

Texas Trees Foundation Managing The Need To Be Treed Dallas Tree Equity Planting Map, 2022

March 2023



AGENDA

01

Dallas Urban
Forest Health and
Equity

02

Dallas Tree Equity
Planting Map
2022

03

Dallas Equity
Engagement
Process

04

Dallas Equity
Indicators and
Challenges



About Texas Trees Foundation

The Texas Trees Foundation (Texas Trees) serves as a catalyst in creating a new green legacy for North Texas through transformational, research-based plans that educate and mobilize the public to activate the social, economic, environmental, and health benefits that trees and urban forestry provide for a better quality of life.

How do we create cleaner, greener, cooler, and healthier cities?

Urban Forest Preservation & Expansion



Cool Schools Program™



Southwestern Medical District Streetscape & Park Improvement



Connecting & Celebrating Trees and People

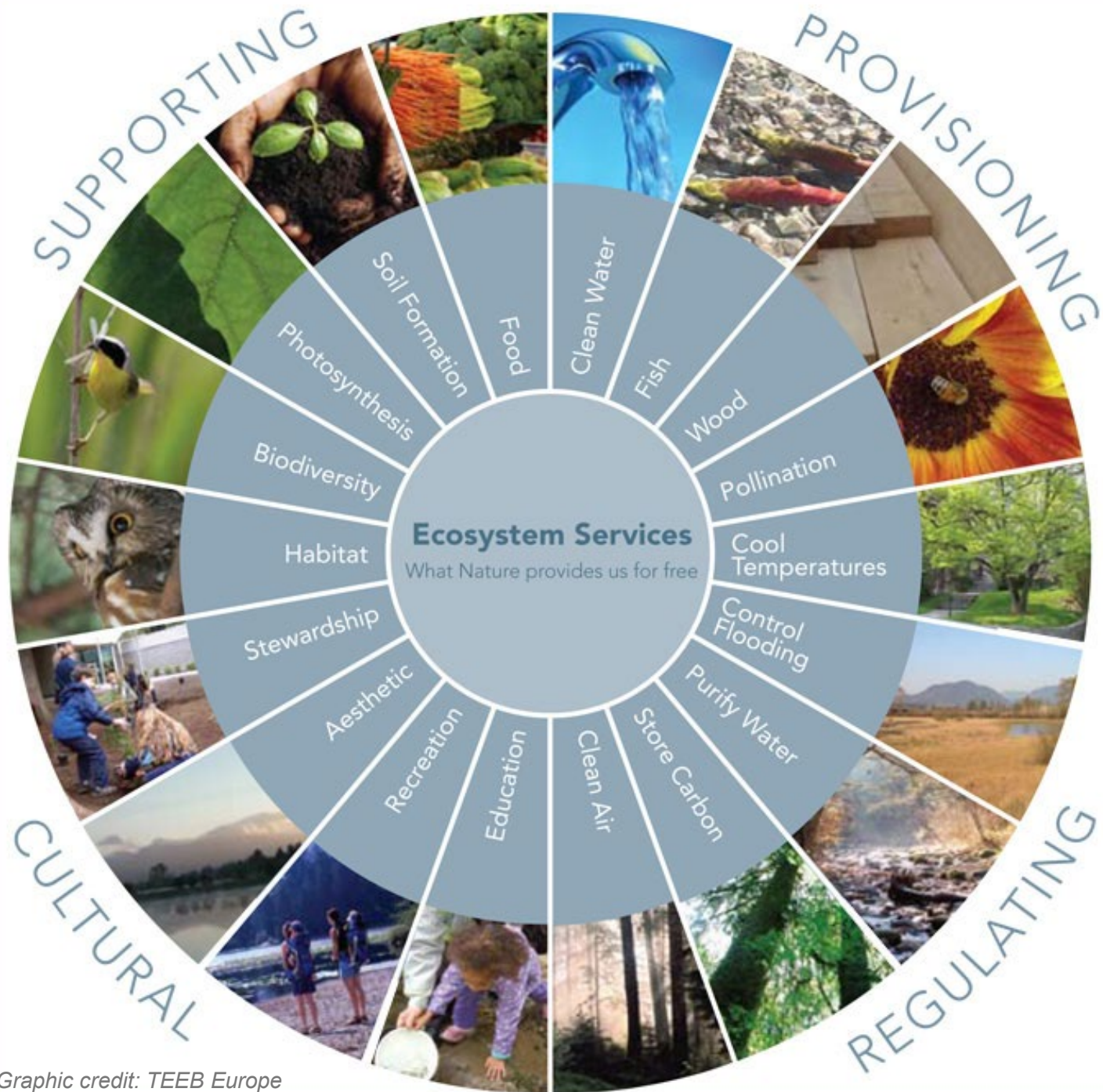
Texas Trees Foundation



01



Dallas Urban Forest, Health, and Equity



Urban Forestry

The art, science, and technology of managing trees and forest resources in and around urban community ecosystems for the physiological, sociological, economical, and aesthetic benefits trees provide society (Helms 1998).

