



Identifying Sources of Air Pollutants (VOCs) in Commerce City, CO

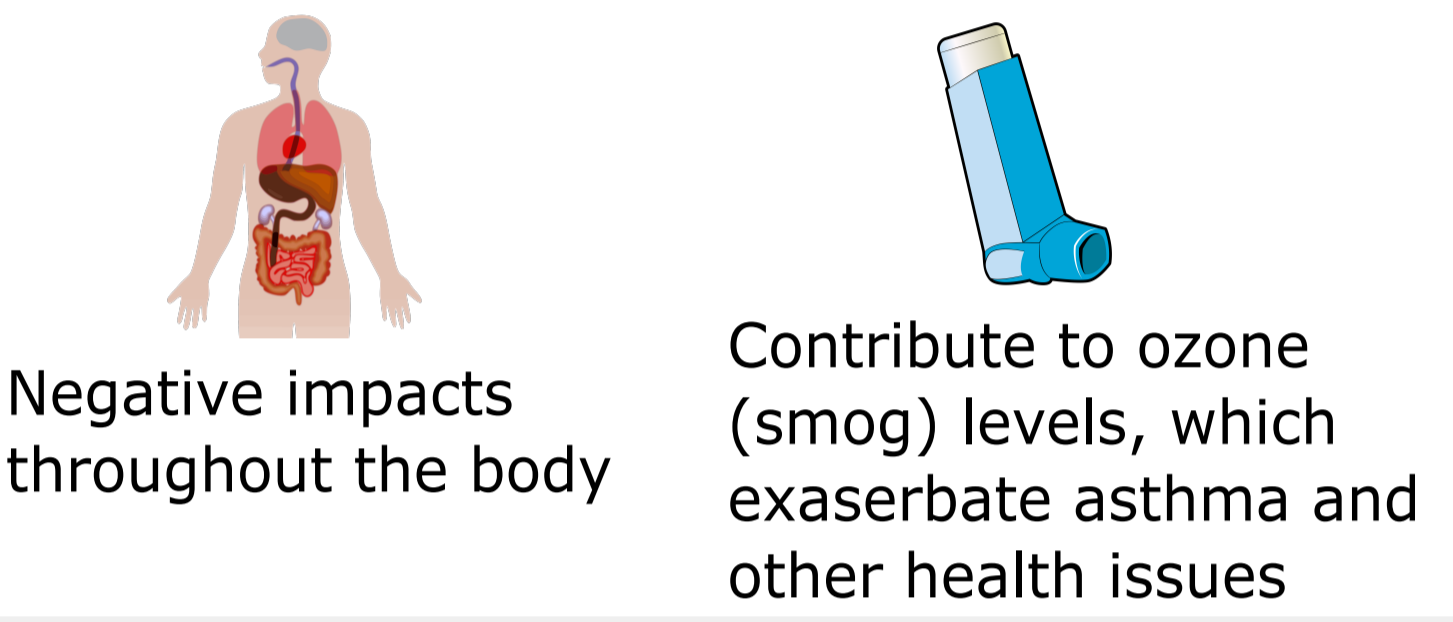
Caroline Frischmon
Michael Hannigan

Contact:
cafr1977@colorado.edu

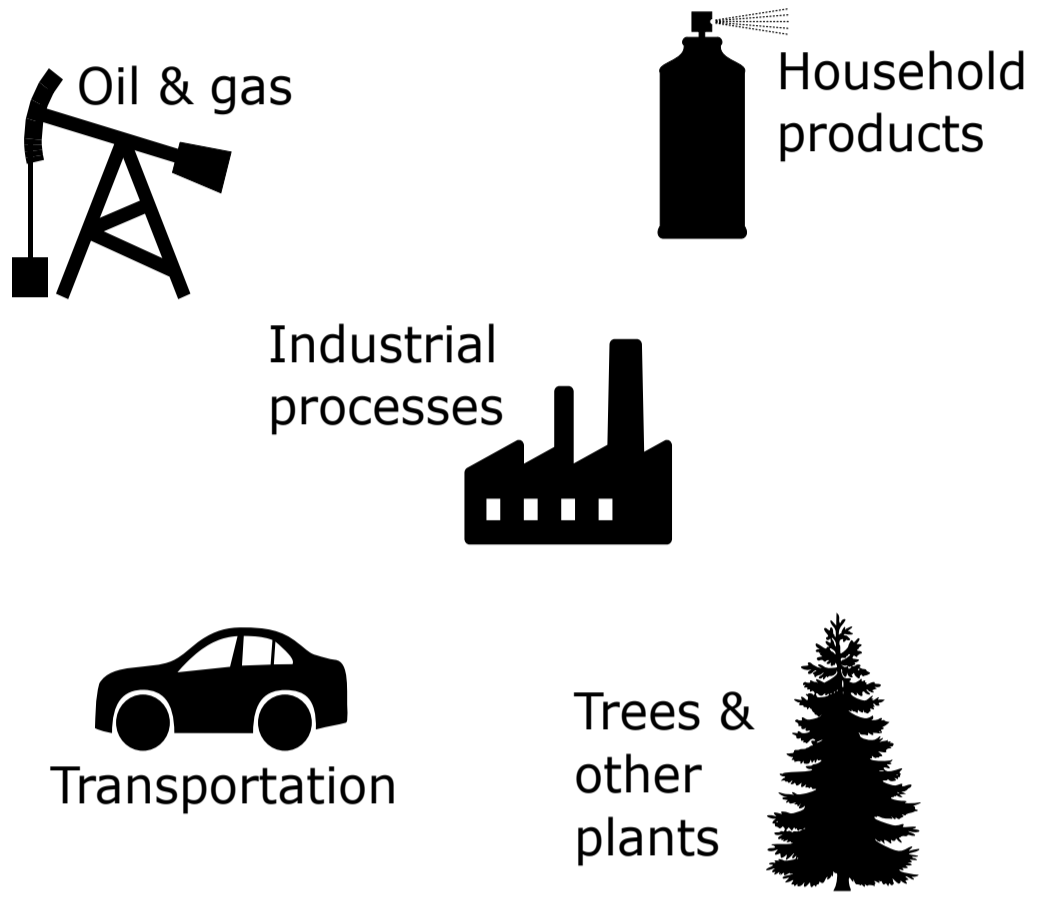
