This paper presents a systematic review and meta-analysis of studies that have estimated the relationship between the number of accidents involving cyclists or pedestrians and the volume of motor vehicles, cyclists and pedestrians. A key objective of most of these studies has been to determine if there is a safety-in-numbers effect. There is safety-in-numbers if the coefficients for traffic volume are less than one. Coefficients less than one show that the number of accidents increases less than proportional to traffic volume. Meta-analysis of model coefficients involves methodological problems, which require a careful consideration of whether model coefficients are sufficiently comparable to be formally synthesised by means of standard techniques of meta-analysis. The comparability of model coefficients was assessed. It was concluded that a formal synthesis of model coefficients in studies of the safety-in-numbers effect is defensible. According to a random-effects inverse-variance meta-analysis, the summary estimates of the model coefficients for traffic volume are 0.53 for motor vehicle volume, 0.43 for cycle volume and 0.51 for pedestrian volume. Estimates are highly consistent between studies. There is no evidence of publication bias. It is concluded that a safety-in-numbers effect exists, but it is still not clear whether this effect is causal, nor, if causal, which mechanisms generate the effect.