The Built Environment and Public Health

How planners and public health practitioners can build healthier, more livable communities

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The intersection of transportation planning and urban design to promote active modes of transportation

Outcomes
- Physical Activity
- Transportation

My Research

The Individual

The Built Environment

The Social Environment
America’s Cities Are Still Too Afraid to Make Driving Unappealing

Tough policies are the ones that would truly change commuter habits, but we’re barely seeing them.

Let’s talk seriously about why cyclists break traffic laws

By Emily Badger
January 9, 2015

Self-Driving Cars Could Be Bad for Walkable Cities

DANIEL PIATKOWSKI OCT 4, 2018

Advocates say self-driving cars will make other road users safer—but at what price?
Do We Look Fat in These Suburbs?

People in dense cities are thinner and have healthier hearts than people in sprawling subdivisions. New research says the secret is in the patterns of the streets.

JAMES HAMBLIN | AUG 13, 2014 | HEALTH

Traditional Grid Design (circa 1900)

Curvilinear Loop Designs & Beginning of Cul-De-Sacs (approx. 1930 – 1950)

Conventional Cul-De-Sac Design (since 1950)

The good news is that even modest increases in physical activity have been shown to positively impact health disparities. Health disparities are the differences in health by gender, race or ethnicity, education, income, sexuality, or geographic location. Health disparities are the differences in health by gender, race or ethnicity, education, income, sexuality, or geographic location. Data from the Centers for Disease Control and Prevention (CDC) suggests that more than half of the U.S. adult population fails to meet the minimum daily amount of recommended physical activity and that this percentage is higher than it was a generation ago.

The World Health Organization (WHO) estimates that insufficient physical activity contributes to 1.9 million annual deaths worldwide. The literature suggests that the shift in industrialized nations toward a more sedentary lifestyle is linked to the increase in obesity. The amount of time spent driving has been found to be a key factor impacting obesity risk.

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The existing literature on the impact of the built environment on travel behavior, physical activity, and health outcomes is vast. Existing literature on the impact of the built environment on travel behavior, physical activity, and health outcomes is vast. The existence of a novel assessment of streets networks, community design, and public health that can better speak to questions of health disparities and their role that street networks play in public health. Specifically, the following three points can be characterized:

(i) studies in this area now include a broader range of variables from a larger number of disciplines; (ii) these studies use more appropriate statistical methods such as multilevel, hierarchical models; and (iii) they use other researchers.
Overview

• Part 1 - Defining Terms
• Part 2 - A History Lesson
• Part 3 - Planning and Public Health Today (in the US)
• Part 4 - Solutions
Defining terms

• The built environment:
  • The physical characteristics of the places we live and work

• (associated) Health impacts:
Urban Planning ➔ Behavior ➔ Pathway ➔ Morbidity ➔ Mortality

- Physical activity
- Noise/Pollution exposure
- Mental health
- Social contacts
Part 1 - History lesson: How (and why) did we end up here?
A brief history of urban planning and public health

Ur (ancient Sumer, modern day Iraq)
The technology that solved: ”The problem of the city”

“We shall solve the city problem by leaving the city” - Henry Ford
1900-1950: A confluence of forces

1. Existing cities are deemed to be “bad”
2. Cars offer the opportunity to escape
3. Street space becomes highly regulated
4. Good roads movement gains momentum
5. New city forms are invented and codified
Fixing “bad” cities: The invention of zoning

- A system dictating possible land uses in a given geographic location

- To separate “incompatible” land uses

- Codified sprawling development
  - Single-use zoning
  - Minimum parking requirements
The Good Roads Movement

• 1916: First Federal Highway Act
• 1932: Federal gas tax adopted
• 1956: Interstate Highway Act Passed
  • Created a 41,000 mile “National System of Interstate Defense Highways”
  • Federal government would pay 90% of construction costs (up from 50%)
  • Highways became primary trade routes
New city forms are invented and codified
In the 1930s Federal Housing Administration (FHA) created publications recommending specific street patterns...

Formally endorsed hierarchical street layouts with cul-de-sacs

FHA called the grid layout: monotonous, with little character, uneconomical, and a safety issue...

“Short blocks are not economical”
”We should discourage through traffic”

FHA was not only responsible for providing both mortgages & mortgage insurance, they also reviewed subdivision plans & made recommendations based upon these standards.

Overall, FHA played a role in **over 22 million** properties before 1960.
Why does street network matter?

Do We Look Fat in These Suburbs?

People in dense cities are thinner and have healthier hearts than people in sprawling subdivisions. New research says the secret is in the patterns of the streets.

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Associated with higher rates of asthma, obesity, high blood pressure, and heart disease
One-Mile Network Distance: Traditional versus Sprawling Neighborhood

(Lawrence Frank, Sightline Institute; Steuteville, 2015)
The street network defines the types (and scale) of land uses
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Part 3: Planning and public health today

Urban Planning

Behavior

Pathway

Morbidity

Mortality

- Physical activity
- Noise/Pollution exposure

- Obesity
- Asthma
- Heart Disease
- Cancer

- Mental health
- Social contacts

Individual and Structural Context
Part 3: Planning and public health today

Physical activity is an event (not a part of normal day), and we interact primarily with those similar to ourselves.

- Driving is a necessity for most of us
- Community, and community centers, are auto-dependent
- We tend to lead private lives in private spaces
Urban vs. Rural?
(big city vs. small town)
Big cities and small towns: Built environment and health challenges

**Similarities**

- Living in an isolated area and not being able to walk to any destinations is similar to living in an auto-oriented suburb.