What are VOCs?

VOCs (volatile organic compounds) are a major, often odorous, group of air pollutants.

Associated health concerns:



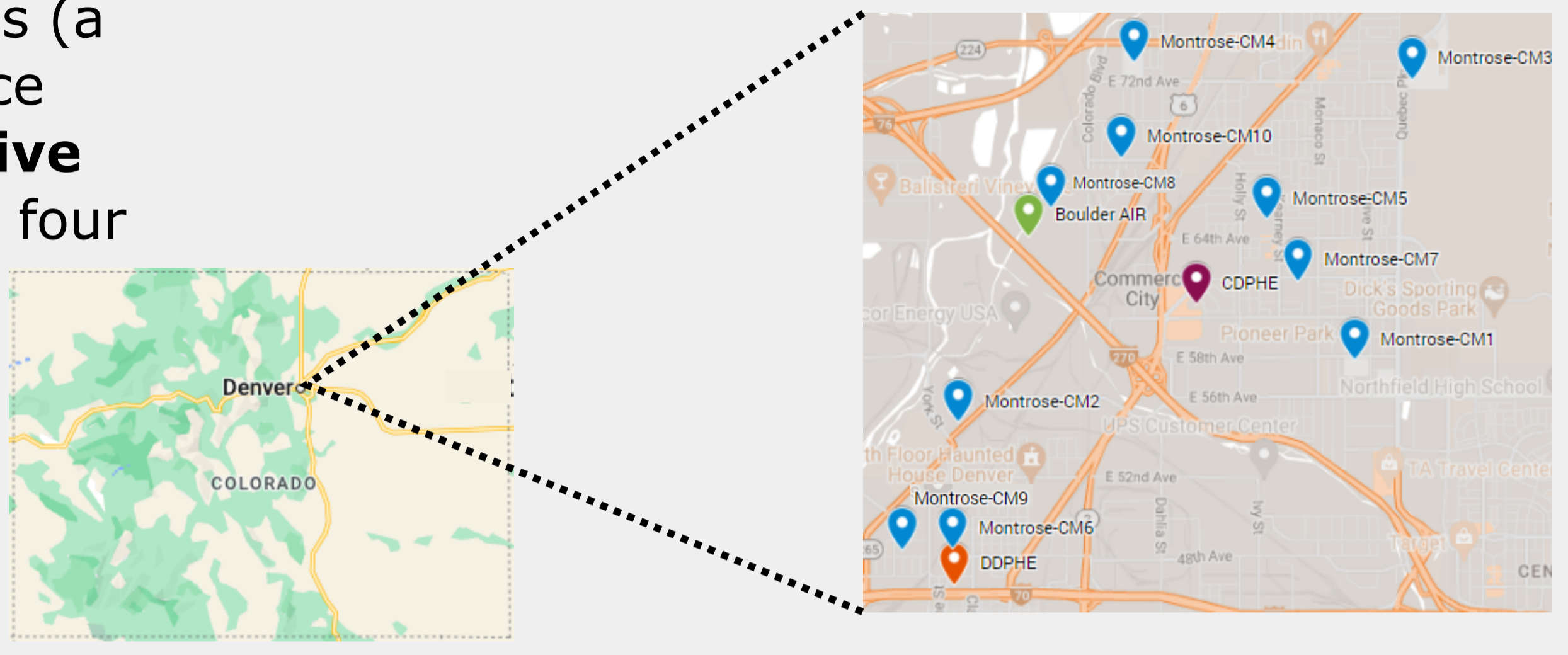
VOCs come from many sources:



How did we identify VOC sources?

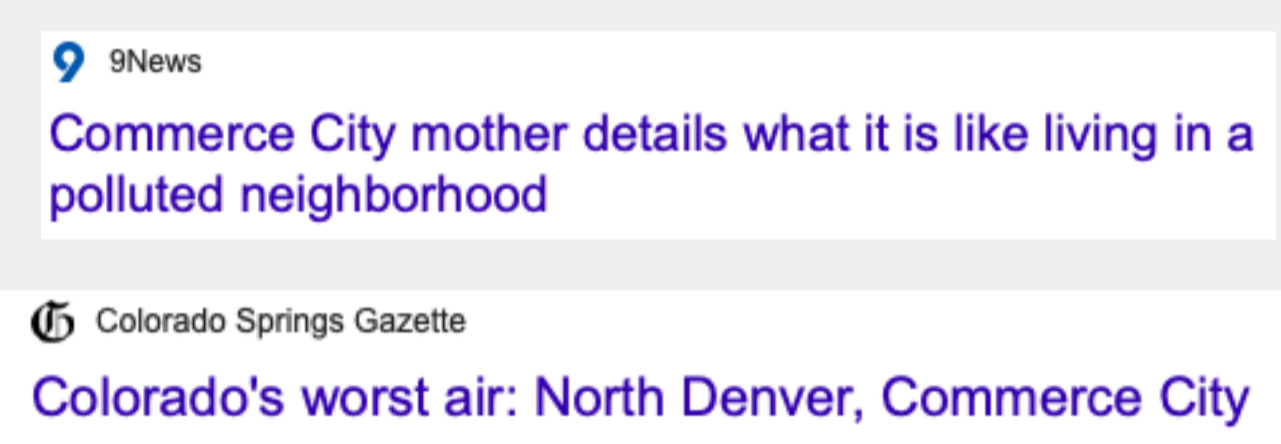
We identified major sources of VOCs (a group of air pollutants) in Commerce City by applying a tool called **positive matrix factorization** to data from four recent monitoring programs.

By comparing across multiple monitoring sites, we start to see the bigger picture of VOC sources throughout Commerce City.

