Clarkson Adirondack Semester

LEED for Communities In the New York Olympic Region

Olympic Regional Development Authority

LAKE PLACID adirondacks, usa

Agenda

- LEED Background
- Role of Investigators
- Community Background
- Project Approach
- Core Metrics
- Community Metrics
- Future Steps
- Recommendations

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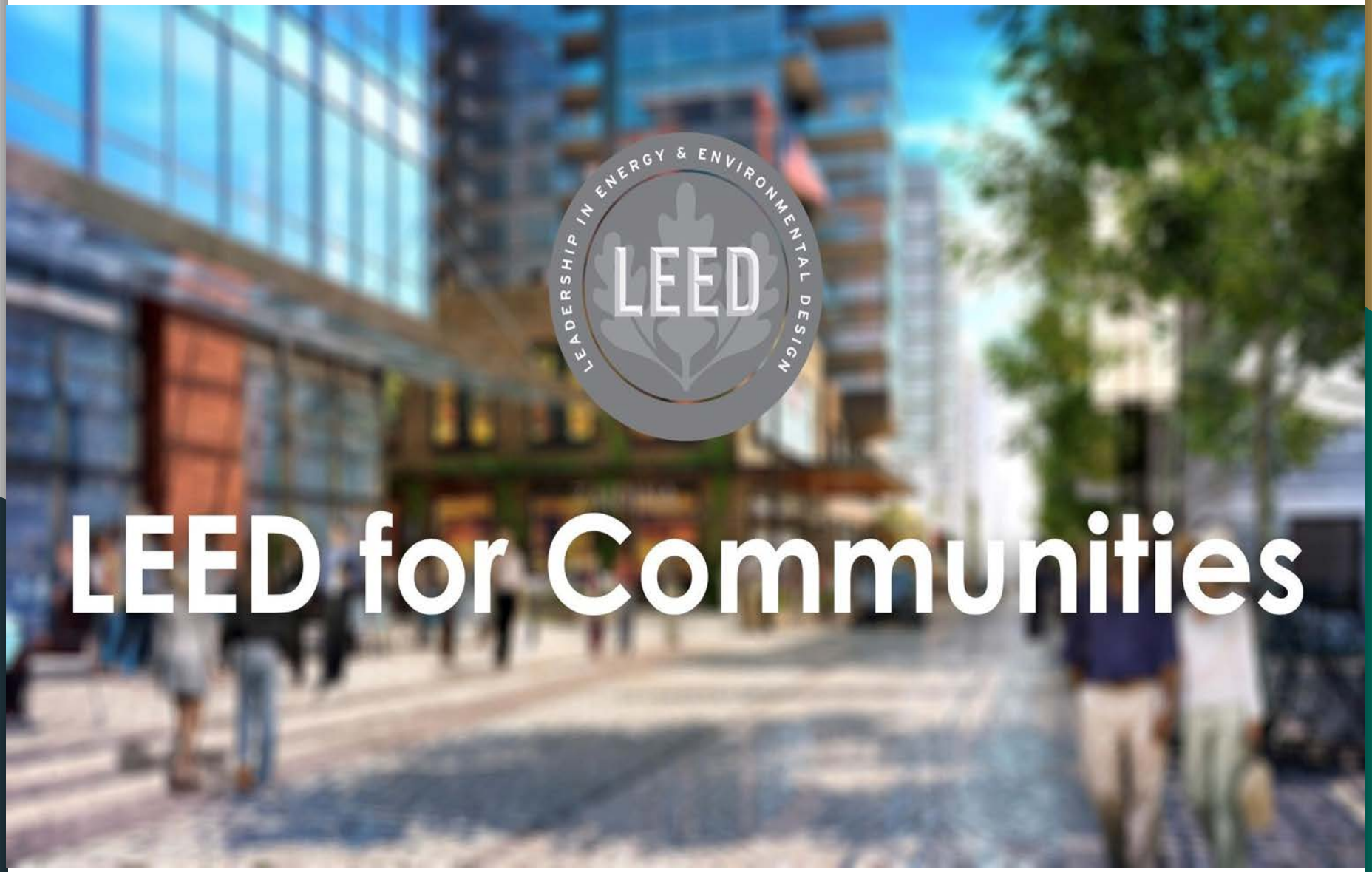
CLIMATE SMART COMMUNITIES
NEW YORK STATE

U.S. GREEN BUILDING COUNCIL
LEED
USGBC


LEADERSHIP IN ENERGY & ENVIRONMENTAL DESIGN
LEED
LEED for Communities

Core Metrics

	Energy	1. Greenhouse Gas Emissions (CO_2 equivalent)
	Water	2. Water Consumption
	Waste	3. Municipal Solid Waste Generated
		4. Municipal Solid Waste Diverted from Landfill
	Transportation	5. Distance Traveled in Individual Vehicles Daily
Human Experience	**Education**	6. Population with (at least) a High School Degree
		7. Population with (at least) a Bachelor's Degree
	Equitability	8. Median Gross Rent as % of Household Income
		9. Income Differential/Gini coefficient
	Prosperity	10. Median Household Income
		11. Unemployment rate
	Health & Safety	12. Median Air Quality Index (AQI)
		13. Air Quality Days Unhealthy for Sensitive Groups
		14. Violent Crime

Improve performance and certify LEED for Cities & Communities

Step 1:
Register your community in Arc

Step 2:
Pre-certify

Step 3:
Share data to receive a score

Step 4:
GBCI review of data

Step 5:
Certify to LEED for Communities

Pre-certification

- Commit to track data & measure progress
- Identify city boundaries, governance, and stakeholders
- Share your plans, goals, and strategies for sustainability and quality of life

PERFORMANCE, SCORED.

Energy:	out of 33
Water:	out of 15
Waste:	out of 8
Transportation:	out of 14
Human Experience:	out of 20