Trees and Human Health and Wellbeing

- Reducing the burden of chronic, lifestyle-related diseases;
- Improving mental and physical health and well-being;
- Promoting physical activity and reducing stress;
- Contributing to social cohesion in cities;
- Improving urban air and water quality for improved human health;
- Reducing heat- and noise-related diseases in cities;
- Improving children's opportunities for healthy development; and
- Providing environmental education.

- See Routledge Handbook of Urban Forestry



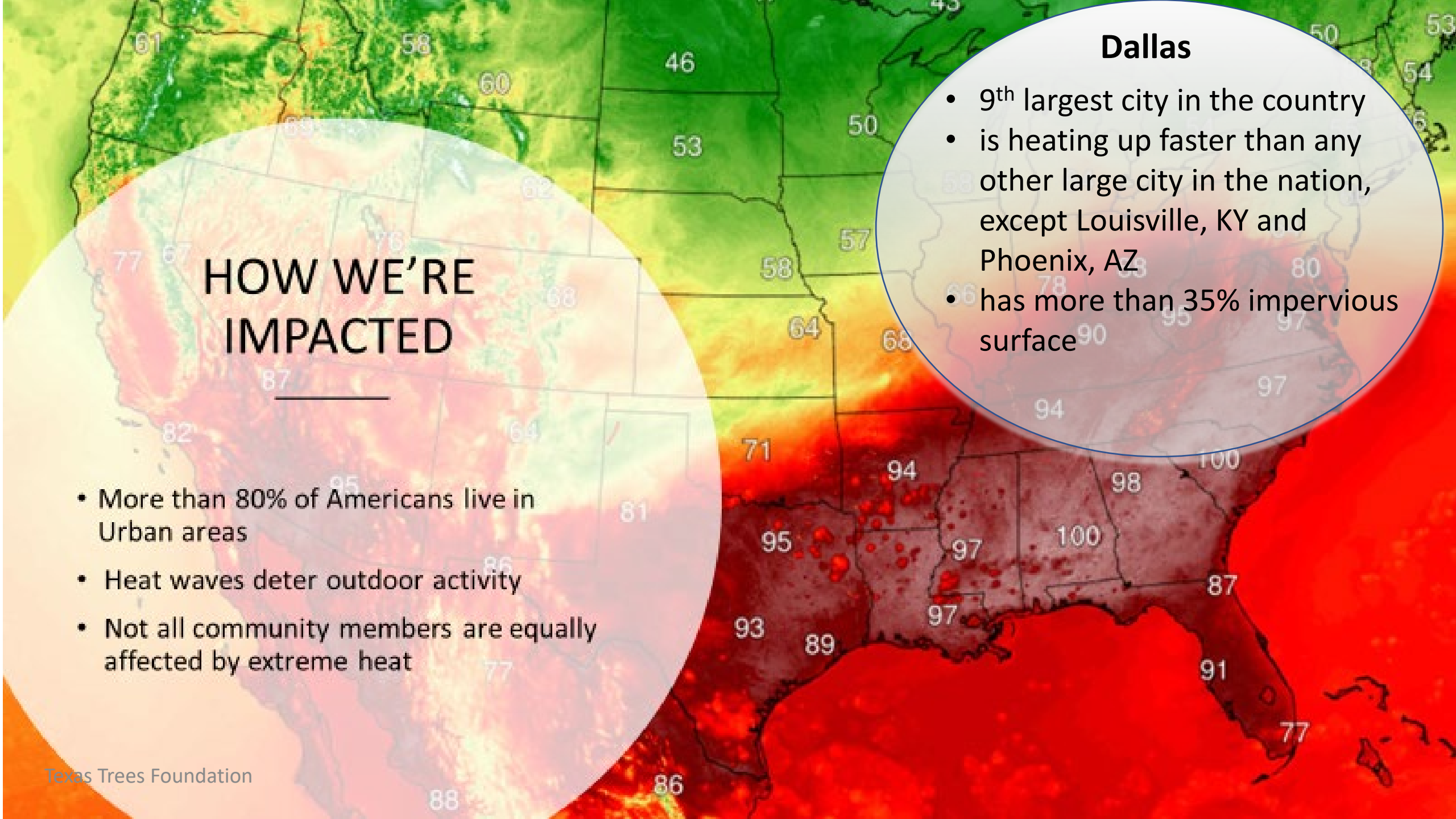
Imagine a Green, Inclusive, Safe, Accessible, and Healthy District...

Urban Heat Island Effect

WHAT ARE HEAT ISLANDS?

