

# Long-term Impact of a Restrictive Tobacco use Hiring Policy in Florida Firefighters\*

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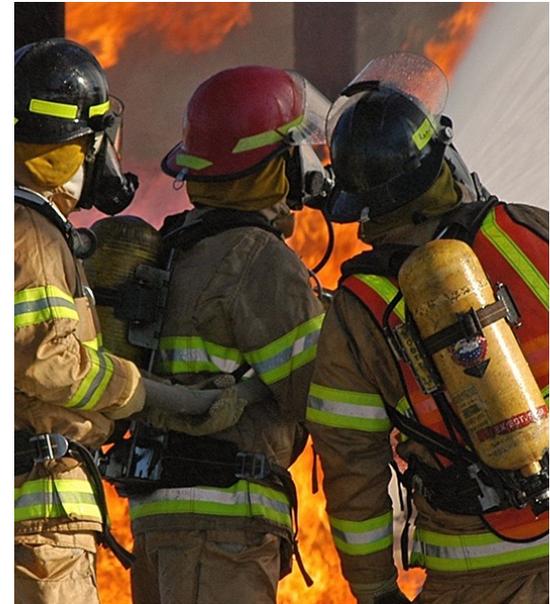
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**FIREFIGHTER  
CANCER  
INITIATIVE**

RESEARCH > EDUCATION > PREVENTION

 **SYLVESTER**  
COMPREHENSIVE CANCER CENTER  
UNIVERSITY OF MIAMI HEALTH SYSTEM

- Firefighters face carcinogenic exposures and have a heightened risk of certain cancers, including those that are tobacco-associated<sup>1</sup>
- An analysis of cancer risk in Florida Firefighters reported a decreased risk of several tobacco-associated cancers including a significantly lower risk of lung cancer and laryngeal cancers<sup>2</sup>
- **Possible explanation:** The implementation of Florida's restrictive tobacco use hiring policy in 1989



1. Demers PA, DeMarini DM, Fent KW, et al. Carcinogenicity of occupational exposure as a firefighter. *Lancet Oncol.* 2022;23(8):985-6.
2. Lee DJ, Koru-Sengul, Hernandez MN et al. Cancer risk among career male and female Florida firefighters: Evidence from the Florida Firefighter Cancer Registry (1981-2014). *Am J Ind Med.* Apr 2020;63(4):285-299. doi:10.1002/ajim.23086

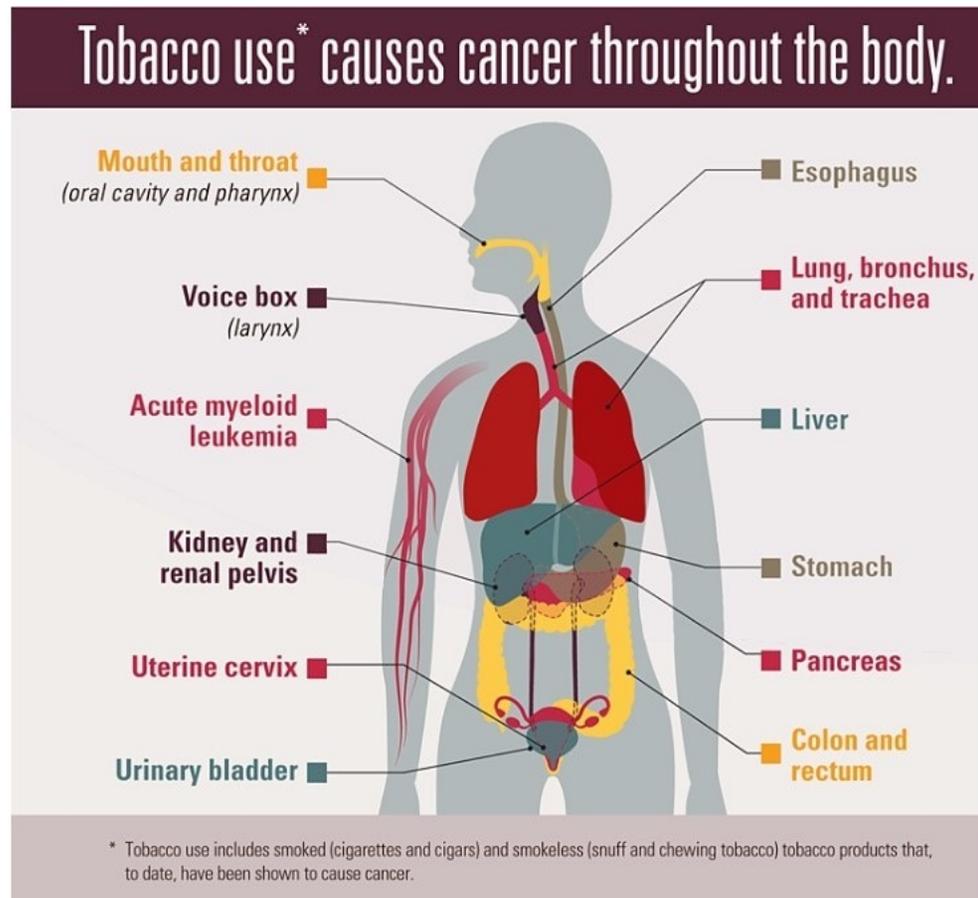
# Policy Overview: 1989 Florida Tobacco Use Hiring Policy