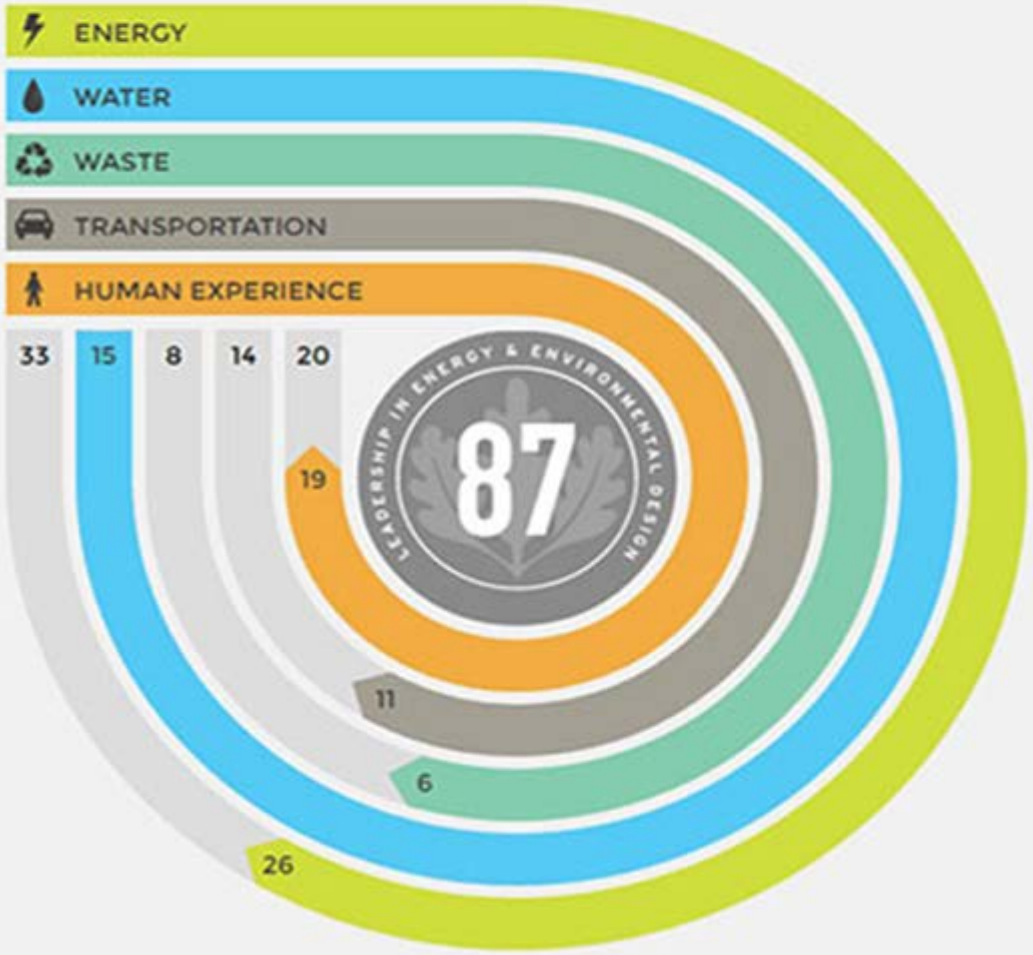
Base score: out of 10

Education, Health, Safety, Equitability and Prosperity

- City provides data across 5 categories to generate score:

  - Energy
  - Water
  - Waste
  - Transportation
  - Human Experience

SCORING 1-100



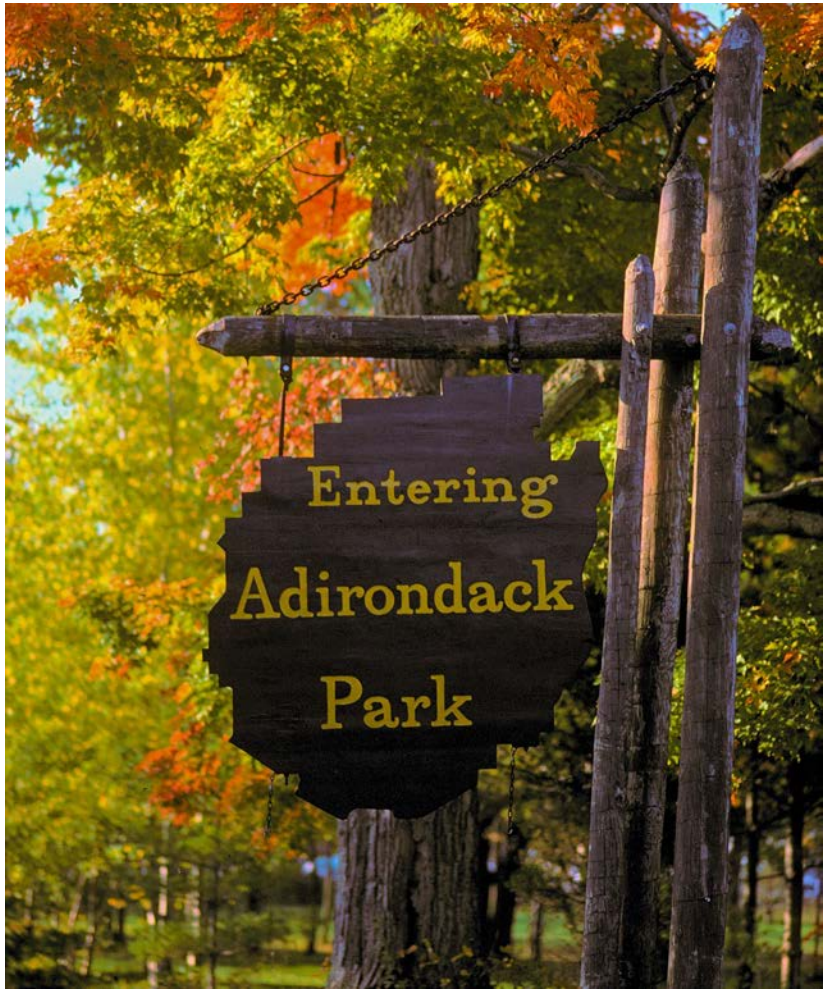

LEADERSHIP IN ENERGY & ENVIRONMENTAL DESIGN
LEED
CERTIFIED
40+
CERTIFIED
LEADERSHIP IN ENERGY & ENVIRONMENTAL DESIGN
LEED
SILVER
50+
SILVER
LEADERSHIP IN ENERGY & ENVIRONMENTAL DESIGN
LEED
GOLD
60+
GOLD
LEADERSHIP IN ENERGY & ENVIRONMENTAL DESIGN
LEED
PLATINUM
80+
PLATINUM

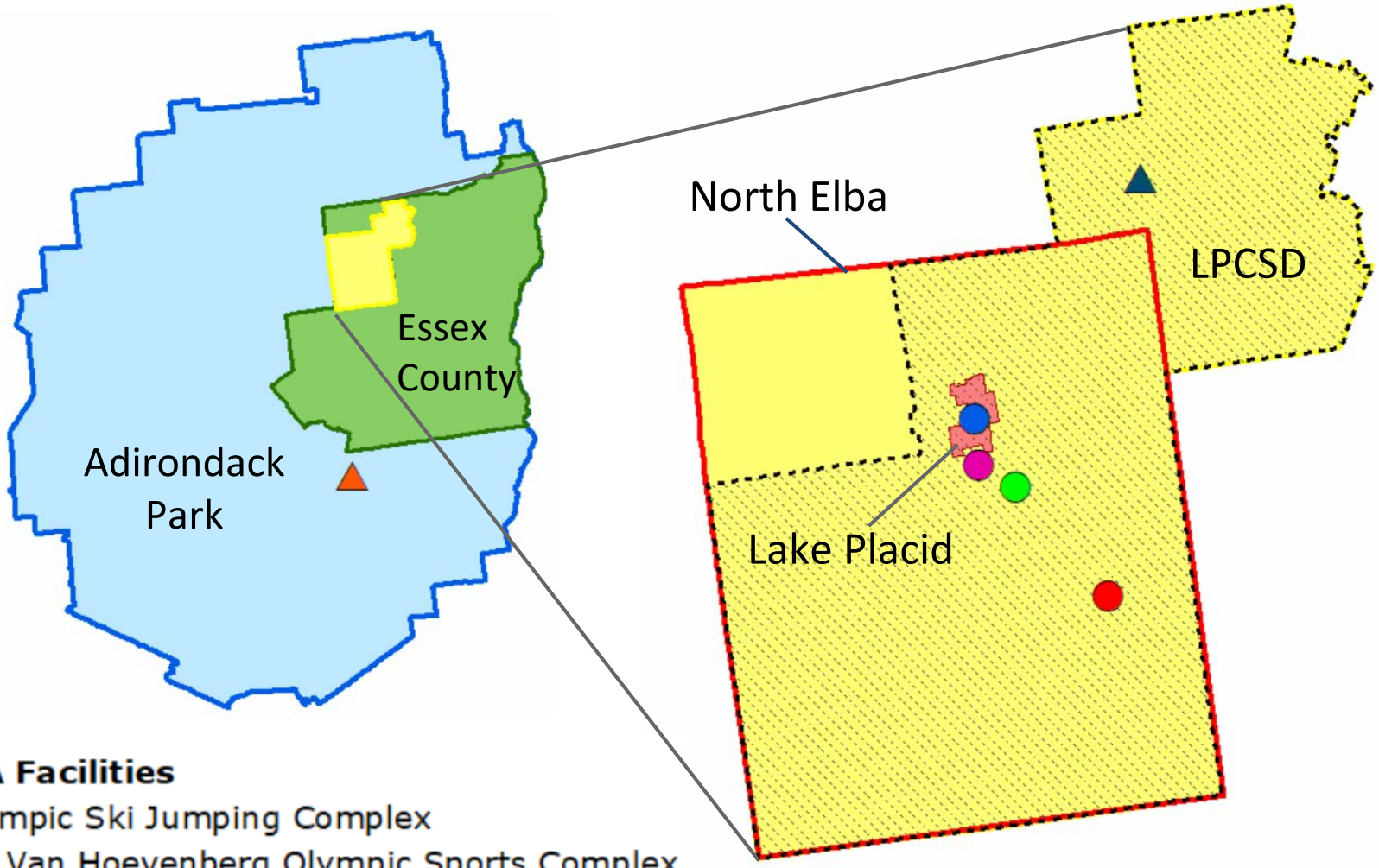
Role of Clarkson Students

- Data collection
  - Collect data for Core Metrics
  - Choose and create Community Metrics
- Enter data into Arc
- Create a preliminary roadmap for NYOR and other similar communities to use in the future.
- Give recommendations and improvements to the USGBC.

