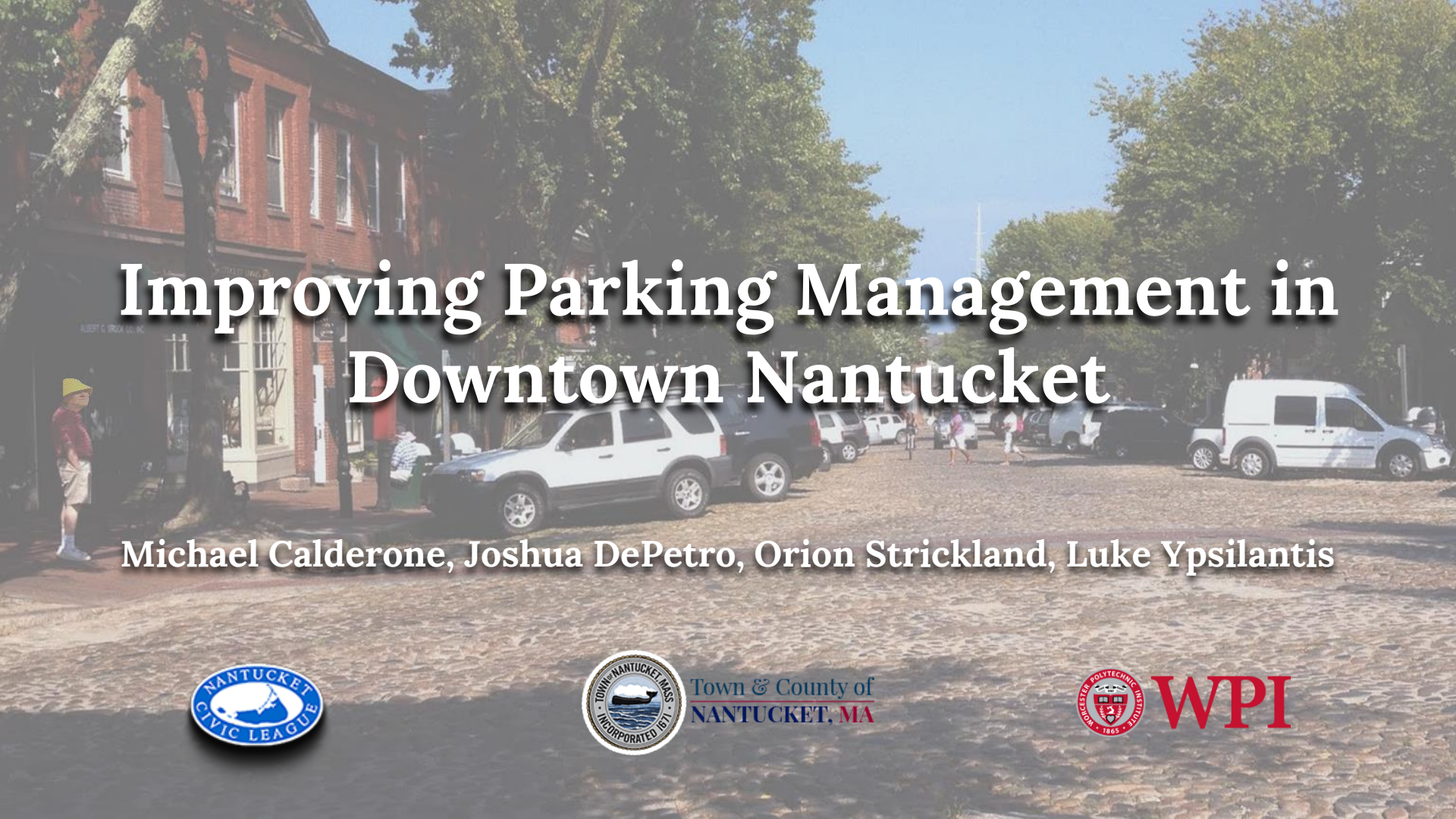

Improving Parking Management in Downtown Nantucket

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Town & County of Nantucket, MA

Worcester Polytechnic Institute 1865

WPI

Project Goals and Objectives

Parking and Traffic Flow

Parking Management

1. Gauge current on-street parking conditions
2. Propose on-street parking changes aimed at:
   - Improving vehicle traffic flow and pedestrian access
   - Promoting alternative modes of transportation
3. Evaluate potential new parking management systems
4. Analyze stakeholder' views on those potential solutions

