

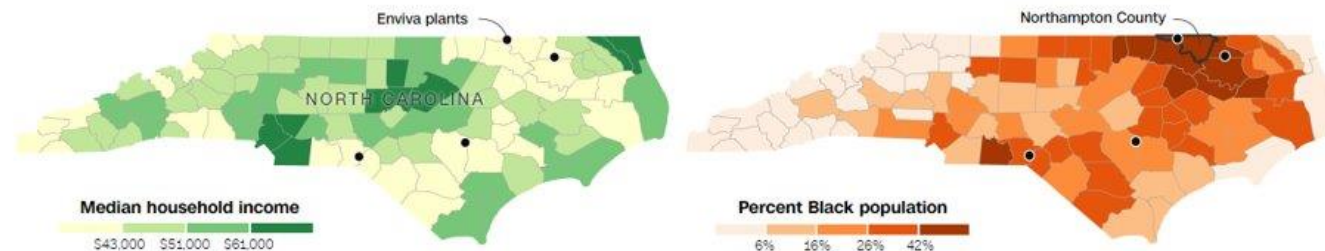
# CEB Biomass & Proximity Analysis EJ Update

Briefing for Sharyn Lie

April 3, 2024

# Background & Context

- Proximity analysis code was originally developed by NCEE for HFC Facility Analysis.
- New automated process allows for the easy-swapping of locations and tract-level data.
- CCD has worked closely with colleagues including OAQPS, ORD, Region 4 on issues like biogenic CO2 emissions and wood pellet production for over a decade.
- In August 2022, OAP held a listening session with the Dogwood Alliance, the People's Justice Council and residents concerning environmental justice (EJ) issues surrounding pellet mills in the Southeast.
- Concerns focused on Title V permits for pellet mills, and the conditions documented in EJ reports submitted by the applicant and reported by CNN and others.



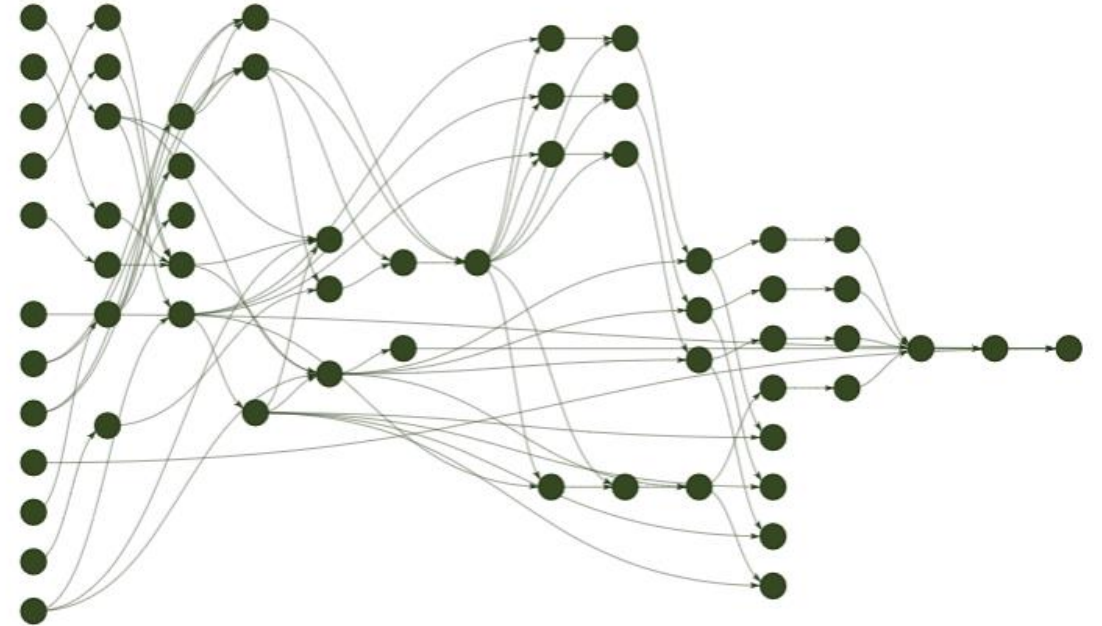
Source: CNN, How marginalized communities in the South are paying the price for 'green energy' in Europe ([link](#))

# Background (cont'd)

- CEB had previously (2020) started work with Dr. Greg Latta, developer of the LURA and FASOM models, on this topic and he shared a spreadsheet with all the forest product mills (all mill types), their locations, and demographics from the Census block group where they were located.
- Our work builds on Latta's by including additional datasets describing health conditions, and other nearby emitters at multiple scales.
- Latta's "All Mills" dataset served as the first exploratory use-case for automation.
- CCD has been working with Tom Casey, a UMD master's student on his capstone project "Community assessments of pulp and paper mills in Georgia". We are scheduling a brownbag for Tom on May 21<sup>st</sup>.