Characteristics of NYOR

- Multi-jurisdictional
- Rural
- Tourist-Based Economy
- Park Regulations
  - Maintain “Forever Wild”





New York Olympic Region

Project Approach

1. Create an accurate and intuitive data set
2. Allow for ease of replicability
3. Create a model for future communities

Boundary Questions

Conceptual

- How does LFC fit NYOR?
  - Core metrics
  - Community metrics
- How does the transient visitor population factor in?
  - 10,000 visitors daily
  - Work in progress

Physical

- What area is data consistent for?
  - North Elba
- Can we tailor this region further?
  - No

Energy

1. Greenhouse Gas Emissions

- Climate change
  - Environmental impacts
  - Resource security
  - Energy security
- Responsible Energy Use
  - Save money
  - Improve image
- Estimate for NYOR emission; used North Elba, Whiteface and Gore emissions.

LOCATION	YEAR PERFORMED	TOTAL EMISSIONS (MT CDE)	MT CDE PER CAPITA
Essex County, NY	2010	868,508.00	22.06
Whiteface	Estimated for 2016	900.00	N/A
North Elba, NY	Estimated for 2016	111,000.00	12.00
Gore	2017	900.60	N/A
ORDA*	2015	7,717.19	N/A
NYOR	2017	112,800.60	13.14
United States	2006	5,902,750,000.00	19.78

*ORDA facilities inside Essex County/North Elba included in Essex County/North Elba totals

*ORDA emissions include all ORDA facilities

Table 3.1b (State and Local Energy Data. 2018), (NYSERDA Executive Order 166 for ORDA. 2016) and (North Country Greenhouse Gas Inventory Report. 2010)

Future Emissions Tracking

- Use alternative methods in future collection
  - GHG inventory in conjunction with the Climate Smart Communities
  - EPA's Local Greenhouse Gas Inventory Tool

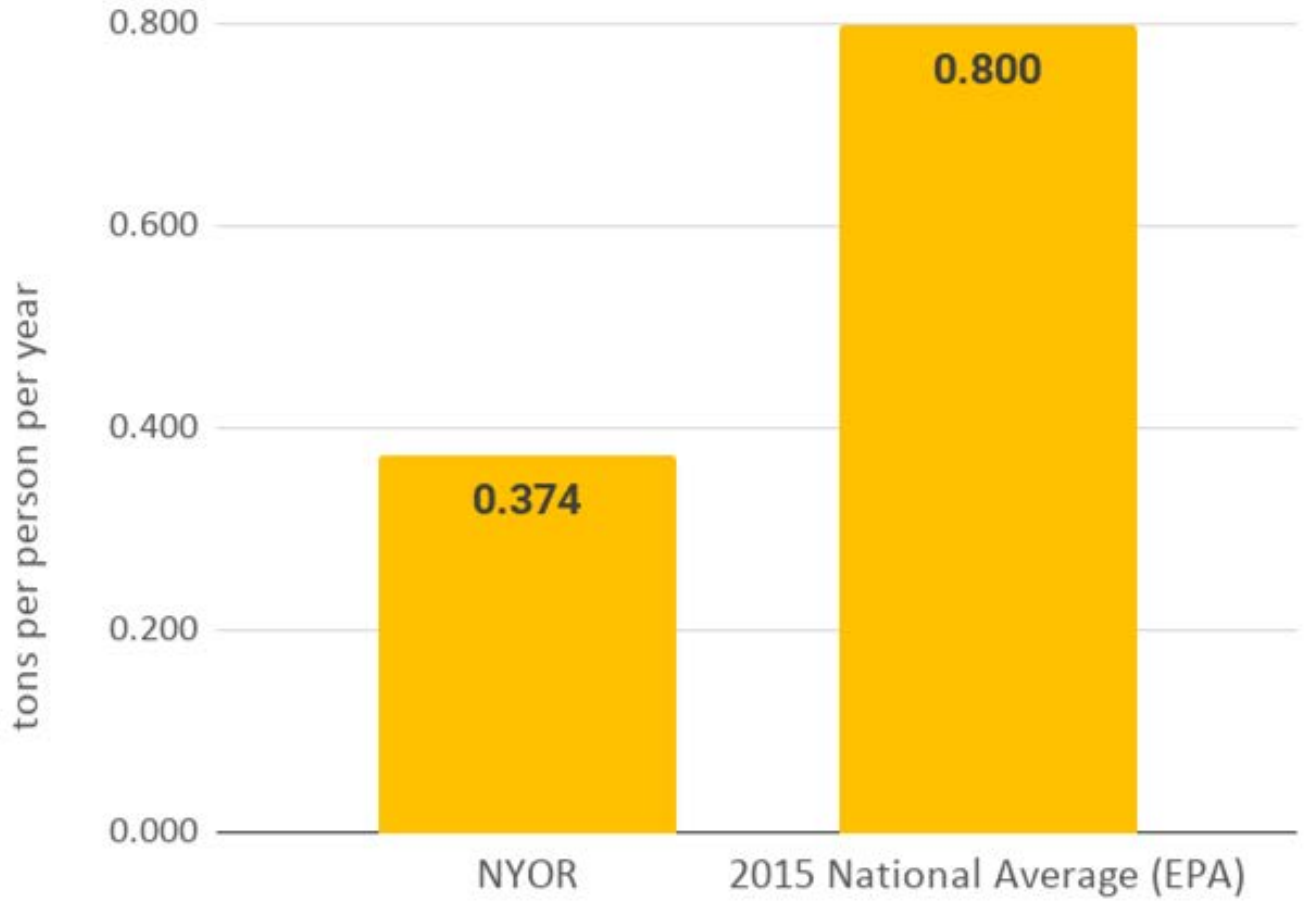
Water

2. Water Consumption

- North Elba: 36,811 gallons/year/person
  - National average: 36,500
- Separate metrics for ORDA facilities
- Challenges
  - Limited municipal data
  - Private wells not metered
- Significance in sustainability efforts
  - Increase in water usage
  - Need for management

