

# Air Quality Improvement and Decreased COPD Prevalence

## First Choice Health Center: East Hartford, CT

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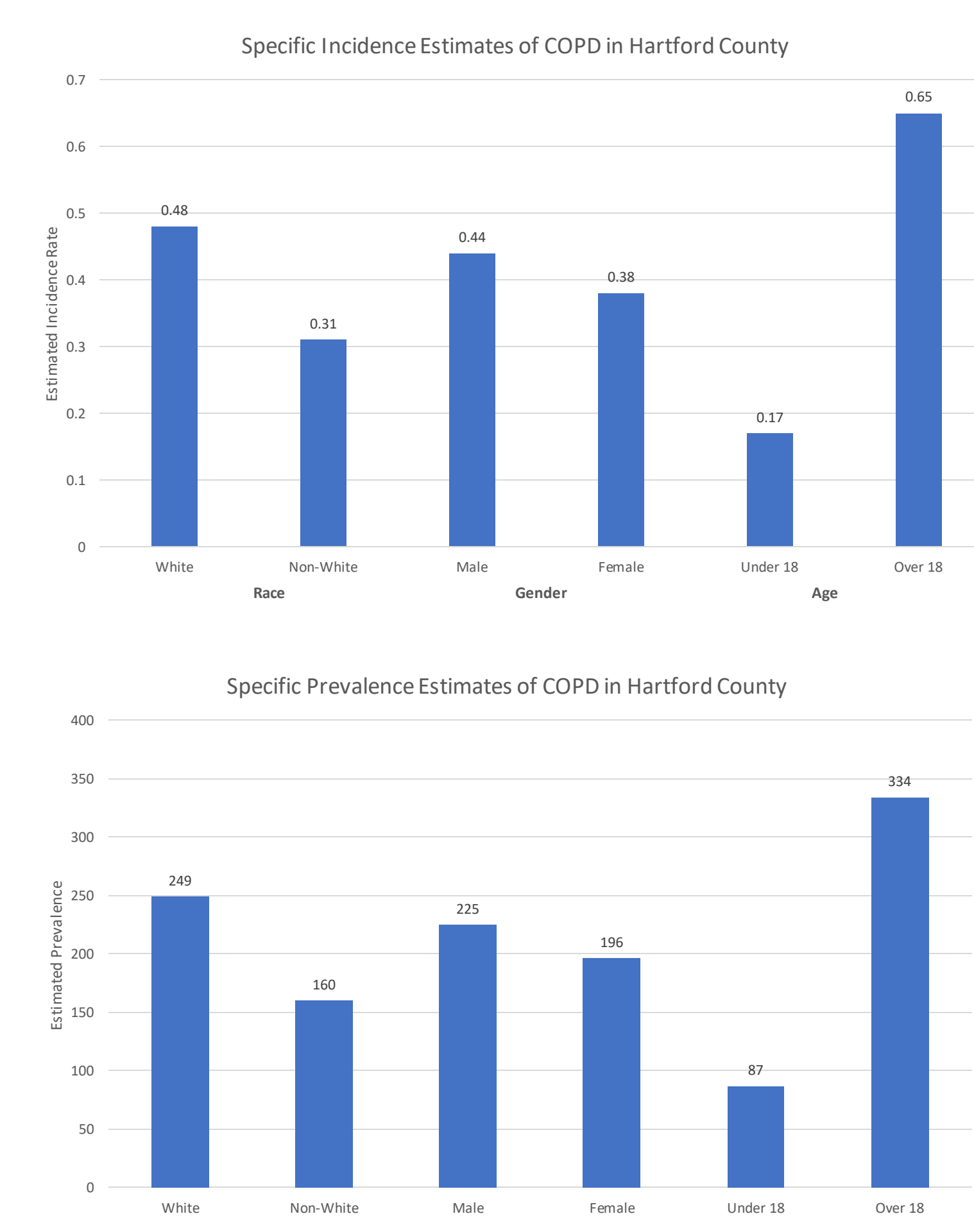
### 1: Background

