TITLE: Understanding Pulmonary Fibrosis Through Complex Occupational Exposure Assessments

ABSTRACT:
Pulmonary fibrosis (PF) is a chronic lower respiratory pathology characterized by tissue scarring and is the hallmark pathologic finding of interstitial lung diseases (ILDs). ILDs contribute significantly to global mortality and incur billions of healthcare costs annually. Although a large proportion of ILDs are considered idiopathic, early research has demonstrated that occupational and environmental exposure to inhalational vapors, gases, dusts, or fumes (VGDF) have profibrotic and inflammatory effects that can lead to PF. However, most PF research focuses on therapeutics and predictors of disease progression. To date, scant attention has been paid to the role that preventable occupational risk factors play in disease development and progression. Furthermore, marginalized communities with higher exposure histories are underrepresented in the current literature. Characterizing the role that inhalation exposures play in ILD will allow us to implement policy and workplace safety changes to prevent such diseases. There are critical medical and policy needs to address this knowledge gap by clarifying the associations between preventable risk factors of occupational exposures to inhalational hazards and PF. To fill this gap, vital statistics and public health datasets are ripe sources of information that cuts across all levels of socioeconomic status. The California Electronic Death Registration System (Cal-EDRS) has a wealth of data regarding all decedents statewide, including cause of death, occupational history, and residential address. For Aim 1, I will use existing exposure data and expert consensus to develop an innovative PF-specific job exposure matrix (PF-JEM), allowing characterization of the environmental and occupational contributors to ILD. In Aim 2, I will employ a frequency-matched case-control study design to apply the exposure assessment to the CAL-EDRS and measure the association between occupational exposures and ILD. This study is innovative through its linkage of a large and rich dataset of vital statistics records to industry and occupational coding, alongside creating an innovative PF-JEM.