Waste

3. Municipal Solid Waste Generated



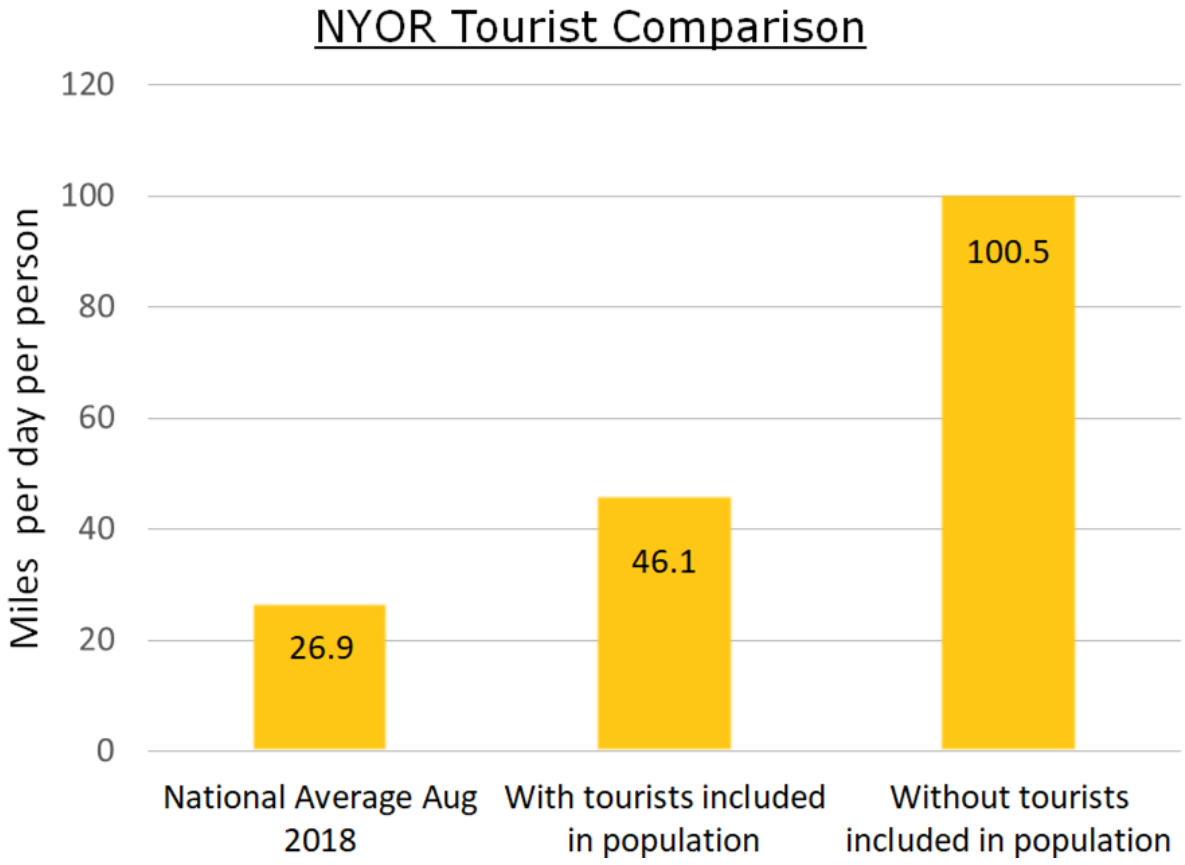
4. Municipal Solid Waste Diverted From Landfill

- Ratio of municipal solid waste diverted from landfill of the total waste stream
- Casella provided Zero Sort recycling data
- North Elba Transfer Station recycling data
- NYOR - 16.70%

Transportation

5. Distance Traveled in Individual Vehicles Daily

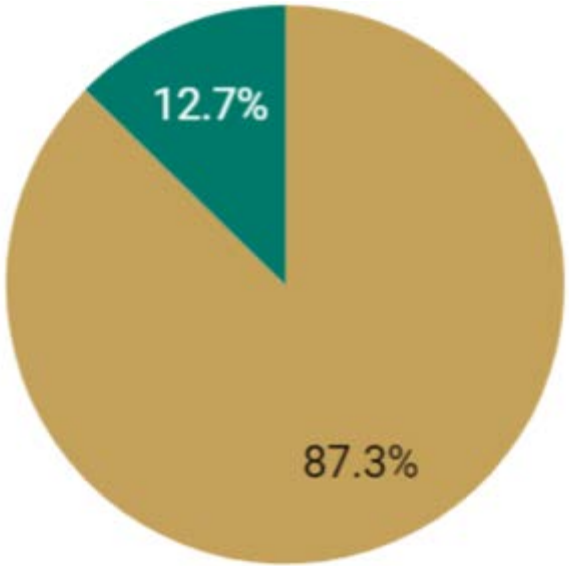
- Contributes to climate change
- Impacts human health
- Investing in infrastructure



