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Active Design
Promoting Health by Design

Risk Factors Contributing to Obesity and Chronic Disease

Lancet study published in 2012 suggests that

“A lack of exercise is now causing as many deaths as smoking across the world”



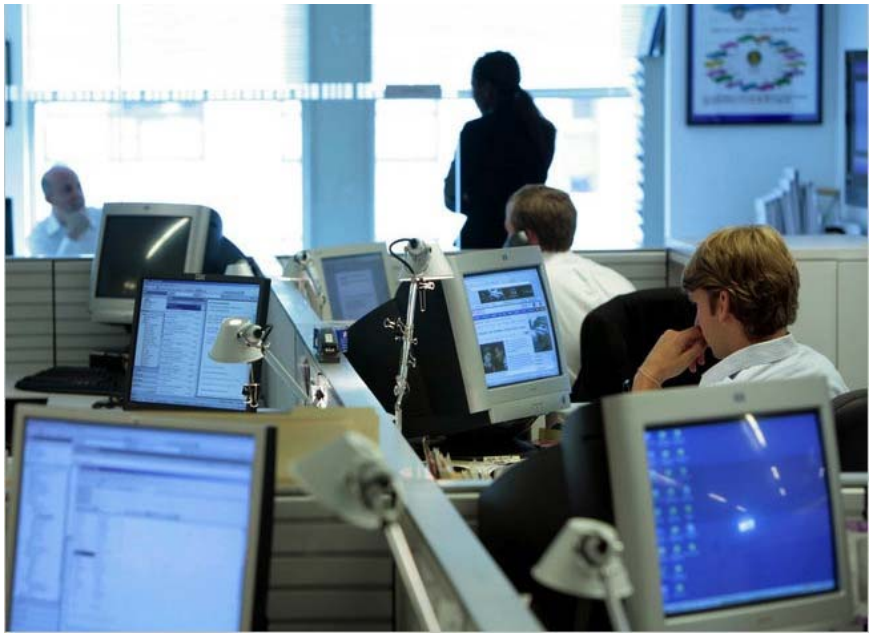
Source: **The pandemic of physical inactivity: global action for public health.** Prof Dr Harold W Kohl PhD a, Cora Lynn Craig MSc b, Prof Estelle Victoria Lambert PhD c, Prof Shigeru Inoue MD d, Jasem Ramadan Alkandari PhD e, Grit Leetongin MD f, Sonja Kahlmeier PhD g, for the Lancet Physical Activity Series Working Group

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Design and Physical Activity

People haven’t changed – but our environment has





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We are Designing the Problem







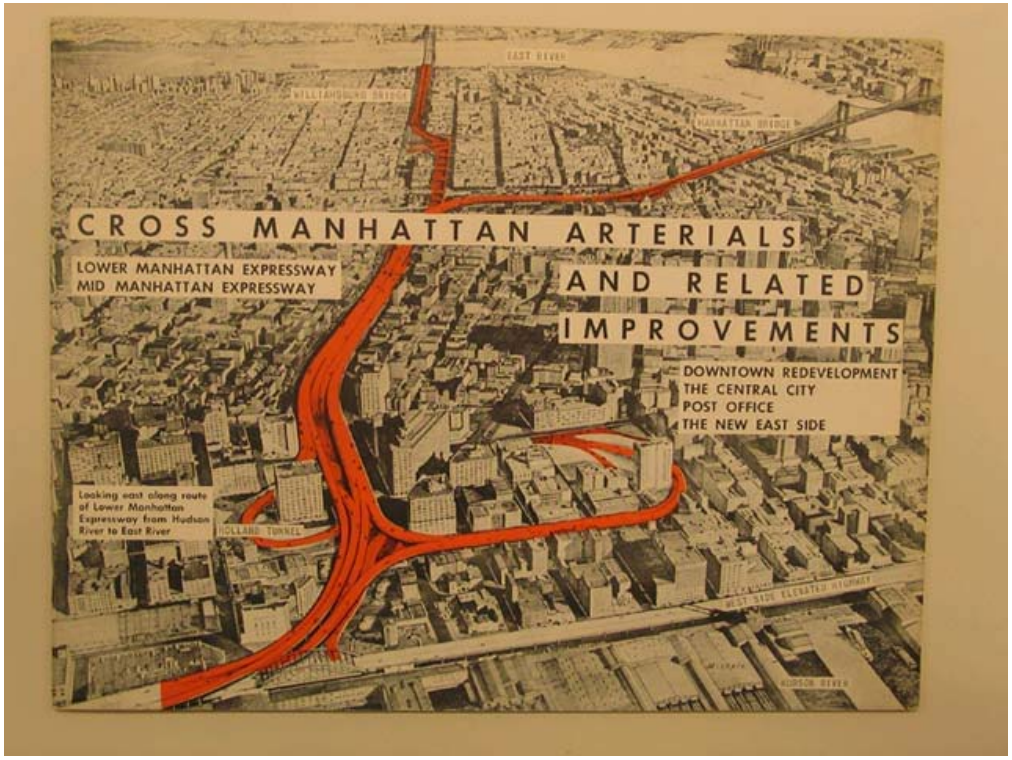


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The Need for Change

The last time we really changed the way we designed our cities was in response to the automobile, over HALF A CENTURY ago!

If a business did not update its practices and processes in over 50 years it would be out of business today!!!



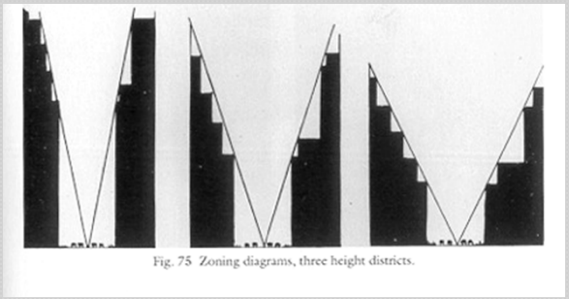
Proposal for Manhattan Expressway

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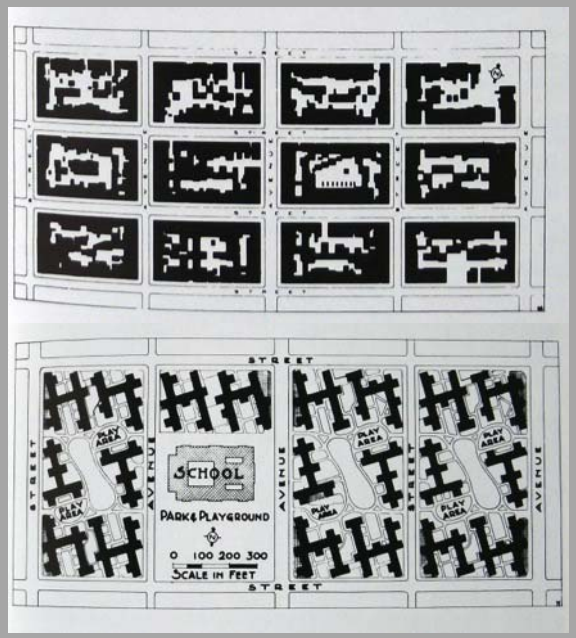
Modern Day Relevance

Our built environment changes and evolves, and with it, so must our thinking, our regulations, and our policies!