# Automated Proximity Analysis using targets

1. Input facility coordinates
2. Create buffer zones and map census tracts
3. Calculate variable means and standard deviations for each buffer zone
4. Merge results into single table and export



# Automated Proximity Analysis using targets

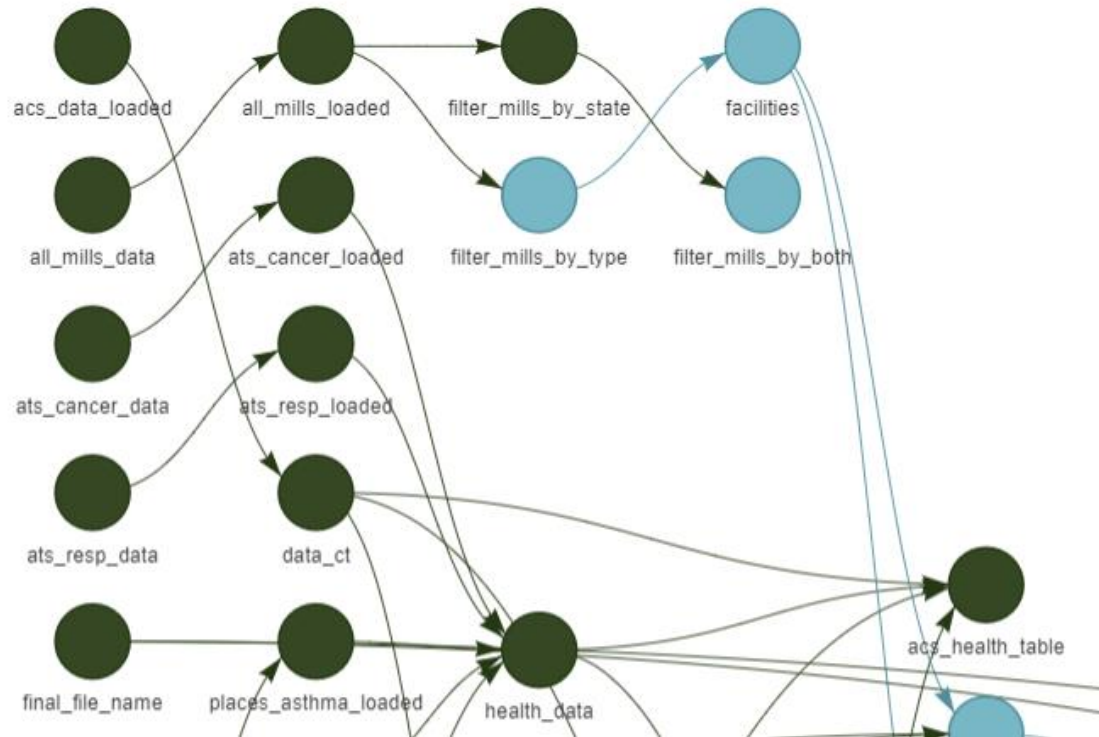
Ex. Change facility inputs to pellet mills