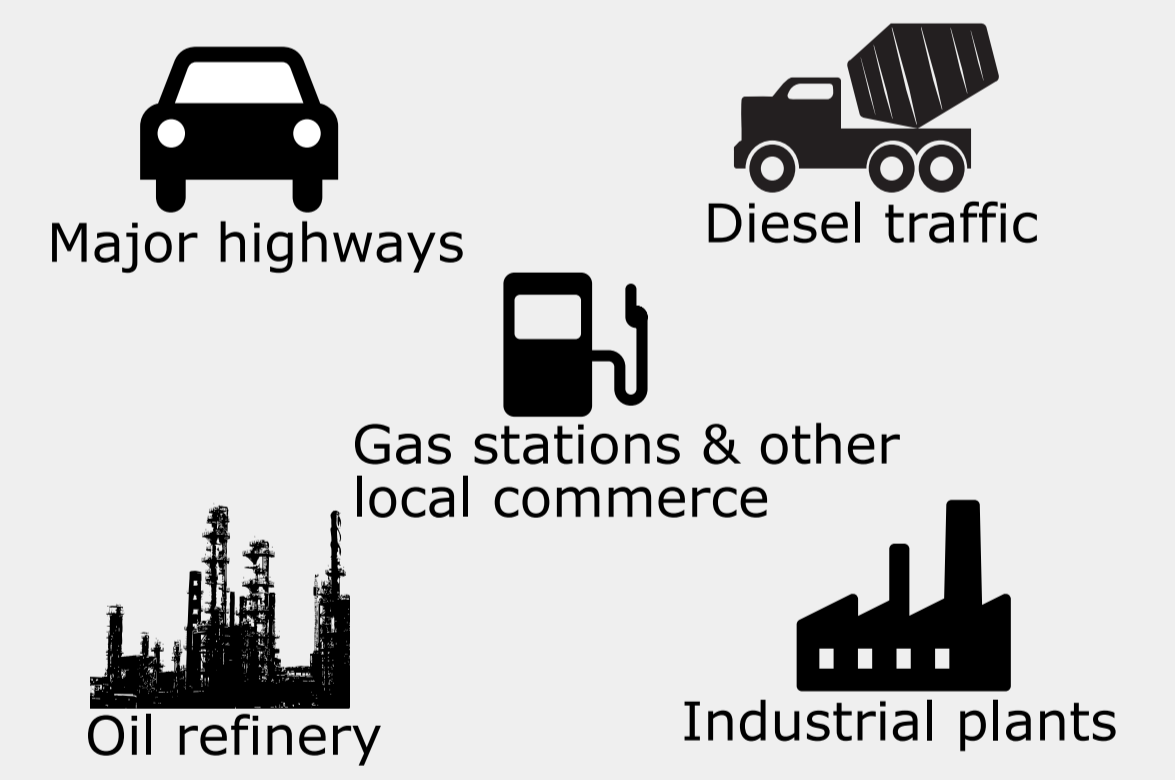


Why Commerce City?

Commerce City is a disproportionately impacted community with many distinct VOC sources.