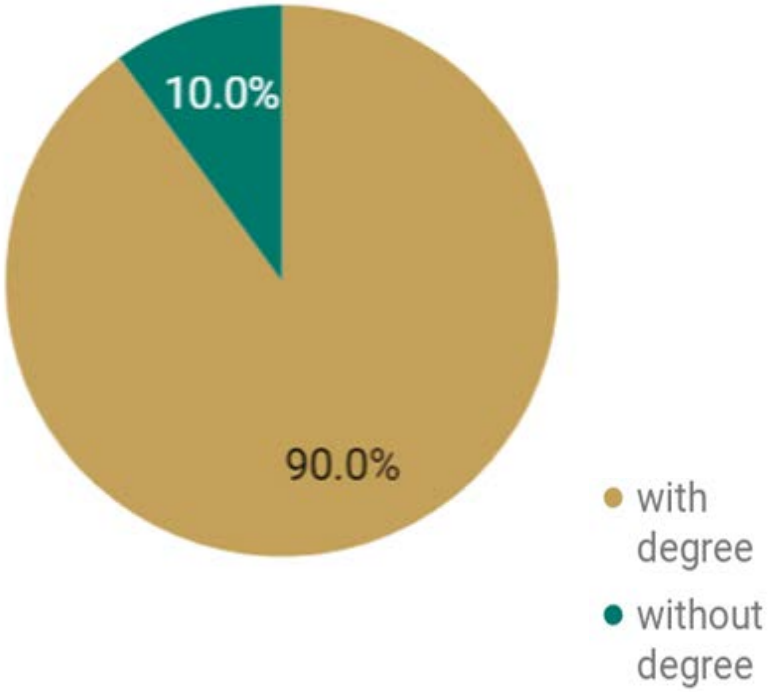
Human Experience

6. Population over the age of 25 with (at least) a High School Degree

United States in 2017

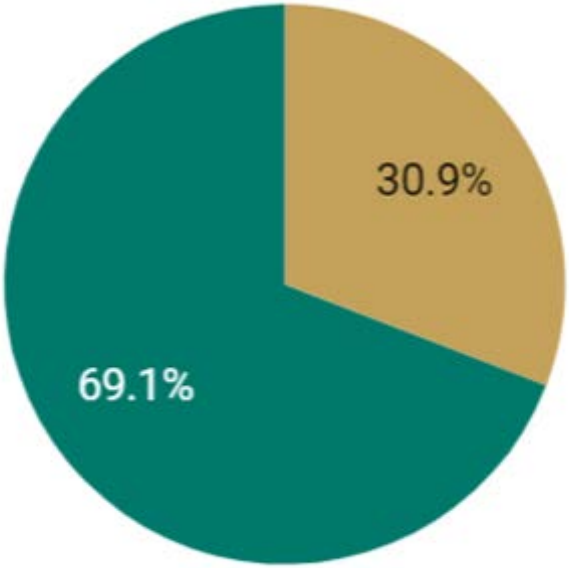


NYOR in 2017

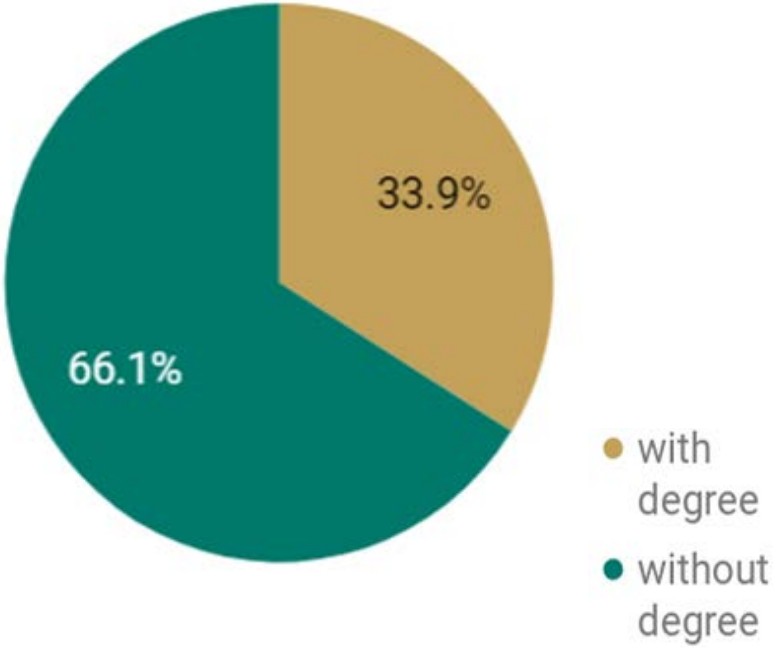


7. Population over the age of 25 with (at least) a Bachelor's Degree

United States in 2017

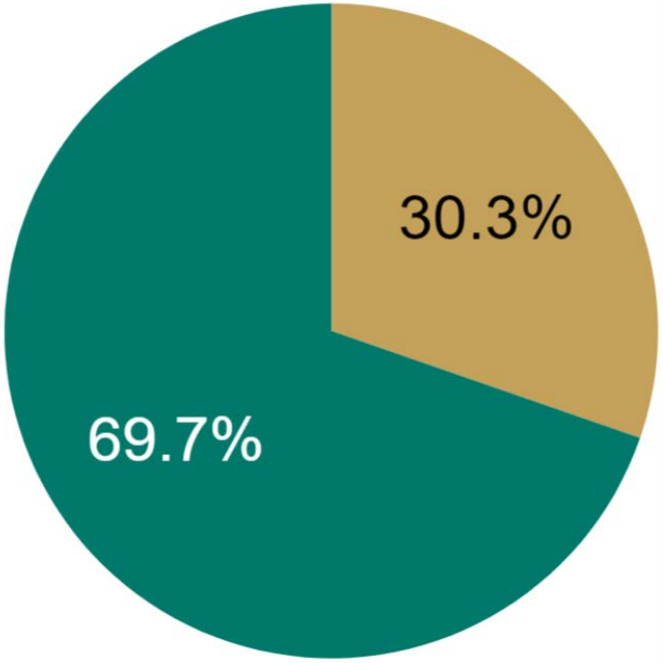


NYOR in 2017

