# Measuring the Street:

## New Metrics for 21st Century Streets

NEW YORK CITY DOT

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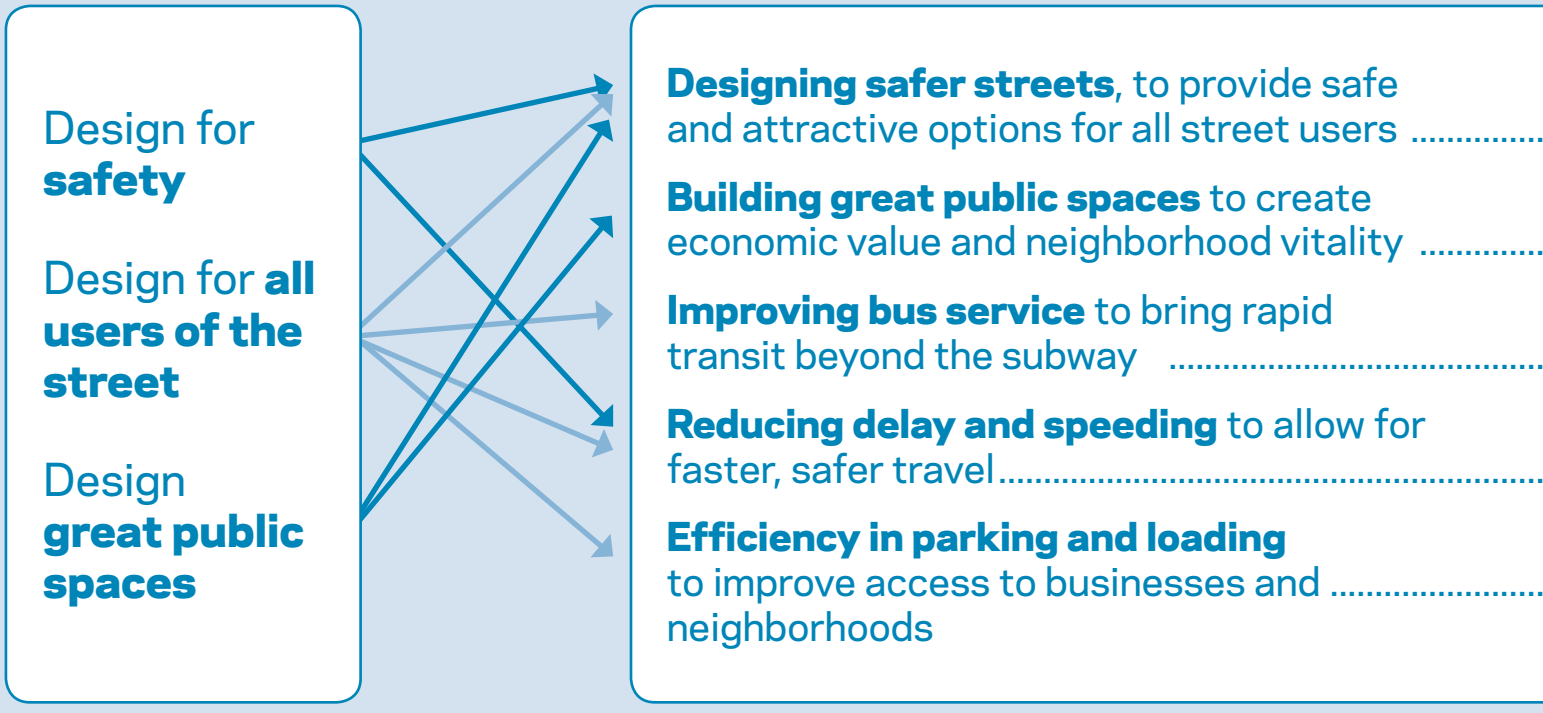
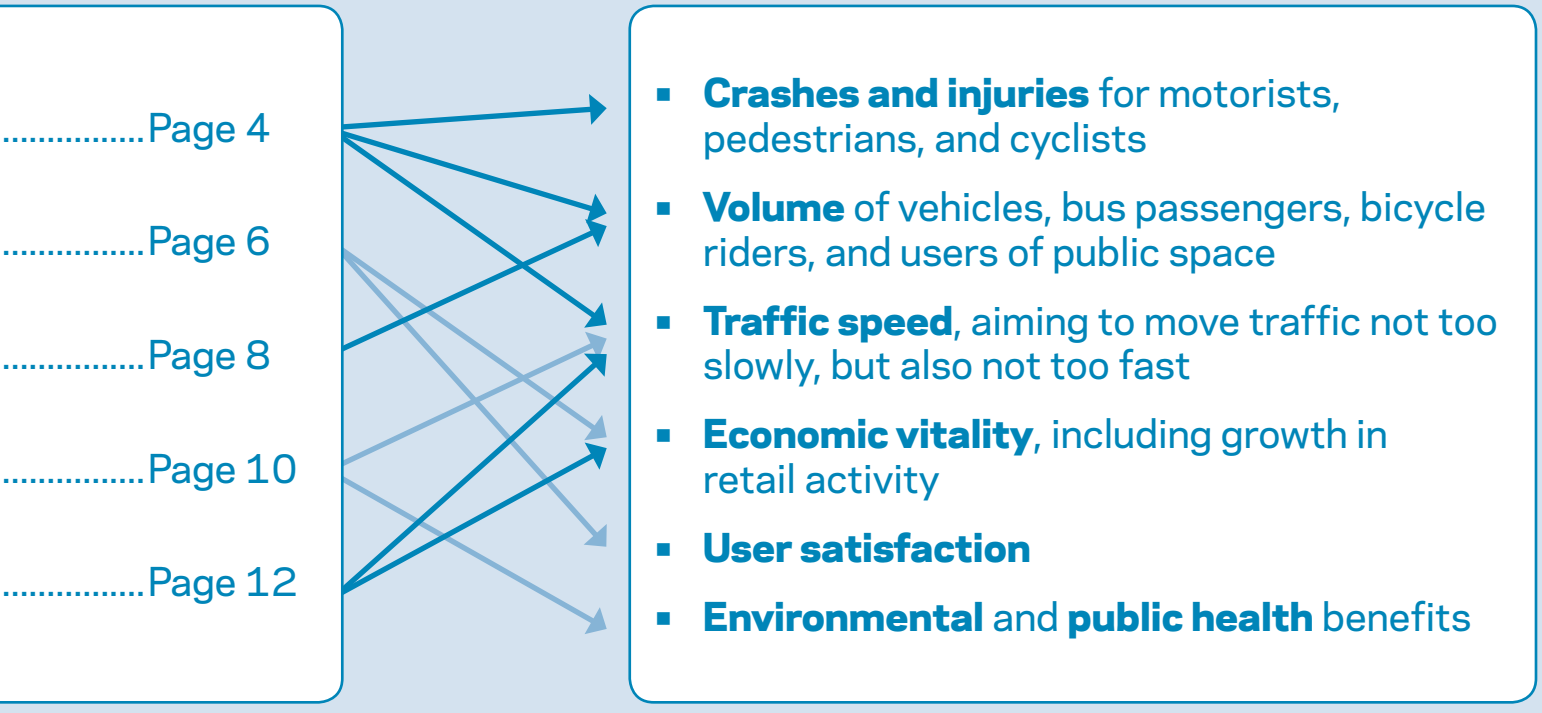
## New Metrics for 21st Century Streets

