Objective: Exploratory analyses by occupation or industry are commonly conducted in case-control studies. However, cancer risks limited to certain jobs within an industry, or to a job within a given industry, become undetectable in the overall industry or job odds-ratio. Using the SYNERGY dataset we conducted an analysis based on occupations and industries combined.

Methods: Data included 10,917 male cases and 13,154 male controls. Industries and jobs were coded according to ISIC Revision 2 and ISCO 1968, respectively. Odds-ratios were computed for ISCO-ISIC combinations with ≥10 study subjects, adjusting for study, age, and smoking. To allow for multiple comparisons we applied a semi-Bayes approach, shrinking towards a group mean the estimate for each ISCO-ISIC combination, previously classified as: occupation known or suspected to entail lung cancer risk, other manual workers, other non-manual workers.

Results: Out of 1187 evaluated ISCO-ISIC combinations, 50 had an increased odds-ratio (p<0.05). For 26 combinations the risk remained elevated after semi-Bayes shrinkage. As an example, painters in car repair, but not in other industries like car building, had an increased risk (odds-ratio after shrinkage: 1.79, 95% CI 1.04 to 3.07). Likewise, only 8 jobs had increased risk among 63 analysed within the construction industry: miners (2.05, 1.10 to 3.55), bricklayers (1.57, 1.37 to 1.80), welders (1.57, 1.08 to 2.28), earth-moving operators (1.36, 1.05 to 1.76), carpenters (1.30, 1.08 to 1.57), other workers (1.24, 1.06 to 1.44), plumbers (1.23, 1.02 to 1.49) and labourers (1.20, 1.05 to 1.36).

Conclusions: The use of ISCO-SIC combinations and a semi-Bayes approach identified specific jobs within specific industries with an increased lung cancer risk.