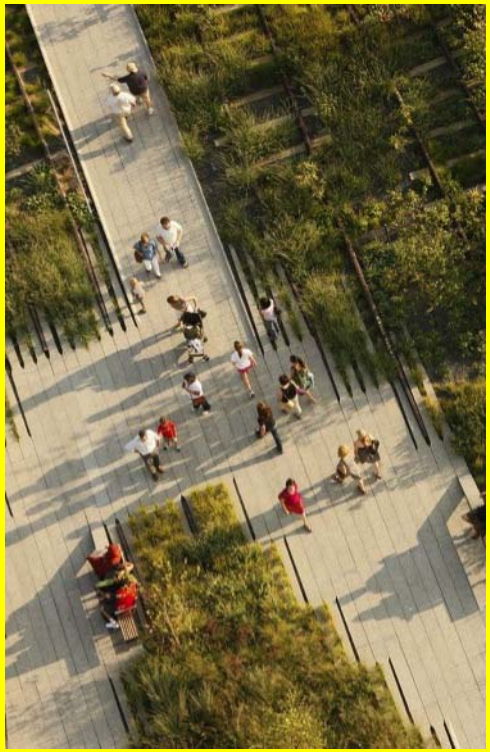


1916 Zoning Resolution NYC
(light and air; separated uses)



1938 Williamsburg Houses

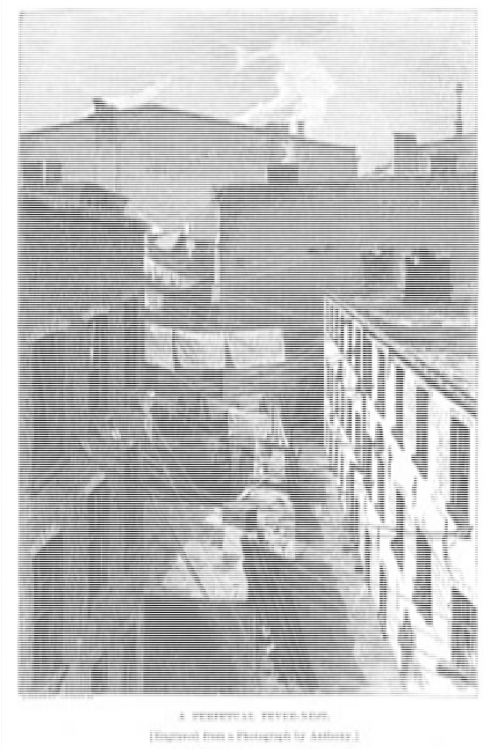
A new model of urban thinking
(automobile; tower in the park)



Today: A chance to redefine our future

History of Health and the Built Environment

100+ years ago, urban conditions in NYC (and many other cities) created a breeding ground for disease epidemics



OVERCROWDING

By 1910, the average density in lower Manhattan was 114,000 people/ sq. mi;
Two wards reached densities > 400,000.
(Today's density: 67,000/ sq. mi.)

+

INADEQUATE SYSTEMS

for garbage, water, and sewer, leading to pervasive filth and polluted water supplies.

MAJOR EPIDEMICS

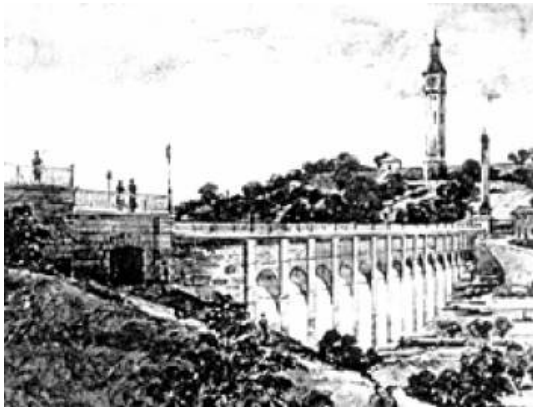
Air/droplet-borne diseases:
TB

Water-borne diseases:
Cholera

Vector-borne diseases:
Yellow-fever

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The Design Response





1842 New York's **water system** established – an aqueduct brings fresh water from Westchester

1857 NYC creates **Central Park**, hailed as "ventilation for the working man's lungs", continuing construction through the height of the Civil War

1881 Dept. of Street-sweeping created, which eventually becomes the **Department of Sanitation**

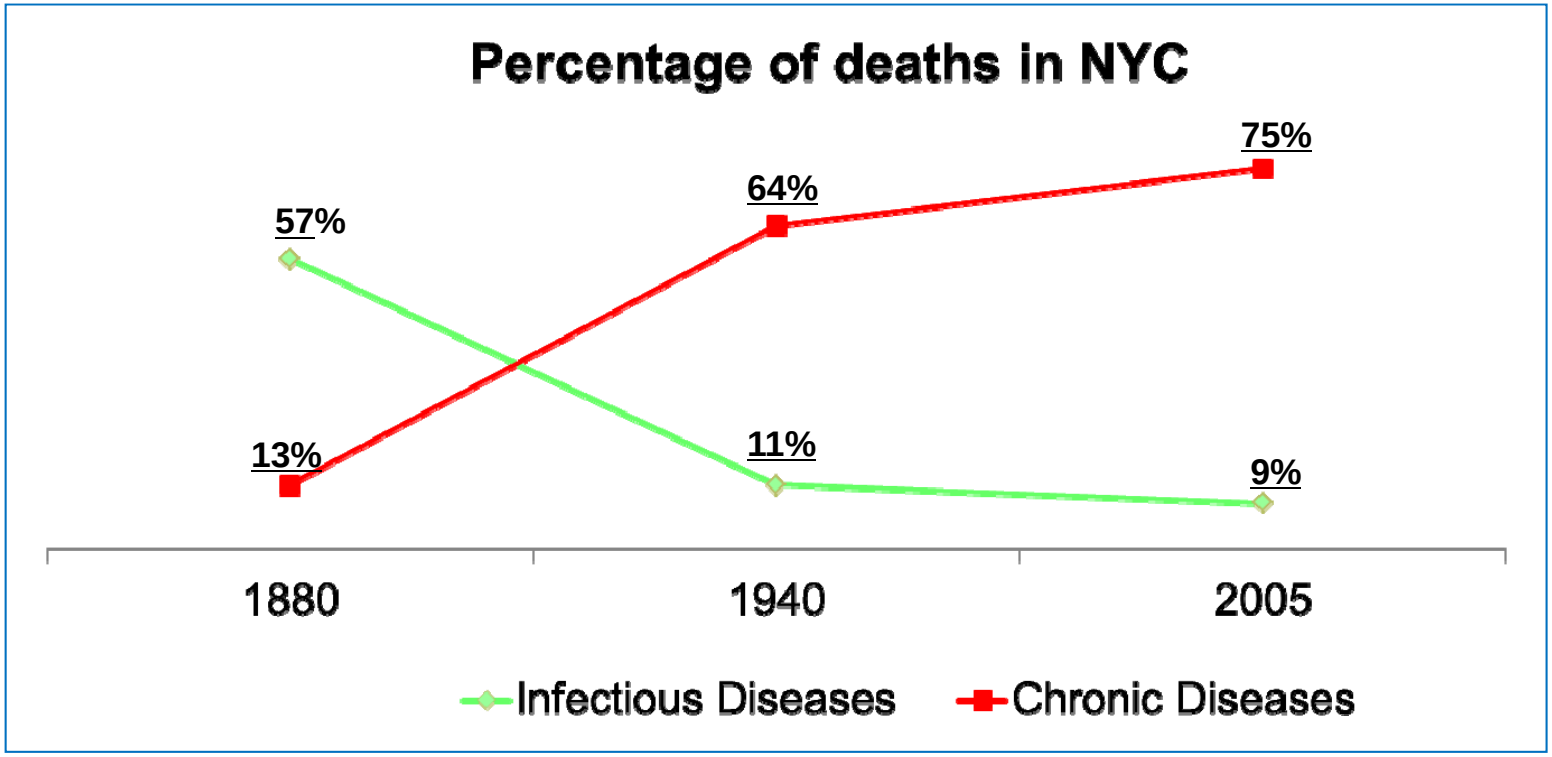
1901 **New York State Tenement House Act** banned the construction of dark, airless tenement buildings

1904 First section of **Subway** opens, allowing population to expand into Northern Manhattan and the Bronx

1916 **Zoning Ordinance** requires stepped building setbacks to allow light and air into the streets

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The Results: Infectious disease rates plummeted



- Today, **chronic disease** accounts for 75% of deaths.
- In 2005, 133 million Americans – **almost 1 out of every 2 adults** – had at least one chronic illness.