- COPD is a chronic lung disease that affects over 16 million Americans and is characterized by obstructed airflow of the lungs, with prevalence and severity worsened with prolonged exposure to irritants and toxins.
- In 2021, COPD was the sixth leading cause of death in the US. While overall prevalence rates among adults have remained stable for the past decade, incidence rates have increased for those  $\geq 75$  years of age, live in rural environments, or have a history of smoke exposure.
- The prevalence in Hartford County, 4.9%, reflects an image close to the national average of 6.0%.
- Although smoking remains a pressing risk factor, other elements, such as occupational exposure, infection, and air pollution play a prominent role in disease progression.
- Social determinants of health (SDoH), including income, education, employment status, and housing are the genesis to the exposure to these risk factors as SDoH dictates your environment. Those with a lower SDoH status will be more exposed to these risk factors.
- These trends imply the necessity for public health intervention, an outlook that focuses on evidence-based strategies for social determinants of health to mitigate exposure for at-risk individuals with the aim of preventing and slowing the development of COPD.

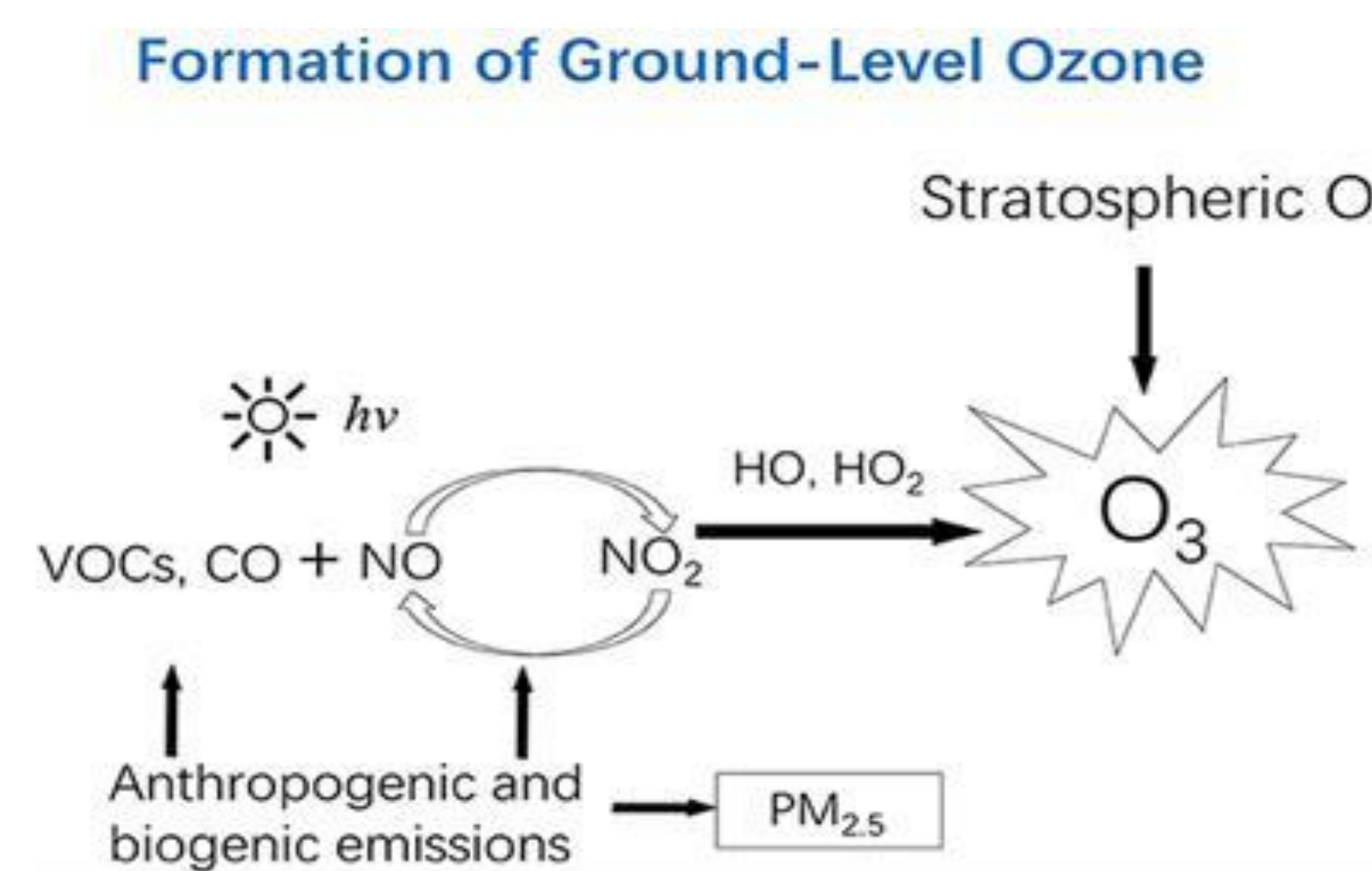
### 2: Burden Summary

- The prevalence of COPD in Hartford County stands at 4.9%
- The Rotterdam Study reported an incidence rate of 8.9 cases per 1000 person-years (0.0089), highlighting the high frequency of new COPD diagnosis within at-risk elderly populations.
- Beyond its direct health effects, COPD severely diminishes the quality of life for those affected, limiting both physical activities and productivity. The substantial economic burden on healthcare systems due to frequent hospital visits, medication expenses, and lost workdays underscores the pressing need for robust prevention strategies, early detection methods, and comprehensive management approaches to alleviate the considerable societal impact of COPD.

Census Tract Category	Population
<b>Total Population</b>	<b>9,155</b>
<b>White</b>	<b>5,417</b>
<b>Non-White</b>	<b>3,474</b>
<b>Male</b>	<b>4,896</b>
<b>Female</b>	<b>4,259</b>
<b>Under 18</b>	<b>1,894</b>
<b>Over 18</b>	<b>7,261</b>



### 3: Evidence Based Intervention



#### Transportation Demand Management (TDM) Program

- Parking cash-outs:** Employees will be refunded the total annual cost of on-campus parking and have the option to either use that money to park on-campus, or find a more efficient alternative such as public transportation or carpooling
- Preferred parking** for carpools and vanpools
- On-site public transportation stop** or shuttle to nearest stop
- Commuter benefits program:** Allow employees to allot pre-tax dollars to public transportation passes, lowering taxable income and therefore presenting an opportunity for savings
- Ride-matching:** Mapping routes and home locations of employees to build easily accessible carpools

