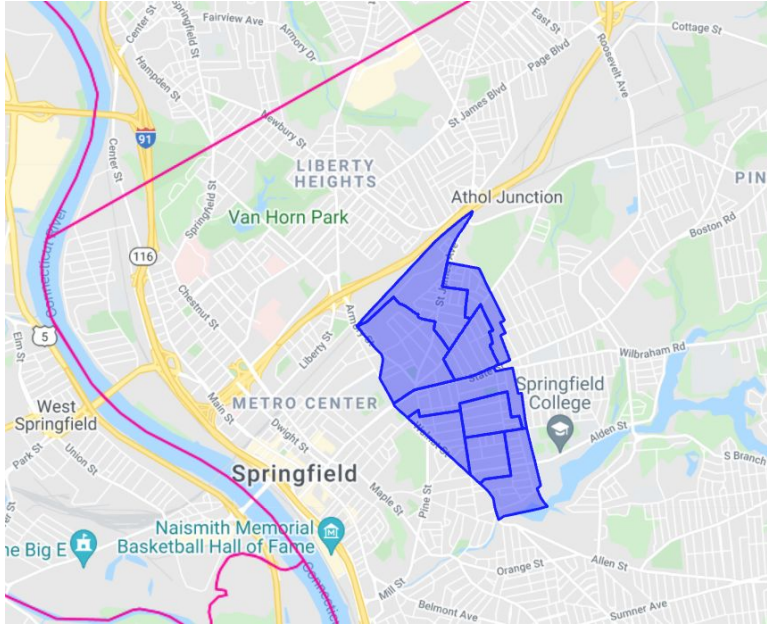# ReGreening the Community

Nava Parvaneh, Gabi Walsh, Juliana Arenas

Baystate Health | ADVANCING CARE. ENHANCING LIVES.

Population of Focus:

- Old Hill and McKnight neighborhoods in Mason Square, Springfield, MA
- Why we chose this area:
  - Regreen Springfield is working to promote reforestation in these neighborhoods
  - Wanted to examine equity in Mason Square through an environmental health lens
- Old Hill: 311 Acres
  - Tree/shrub cover: 20.75%, Impervious: 54%, Plantable Space: 29.78%
- McKnight: 410 Acres
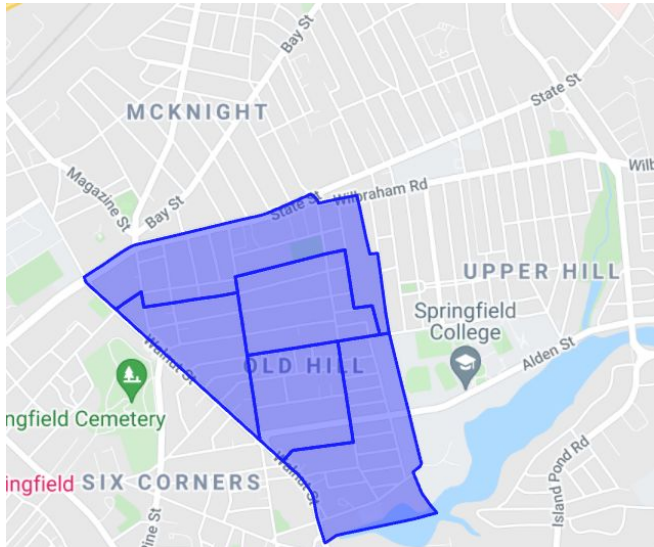 - Tree/shrub cover: 32.75%, Impervious: 48.5%, Plantable Space: 28.59%

Key Demographics:

Old Hill

Population: 4,278 individuals

91% **POC**

Poverty: 34.6%

McKnight

Population: 4,636 individuals

86% **POC**

Poverty: 30.3%

Environmental Exposures and Inequities:

Selected Variables	Percentile in State	Percentile in EPA Region	Percentile in USA
EJ Indexes			
EJ Index for Particulate Matter (PM 2.5)	94	94	79
EJ Index for Ozone	94	94	84
EJ Index for NATA* Diesel PM	93	94	83
EJ Index for NATA* Air Toxics Cancer Risk	94	95	82
EJ Index for NATA* Respiratory Hazard Index	94	95	81
EJ Index for Traffic Proximity and Volume	90	93	90
EJ Index for Lead Paint Indicator	94	95	95
EJ Index for Superfund Proximity	87	88	79
EJ Index for RMP Proximity	96	97	93
EJ Index for Hazardous Waste Proximity	91	92	91
EJ Index for Wastewater Discharge Indicator	89	90	86

Common Health Exposures

- In a 2021 Report, the AAFA ranked Springfield as the **#12 Asthma Capital**

- Latino people are 5x and African Americans are 2x more likely to end up hospitalized overnight due to asthma.