New York City's streets are constantly called on to the meet new and varied needs of a growing, dynamic, 21st Century city – and to do this in a complex environment where there is little opportunity to expand the existing footprint. How do city leaders address these challenges and measure their success? This report discusses key approaches to street design projects, and how results can be measured against goals for safety, serving all users and creating great public spaces while also maintaining the flow of traffic. Using a cross-section of recent NYCDOT street design projects, this report details the metrics NYCDOT uses to evaluate street projects, and illustrates how measuring results can show progress toward safe, sustainable, livable and economically competitive streets.



Cities need to set new goals for their streets if they are to meet the needs of a dynamic and growing city and address the problems of vehicle crashes, traffic congestion, poor-performing bus and bike networks, and environments that are inhospitable for pedestrians. New York has been able to transform our streets by blending new technologies with time-tested tools to create 21st Century Streets for all users.

The projects described in this report demonstrate this approach. The metrics shown here track the success of these projects, inform the design of future projects and are vital to building public support for world-class streets.



# Designing safer streets

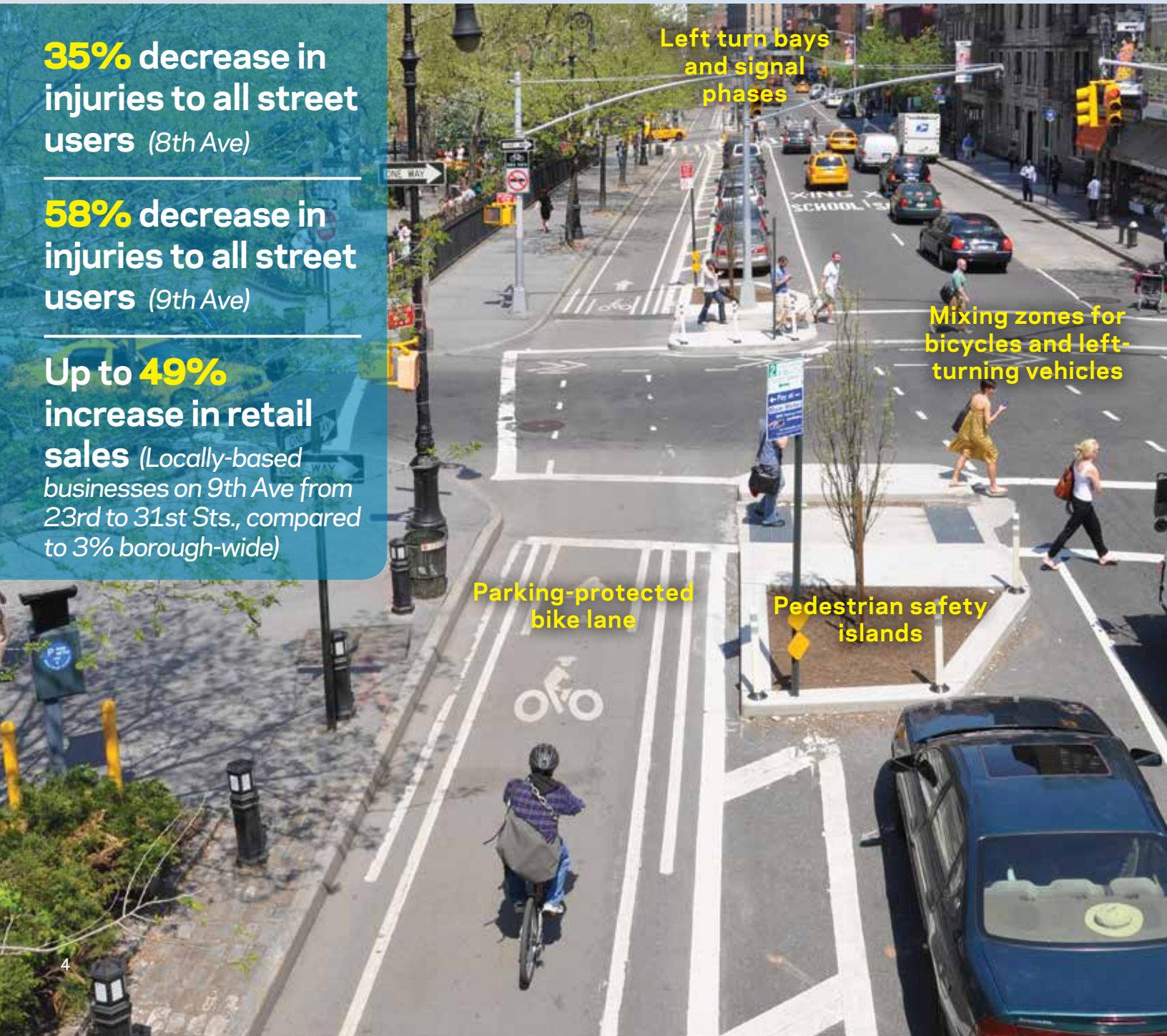
## Safe and attractive options for all users

**First protected bicycle lane in the US:**
8th and 9th Avenues (Manhattan)

**35%** decrease in injuries to all street users *(8th Ave)*

**58%** decrease in injuries to all street users *(9th Ave)*

Up to **49%** increase in retail sales *(Locally-based businesses on 9th Ave from 23rd to 31st Sts., compared to 3% borough-wide)*



The City's streets are unique because of the mix of people using the same space. Planning for safety, which is at the heart of every DOT initiative, means helping pedestrians, motorists, bus riders, and cyclists coexist safely. Here our focus has been on organizing the different streams of traffic – by simplifying intersections; by creating dedicated lanes for turning drivers and for cyclists; and by setting aside signal time and safe space for crossing pedestrians.