Current Parking Related Problems

Current Parking Related Problems

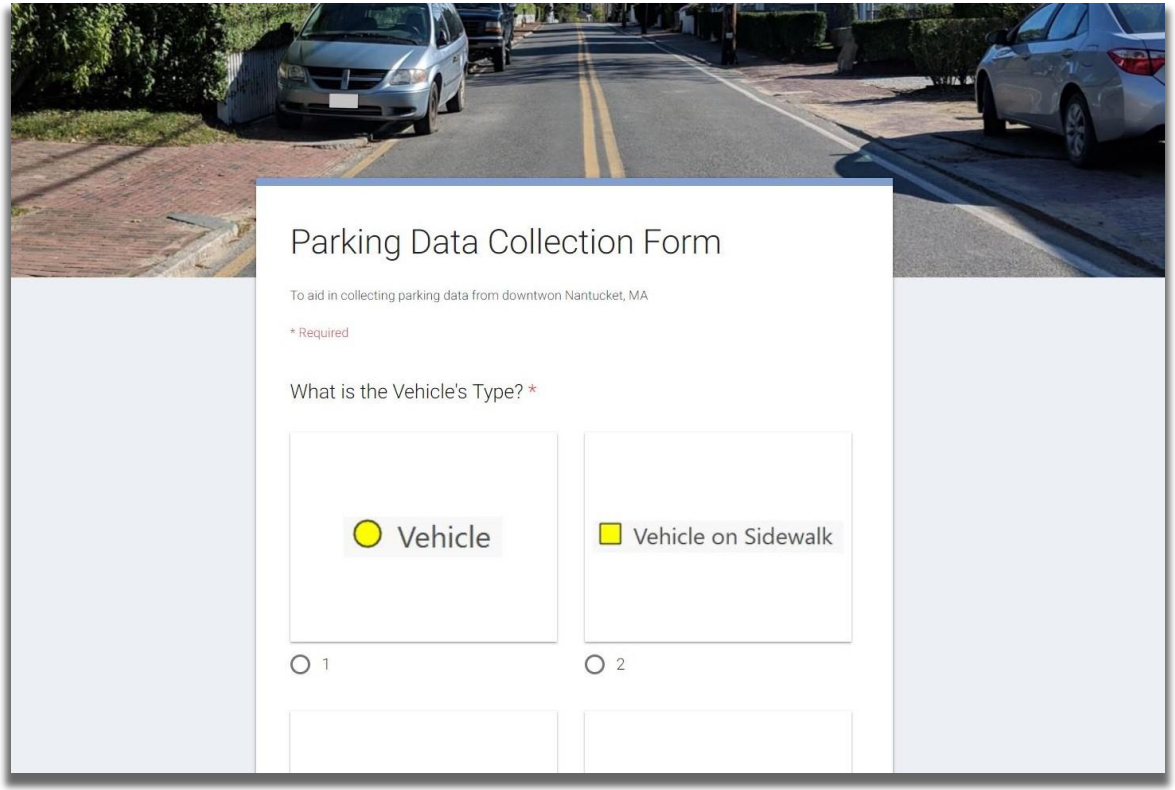
Step 1: Manual Parking Inventory

- Counted parked vehicles
- Created paper street maps
- Classified parked vehicles

Fair St Inventory Map

Step 2: Data Input

- Use “Google Form” for data entry by multiple users
- Data is easier to duplicate



Step 3: Visualization of Data

- Convert data from Google Form into an ArcGIS layer
- Displays all of the data collected accurately and neatly
- Multiple filter features from GIS

Original Layer Image

Step 3: Visualization of Data

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Filtered by TimeSession and Vehicle Type Layer Image

Step 3: Visualization of Data (cont.)

Step 4: Data Processing

Time of Day	Road Name	Total Vehicles Parked	Cars	Cars on Sidewalk	Work Vehicles	Work Vehicles on Sidewalk	Total on Street Spaces	Utilization %
	CLIFF RD	11	11	4	0	0	15	73%
	FAIR ST	39	37	26	2	1	52	75%
	PINE ST	20	17	5	3	3	30	67%
	SUMMER ST	7	6	5	1	1	22	32%
	LIBERTY ST	19	19	19	0	0	35	54%
9:00 AM	GAY ST	7	7	7	0	0	11	64%
	INDIA ST	22	22	6	0	0	32	69%
	PLEASANT ST	5	5	0	0	0	23	22%
	YORK ST	5	5	5	0	0	17	29%
	UNION ST	30	29	2	1	1	49	61%
	ORANGE ST	31	30	3	1	0	53	59%
	CAMBRIDGE ST	11	9	0	2	0	17	65%
	FEDERAL ST	11	11	0	0	0	35	31%
	CENTER ST	36	30	2	6	1	65	55%
	INDIA ST (COB)	24	24	0	0	0	24	100%
	BROAD ST	27	27	0	0	0	47	57%
	MAIN ST	28	25	0	3	0	100	28%

