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4262.0 - The ecological fallacy of safety on commercial construction worksites



Abstract

background and objectives: The construction workforce suffers nonfatal occupational injuries at rates 5 times the national average, highlighting the need to provide safe work environments despite the presence of hazards. Owners and general contractors must continually evaluate and monitor worksite safety. The organizational structure of commercial worksites, where general contractors hire subcontractors, who in turn employ workers, results in complex relationships between indicators of safety which may lead to conflicting results. This analysis investigates the similarities and differences of construction workers at the individual, company, and worksite level in regards to their perception of worksite safety.

methods: Surveys collected from 1,433 construction workers representing 164 companies on 26 worksites in Massachusetts from 2017 - 2018 were analyzed. Principal components analysis was used to reduce a set of 28 safety-specific questions and responses were then further grouped using k-means clustering to identify common themes regarding safety at the individual, company, and worksite levels.

results: Overall, 13% of construction workers strongly agree that safety practices are upheld both within their company and at the worksite. 53% of individuals with negative opinions about current safety practices belong to companies where the average individual feels generally positive about overall safety. Of those individuals on worksites where the average individual feels negatively about safety communication and other areas of safety, 69% belong to companies where the average individual feels positively about overall safety. 47% of individuals who feel as though they have the strongest safety climate and strong compliance, motivation, knowledge, and leadership belong to worksites where the average individual feels negatively towards safety climate and diligence.

conclusions: When averaged across individuals, summary safety measures for both worksites and companies have different directional relationships compared to the disaggregated responses, which impacts analyses and interpretation of workplace safety, health and wellbeing research in construction.

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