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Can design help today's health epidemics?

THE 19th CENTURY:

infectious diseases

19th Century codes, planning and infrastructure as weapons in the battle against contagious disease

These strategies were built into the city fabric, and they were effective

THE 21st CENTURY:

chronic diseases
many of which are
"**Diseases of Energy**"

The emerging design solutions for health parallel **sustainable design** solutions

Effective designs will have to be an **invisible, pervasive, and inevitable** part of life

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Today's Epidemic – Chronic Disease

Chronic diseases are the leading causes of death and disability in the U.S.

Four Common Causes of Chronic Disease
Four modifiable health risk behaviors are responsible for much of the illness, suffering, and early death related to chronic diseases:

- lack of physical activity
- poor nutrition
- tobacco use
- excessive alcohol consumption

More than 1/3 of all adults do not meet recommendations for aerobic physical activity based on the 2008 *Physical Activity Guidelines for Americans*, and 23% report no leisure-time physical activity at all in the preceding month.

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Centers for Disease Control and Prevention. Prevalence of self-reported physically active adults—United States, 2007. MMWR 2008;57:1297–1300. Available from: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5748a1.htm

Risk Factors Contributing to Obesity and Chronic Disease

Lancet study published in 2012 suggests that

“A lack of exercise is now causing as many deaths as smoking across the world”

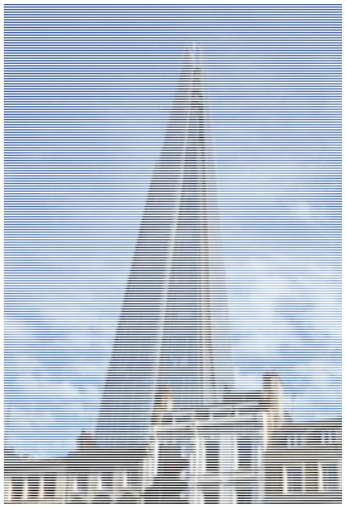


Source: **The pandemic of physical inactivity: global action for public health.** Prof Dr Harold W Kohl PhD a, Cora Lynn Craig MSc b, Prof Estelle Victoria Lambert PhD c, Prof Shigeru Inoue MD d, Jasem Ramadan Alkandari PhD e, Grit Leetongin MD f, Sonja Kahlmeier PhD g, for the Lancet Physical Activity Series Working Group

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Solutions









Bike share, waterfront, skyscrapers, streets, open spaces, stations…

We should borrow and share from place to place, learning what didn't work, making it better, and most importantly adapt and morph these ideas into what makes sense for YOUR built environment!

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Keep in mind local **context,** potential **unintended consequences**, and the **constant changing nature** of our cities.

Solutions

Be visionary and set clear goals that you can all align to and work together collaboratively to achieve!

Who are the different stakeholders and what do they have at stake?



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Solutions

Look at the tools and mechanisms you have at hand to help shape the change you are striving for



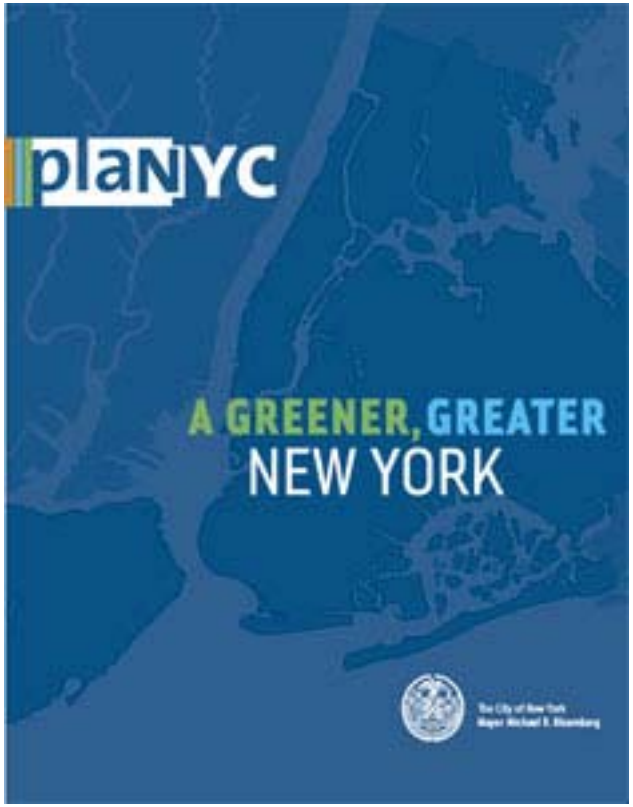


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Case Study: New York City
Long Term Planning Goals

2007: Office of Long Term Planning and Sustainability

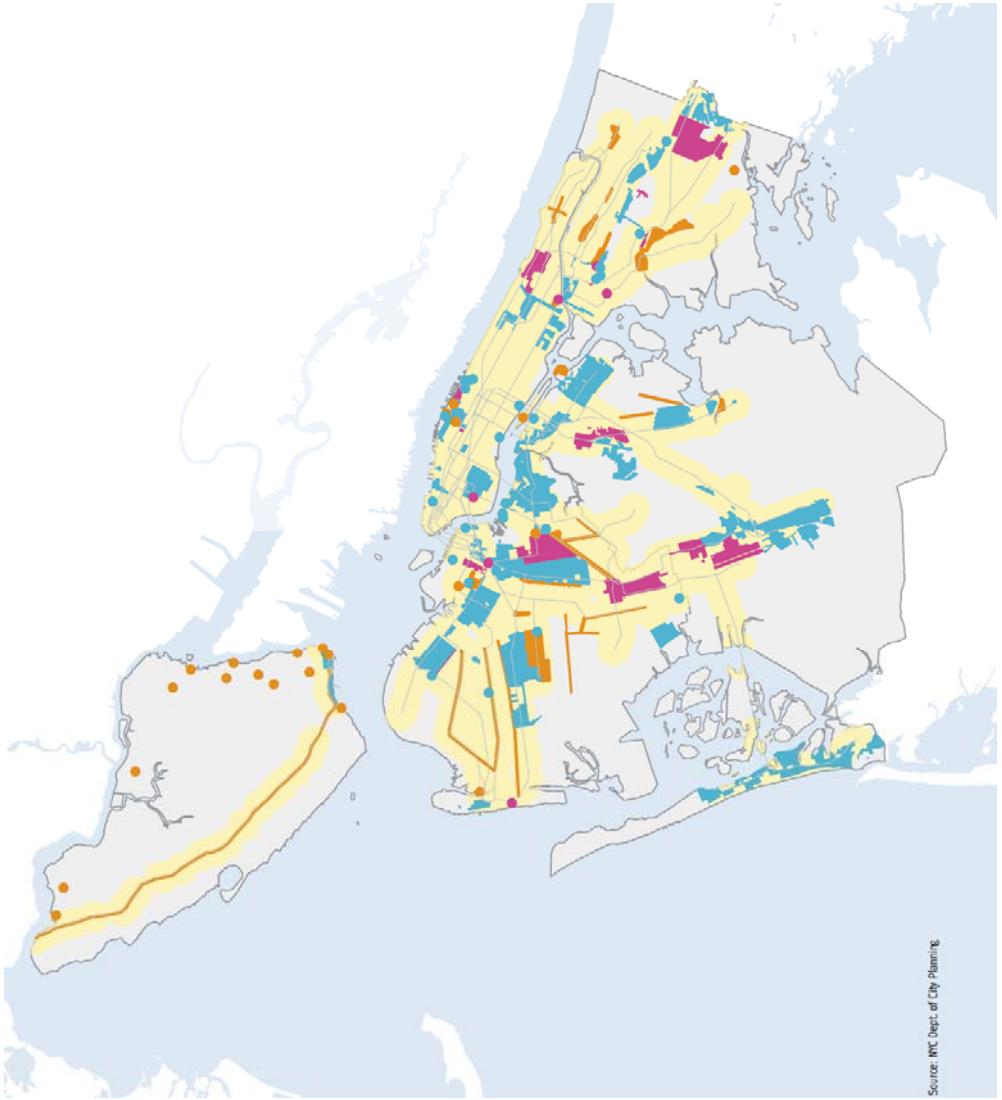
- **Set long term vision + coordinate + oversee efforts across agencies**
- **1 million new people by the year 2030**