- Latino/a residents were 4x and black residents were 2x more at higher risk of COPD-related hospital visits.
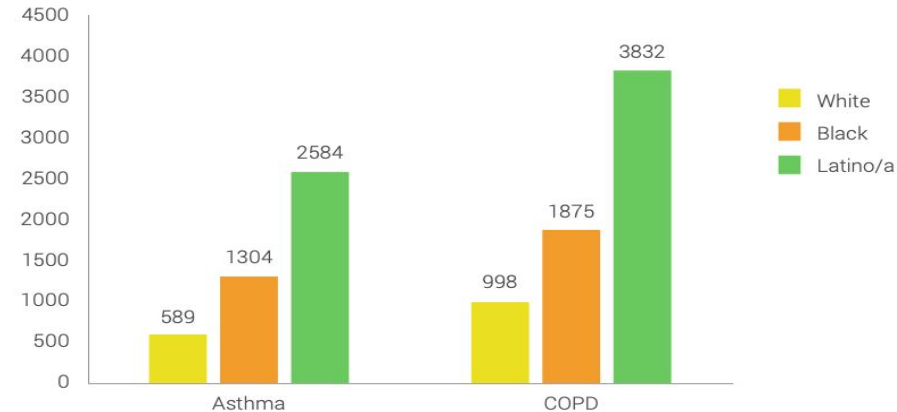

Figure 10. Springfield Asthma and COPD Emergency Room Visit Rates, 2012 – 2015
Source: MDPH, Acute Care Dataset; age-adjusted rates per 100,000

Current Health Benefits of Trees

	Old Hill 20.75% Canopy	McKnight 32.75% Canopy	Liberty Heights 41.00% Canopy	Sixteen Acres 48.50% Canopy
Acute Respiratory Symptoms (Cases reduced per year)	1.19	2.32	15.10	68.84
Asthma Exacerbations (Cases reduced per year)	0.43	0.83	5.26	24.11

i-Tree™
Landscape

Community Partnership

Voices from the community

- **Green spaces build community**
- **Trees clean the air and provide community members with mental and physical benefits**
- **Planting wildflowers supports native insects and birds for the community to enjoy**
- **Trees can fall down and damage houses, the leaves need to be gathered, it's hard to see past them**

Liz Stevens maintains the wildflower garden in her home community of McKnight

Old Hill Community Engagement - The Value of a Single Tree

Methods and Tools

Canopy

Species

Landscape

Design

Mytree
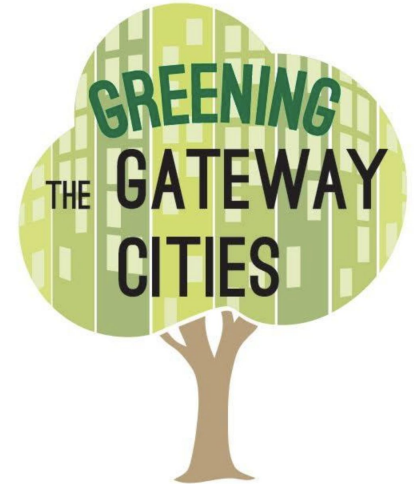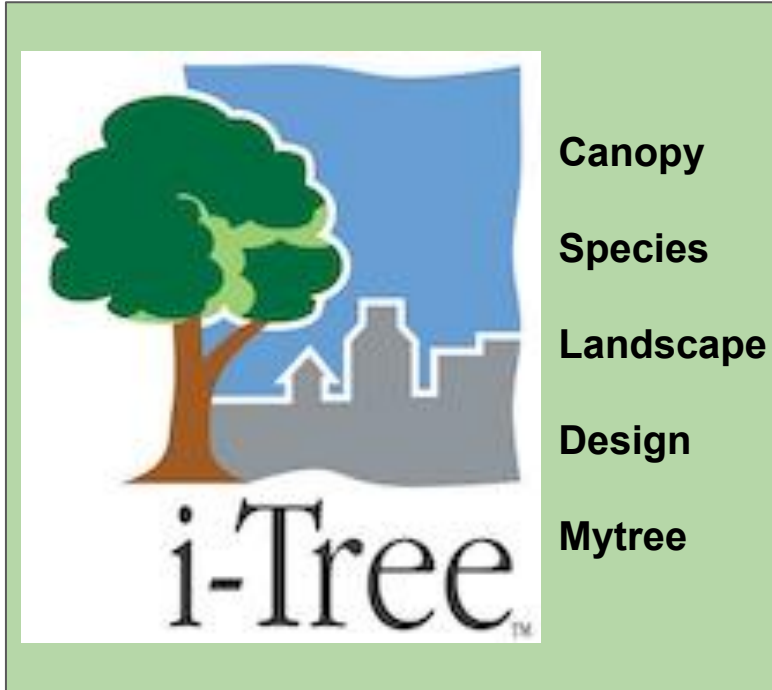
Rebecca M. Johnson Tree Proposal