- All newly certified firefighters were mandated to affirm no tobacco use for 12 months preceding their application for employment as a firefighter
- There were no restrictions imposed on incumbent firefighters
- Once hired, firefighters were not obligated to maintain a smoke-free status

# Research Objectives

- Using registry data, investigate trends in cigarette smoking proportions at the time of cancer diagnosis for non tobacco-associated cancers in Florida firefighters spanning from 1981 to 2014
- Analyze trends in tobacco-associated cancers both before and after the implementation of the policy
- Contrast contemporary smoking rates between Florida firefighters and other worker groups in Florida using data from the BRFSS

# Figure 1. Tobacco-Associated Cancers

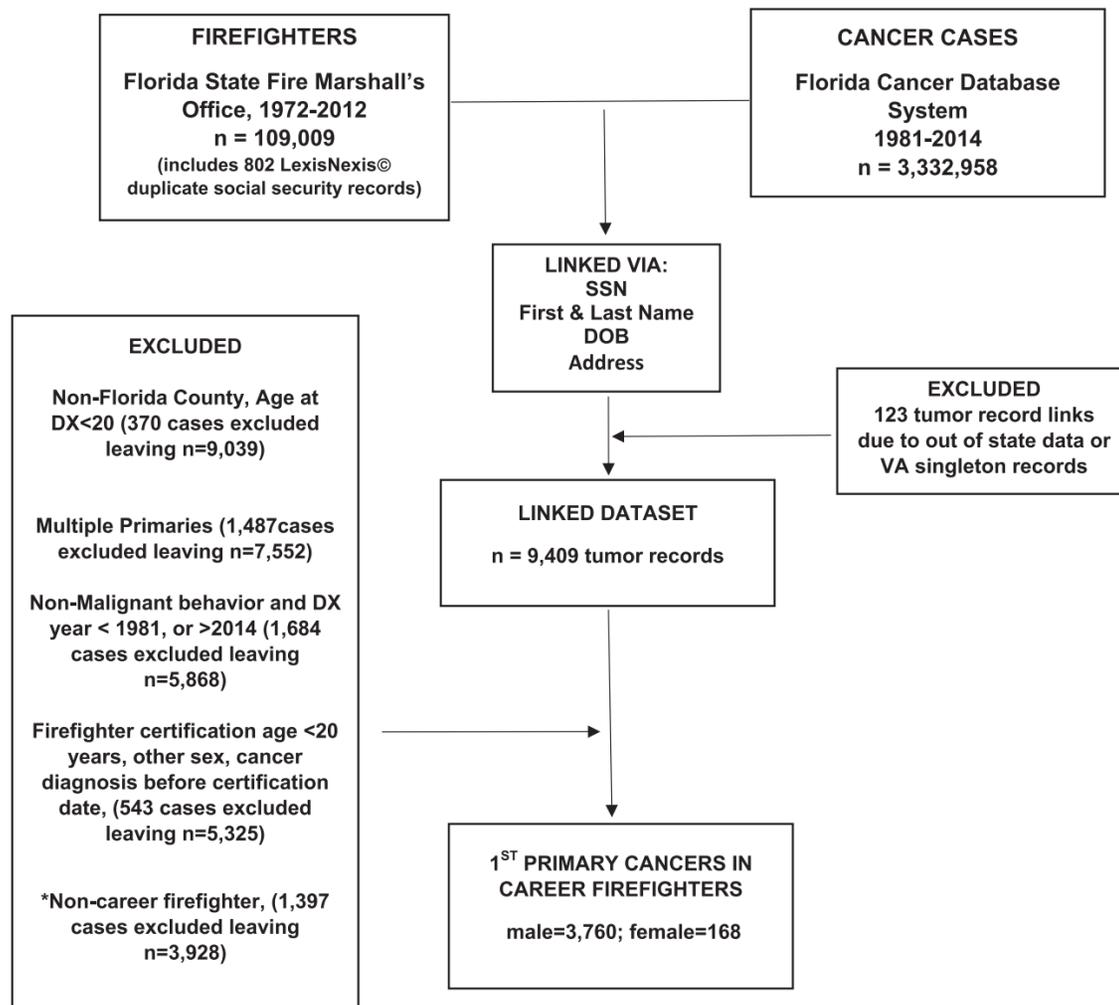


Source: <https://www.cdc.gov/cancer/risk-factors/tobacco.html>

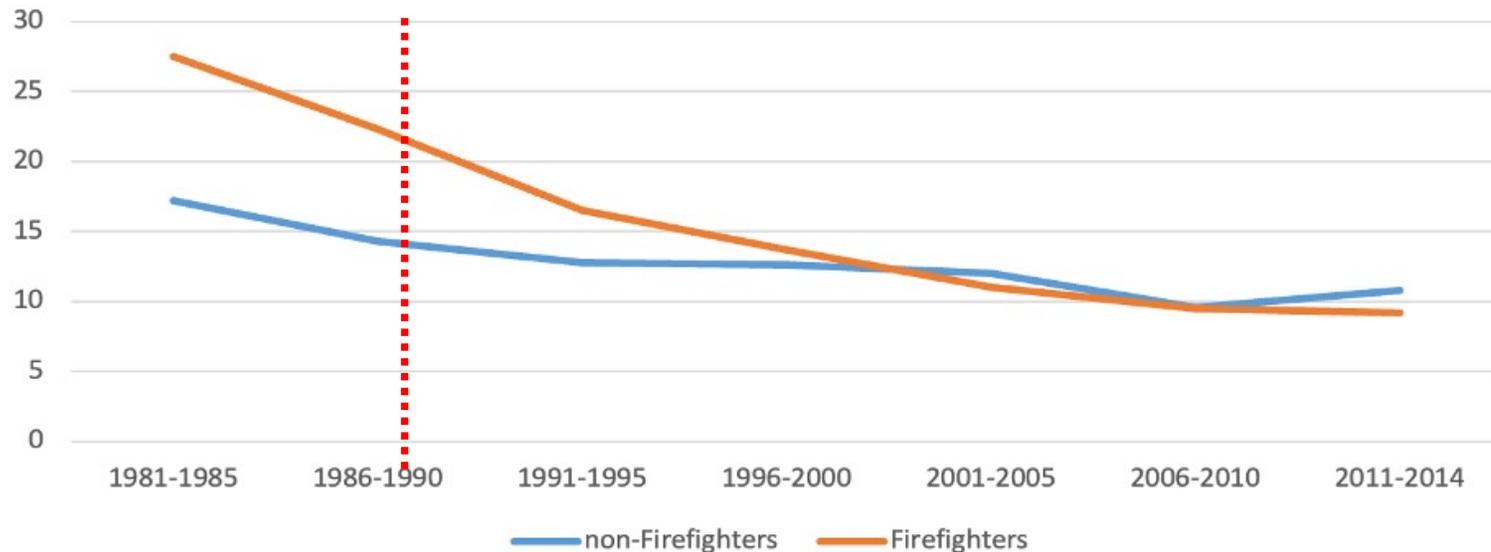
# Design and Methods

- Florida firefighter employment records (n=109,009) were linked with Florida Cancer Data System (FCDS) spanning from 1981 to 2014
- Smoking status at the time of cancer diagnosis was recorded if available
  - Proportions of current smokers were reported
- Smoking trends were compared using Poisson regression models
- Cancer rate trends were analyzed using Joinpoint Regression