**Differences**

- **Scale:** Super-sized suburban problems
  - Access (e.g., transportation) burdens are multiplied
  - Resources (e.g., tax base, population) are limited
- **Demographics:**
  - Aging and shrinking
Part 4: Solutions -
Using the built environment to improve health means focusing on public space and transportation

Step 1: Rethinking public space
Step 2: Reducing red tape
Rethinking public space activity: What is transportation?

Write down a one-sentence definition of transportation:

What is the purpose(s) of transportation?

What is the form that transportation takes in US cities today?
When is transportation more than just transportation?

Write down each unique activity occurring on the streets....

~100 years ago, what was a street for?
Today, good public space is considered a fairy tale....
Venice, Italy

Greenwich Village, NYC

Boulder, CO
Part 4: Solutions -
Using the built environment to improve health means focusing on public space and transportation

Step 1: Recognizing what you have
Step 2: Rethinking public space
Step 3: Reducing red tape
Imaging what you want is pretty easy...
Existing literature on the impact of the built environment on travel behavior, physical activity, and health outcomes is vast. While these trends suggest a public health benefit of avoiding obesity and associated health disparities, it is often difficult to incorporate leisure-time physical activity into an individual's daily life. Over the last 2500 years, the way we have built our cities has evolved. This evolution can be characterized by three points: (i) studies in this area now include a broader range of variables from a larger number of disciplines; (ii) these studies use more appropriate statistical methods such as multilevel, hierarchical models; and (iii) they use evidence of the actual health disparities; evidence of the influence of the three fundamental measures of health: mortality, morbidity, and health-related quality of life.

While these trends suggest a public health benefit, this benefit is often difficult to measure. Thus, this study seeks to better understand this link to actual health outcomes and health disparities. This research seeks to provide a novel assessment of streets networks, community design, and public health that can better speak to questions of health disparities and influence of the type of street network where one resides.

The literature suggests that our older cities can help facilitate less driving and more active transportation. Literature related to travel behavior, physical activity, obesity, and more direct measures of health. We will organize this section around the last point by conducting an overview of the built environment. The good news is that even modest increases in physical activity have been shown to positively impact obesity rates, risk for certain chronic diseases, as well as mortality rates. Perhaps more critically, this issue now affects 1 in 3 children, which triples the percentage of overweight or obese children from just a generation ago. Today, over 68% of Americans over the age of 20 are overweight or obese; this number has increased from just 31.5% in 1960. The bad news is that more than half of the U.S. adult population fails to meet the minimum daily amount of recommended physical activity and that this percentage is higher than it was a generation ago. Health disparities are the differences in health by gender, race or ethnicity, education, income, sexuality, or geographic location. But do they actually have a measurable public health benefit?

Evolution of Community Design and Street Networks in the U.S.

This thinking extended into the gridiron plans of the ancient Greeks and Romans to the organic, medieval patterns found across Europe and eventually in the New World. The Renaissance helped bring orthogonal, rectilinear networks back into vogue, and these street network patterns eventually found their way into early U.S. cities such as New Haven and Philadelphia in the mid-1600s. The trend continued across the U.S. and eventually expanded to suburban areas, particularly during the late 1800s in conjunction with the burgeoning use of streetcars. Despite some variation through the years, this approach to assembling cities saw a complete overhaul over the course of the 20th century. The compact and connected ways that we built our cities for the last few thousand years are more direct measures of health. The literature suggests that the shift in industrialized nations toward a more sedentary lifestyle is linked to disparities in health. As physical activity is removed from utilitarian transportation and commute times rise, it is often difficult to incorporate leisure-time physical activity into an individual's daily life.
Part 4: Solutions -
Using the built environment to improve health means focusing on public space and transportation.

- Step 1: Recognizing what you have
- Step 2: Rethinking public space
- Step 3: Reducing red tape
Which one can you build without changing any laws?
Zoning and parking minimums
Current state of development
1. New is always cheaper
2. The bigger the better
3. Nothing can change
Part 4 - Solutions: Land use policies

• Existing zoning codes are inflexible
• Nothing can change
  • Neighborhoods cannot evolve
    • Whether we like it or not, everything changes
    • Prioritizing incremental change
• Any change occurs on the fringe or as brownfield remediation
  • Large scale
  • Costly
  • Not incremental
Making both of these viable options

Allowing for incremental neighborhood change
Solutions: The small town perspective

• Small town strengths
  • Social Capitol
  • Manageable scale (ROI)

• Small town challenges
  • Larger economic and social context
  • Limited examples of success
    • Tourist-centered
    • Education-centered
    • (Single) Industry-centered

• Small town opportunities
  • Supporting local business
  • Allowing flexibility in use and reuse of existing infrastructure
  • Prioritizing residents
    • Existing needs
    • Existing strengths
  • Work backwards from a goal
Conclusions

• The current health crises facing cities are largely a result of land use and transportation systems that
  • Limit daily physical activity
  • Limit spontaneous social interaction
  • Are particularly limiting for those unable to drive

• Historically, we have
  • Built cities around walking
  • Prioritized high-quality public spaces

• Planners and Public Health Practitioners can collaborate:
  • Change zoning codes
  • Prioritize walkable communities
  • Support affordable housing and small business growth
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How planners and public health practitioners can build healthier, more livable communities

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