- Structures such as buildings and roads absorb and re-emit sun's heat more than natural landscapes such as forests and water bodies
- This leads to hotter days and even hotter nights in our urban environment





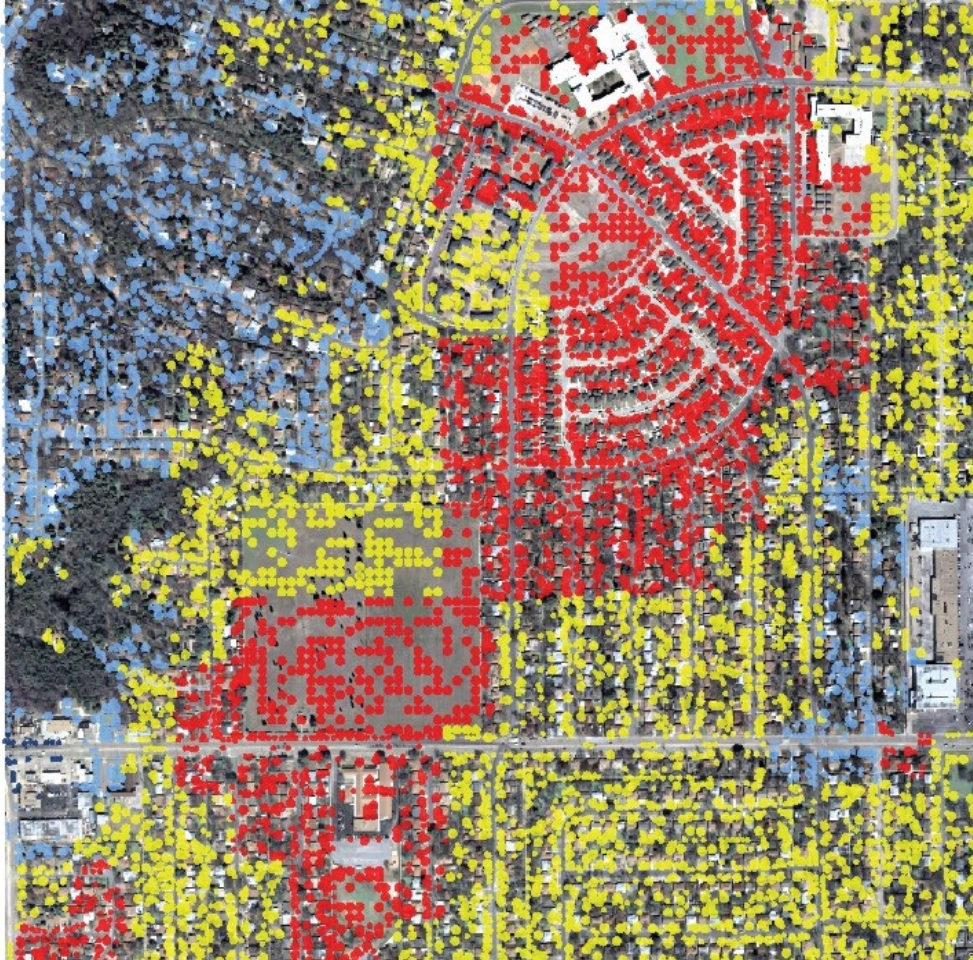
HOW WE'RE IMPACTED

- More than 80% of Americans live in Urban areas
- Heat waves deter outdoor activity
- Not all community members are equally affected by extreme heat

Dallas

- 9th largest city in the country
- is heating up faster than any other large city in the nation, except Louisville, KY and Phoenix, AZ
- has more than 35% impervious surface

Urban Heat and the Urban Forest



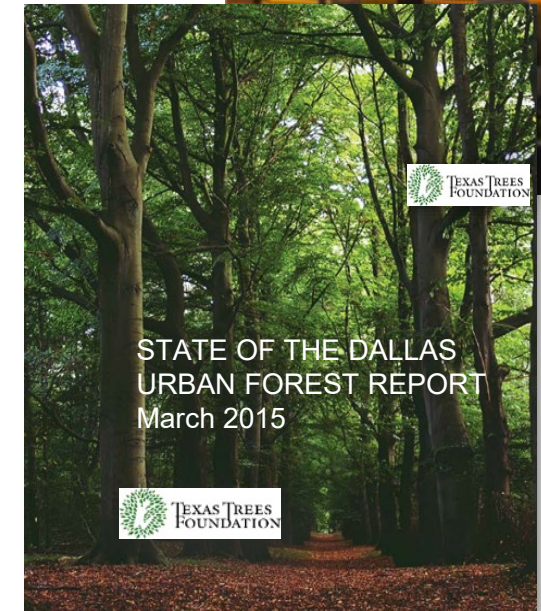
Surface Temperature Ranges (Degree F)

0-110	121-130	141 + N/A
111-120	131-140	

Tree-planting locations
color-coded by
temperature range

US Forest Service
recommends 40% tree
canopy cover

Dallas has 32%
SWMD has 7%



Microclimate
Matters to
Human
Comfort

Effect of
Shade on
Surface
Temperature

Select Heat Data Pegasus Park, Parking Lot

SITE	Surface Temp F Shade	Surface Temp F Sun
Grass	101.8	104.7
Light Color Concrete	109.9	122.1
Exterior White Car	114.2	134.6
Woodchip Mulch	107.0	146.1
Exterior Black Car	113.7	157.6

Thursday, July 21, 2022
Recorded Time: 4:15PM – 4:22PM
Recorded Air Temperature 100/95F
Weather Conditions: Sunny
Data captured by infrared thermometer

