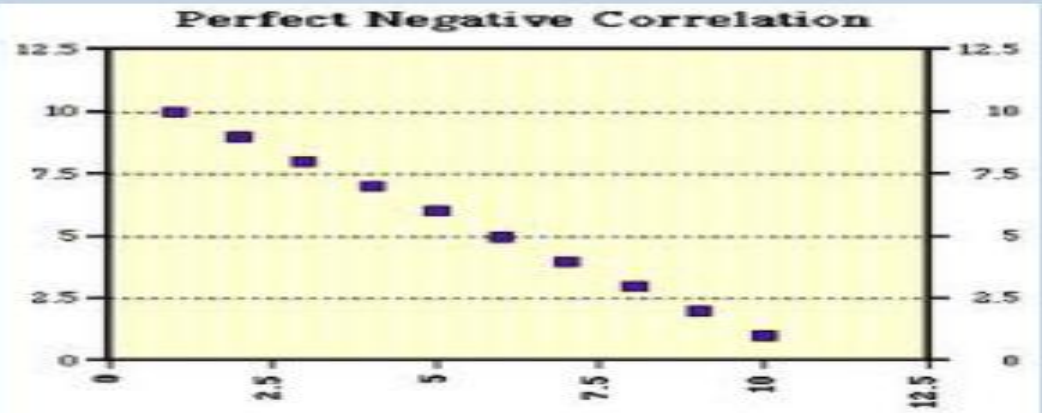
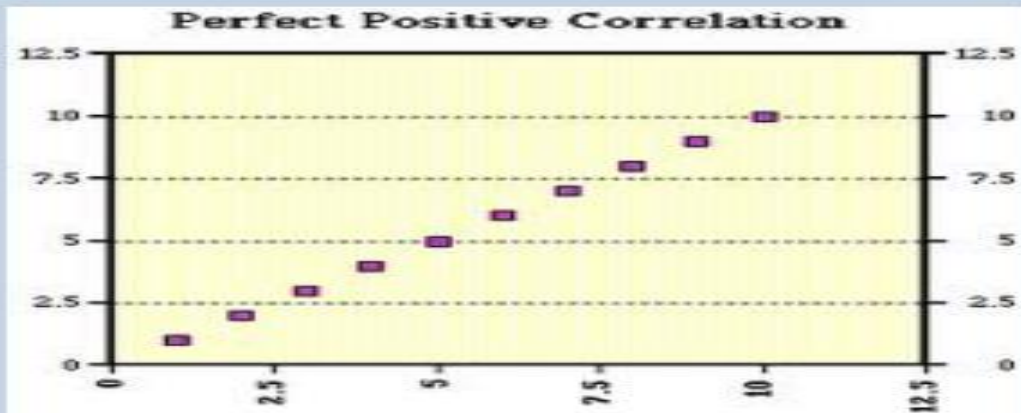


# Correlation Analysis

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- A positive sign indicates a high value on one variable tend to score high on the other.
- A negative sign indicates a high value on one variable tend to score low on the other.

# Correlation Analysis



# Correlation Analysis

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- **Correlation Measures**

1- ) **Pearson** : It is a parametric test, it can be used to describe the relationship between two continuous variables.

2-) **Spearman rho** : It is a nonparametric test, it can be used to describe the relationship between two ordinal variables.

3-) **Kendall's Tau** : It is a nonparametric test and similar to spearman rho.



# Correlation Analysis

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**Correlation is denoted by (  $r$  )**

**Coefficient of determination ( $R^2$ )** : The correlation coefficient squared is a measure of the variation explained in Y by X variable.

# Correlation Analysis

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- **Correlation Coefficient Categories**

0.00 to 0.25 just little correlation

0.26 to 0.49 Low correlation

0.50 to 0.69 Moderate correlation

0.70 to 0.89 High correlation

0.90 to 1.00 very high correlation

# Reference

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- Prem S. Mann 1998, Introductory Statistics, 7<sup>th</sup> edn, New York, USA.



# Good Luck for All Students

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- Please do not hesitate to contact me if you have any questions.
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# سبحان الله وبحمده سبحان الله العظيم

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ذكر الله أعظم ما في الوجود ،، لعل الله يرحمنا بعلم تعلمناه في الحياة  
الدنيا

أستغفر الله