**Figure 2: Data linkage flowchart**



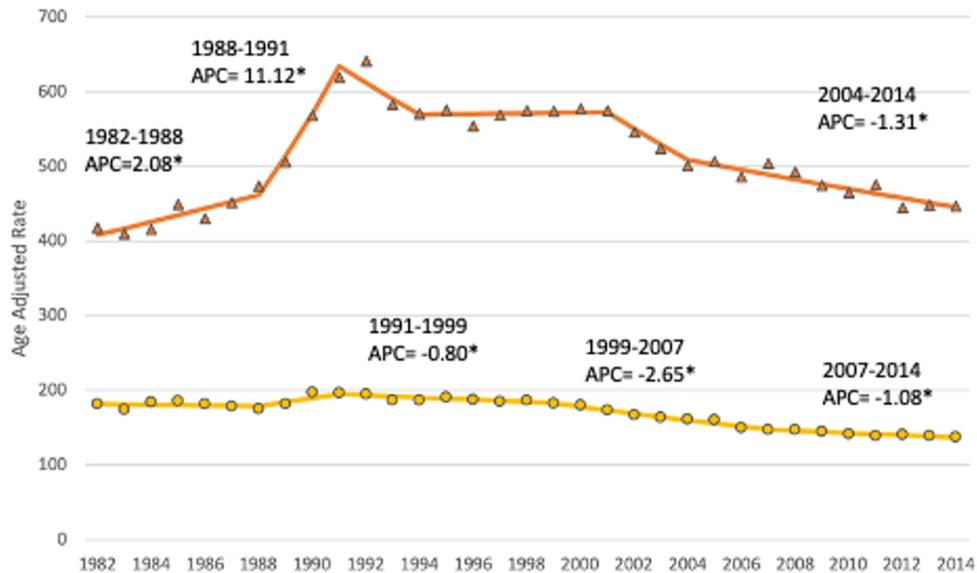
**Figure 3:** Reported Smoking Rates at the Time of non-Tobacco-Associated Cancer Diagnosis in Florida.



Two-way interaction term was significant 0.92 (95%CI: 0.86-0.98, p-value=0.02) documenting a steeper decrease in smoking over time for firefighters versus non-firefighters

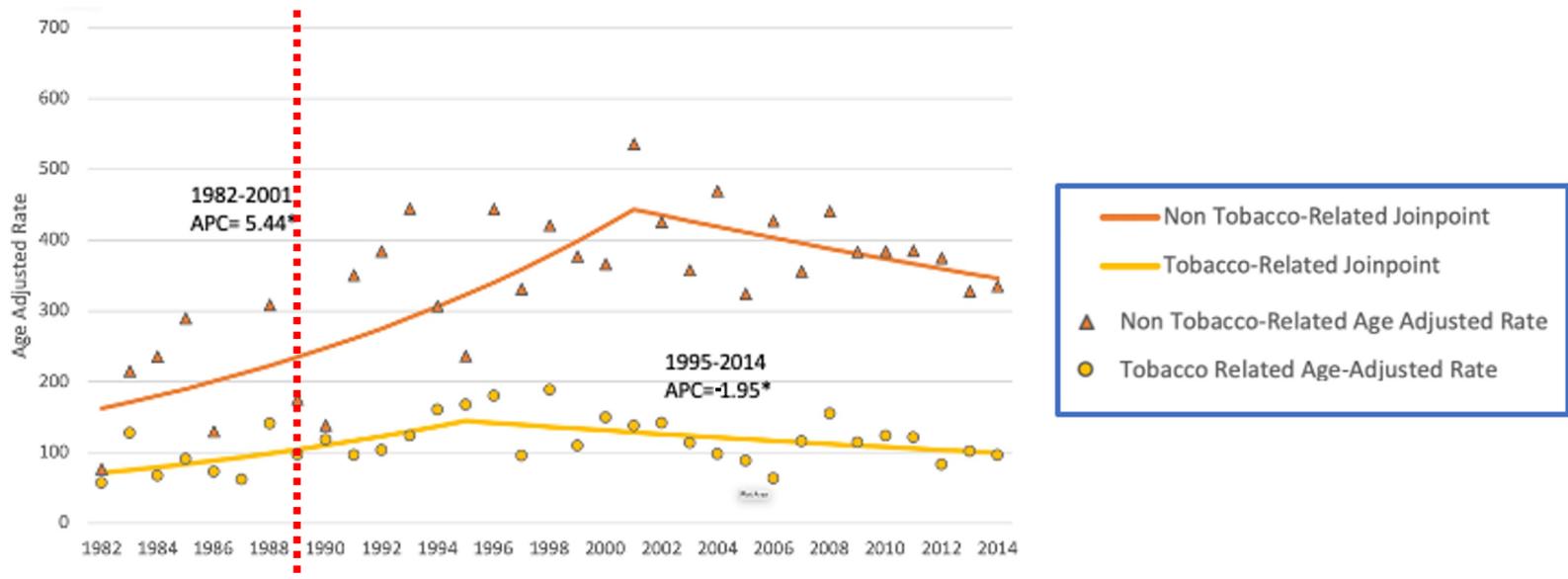
**Figure 4: Male Florida Cancer Trends: Tobacco Related and non Tobacco-Associated Cancers, age 25-79, Dx 1982-2014**