Case Study: New York City
Smart Growth

Focus the development for nearby public transit access



Case Study: New York City
Complete Neighborhoods



HOUSING FOR ALL



JOBS



LOCAL RETAIL



OPEN SPACE

Policy Mechanisms

We have been encouraging people to change their behavior through building healthier environments and by changing policy

Incentivize certain practices



Protect



Mandate + relieve the burden



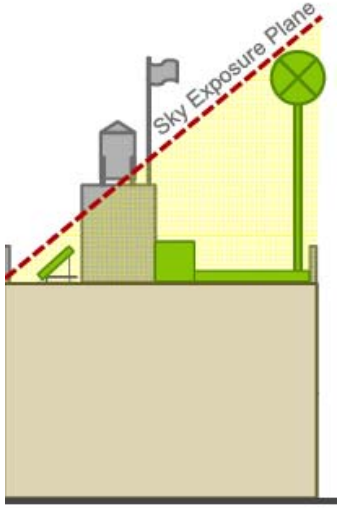
Allow



Create minimum design standards



Remove impediments



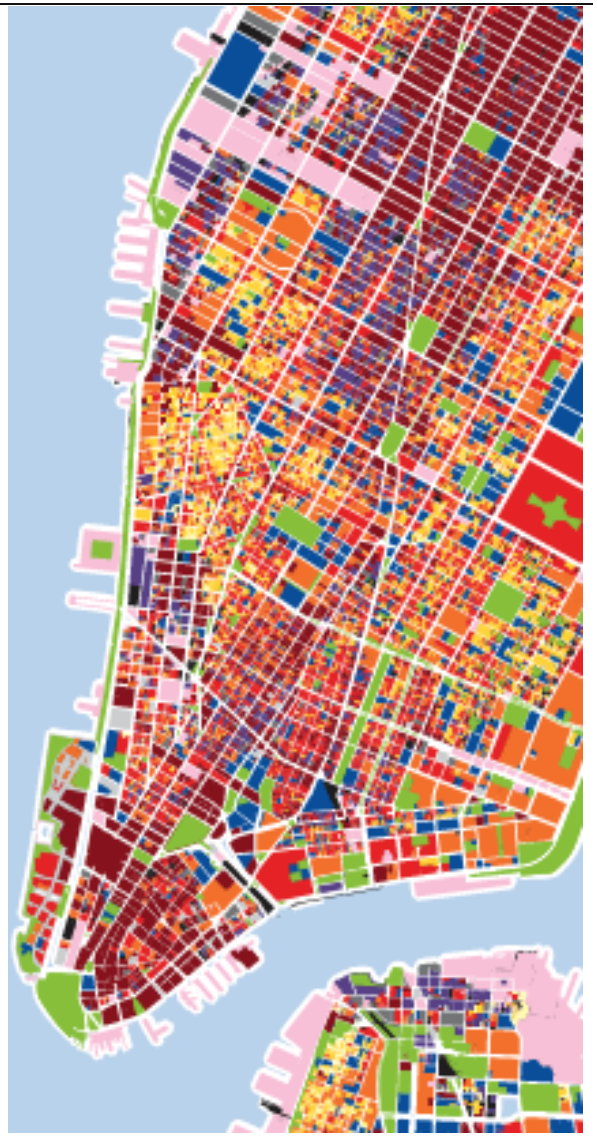
E ELEVATION (not to scal

Policy
Land Use Mix – Walkable Neighborhoods

According to an ALR study, residents of communities with a mix of shops and businesses within easy walking distance have a 35 percent lower risk of obesity than residents of communities that do not have these services within easy walking distance

Designing for Active Transportation, San Diego: Active Living Research, February 2005

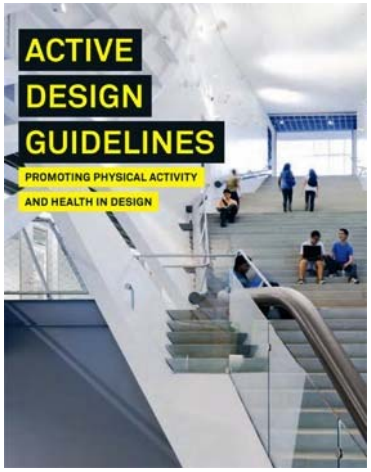
Gap in research around the components of a neighborhood that supports Active Living



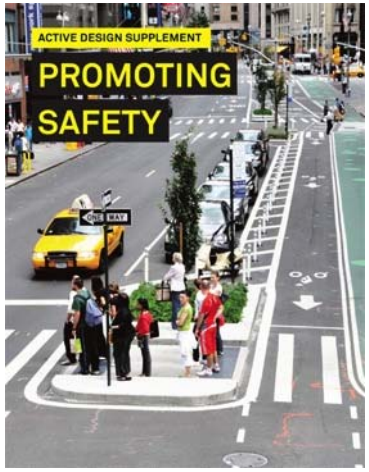
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Active Design

Using Evidence Based and Best Practice design strategies











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Origins and development of the *Active Design Guidelines*



- Annual **Fit City** conferences since 2006
  Expanded to Fit Nation and Fit Cities, Fit World
- **Building Partnerships** included City Agencies, Health and Design professional, Real Estate Developers
- The **Centers for Disease Control and Prevention** funded initial outreach efforts
- The **Center for Active Design** is now leading efforts to disseminate information about active design





Center for Active Design
Promoting Health through Design

MISSION

Organized in response to a growing international health crisis, the Center for Active Design seeks to reduce obesity and chronic diseases by promoting physical activity and healthy eating through the design of buildings, streets, and neighborhoods.