# Automated Proximity Analysis using targets

## Ex. Change facility inputs to pellets mills

## 1. Input facility coordinates

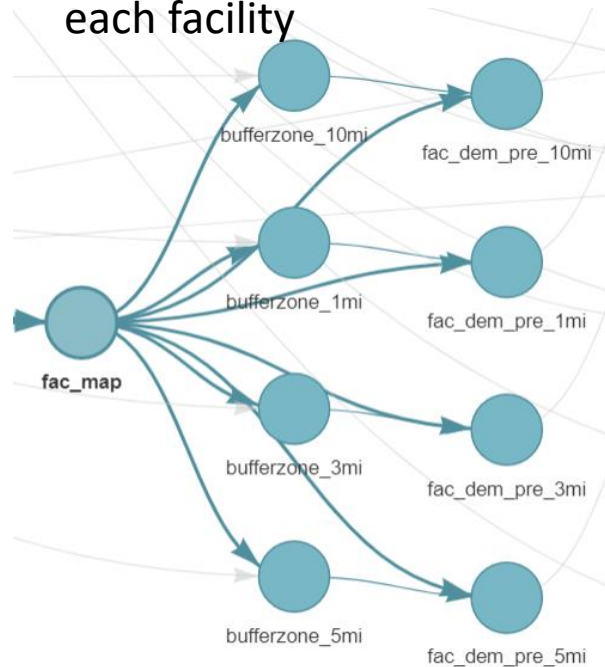




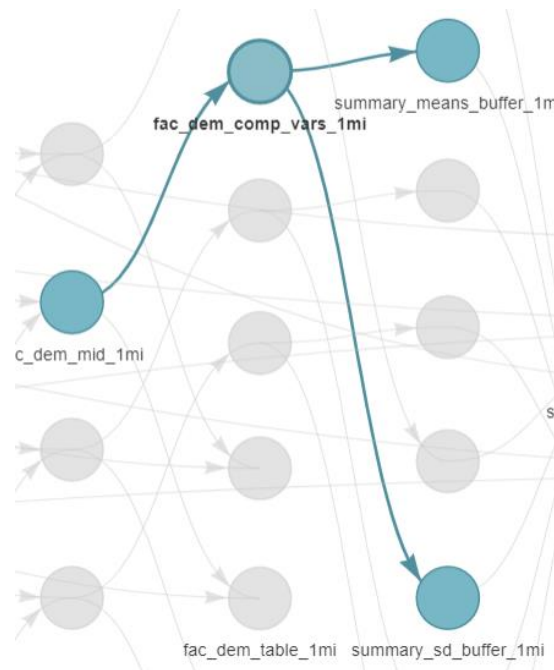
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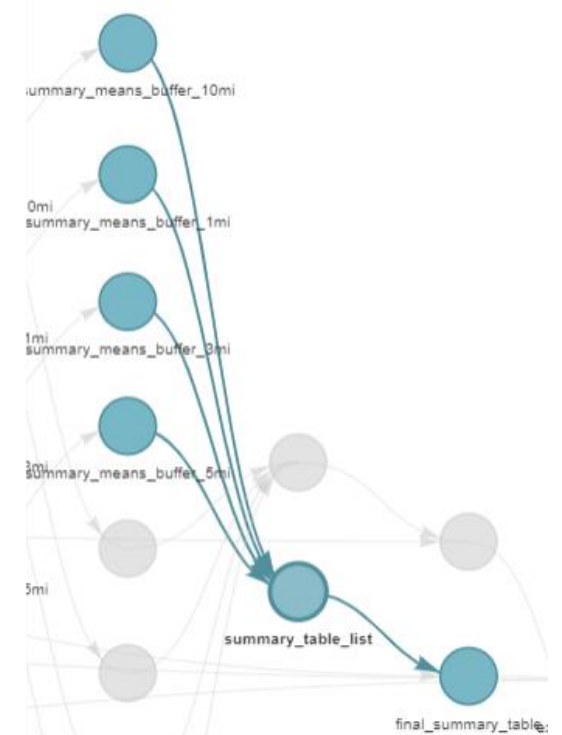
2. Create buffer zones and map census tracts based on intersection for each facility



3. Calculate variable means and standard deviations for each buffer zone



4. Combine results into summary table and export



# Tract-Level Data Sources

- American Community Survey 2019 (ACS)\*
  - Race and ethnicity demographics
  - Median household income
- AirToxScreen 2019
  - Cancer risk
  - Respiratory illness risk
- CDC PLACES, 2021 release\*
  - Asthma prevalence
  - Heart disease prevalence
  - Cancer (excl. Skin) prevalence
- All sources utilize 2010 census tract boundaries
  - \*: More recent versions available



# Summary Tables: NC Pellet Mills

Overall Community Profile and Health Outcomes for Communities Near 6 NC Pellet Facilities; 3 Rural and 3 Urban

	Overall National Average	Rural Areas National Average	Within 1 mile of facilities	Within 3 miles of facilities	Within 5 miles of facilities	Within 10 miles of facilities
% White	68.17	75.10	46.37	50.66	56.43	60.10
% Black or African American (race)	12.55	9.66	45.01	38.85	32.78	28.87
% Other (race)	19.27	15.25	8.61	10.49	10.79	11.03
% Hispanic (ethnic origin)	18.44	14.56	8.47	8.28	7.14	6.77
Median Income (1k 2019\$)	81.11	79.73	43.37	46.50	48.86	52.09
% Below Poverty Line	6.69	6.27	12.31	11.66	10.42	9.87
% Below Half the Poverty Line	5.64	5.15	11.60	9.57	8.50	8.17
Total Cancer Risk (per million)	25.42	22.29	27.84	28.62	28.80	28.61
Total Respiratory Risk (hazard quotient)	0.31	0.26	0.37	0.37	0.36	0.36
Cancer Prevalence (exl. Skin) (% Pop.)	6.67	7.48	6.86	7.18	7.25	7.17
Asthma Prevalence (% Pop.)	9.69	9.82	11.56	11.03	10.70	10.58
Coronary Heart Disease Prevalence (% Pop.)	5.92	6.79	8.43	8.17	7.87	7.75

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# Next Steps & Potential Applications

- Technical model improvements
  - Expand proximity analysis to include Census block groups within a generalized “blob” shape
  - Investigate effects of wind on air pollution dispersion patterns, focusing on EJ-related effects
  - Integrate demographic analysis within PE model
  - “Fused” data
  - Explore alternative tract-mapping
- Research topics
  - Do EJ impacts of biomass differ by facility type (e.g., sawmill, pulp & paper)? Region? Age of facility?
  - Are there differences in air pollution volumes and related health effects between entities with Major vs Minor Title V permits?
- Possible Applications
  - Explore the extent to which these findings and/or tools can be applied within EPA regulatory settings (e.g., in RIAs)
  - Augment work by R4 and ORD looking at HAPs in US Southeast