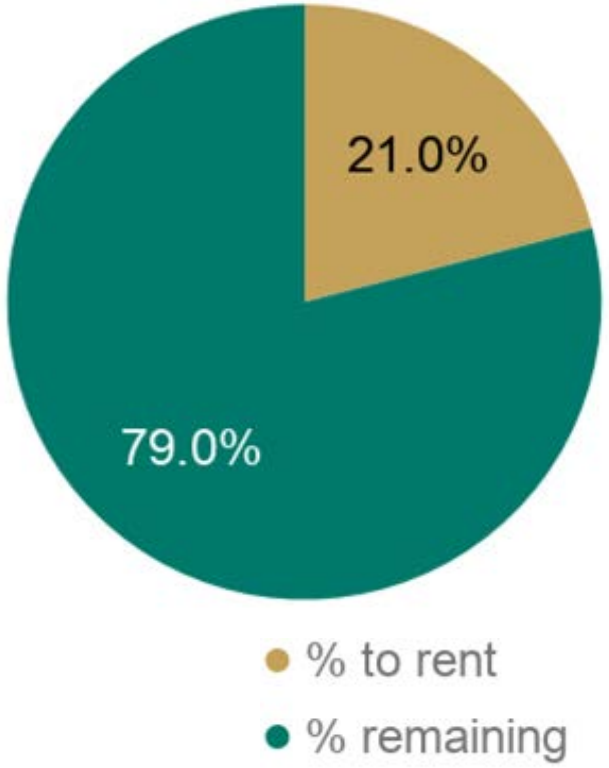


8. Median Gross Rent as % of Household Income

United States in 2017



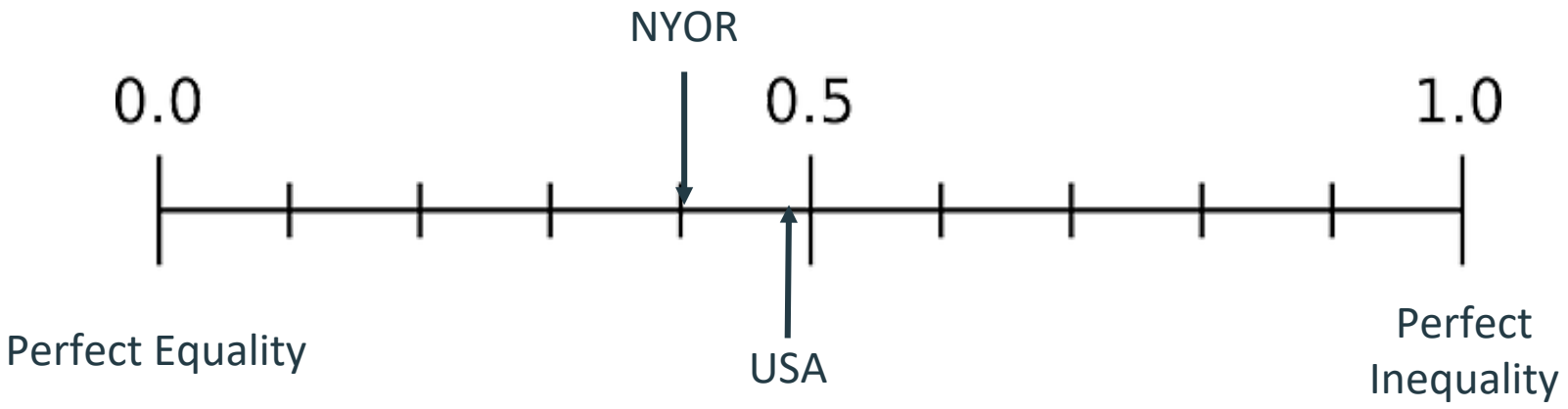
NYOR in 2017



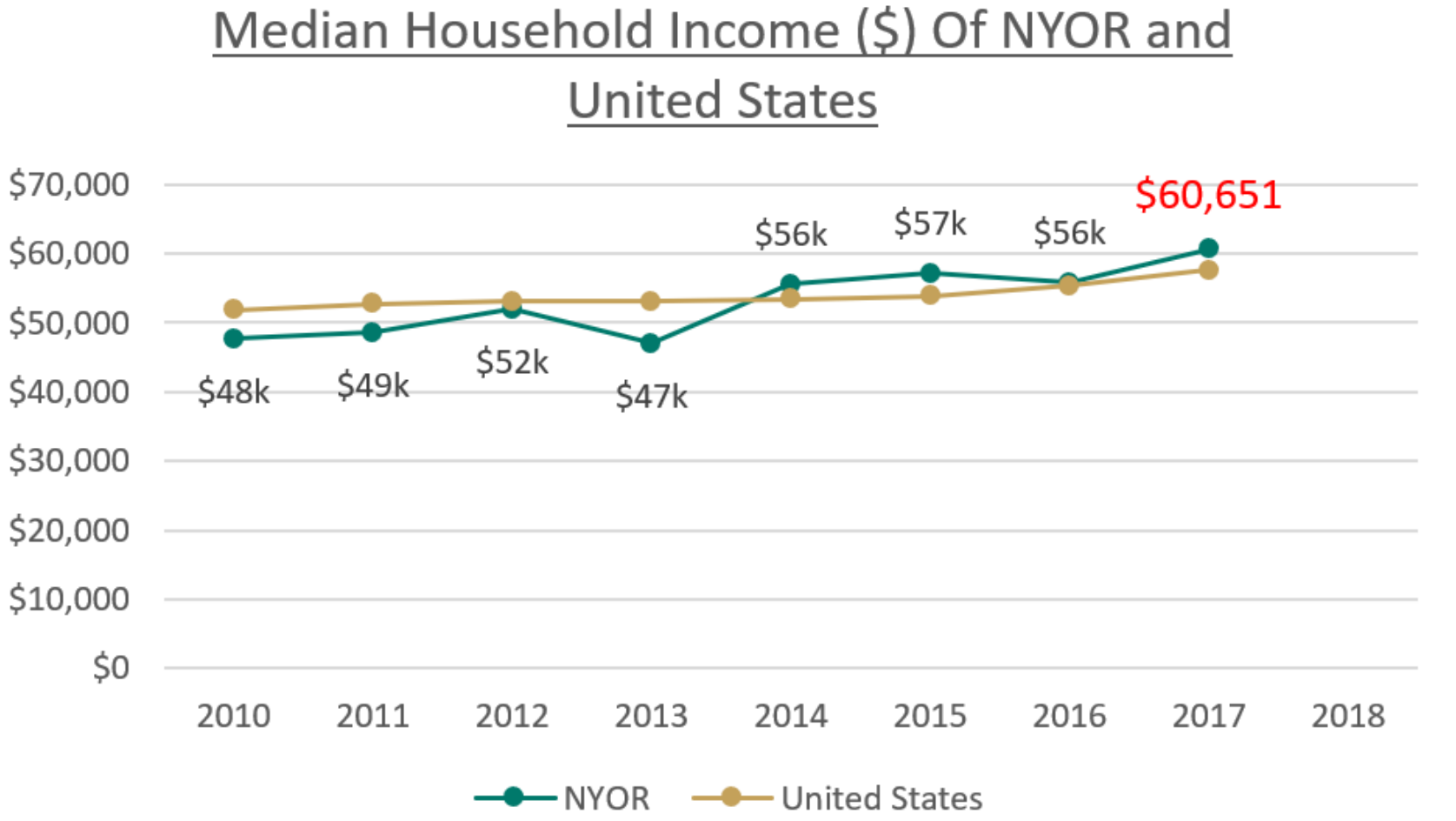
9. Gini Coefficient

- Measure of income distribution of a population

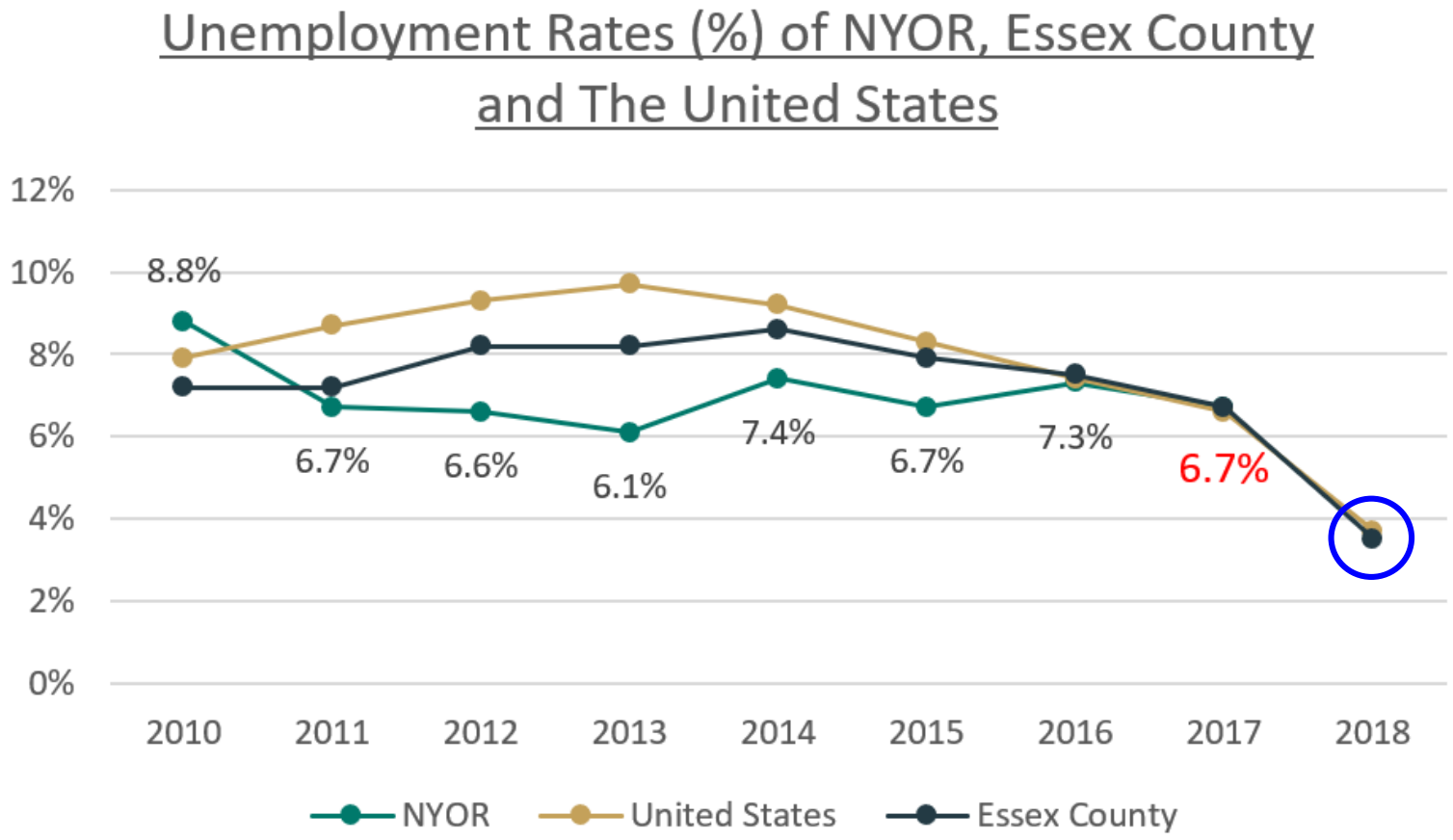
- Gini Coefficients in 2017
  - NYOR: 0.4017
  - United States: 0.4822