Active Transportation | Active Recreation | Food Access | Active Buildings

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www.centerforactivedesign.org

Key Concepts

Active Transportation



Active Recreation



Forest Hills Community House | WXY Architecture

Active Buildings



Glen Oaks Branch Library | Marble Fairbanks Architects

Healthy Food Access



ACTIVE TRANSPORTATION

Each hour spent in a car contributes a 6% risk in obesity and chronic disease while each km walked contributes a 5% decrease in risk



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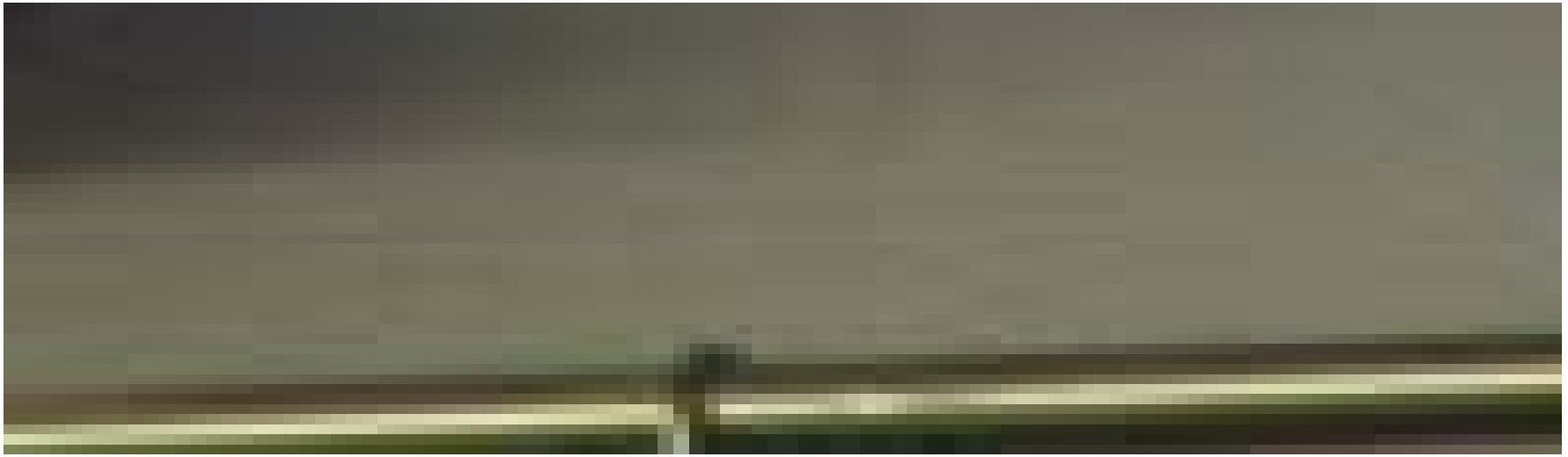
ACTIVE TRANSPORTATION // ACTIVE BUILDINGS
Bicycle Parking and Storage



Just 15 minutes of cycling (2.5 miles) twice a day burns the equivalent of 10 lbs per year

Source: MyPyramid.gov:
How many calories does physical activity use?

Secure bike storage with **easy access**



ACTIVE TRANSPORTATION // URBAN DESIGN STRATEGY
Bicycle Network and Infrastructure



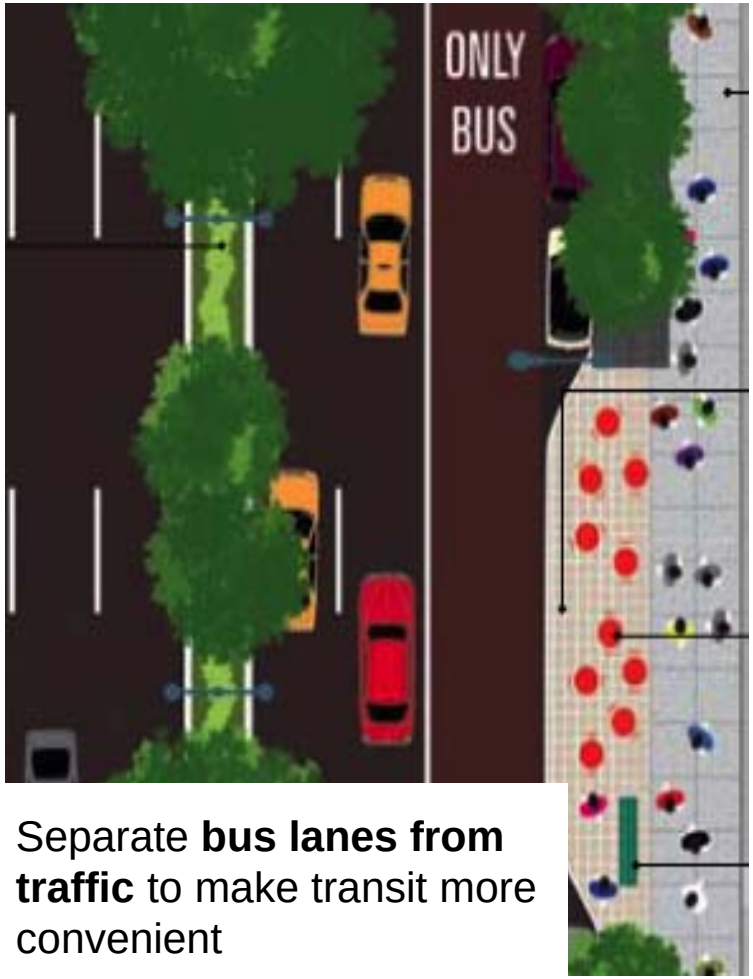
Encourage use through development of **interconnected bikeways**

Provide attractive **signage**, **wayfinding,** and **secure bike parking**



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ACTIVE TRANSPORTATION // URBAN DESIGN STRATEGY
Transit



Separate **bus lanes from traffic** to make transit more convenient



Provide **attractive** and **sheltered seating areas** to encourage use of transit routes

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URBAN DESIGN STRATEGY
Pedestrian Environment





Reduce crossing distances
with
median refuge islands

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URBAN DESIGN STRATEGY
Pedestrian Environment

Research in the Netherlands and Japan indicated that people were more likely to walk or cycle to work if the streets were lined with trees and live longer and feel better as a result.

Van den Berg, A.E., Koole S.L., and Van der Wulp N.Y. (2003). 'Environmental preferences and restoration: (how) are they related?' Journal of Environmental Psychology 23, 135-146.





URBAN DESIGN STRATEGY
Complete Streets results in NYC between 2000 and 2012



30% reduction in traffic fatalities

10% growth in bus and subway ridership

262% increase in commuter cycling

5% reduction in motor vehicle registrations

25% decline in citywide traffic volumes





HEALTHY FOOD ACCESS
Farmers Markets

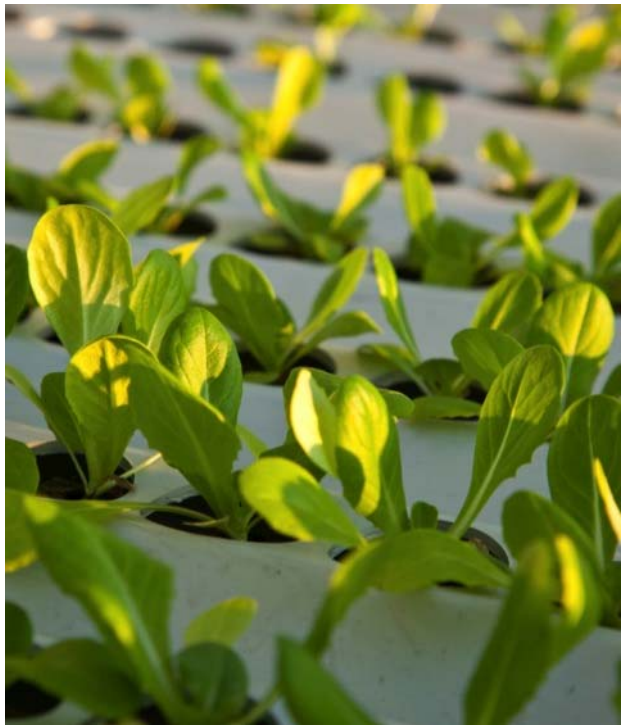


ACTIVE BUILDINGS

Limited access to nutritious food and relatively easier access to less nutritious food may be linked to poor diets and, ultimately, to obesity and diet-related diseases.