22%   Rebecca M Johnson student population

Springfield
Massachusetts

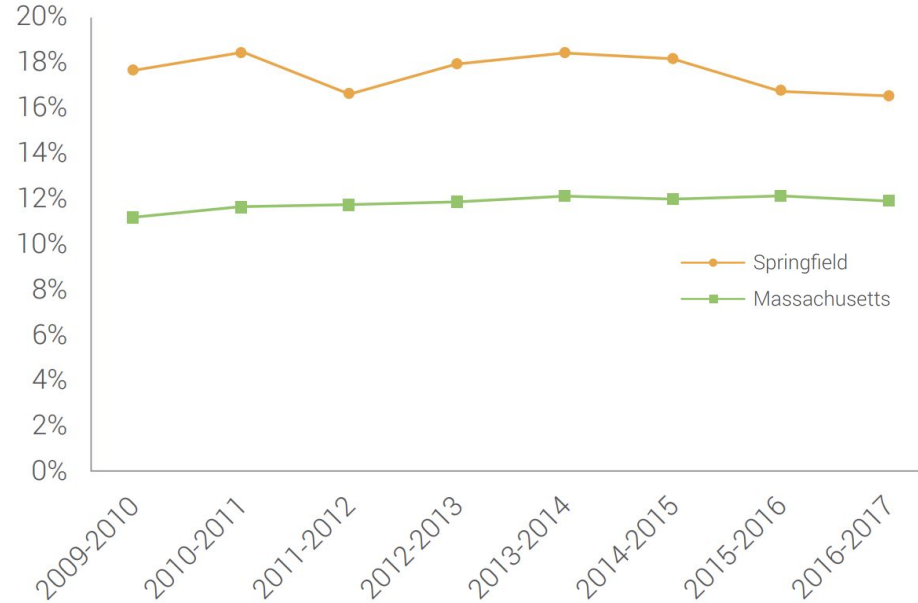2009-2010 2010-2011 2011-2012 2012-2013 2013-2014 2014-2015 2015-2016 2016-2017

Figure 9. Pediatric Asthma Prevalence, 2016 – 2017
Source: MDPH, Environmental Public Health Tracking System

Current Tree Benefits at Rebecca M. Johnson School

Over the next 25 years these 57 trees will:

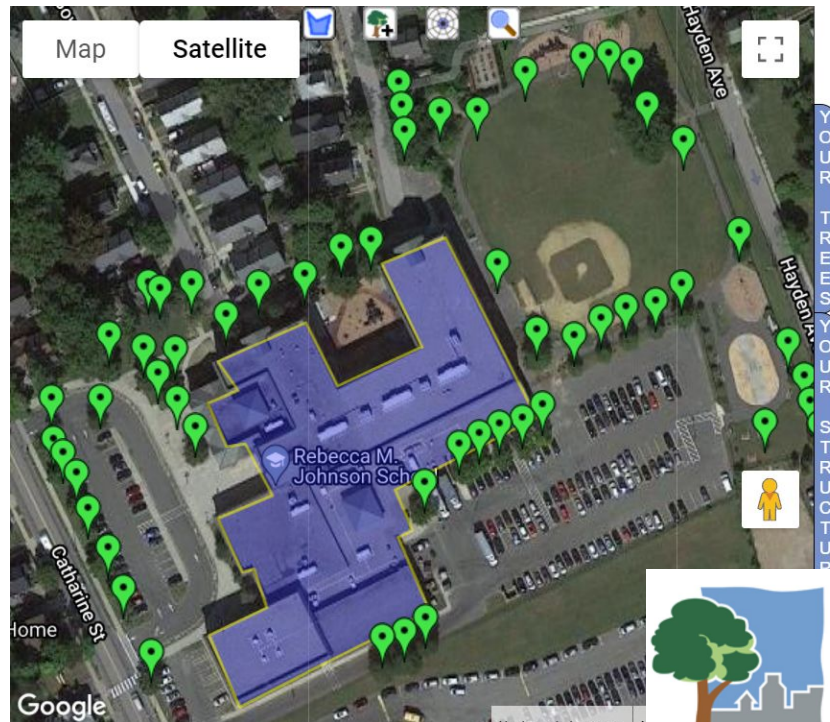| Provide a total of	Remove an estimate of
$28,136	**1,145 lbs.**
worth of overall benefits.	of pollutants.