10. Median Household Income



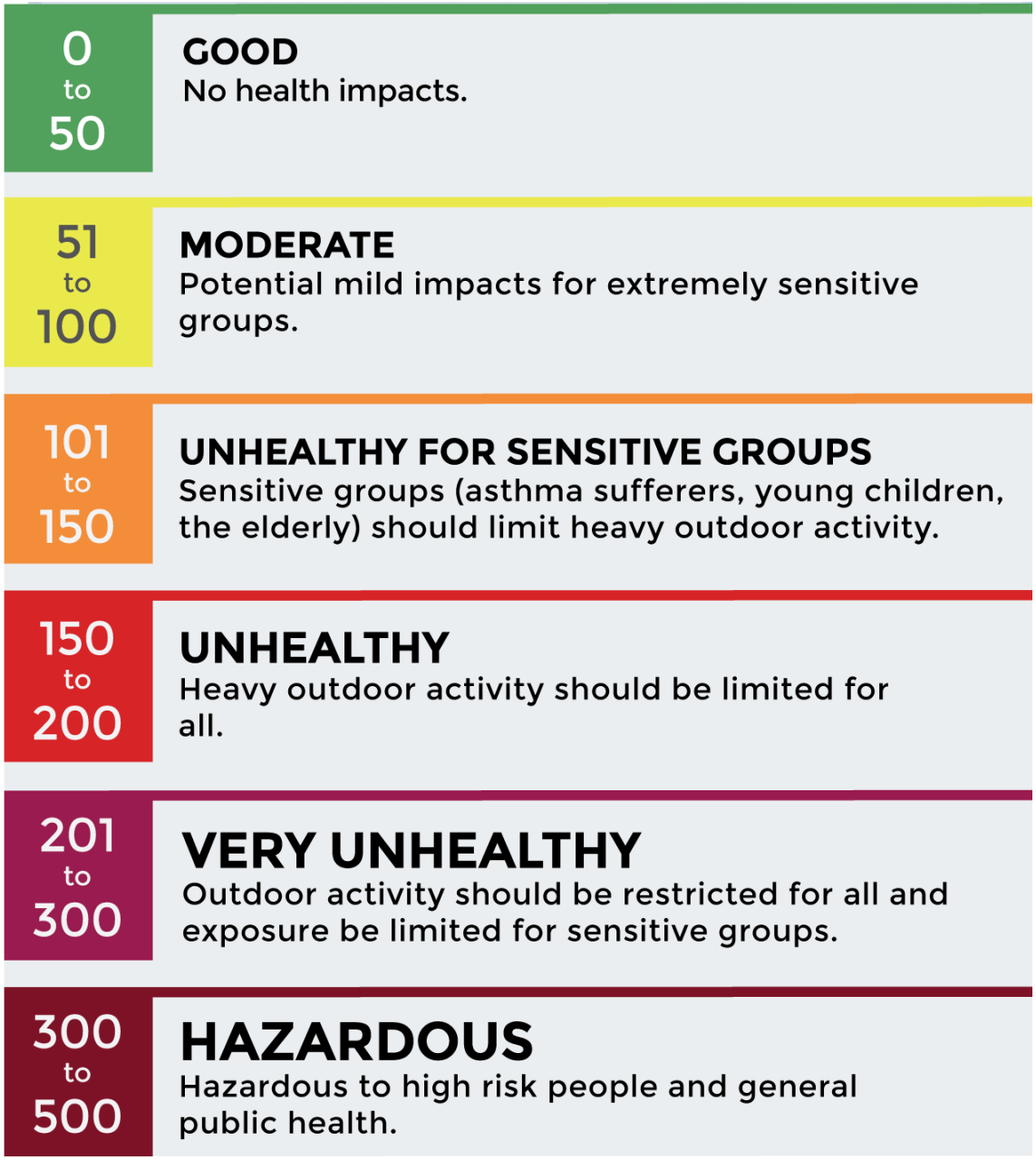
11. Unemployment Rate



Sourced from The Bureau of Labor Statistics and the NYS Department of Labor

12. Median Air Quality Index (AQI)

- EPA data from Whiteface base air monitoring station
- Ozone
  - Forms at ground level in sunny weather
- Small particulate matter
  - Airborne particles with diameter less than 2.5 microns


0 to 50
GOOD
No health impacts.
51 to 100
MODERATE
Potential mild impacts for extremely sensitive groups.
101 to 150
UNHEALTHY FOR SENSITIVE GROUPS
Sensitive groups (asthma sufferers, young children, the elderly) should limit heavy outdoor activity.
150 to 200
UNHEALTHY
Heavy outdoor activity should be limited for all.
201 to 300
VERY UNHEALTHY
Outdoor activity should be restricted for all and exposure be limited for sensitive groups.
300 to 500
HAZARDOUS
Hazardous to high risk people and general public health.

13. Air Quality Days Unhealthy for Sensitive Groups

	Ozone (O_3)	Particulate Matter ($PM_{2.5}$)
People with Lung Diseases	x	x
People with Heart Diseases		x
Older Adults	x	x
Children	x	x
Active People	x	

Health Risks for Airborne Pollutants

Ozone

- Respiratory irritation
- Reduced lung function
- Lung infection susceptibility
- Aggravated asthma & chronic lung diseases
- Permanent lung damage

Small Particle Pollution

- Additional ER visits
- Chest pains, palpitations
- Death
- Coughing, shortness of breath
- Respiratory infection susceptibility

2017 EPA Air Quality Data

AQI median: 39

AQI maximum: 90

0 to 50	312 days
51 to 100	53 days
101 to 150	0 days
150 to 200	0 days
201 to 300	0 days
300 to 500	0 days

14. Violent Crime

Four Offenses

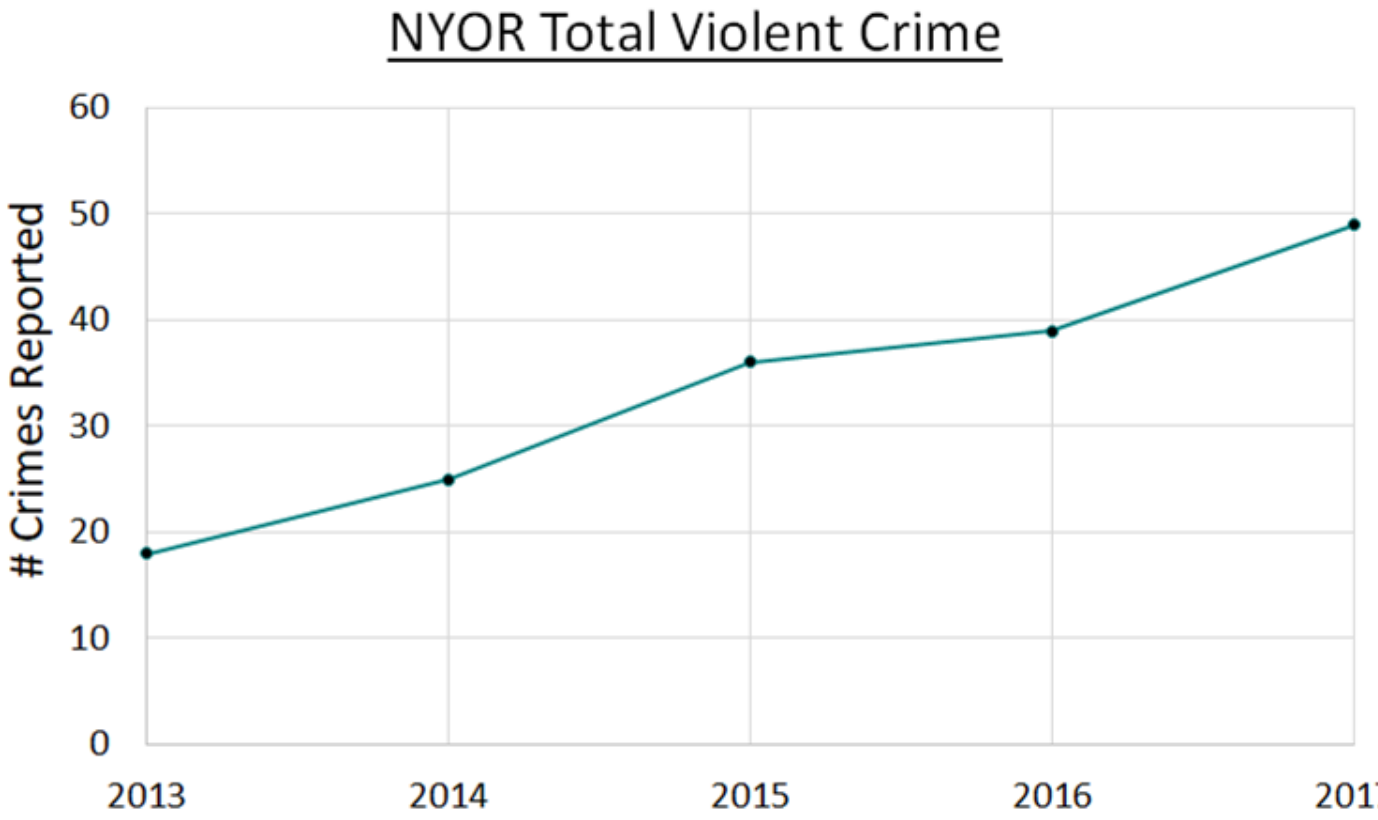
1. Murder / Manslaughter
2. Rape
3. Robbery
4. Aggravated Assault