Step 4: Data Processing

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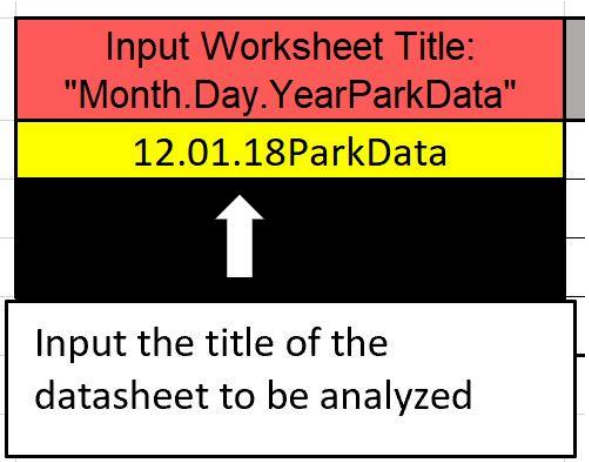
Step 4: Data Processing (cont.)

- Street names and times are flexible for future use
- Can display data from any day in the same table



Time Period in Table	Time of Inventory/Data Collection
1	9:00 AM
2	12:00 PM
3	3:00 PM
4	5:00 PM
5	7:00 PM

Row # Of Street	Street Names (in correct format)
1	CLIFF RD
2	FAIR ST
3	PINE ST
4	SUMMER ST
5	LIBERTY ST
6	GAY ST
7	INDIA ST
8	PLEASANT ST
9	YORK ST
10	UNION ST
11	ORANGE ST

Improved Parking Inventory Process

Originally ~600 vehicles	Improved ~2000 vehicles
~18.5+ hours (32/hr)	**~11.5 hours** (174/hr)

Improving Inventory with Tech

- Manual process provides downtown parking snapshot
- Time Consuming
- Technology can provide continuous parking status

https://www.cleverciti.com/technology/sensors/

https://www.nwave.io/

https://www.civicsmart.com/

Implementation Criteria

- Weather Resistance
- Minimal Infrastructure

Parking Management Technologies

Technology Recommendations

- Upgrade the Town's Cellular network infrastructure
  - *Imperative for moving forward*
- Continue inventory process using manual data collection
- Integrate downtown sensor system
- Use Parking Benefit District revenue for maintenance

Options for Improving Street Conditions

- Visualize street reconfiguration (Adobe Photoshop)
- Modify curbs
- Prohibit Parking on certain streets
- Delineating spaces
- Change street/sidewalk width

Mountable Curb

Mountable Curb

+: Better for parking on sidewalk, Easier for bikers to move onto sidewalk

–: Cars can easily drive onto the sidewalk

Delineating Spaces

Delineating Spaces

+: Organized Parking

–: Parking is less flexible

No Parking

No Parking

+: Increases width for drivers, no sidewalk parking, leads to other options

–: Lose some parking spaces

No Parking

No Parking

Remove parking and add bike lane

Array of Options

- Cambridge St (~17 parking spaces)
- Fair St (~52 parking spaces)
- Gay St (~11 parking spaces)
- India St (~32 parking spaces)
- Liberty St (~35 parking spaces)
- Orange St (~53 parking spaces)
- Union St (~49 parking spaces)
- York St (~17 parking spaces)

- Remove parking
- Add bike lane
- Curb modifications
- Delineating spaces
- Change sidewalk/street width
- Open street design
- Traffic flow altercations (one-ways)

Street Reconfiguration Recommendations

- Study traffic flow and behavior for optimal solution
- Evaluate options for reconfiguring streets
- Experiment: Reconfigure particular streets –> Evaluate success

Recommended Next Steps

- Improve parking inventory process
- Consider reconfigurations options and technological solutions
- Consider list of actions in recommendations

ACKnowledgements

Transportation Planner Mike Burns

Civic League Co-President Peter Morrison

Professor Scott Jiusto

Professor Fred Looft

Town Association President Henry Terry

Chief of Police William Pittman

Deputy Chief Charles Gibson

Chief Technology Officer Karen McGonigle

IT Manager Linda Rhodes

IT Technician Patrick McGloin

CivicSmart CEO Mike Nickolaus

WiseMoving Sales Manager Matthew Valera

Jim Short from Smart Parking


Questions?