Access to Affordable and Nutritious Food:
Measuring and Understanding Food Deserts and Their Consequences USDA 2006





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ACTIVE RECREATION // HEALTHY FOOD ACCESS
Street Trees and Planting



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HEALTHY FOOD ACCESS
Supermarket Incentive Program

Remove planning impediments for neighborhood supermarkets

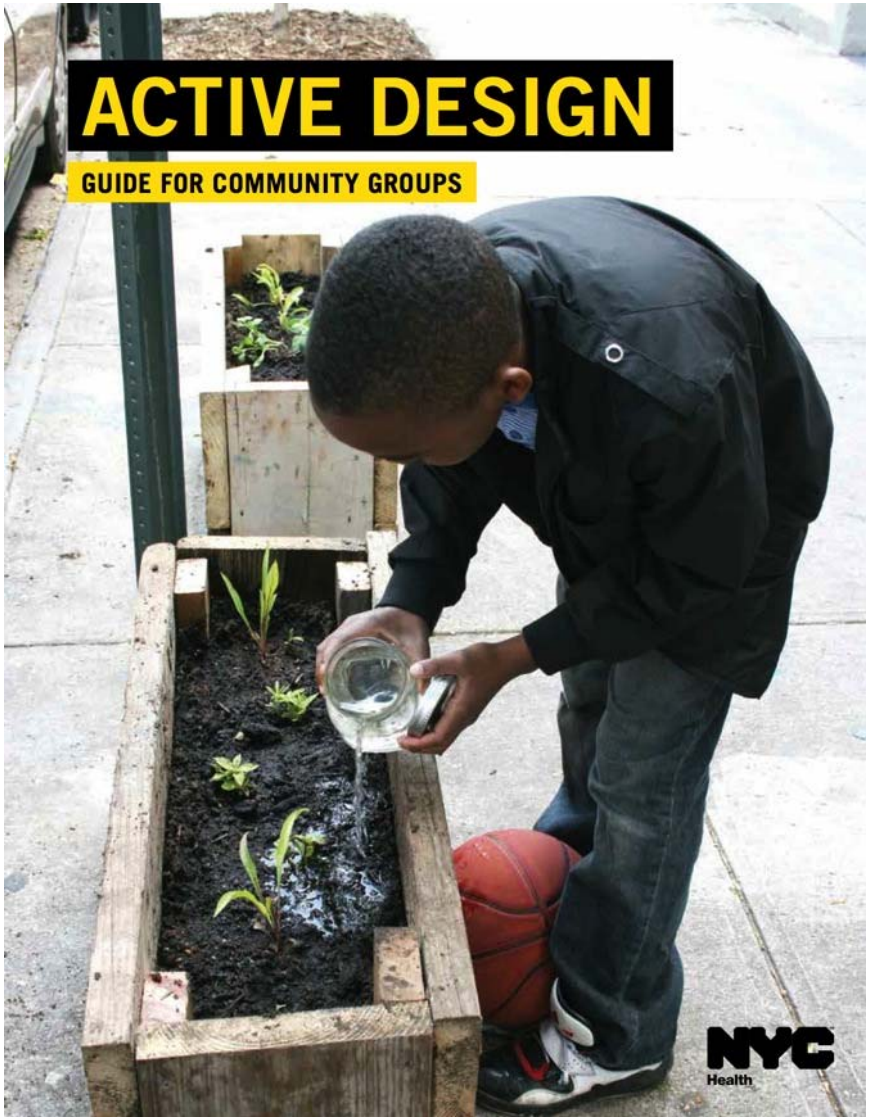


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ACTIVE RECREATION
Community Scale Strategies

Engaging the Community to learn from their perspective and better understand opportunities and challenges

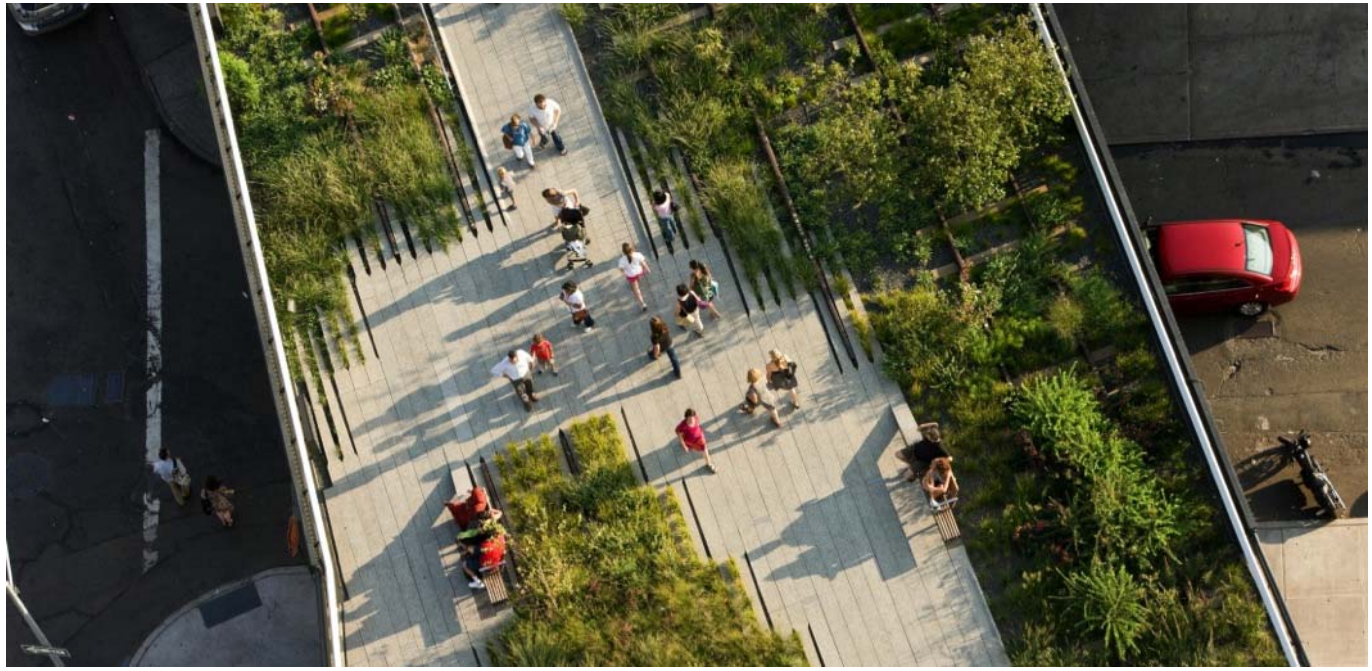




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ACTIVE RECREATION
Policy Based on Health Evidence

Ensure that all New Yorkers live within a 10-minute walk of a park



Proximity to parks and recreational facilities is associated with higher levels of physical activity and healthier weight levels among youth and adults

(Sallis JF and Glanz K. Physical activity and food environments: solutions to the obesity epidemic. Milibank Quarterly. 2009;87(1): p. 123-154.)