**Male Florida  
Cancer Trends  
(rates per  
100,000)**

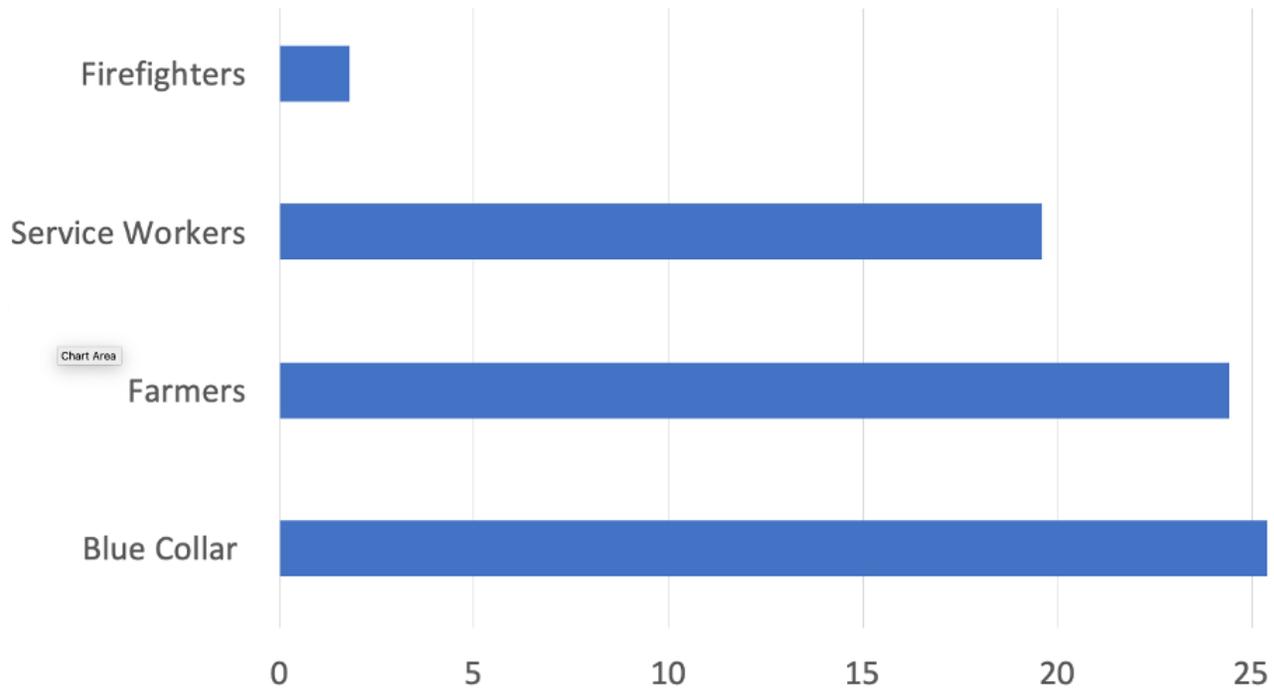


**Figure 5: Male Firefighter Cancer Trends: Tobacco Related and non Tobacco-Related Cancers, age 25-79, Dx 1982-2014**

**Male Florida Firefighter Cancer Trends (rates per 100,000)**



**Figure 6:** Prevalence of Cigarette Smoking - Pooled Florida BRFSS data (2013, 2015, 2016, 2017).



# Discussion

- Initially, Florida firefighters diagnosed with non-tobacco-associated cancers exhibited higher smoking rates
  - Over time, there was a more pronounced decline in the smoking proportions in firefighters relative to the general Florida population
- Current smoking rates among Florida firefighters are substantially lower compared to other workers
- Significant annual decreases in tobacco-associated cancers were observed in firefighters after tobacco policy implementation following a six-year lag
  - These patterns differed from the Florida population whose rates started to decline earlier than for firefighters

# Limitations

- Comparing smoking proportions in those diagnosed with non-tobacco-associated cancers is subject to limitations
  - Data missingness
  - May be a poor proxy for actual smoking rates
- Firefighter cancer trends were examined in a closed cohort and compared to trends for the entire state
- Smoking-cancer associations are subject to long latency
- A replication study in southern states without similar firefighter smoking restrictions would strengthen conclusions

# Policy Implications

- The application of similar restrictive firefighter hiring practices in other states has the potential to decrease the number of new hires who use tobacco and to favorably shape the culture of the acceptability of tobacco use in the fire service
- The complex lifetime carcinogenic exposures faced by firefighters and their documented risk of developing select cancers adds further justification for instituting similar policies in other states