Pegasus Park Parking Lot

Sensor Locations



KEY

TH = Temperature and Humidity Sensor

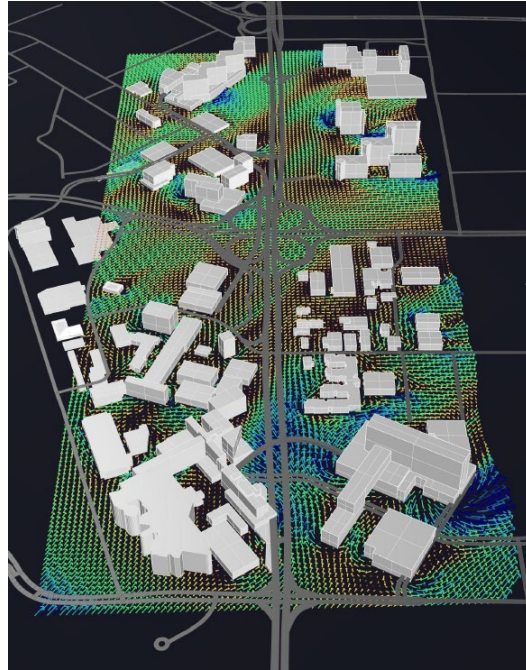
MRT = Mean Radiant Temperature Sensor Globe

Anon = Anemometer (wind flow/direction)

Evidence-Based Design Applied

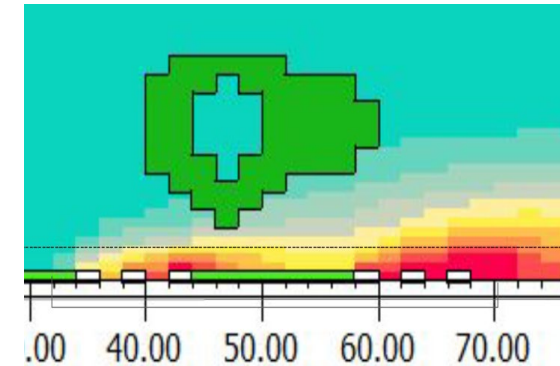
Measure

Use high resolution satellite imaging and ground-based sensors for ongoing monitoring and analysis.



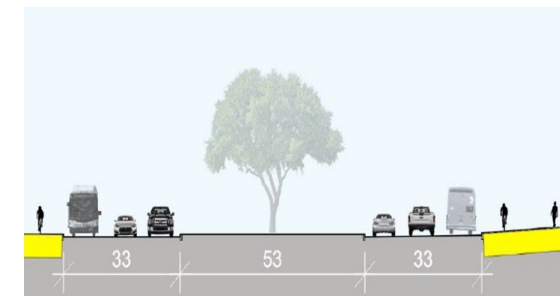
Modify

Optimize design scenarios to maximize health benefits through iterative modeling process.



Model

Leverage real time data to create environmental simulations that will be used to predict design outcomes.



Particulate Matter Study

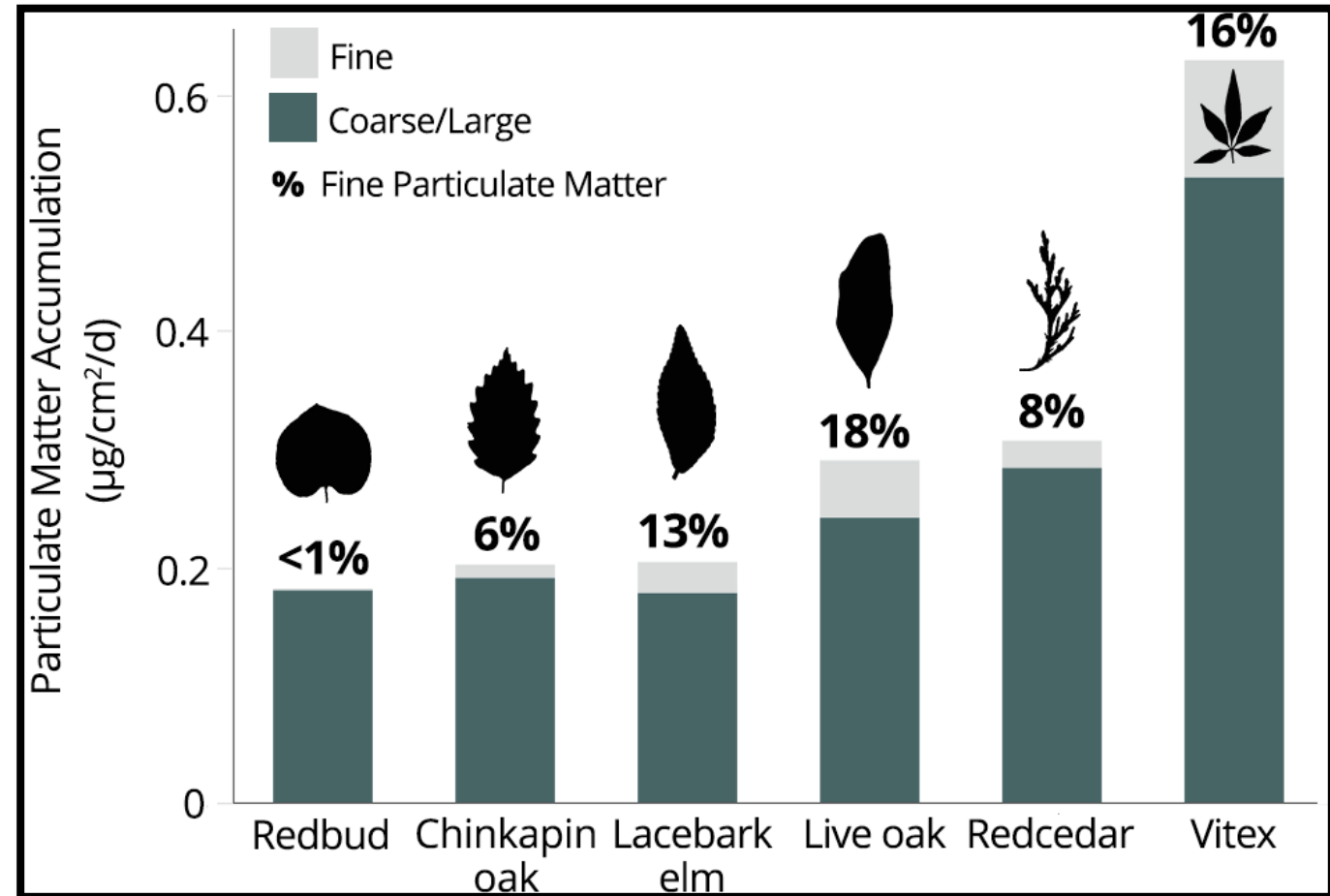
- Conducted around Charles Rice Learning Center in Dallas
- This study examined the efficiency of different tree/plant species in filtering airborne particulate matter (PM)
- Goal of the study is to inform plant species selection for vegetation barriers around urban schools