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Reusing Existing Outdoor Space

PLANYC: 180 Schoolyards to Playgrounds opened



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ACTIVE RECREATION

When using playgrounds that are painted with designs for games and imaginative play, kids engage in moderate to vigorous activity for more than 50% of their recess period

Source: Stratton G and Mullan E. “The Effect of Multicolor Playground Markings on Children’s Physical Activity Level During Recess.” Preventive Medicine, 41(5–6): 828-833, 2005.





ACTIVE BUILDINGS
Exteriors: Contributing to the Pedestrian Realm

Maximize variety, detail, texture and continuity on the lower 1-2 floors of the building façade

Provide multiple entries and appropriate transparency





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ACTIVE BUILDINGS

Americans, on average, spend approximately 90 percent of their time indoors

U.S. Environmental Protection Agency. 1989. Report to Congress on indoor air quality: Volume 2. EPA/400/1-89/001C. Washington, DC.



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Design and Physical Activity

Encouraging stair use & active transportation

Just 2 minutes (about 6 floors) of stair climbing a day burns enough calories to prevent average U.S. adult annual weight gain.

Source: U.S. Centers for Disease Control and Prevention (CDC), The Guide to Community Preventive Services, www.thecommunityguide.org/pa/pa-int-create-access.pdf)

Men climbing 20-34 flights of stairs per week have a 29% lower risk of stroke.

R.S. Paffenbarger Jr, R.T. Hyde, A.L. Wing and C.C. Hsieh, Physical activity, all-cause mortality, and longevity of college alumni, N Engl **J Med 314 (1997), pp. 605–613.**



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BUILDING DESIGN STRATEGY
Promote Stair Use



Stairs to receive plenty of **natural daylight**



Art in stairs to **increase visual interest**



Stairs **designed to invite** users

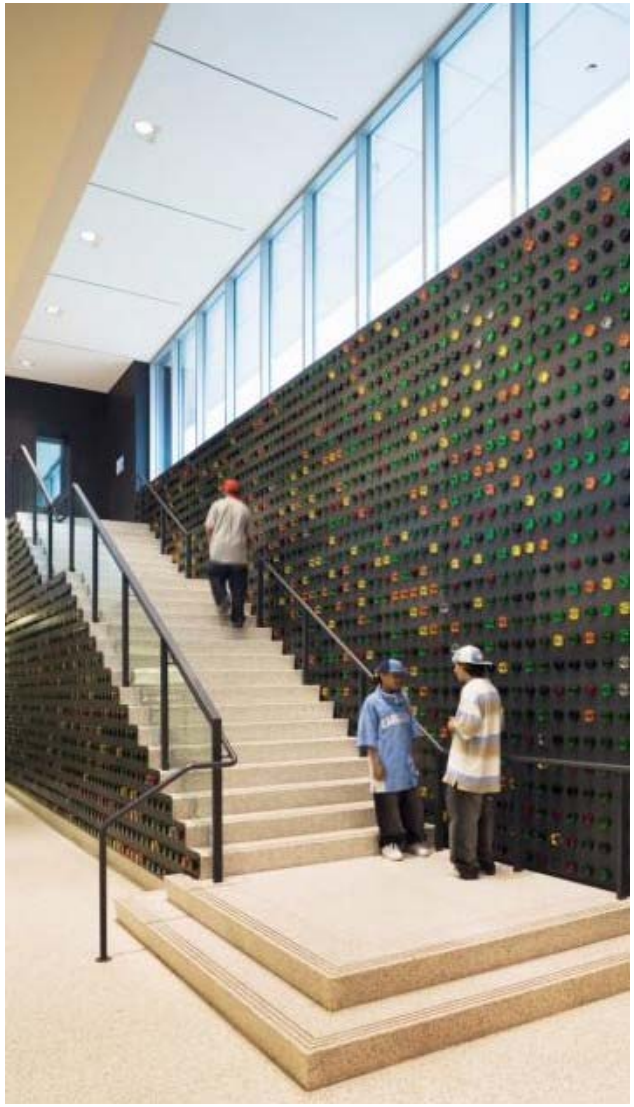
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BUILDING DESIGN STRATEGY
Stairs: Design and Aesthetics

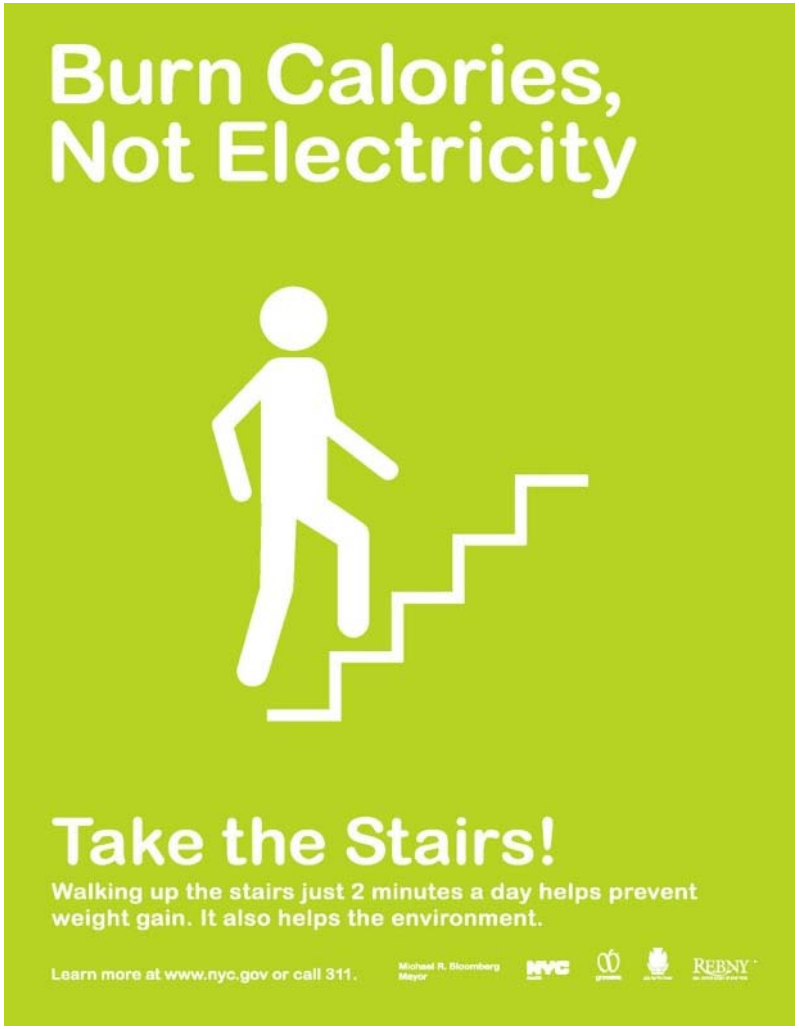
Designed to invite users

- **Daylighting**
- **Artwork**
- **Finishing**





BUILDING DESIGN STRATEGY
Stairs: Signage and prompts



Stair prompts that encourage stair use for health benefits have been shown increase stair use by a median of 50%

Guide to Community Preventive Services, Environmental and Policy Approaches to Physical Activity: Point-of-Decision Prompts to Encourage Use of Stairs, http://www.thecommunityguide.org/pa/environmental-policy/podp.html (last visited Dec. 20, 2011).

