

## 5. HOW TO READ THE PLOT

In this book I make extensive use of plots. The plots are annotated with labels that follow a consistent format, as outlined here.

For example, Figure 1 shows the impact of corticosteroids on mortality for patients with severe sepsis and septic shock (Annane et al., 2004). All patients received standard drugs, and those in the treatment group received corticosteroids as well. The effect size is the risk ratio, with values less than 1.0 favoring treatment.

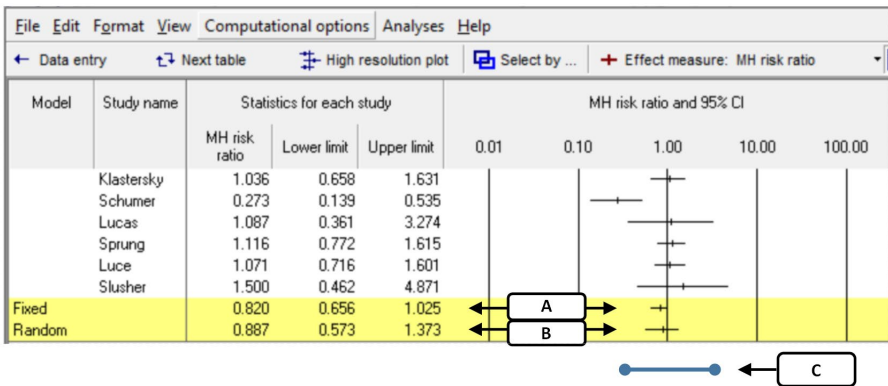


Figure 1 | Effects of corticosteroids on mortality | Risk ratio < 1 favors treatment

When we perform a meta-effects analysis, we typically have two distinct goals.

- One goal is to estimate the *mean* effect size. This goal is addressed by lines [A] and [B], which present the mean effect size along with a confidence interval. A narrow confidence interval tells us that we know the mean effect size precisely, whereas a wide confidence interval tells us that our estimate of the mean is imprecise. Line [A] applies if we intend to report the mean for the studies in the analysis and not generalize beyond them. Line [B] applies if we intend to report the mean for the universe of all comparable studies.
- A second goal is to estimate the *dispersion* of effects. This goal is addressed by line [C], which presents the prediction interval. A narrow prediction interval tells us that the impact of the intervention is relatively consistent across populations. A wide prediction interval tells us that the impact of the intervention varies across populations.

Critically, the confidence interval on lines [A] and [B] is an index of *precision*. It tells us how precisely we have estimated the mean effect. By contrast, the prediction interval on line [C] is an index of *dispersion*. It tells us how widely the effect the effect size varies.

The distinction between lines [A] and [B] depends on the statistical model, and is discussed in sections 6 and 7. The difference between confidence intervals and prediction intervals is discussed in section 9.4.