## KEY METRICS

- Crashes and injuries to motorists and other vehicle occupants, pedestrians, cyclists, and motorcyclists
- Vehicle speeds

### Neighborhood traffic calming:
East 180th Street (Bronx)

**67%** decrease in pedestrian crashes

**29%** decrease in eastbound speeding

**32%** decrease in westbound speeding

# Building great public spaces

## Economic value and neighborhood vitality

**Expanding an iconic space:**
Union Square North (Manhattan)

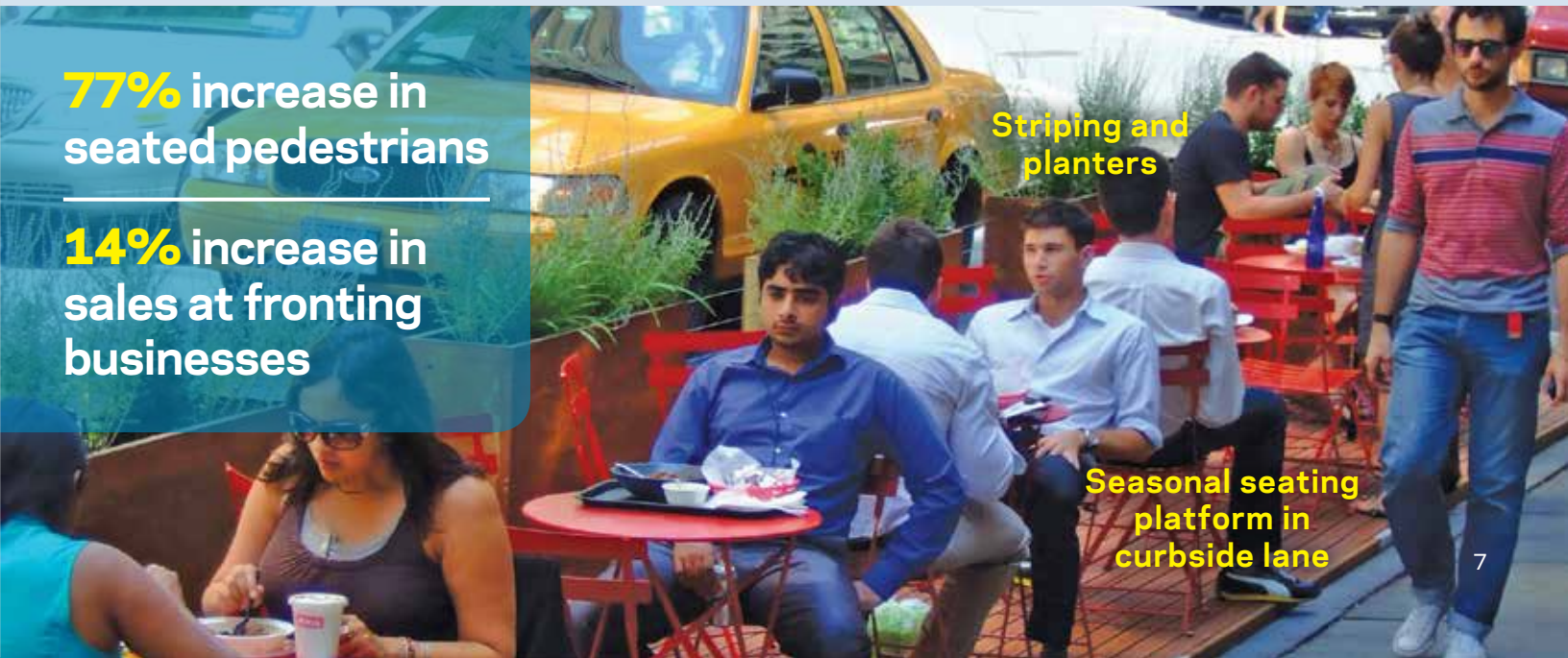
New York's streets serve more functions than simply moving people and goods. In such a densely populated city, the streets and sidewalks are places to congregate, relax, and enjoy being out in public.
We have focused on creating great public spaces that serve individuals and groups large and small. Local organizations who maintain and program our public spaces help us ensure that these spaces will remain functional and useful for all users.