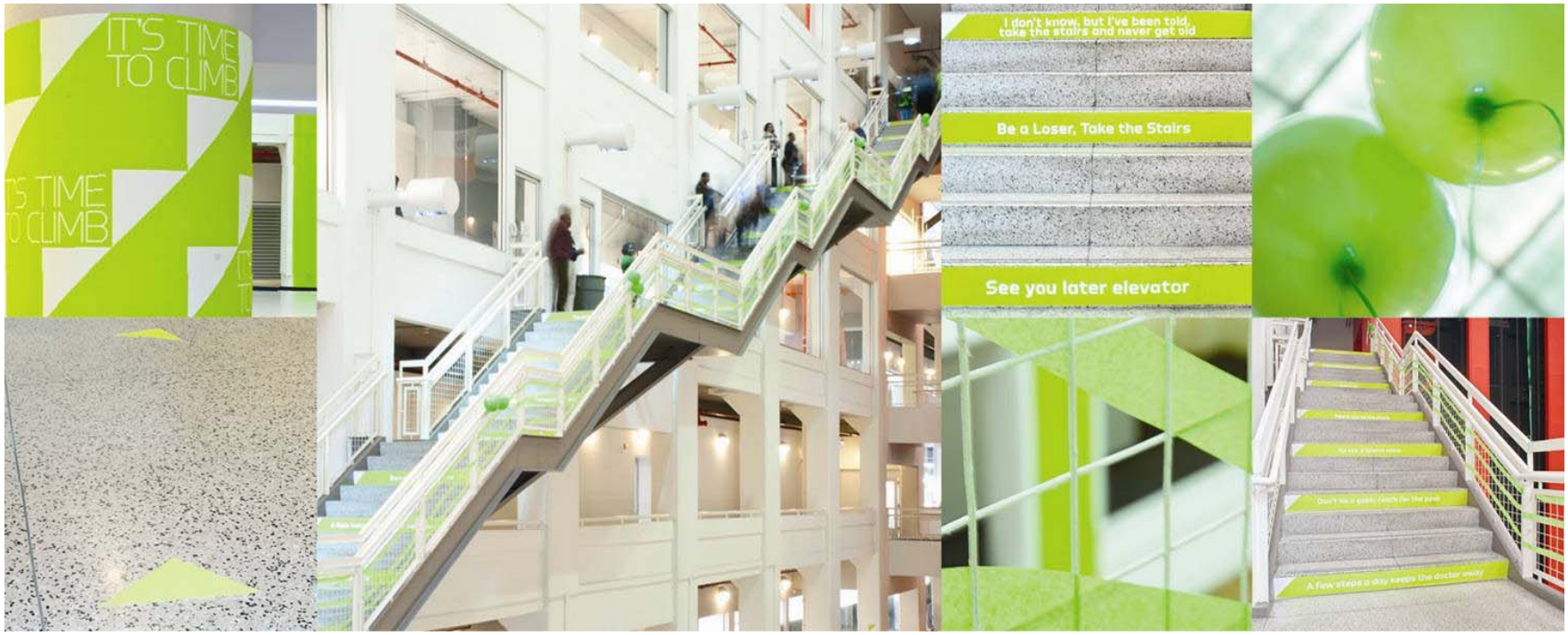




BUILDING DESIGN STRATEGY
Stairs: Programming

Motivational Signage placed at points of decision

Promoting stair use at work (i.e. Stair Week)



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Co-benefits
Environmental sustainability

Storm Water Retention:

- **Bioswales as part of street planting**
- **Increased area od pervious surface from parks**



Improved Air Quality:

- **More Trees**
- **Fewer Cars**

Reduced use of fossil fuels:

- **Fewer Car miles**
- **Clean fuel public transport**
- **Less elevator trip**
- **Less electricity used for electronics**



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Co-benefits
Universal accessibility

Streets designed for slower speeds of pedestrians
Crossing designed with curb cuts
Reduced crossing distances with refuge islands

Increased use of stair leads to readily available elevators





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Co-benefits
Economic benefits

DOT study shows:

- **49% fewer commercial vacancies at Union Square plaza**
- **172% Increase in retail sales at Pearl Street plaza and**
- **14% increase in Sales at fronting businesses**



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Co-benefits
Community Resiliency and Social Engagement

Creating a more vibrant public realm supports economic and social health of communities, mental health of individuals





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Co-benefits
Social Equity

Minority and lower-income people are more likely to live in neighborhoods with lower-quality sidewalks, fewer parks and recreation resources, and more danger from crime and traffic

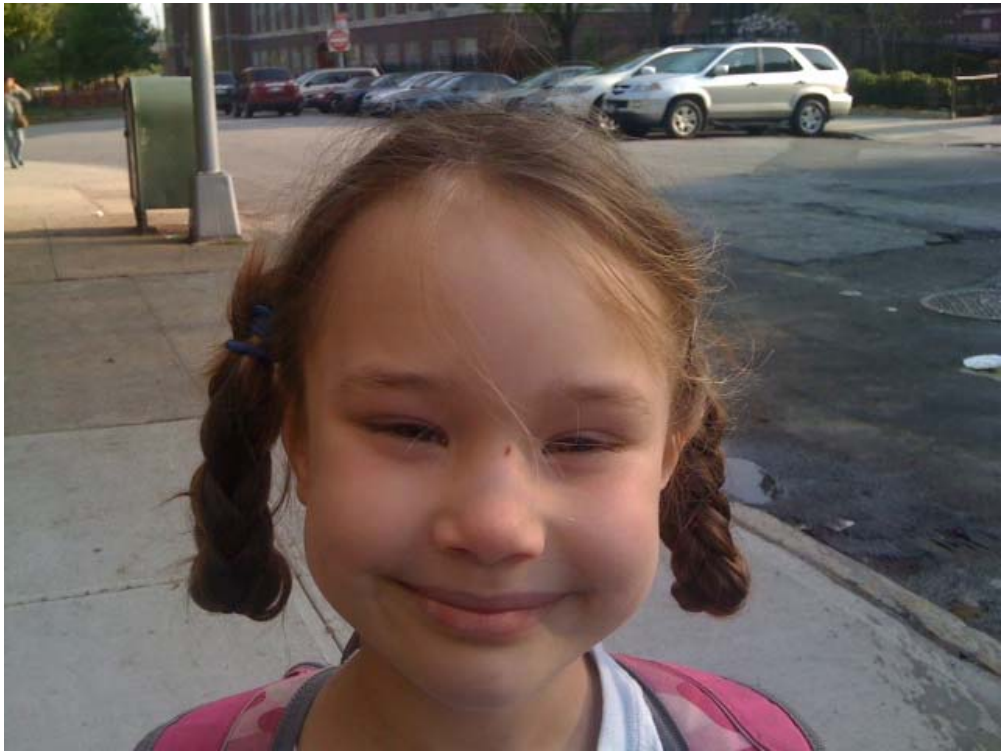
Taylor W and Lou D. Do All Children Have Places to Be Active? Disparities in Access to Physical Activity Environments in Racial and Ethnic Minority and Lower-Income Communities. A Research Synthesis. Princeton, NJ: Active Living Research, Nov 2011



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Results
In New York City

In New York City, 5.5 percent decline in the number of obese schoolchildren from 2007 to 2011



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