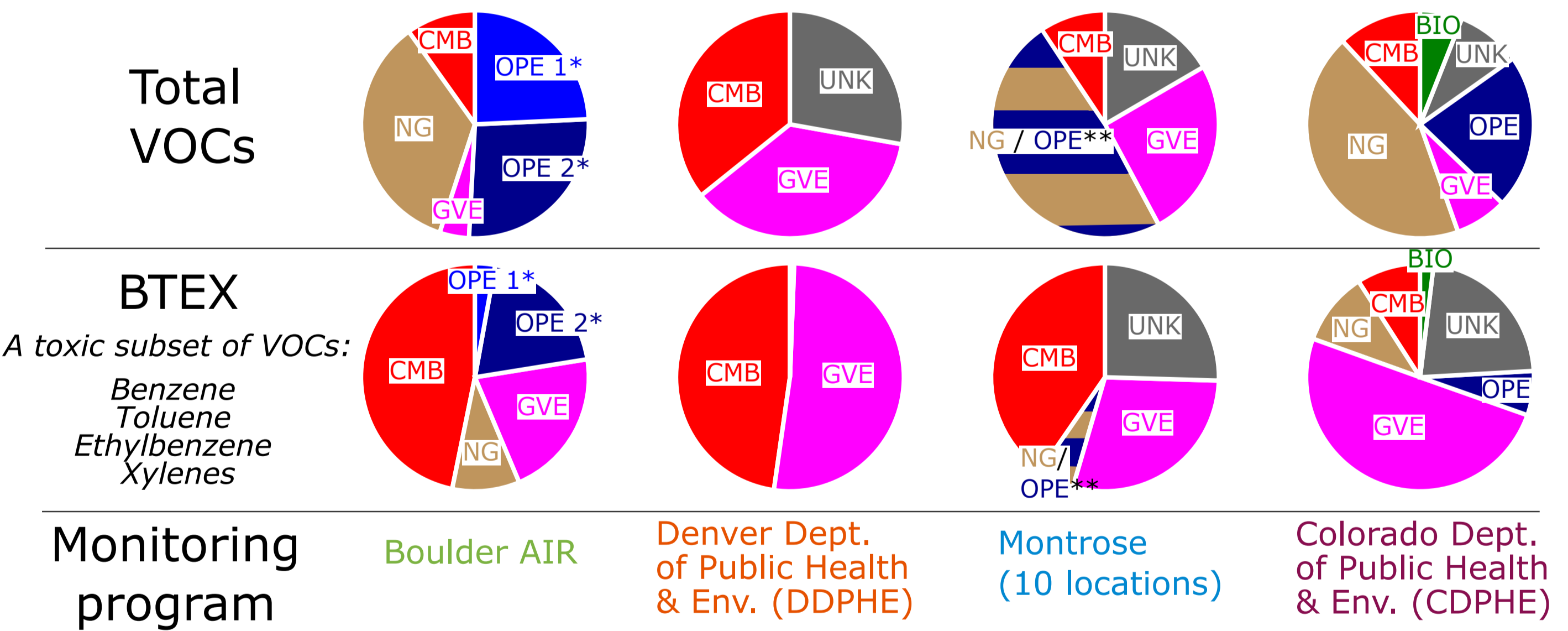


Understanding how much each source contributes to air quality issues in Commerce City can help us **address community concerns** and develop targeted pollutant mitigation strategies.



What were the major VOC sources?

Source Contributions



Source Names:
CMB: Combustion / Diesel Exhaust
NG: Natural Gas
GVE: Gasoline Vehicle Exhaust
OPE: Oil Processing / Fuel Evaporation
UNK: Unknown
BIO: Biological / Plants

* The Boulder AIR data set revealed two sources associated with oil processing / fuel evaporation
** The Montrose data set combined the NG and OPE factors into one

Why does this matter?

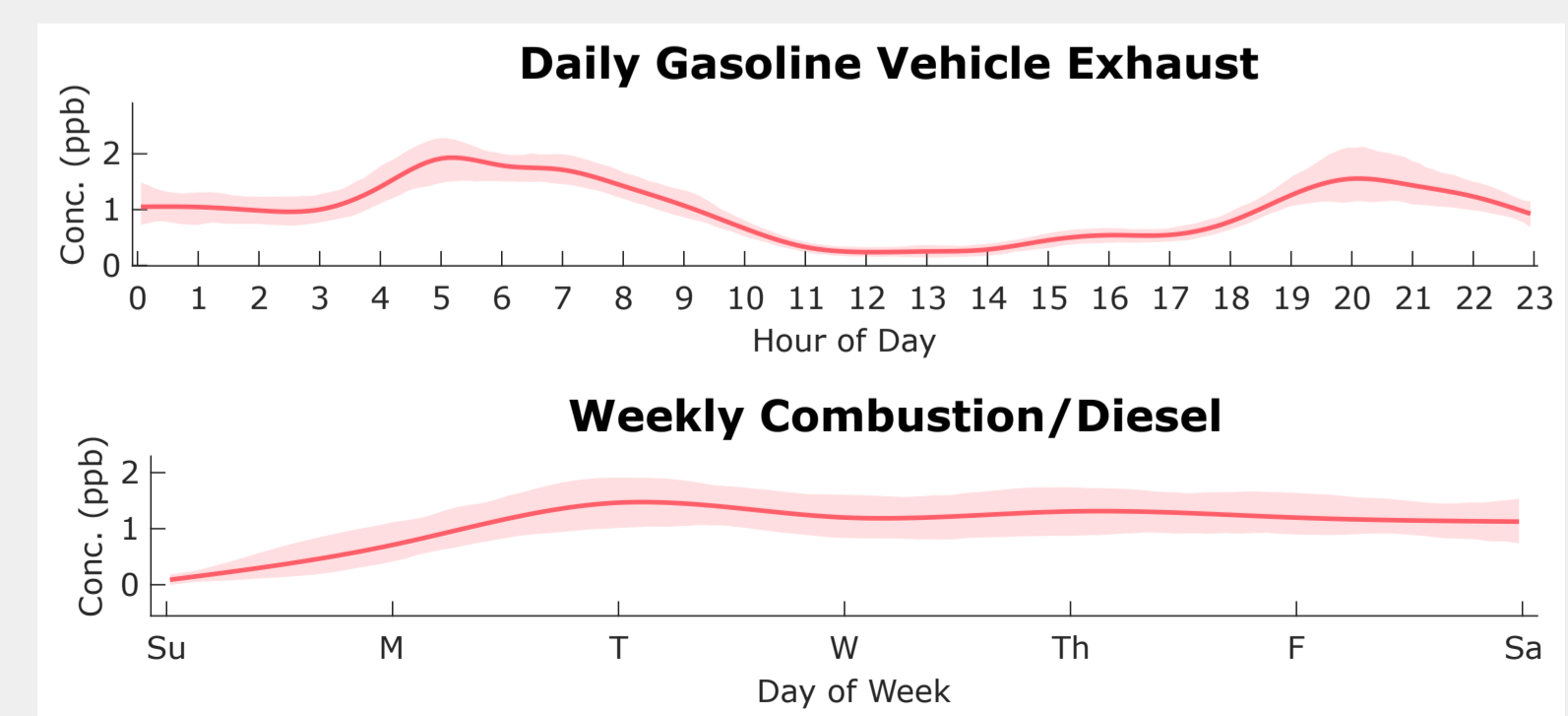
Our Findings:

- 1. Natural gas and oil processing are major contributors of total VOCs.
- 2. Combustion/diesel exhaust and gasoline vehicle exhaust are major contributors of BTEX, a toxic subset of VOCs.

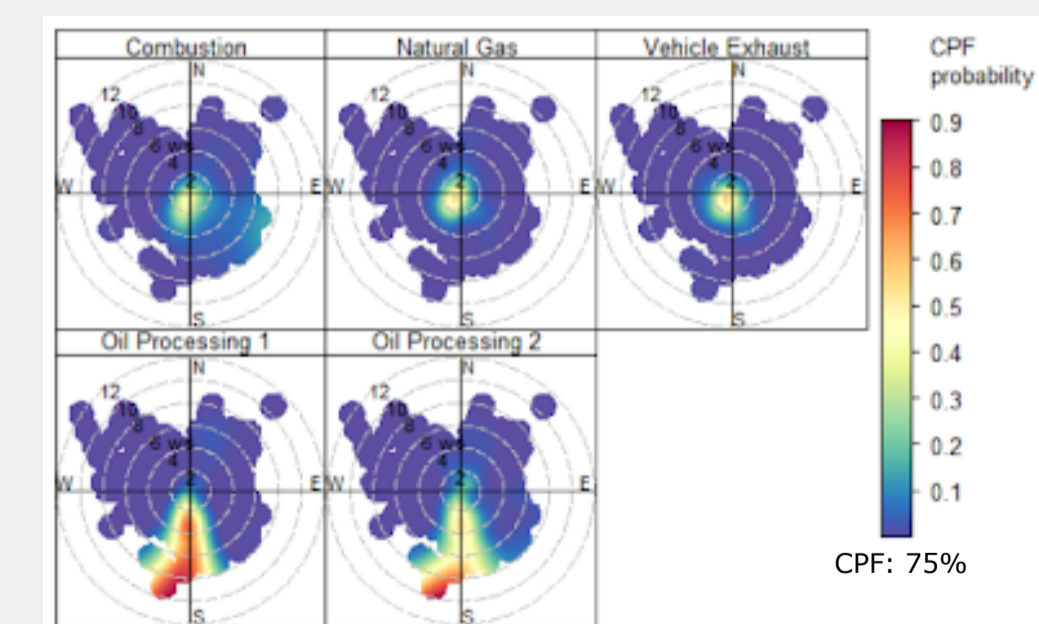
Takeaway for Legislators:

This work was made possible by community-based and regulatory monitoring in response to residents' health concerns. **Supporting communities in their environmental monitoring efforts** can help us develop more informed environmental mitigation plans and policies.

What else can we learn?



Wind direction when sources are highest



Monitor location



Analyzing wind data can help reveal from where these sources originate.

Acknowledgements:

This work used four data sets collected by:
* Colorado Dept. of Public Health and Env. * Boulder AIR / Cultivando
* Denver Dept. of Public Health and Env. * Montrose Air Quality Services