## KEY METRICS

- Economic vitality (sales tax receipts, commercial vacancies, number of visitors)
- User satisfaction, revealed through surveys
- Number of users

### Transforming an underused parking area:
Pearl Street (Brooklyn)


### Creating a seating area out of curb lane:
Pearl Street (Manhattan)



# Improving bus service
## Rapid transit beyond the subway

### Making bus routes work better:
Fordham Road (Bronx)

Even though most New Yorkers use mass transit every day, the city's buses are the slowest in North America. In partnership with MTA New York City Transit, DOT has introduced a new level of bus service, Select Bus Service (SBS), to some of the city's busiest corridors. SBS includes off-board fare payment, three-door boarding to reduce boarding time; red bus lanes and Transit Signal Priority (TSP) to keep buses moving; and new shelters , buses, and bus bulbs to improve the passenger experience. SBS projects also include features to enhance pedestrian, cyclist, and traffic flow and safety.

## KEY METRICS

- Bus ridership
- Bus travel speeds
- Economic vitality (sales tax receipts, commercial vacancies, number of visitors)

## Dedicated lanes for both buses and bikes:
First and Second Avenues (Manhattan)

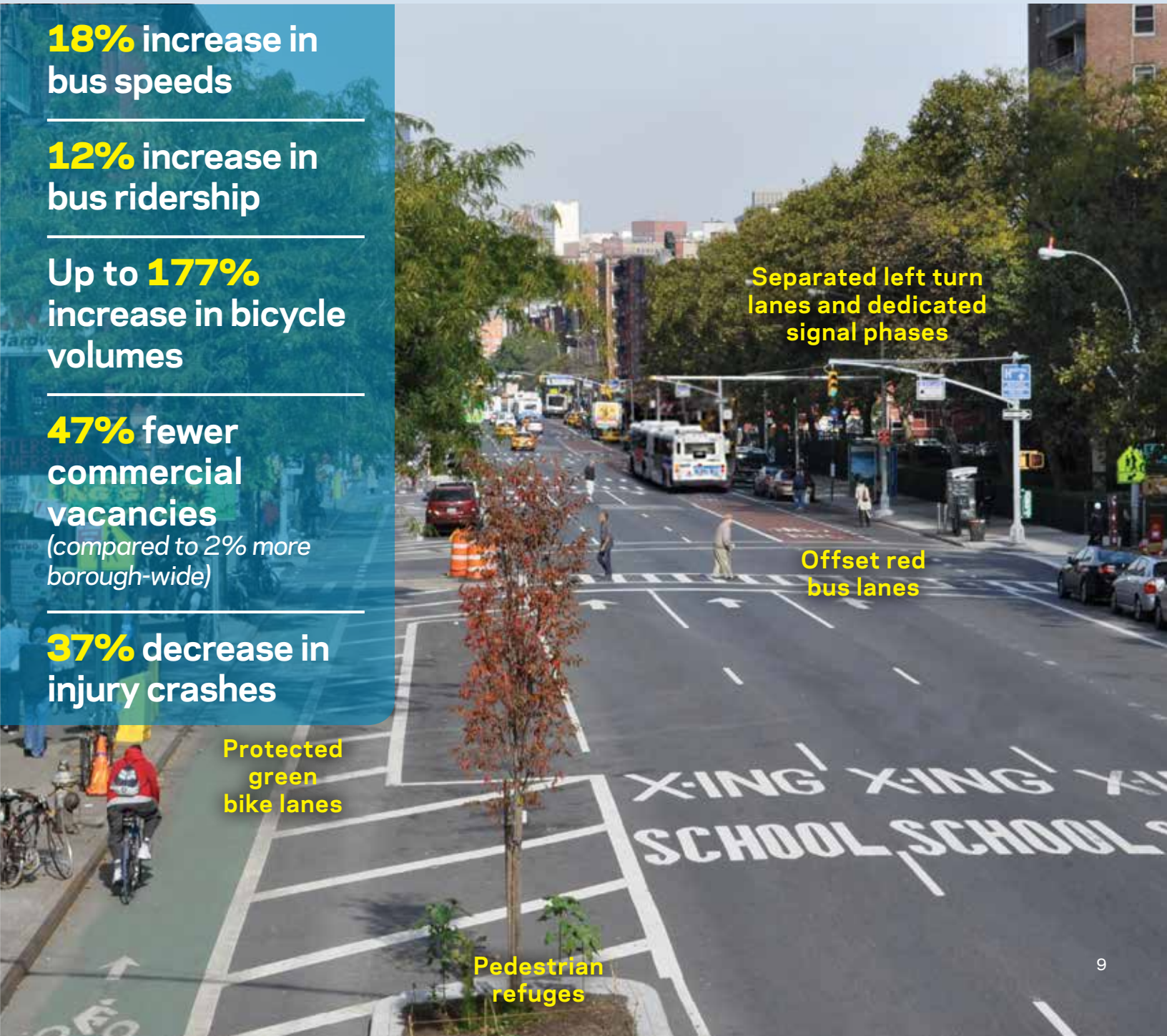
**18%** increase in bus speeds

**12%** increase in bus ridership

Up to **177%** increase in bicycle volumes

**47%** fewer commercial vacancies
*(compared to 2% more borough-wide)*

**37%** decrease in injury crashes



# Reducing delay and speeding
## Faster, safer travel

**Creative traffic engineering for wide streets:**
Hoyt Avenue at the RFK Bridge (Queens)

**51%** improvement in northbound travel times

**21%** decrease in crashes

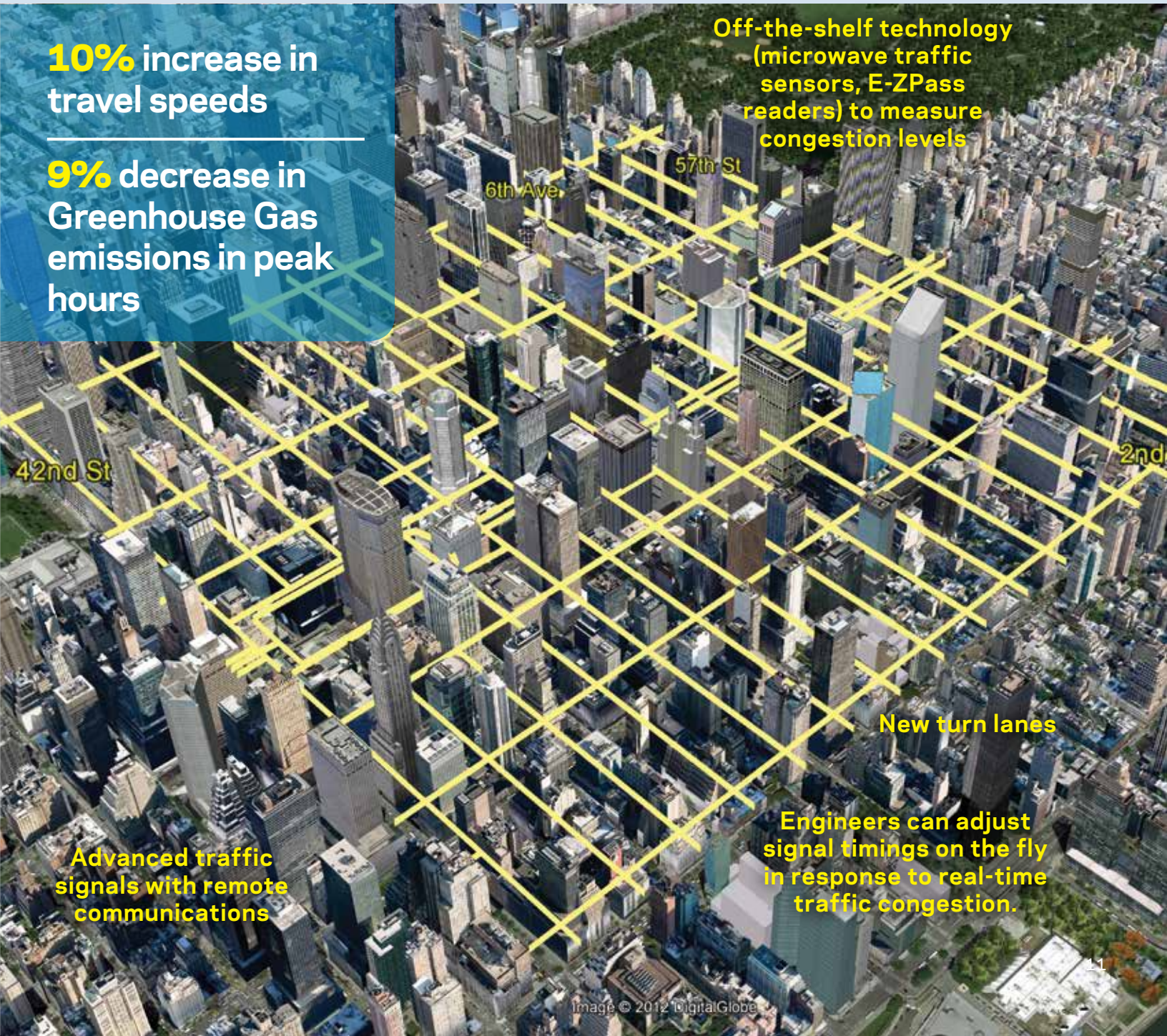
**37%** increase in weekend bicycle volumes