### 4: Barriers and Opportunities for Implementation

#### Barriers to full implementation

- Resistance from employers due to concerns about cost and feasibility
- Lack of existing transportation infrastructure to support all employees
- Lack of employee engagement in the program
- Insufficient funding to provide incentives that will encourage participation
- Geographical distribution of the workplace and employer residences may make this program infeasible for many employees

#### Opportunities for full implementation

- Collaboration with local government agencies to provide tax breaks and/or other financial incentives to employees and businesses participating in the program
- Implement preferential parking to those who carpool or vanpool to work
- Incentivize participants with additional paid time off (PTO)
- Map routes and home locations of employees to build easily accessible pools
- Allow flexible work arrangements, such as 1-2 remote days per week, for participants to complement the initiative and further encourage people to participate

### 5: Interprofessional & Community Stake Holders

- Key interprofessional and community stakeholders
  - Local government officials, employers, federal government, public health experts, Department of transportation, and healthcare professionals.
- Employers may apply for state/federal grants that provide funding to offer environment friendly transportation options for employees.
- Healthcare professionals and public health experts can advocate at state & federal levels for the health benefits of carbon emission reduction --> decreased mortality and lower burden on the healthcare system.
- Local government officials and the Department of Transportation are key players to ensure efficient and accessible modes of transportation are available.
  - Incentivizing certain initiatives (e.g. public transportation, ride-sharing) can have implications on traffic flow and congestion in the city.
  - Help mitigate the consequences that may result from significant changes to the underlying infrastructure.



### 6: Implications Beyond this At-Risk Community

The benefits of Employer Transportation Demand Management programs could extend to populations across the world and promote sustainability through improving air quality, reducing carbon emissions, encouraging community collaboration, and incentivizing exercise through cycling. **Implemented widely, the programs may:**

- Reduce asthma exacerbations
- Lessen overall pulmonary disease
- Improve cardiovascular health and its downstream effects
- Expand life expectancy
- Reduce healthcare cost and disease burden
- Lead to cleaner water and healthier plant/animal life
- Contribute to the deceleration of climate change

Although these types of impacts may take years to become evident, initiatives that promote sustainability and clean energy can start now. Successful Employer Transportation Demand Management programs within at-risk communities like Hartford can serve as the model for more wide-spread implementation in other urban areas.

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