- Vegetation can serve as a barrier between air pollutants and school children and decrease pediatric asthma rates

Particulate Matter Study

- Findings indicate that **mixed-species vegetation barriers** are effective at filtering PM due to the seasonal and spatial complementarity of plants with different leaf characteristics, growth form (trees vs. shrubs) and habit (evergreen vs. deciduous)



02



Dallas Tree Equity Planting Map 2022

5 Planting Priority Categories

Demographic Population density People of color (% non-white) Educational attainment	Health Vulnerable populations Heart disease and obesity
Economic Development Home ownership rates Median income Median home value Poverty percentage	Air Quality Future traffic congestion
	Urban Heat Island Average maximum temperature

This report provides an action guide for decision-makers, city staff, developers, builders, and other stakeholders to better identify where trees should be strategically planted



- Various data sets were used in this analysis including tree canopy and vegetated surfaces from previous projects, sociodemographic data from the U.S. Census Bureau's American Community Survey (ACS), health metrics from the Centers for Disease Control and Prevention (CDC), and future traffic congestion from the Texas Department of Transportation (TXDOT). (A full list of data sources can be found on page 26 of the report).
- 929 census block groups within the City of Dallas used. Block groups are used by the U.S. Census Bureau to assure statistical consistency when tracking populations across the US and can be valuable indicators of environmental justice as they are linked with sociodemographic data.