- Reduce atmospheric carbon dioxide by 303,219 lbs.
- Help avoid 219,362 gallons of stormwater runoff.
- Conserve 50,178.9 Kilowatt-hours of electricity.

Trees Recommended by i-Tree Species

This is a list of the top 10% of tree species based on the following functions.

Generated: 10/29/2021
Location: Springfield, Massachusetts, United States of America
Hardiness: 6
Constraints:
- Minimum Height: 10 feet
- Maximum Height: None

Air Pollutant Removal (0-10 Importance)
- Overall: 10

Other Functions (0-10 Importance)
- Low VOC: 10
- Carbon Storage: 8
- Wind Reduction: 4
- Air Temperature Reduction: 4
- UV Radiation Reduction: 10
- Building Energy Reduction: 6
- Streamflow Reduction: 2
- Low Allergenicity: 10

S = Sensitive I = Intermediate S/I = Indeterminate

Species				Sensitivity			Pest Risk
Scientific Name	Common Name	Hardiness Zone	Invasive	Ozone (O3)	Nitrogen Dioxide (NO2)	Sulfur Dioxide (SO2)	Possible Pests
LIRIODENDRON TULIPIFERA	TULIP TREE	5 ~ 9		S			
TSUGA HETEROPHYLLA	WESTERN HEMLOCK	6 ~ 7			I		Southern Pine Beetle, Western Spruce Budworm, Annosus Root Disease, Douglas-fir Black Stain Root Disease
TSUGA MERTENSIANA	MOUNTAIN HEMLOCK	5 ~ 7					Fir Engraver, Southern Pine Beetle, Western Spruce Budworm, Douglas-fir Black Stain Root Disease
TSUGA CANADENSIS	EASTERN HEMLOCK	4 ~ 7		I			Hemlock Woolly Adelgid, Southern Pine Beetle
TSUGA X JEFFREYI	JEFFREY HEMLOCK	5 ~ 7**					Southern Pine Beetle
ULMUS AMERICANA	AMERICAN ELM	3 ~ 9			I/S		Asian Longhorned Beetle, Dutch Elm Disease, Winter Moth
TSUGA CAROLINIANA	CAROLINA HEMLOCK	4 ~ 7					Hemlock Woolly Adelgid, Southern Pine Beetle
ULMUS GLABRA	WYCH ELM	4 ~ 7					Asian Longhorned Beetle, Dutch Elm Disease

- Tree selection software
- Set health priorities
- Prioritized pollutant removal

2. Place Trees

Please break large projects into smaller projects of no more than 25 trees at a time.

Describe your tree:

- Tree species:

  London planetree

  [Common]

- Tree diameter: [4] [Inches ⌄]

  or circumference: [12.6]

- Tree condition: [Excellent ⌄]

- Tree exposure to sunlight: [Full sun ⌄]

i-Tree™ Design

- Design planning tool

- Estimate tree benefits

Adding 20 Trees to Rebecca M. Johnson School

Over the next 25 years these 77 trees will:

Provide a total of **$39,729** worth of overall benefits.	Remove an estimate of **1,449 lbs.** of pollutants.
•Reduce atmospheric carbon dioxide by 401,765 lbs. •Help avoid 258,979 gallons of stormwater runoff. •Conserve 78,528.7 Kilowatt-hours of electricity.	

41.2% additional overall benefits

26.5% additional pollutants removed

Summary

- Learned about the McKNight and Old Hill neighborhoods of Springfield
- Importance of green spaces on mental and physical well being
- Engaged with community members
- Learned about ongoing advocacy efforts in Springfield communities

Birthplace of basketball in Old Hill

Education session with Dr. Pelletier

Tag planting with Dave

Acknowledgements

❖ Dave Bloniarz

❖ Dr. Pelletier

❖ Sarita Hudson

❖ Liz Stevens

❖ C3 Community Members

❖ Nico, Matt, and Trevor

❖ Justin Ayala and Sarah McAdoo

Mason Square Library with Dave Bloniarz