Jurisdiction	Total Violent Crimes Reported Per Capita In 2017
NYOR	0.00578

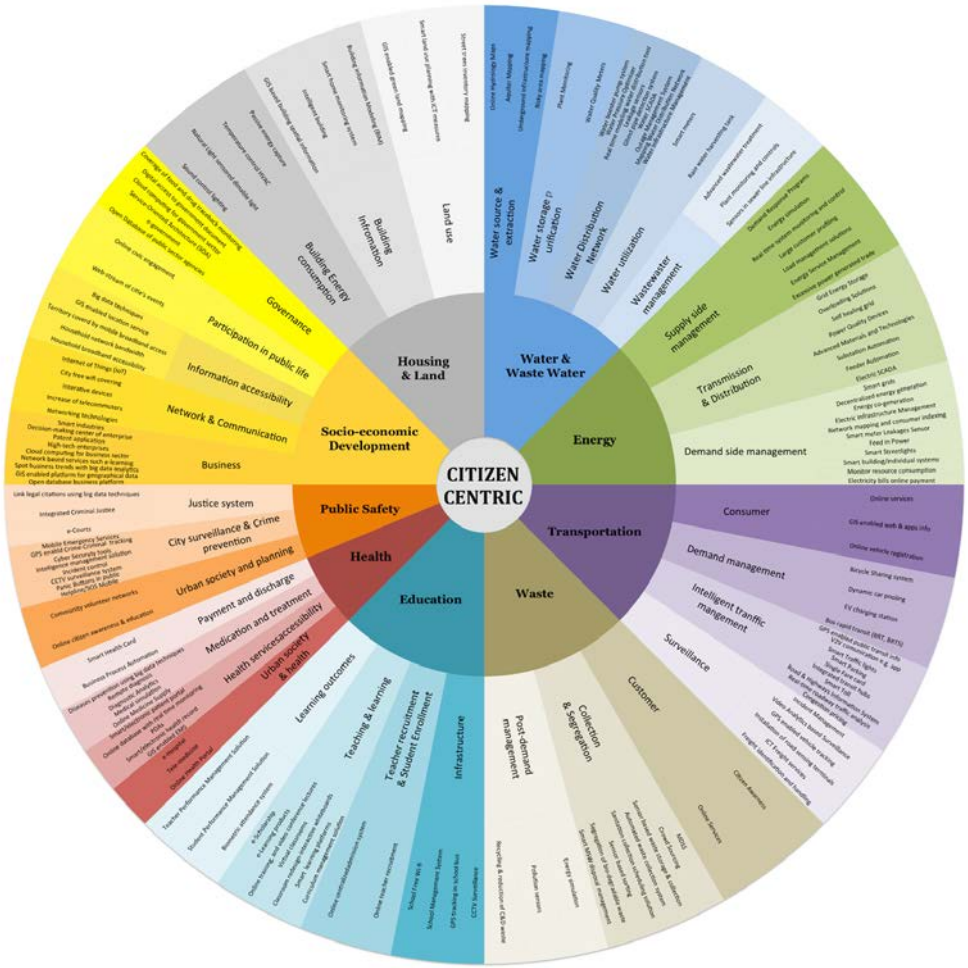
National Comparison

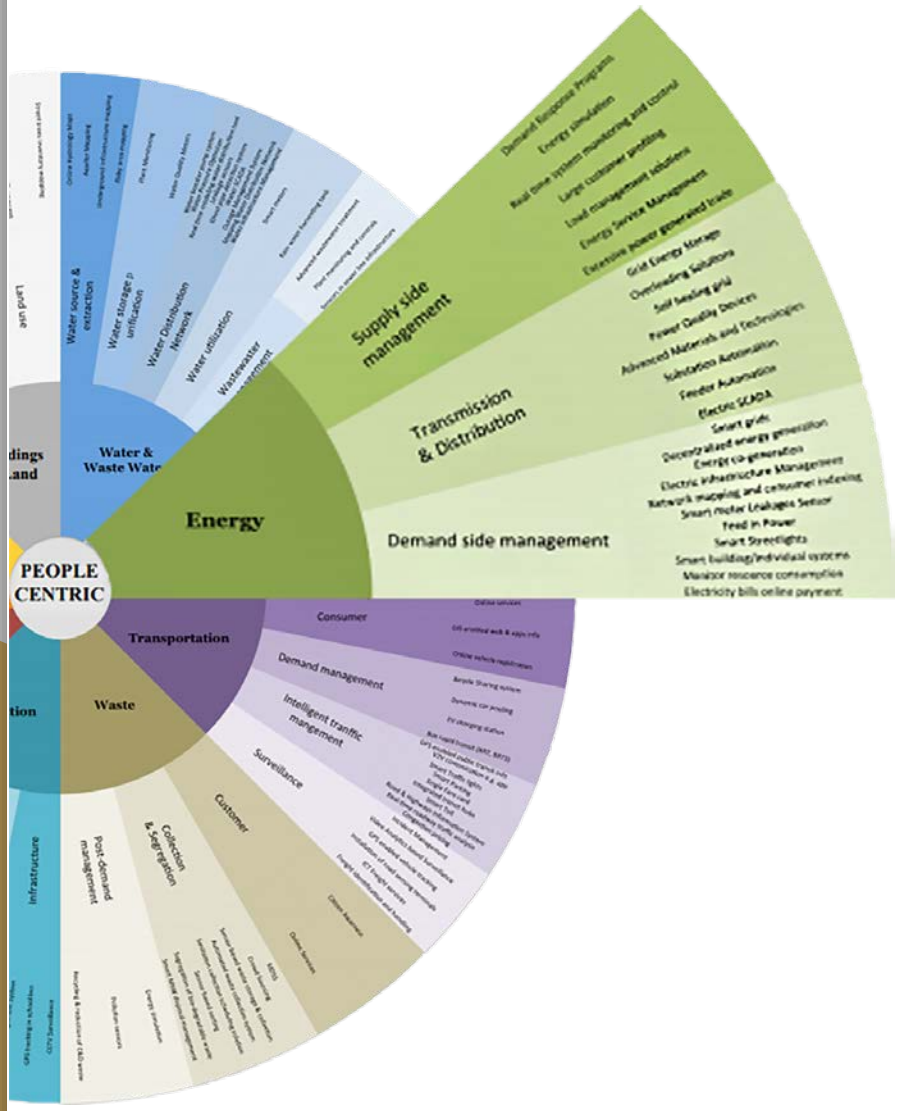
- Average offenses per 100,000 inhabitants

NYOR (w/o tourists): 577.6	NYOR (w/ tourists): 265.09	United States: 382.9



Community Metrics - USGBC





200+ Recommended

- Total residential energy use
- Total commercial energy use
- Percent energy consumed from renewables

Community Metrics in NYOR

01	Human Experience	• Community Engagement and Satisfaction • Connectivity • Health and Accessibility • Sustainable Recreation • Affordable Housing and Prosperity
02	Energy	• Energy Consumption • Renewable and Alternative Energy • Electricity • Building Efficiency
03	Waste	• Recycling • Waste Management
04	Water	• Water Monitoring • Water Sources

Community Metrics in NYOR

- Cost of living
- Miles *transportation* bike infrastructure per square mile
- Miles *recreational* bike infrastructure per square mile
- Pump efficiency
- Voter turnout
- Miles maintained Nordic ski trails

Future Steps: Data Collection and Input

- LPCSD
  - AP Environmental Science Class and Club
    - Student Projects
    - Track data for larger community
  - Data management
- Community Metrics
  - Assigned a stakeholder as lead for each metric
- Comprehensive Plan
- Clarkson University
  - Memorandum of Understanding

Future Goals

- ORDA
  - Increase efficiency of snowmaking
- LPCSD
  - Implement composting
- Town of North Elba/Village of Lake Placid
  - Improve community connectivity
  - Create Universal Access/ADA compliant trails

Recommendations

- Pilot program
  - Metrics not flexible
- NYOR
  - Easier data tracking and access
  - Local organizations and stakeholders collecting data
  - Public website
  - Public involvement
- ORDA
  - Vail Ski Resort's Epic Promise campaign
    - Emissions, waste, forest impact, community


UPSTATE

Clarkson Adirondack Semester Students

Environmental Engineering:

Chloe Gatulik
Daniel Melgar
Laryssa Terleckyj
Lindsay Clark
Lucas Fudo
Paul Barber
Pranav Singh
Sarah Chase

Environmental and Civil Engineering:

Adam Meyer

Civil Engineering:

Benjamin Buck

Engineering and Management:

Louisa Ulrich-Verderber

Environmental Science and Policy:

Adeline Danyla

Psychology and Political Science:

Megan Flory

Innovation and Entrepreneurship:

Benjamin Vondrak