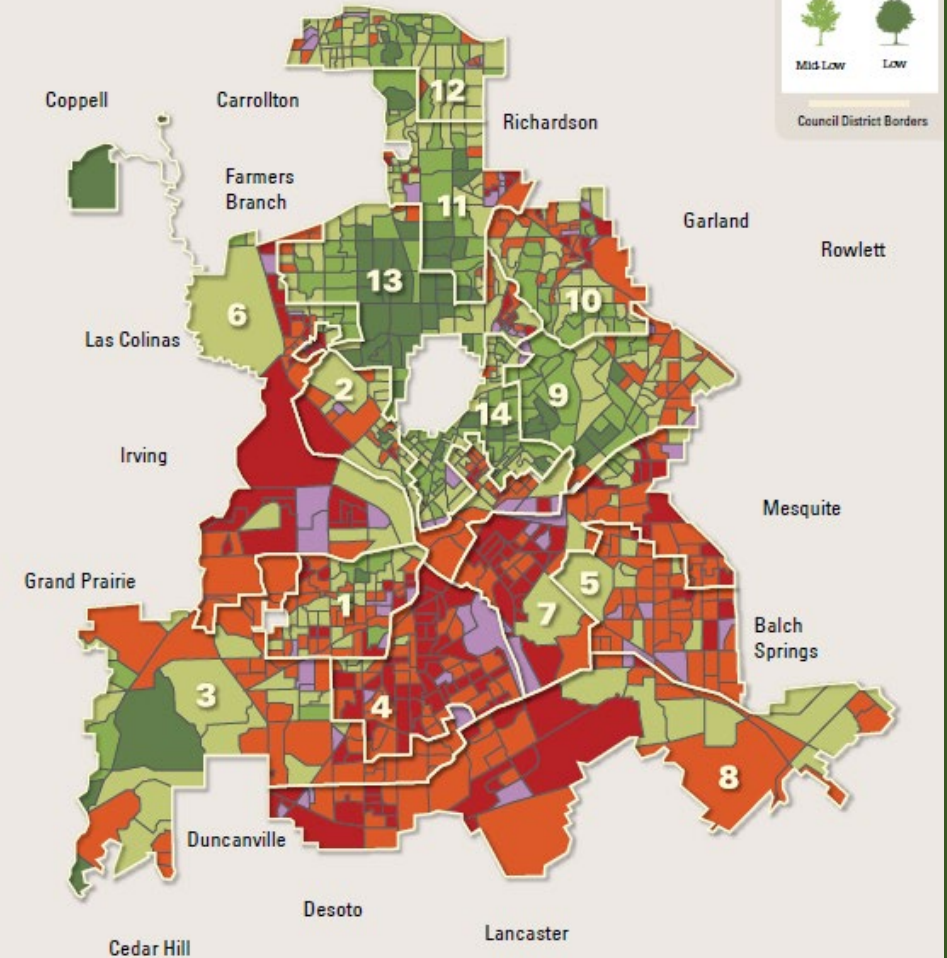


MANAGING THE
NEED TO BE
TREED
DALLAS TREE EQUITY
PLANTING MAP
2022

Dallas Tree Equity Planting Map, 2022

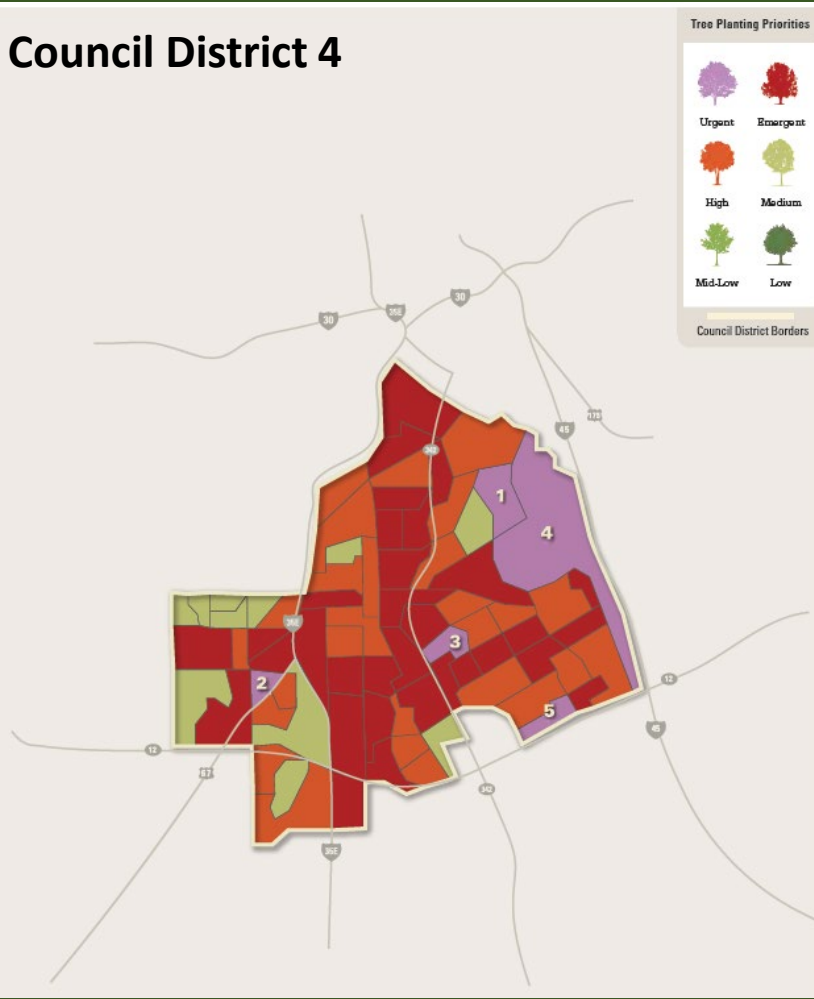
TABLE 4:
Results of planting prioritization analysis
for Dallas City Council Districts

Council District	Overall Planting Priority	Tree Canopy (%)	Non-Tree Vegetation (%)	Average Maximum Temp (°F)
District 1	6	31%	21%	98.19°
District 2	7	21%	17%	98.76°
District 3	8	34%	25%	96.44°
District 4	1	36%	27%	98.34°
District 5	5	38%	26%	96.16°
District 6	2	22%	24%	99.04°
District 7	3	29%	26%	96.96°
District 8	4	32%	34%	96.26°
District 9	11	37%	22%	98.01°
District 10	9	26%	20%	96.47°
District 11	10	27%	16%	96.79°
District 12	12	25%	21%	96.66°
District 13	13	34%	17%	97.12°
District 14	14	25%	14%	98.49°