Streets that work for traffic have less congestion and more reliable travel times. Improving traffic flow need not come at the expense of safety, however. Organizing traffic, simplifying complicated intersections, and optimizing signals can reduce peak congestion, but also prevent speeding at other times. We have combined roadway markings, geometric changes, and signal timing to manage traffic safely – reducing congestion but also controlling excessive speeds.

## KEY METRICS

- Travel speeds and times
- Traffic volumes
- Crashes and injuries to motorists and other vehicle occupants, pedestrians, cyclists, and motorcyclists

## Using technology to manage a congested business district:
42nd to 60th Street (Manhattan)



# Efficiency in parking and loading

## Improving access to businesses and neighborhoods

**Improving parking for local businesses:**
Park Slope (Brooklyn)

**20%** decrease in average parking duration

**18%** more unique visitors found parking

**7%** reduction in traffic volumes *(less cruising for parking)*


**Raised parking rates during peak demand periods**

**Installed muni meters areawide**

Curb frontage is a scarce resource in New York. At the curb, drivers need to park, buses and taxis need to drop-off and pickup passengers, truckers need to load and unload freight, all without interfering with safe pedestrian, bicycle, and traffic flow. When curbs are congested, streets become congested. When curb space is available, the street works better for all users. We have used parking regulations and pricing (through our PARK Smart and commercial paid parking programs) to reduce the amount of time vehicles park, stand, or stop at the curb, so that space turns over for new users, and double parking is minimized. Reducing parking duration by 10-20% can have the same effect as creating hundreds of new parking spaces in a neighborhood, while improving traffic flow.

## KEY METRICS

- Vehicle travel speeds and volumes
- Double parking
- Parking duration
- Number of unique visitors

### Reducing double parking on a busy truck route:
Church Avenue (Brooklyn)

# Street redesign inventory

## 1. DESIGNING SAFER STREETS

### Key treatments

Simplified intersections
Dedicated left, right, and through lanes
Pedestrian safety islands
Protected bike lanes
Leading pedestrian intervals and split phasing

### Also helpful

Turn bans
Mixing zones for bicycles and left-turning vehicles
Medians
Wide parking lanes
Speed humps and slow zones

## 2. BUILDING GREAT PUBLIC SPACES

### Key treatments

Create new pedestrian plazas – first using temporary materials, later as capital projects
Street furniture
Seasonal seating platform in curbside lane
Striping and planters
Maintenance agreements with local organizations
Programmed events

### Also helpful

Simplified intersections

## 3. IMPROVING BUS SERVICE

### Key treatments

Offset bus lanes
Transit Signal Priority
Bus bulbs
Bus lane enforcement cameras

### Also helpful

Pedestrian safety islands
Turn lanes and turn bans
Delivery windows

# 4. REDUCING DELAY AND SPEEDING

## Key treatments

Adaptive signal control
Signal optimization
Dedicated left, right, and through lanes
Simplified intersections
Neighborhood Slow Zones

## Also helpful

Protected bicycle lanes
Pedestrian safety islands
Wide parking lanes

# 5. EFFICIENCY IN PARKING AND LOADING

## Key treatments

PARK Smart
Commercial Paid Parking
Delivery Windows
Muni meters

## Also helpful

Offset bus lanes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