Historical Background

- Ideas behind meta-analysis predate Glass' work by several decades
  - **R. A. Fisher (1944)**
    - "When a number of quite independent tests of significance have been made, it sometimes happens that although few or none can be claimed individually as significant, yet the aggregate gives an impression that the probabilities are on the whole lower than would often have been obtained by chance".
    - Source of the idea of cumulating probability values
  - **W. G. Cochran (1953)**
    - Discusses a method of averaging means across independent studies
    - Laid-out much of the statistical foundation that modern meta-analysis is built upon (e.g., inverse variance weighting and homogeneity testing)

Historical Background

G. Glass (1976)

• He coined the term 'meta-analysis' to refer to 'the statistical analysis of a large collection of analysis results from individual studies for the purpose of integrating the findings.' Many articles and textbooks about meta-analysis followed soon after.

P. Elwood and A. Cochrane (1980)

They conducted a meta-analysis to assess whether aspirin reduced recurrences of heart attack and the findings revealed that it could reduce the risk of recurrence. This made many researchers in medical science interested more in Meta-Analysis.

Since 1980's a lot of publications in various medical science journals tended to emphasize on meta-analysis to a greater extent than the early work in social sciences had done.

What is meta-analysis?

Meta- (prefix) comes from Latin or Greek meaning *after, beyond, highly specialized*

It is a quantitative approach for systematically combining results of previous primary research studies to arrive at conclusions about the body of research or knowledge.

In Thai, there are 4 words used: การวิเคราะห์เมตต้า การอภิวิเคราะห์   การวิเคราะห์รวมผล   และการวิเคราะห์อภิมาน

What does it mean?

- **Quantitative** : **numbers**

- **Systematic** : **methodical**

- **combining**: **putting together**

- **previous research**: **what's already done**

- **conclusions**: **new knowledge**

Definitions

❑Meta-analysis is a type of systemic study that uses statistical techniques to quantitatively combine and summarize results of previous research studies.

❑A review of literature is a meta-analytic review only if it includes quantitative estimation of the magnitude of the effect and its uncertainty (confidence limits).

❑Meta-analysis is an analysis of analyses mathematically.