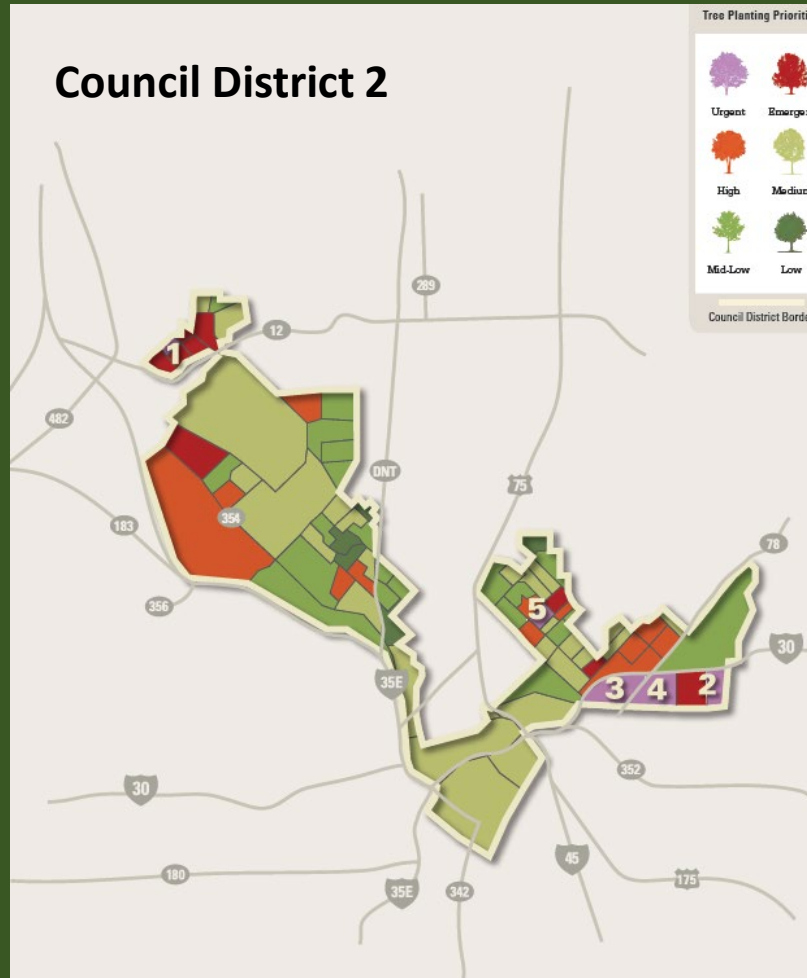


Need To Be Treed By Council District

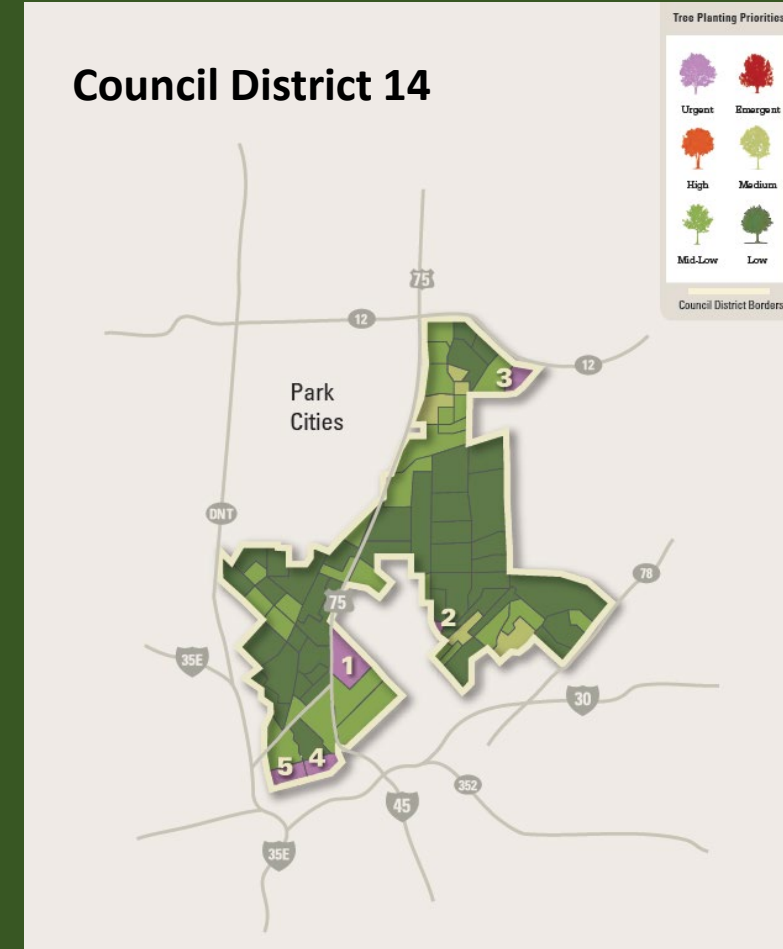
Council District 4



Council District 2



Council District 14



03



Dallas Equity Engagement Process

Community Engagement

- Partnering with Councilmembers* to:
 - Identify tree planting sites
 - Implementing tree planting & tree giveaway locations
 - Providing newsletter articles and announcements
 - Councilmember Neighborhood meetings for TTF presentations
 - Additional key contact information

*Environmental Commission, Park Board Members, Community Advocates, etc.

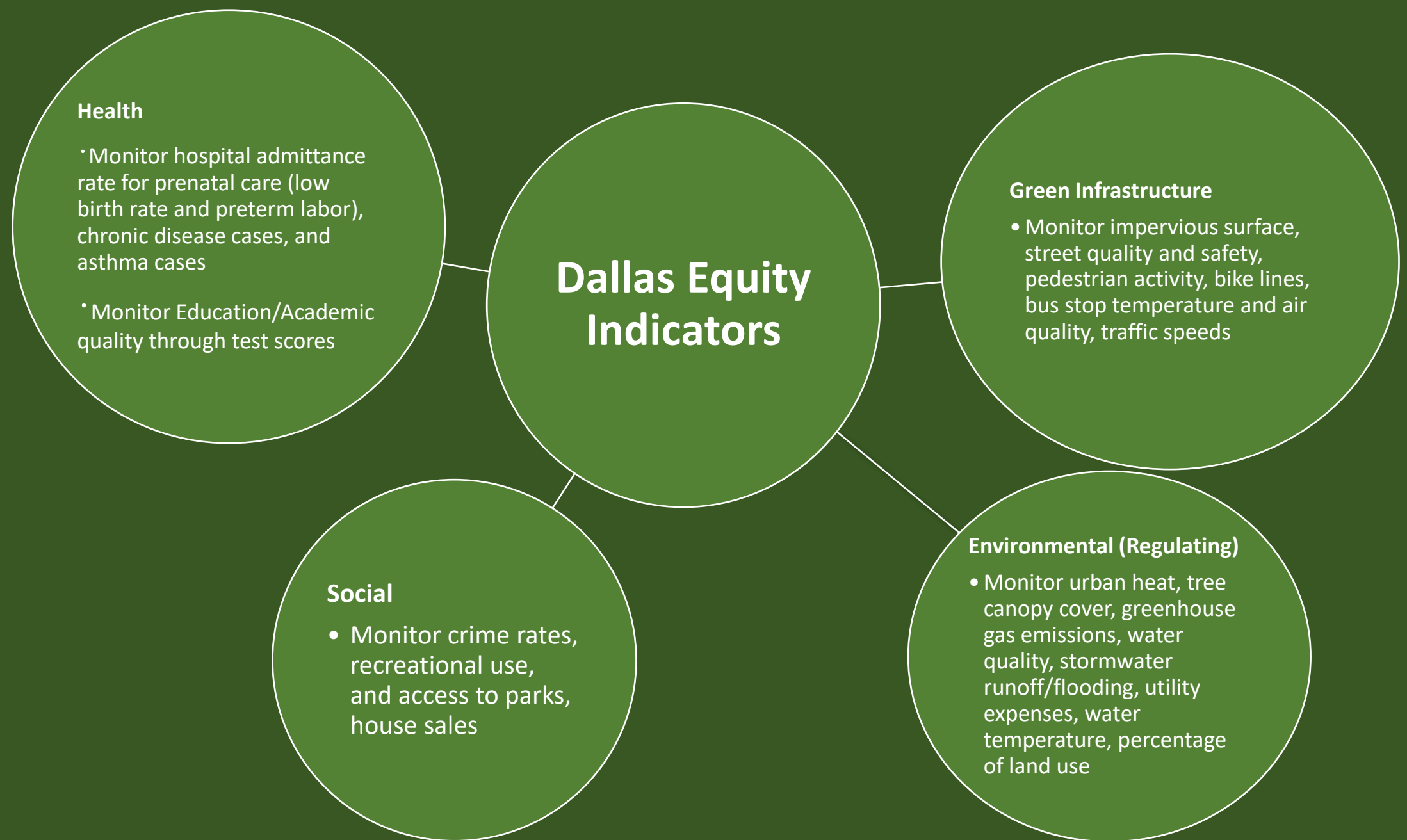
Community Engagement – Grassroot Driven

- Community survey:
 - Conduct a community needs assessment
 - Gauge receptiveness to tree planting
 - Identify potential projects
 - Identify commitment from volunteers for planting day
 - In-person, on-line, bilingual
- TTF Neighborhood Coordinator will:
 - Provide Urban Forestry Education
 - Recruit and Train Volunteers
 - Identify planting projects on public & private lands
 - Coordinate & Implement planting projects
 - Plan for long-term maintenance

04



Dallas Equity Indicators



All these indicators can be monitored to correlate the affects of increased tree canopy cover.

(Environmental and Sustainability Plan, EVC Recommendation on 2023 Environmental Equity Indicators, Racial Equity Plan, Complete Streets, Vision 0, Dallas Tree Equity Planting Map, 2022, Article X).





Thank you! Any Questions?
