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<th>Environment</th>
<th>Architecture</th>
<th>Other</th>
<th>Totals</th>
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<td>21</td>
<td>16</td>
<td>8</td>
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</tbody>
</table>
Sustainable Mobility
- Why LEED ND is so important -
How can we meet the needs of today while allowing future generations to meet their needs?
Impacts

- Economy
- Social/Equity
- Environment
Carbon dioxide

Caused by burning gasoline, natural gas, coal and oil 80%.

Black carbon & other 5%

Halocarbons produced during the industrial process 5%.

3%
Overview: Climate Change

- Greenhouse gases associated with human activities are contributing to global warming with potentially serious consequences

- Emerging U.S. policy:
  - Limit temperature increase to no more than 2° to 3° Centigrade
  - Cut greenhouse gas emissions by 60% to 80% below 1990 levels by 2050
Climate Change Goal

- Cut GHG emissions by 60% to 80% below 1990 levels by 2050
U.S. Transportation Emissions

![Graph showing transportation emissions over time](image)

Source: EPA
Projected Growth in CO2 Emissions from Cars and Light Trucks

Technology Alone Cannot Solve the Problem

Projected Growth in CO2 Emissions from Cars and Light Trucks Assuming Stringent Nationwide Vehicle and Fuel Standards*


Sources: VMT: EIA with 10% rebound  MPG: US Senate,  Fuels: C.
...Even With Very Stringent Standards

Sources: VMT: EIA with 10% rebound, MPG & Fuel: Trend Extrapolation
Supply-Side Failure

- VMT has grown twice as fast as highway capacity in the nation’s urbanized areas.
- Highway building itself induces more traffic, induces low efficiency development patterns and accelerates CO₂ emissions.
Road Building Has Not Reduced Delay

Figure 1-6 Growth of Annual Hours of Delay per Capita
Source: Schrank and Lomax 2005.
Urban Design & VMT

- Compact cities generate less VMT/capita.
- The difference (>20%) is more than can be achieved thru either alt. fuels or improved fuel economy.

**Figure 0-5**

<table>
<thead>
<tr>
<th>Average Daily Vehicle Miles Traveled</th>
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<tr>
<td>10 Most Sprawling Metropolitan Areas</td>
</tr>
<tr>
<td>10 Most Compact Metropolitan Areas</td>
</tr>
</tbody>
</table>

Research Findings 1

- No significant correlation between high density/mixed use development and congestion or delay
- Sprawl does not consistently increase or reduce congestion
- Land use mix alone can account for >20% reduction in VMT/household
Research Findings 2

- Higher gross density reduces VMT/household (big cities and smaller towns)
- Connected street networks do not reduce delay, but do reduce VMT/household
- Residents of sprawl areas exhibit lower physical activity, higher levels of obesity and other health problems
Active Living by Design

- also why LEED ND is so important -
Exposures to behaviors and our environment offer all sorts of risks. Here we present a full spectrum of exposures that caused American deaths - the size of each ring is proportional to the number of deaths from the specified cause.

Use your mouse and click the rings. See the "odds of dying" from any of the exposures presented. The "odds of dying" is reported here as the number of people expected to produce one death from a particular cause. This number is calculated by dividing the United States population, approximately 300 million people, by the number of deaths from each cause during 2002. Using this method, 771 people would be expected to yield one death from active smoking. In contrast, 5,882,353 Americans would yield one death from exposure to the dry cleaning chemical, perchloroethylene.

Active Smoking was the leading cause of exposure death. In contrast, exposure to the dry-cleaning fluid, Perchloroethylene and to numerous environmental chemicals resulted in virtually no deaths at all.
Deaths that are a consequence of obesity likely represent the second largest number of deaths produced by preventable risk factors.

The exact number of deaths attributable to obesity is impossible to measure directly because the condition of obesity is seldom listed as an underlying cause of death - thus the figures presented here are an estimate that will surely change as more data are accumulated.

Deaths that are a consequence of obesity frequently result from an array of diseases associated with obesity (including cardiovascular disease, cancer, respiratory disease, stroke, and diabetes, among others), although each of these causes of death can exist without obesity.
Obesity Trends Among U.S. Adults between 1985 and 2007

**Definitions:**

- **Obesity:** Having a very high amount of body fat in relation to lean body mass, or Body Mass Index (BMI) of 30 or higher.

- **Body Mass Index (BMI):** A measure of an adult’s weight in relation to his or her height, specifically the adult’s weight in kilograms divided by the square of his or her height in meters.
Obesity Trends* Among U.S. Adults

BRFSS, 1985

(*BMI $\geq$ 30, or $\sim$ 30 lbs. overweight for 5’4” person)
Obesity Trends* Among U.S. Adults

BRFSS, 1990

(*BMI $\geq$ 30, or $\sim$ 30 lbs. overweight for 5’ 4” person)
Obesity Trends* Among U.S. Adults
BRFSS, 1995
(*BMI ≥30, or ~ 30 lbs. overweight for 5’ 4” person)
Obesity Trends* Among U.S. Adults

BRFSS, 2000

(*BMI ≥30, or ~ 30 lbs. overweight for 5’ 4” person)
Obesity Trends* Among U.S. Adults

BRFSS, 2001

(*BMI ≥30, or ~ 30 lbs. overweight for 5’ 4” person)
Obesity Trends* Among U.S. Adults
BRFSS, 2002

(*BMI ≥30, or ~30 lbs. overweight for 5' 4" person)
Obesity Trends* Among U.S. Adults
BRFSS, 2003
(*BMI ≥30, or ~ 30 lbs. overweight for 5’ 4” person)
Obesity Trends* Among U.S. Adults

BRFSS, 2004

(*BMI ≥30, or ~ 30 lbs. overweight for 5’ 4” person)
Obesity Trends* Among U.S. Adults
BRFSS, 2005

(*BMI ≥30, or ~ 30 lbs. overweight for 5’ 4” person)
Obesity Trends* Among U.S. Adults
BRFSS, 2006

(*BMI ≥30, or ~ 30 lbs. overweight for 5’ 4” person)
Obesity Trends* Among U.S. Adults

BRFSS, 2007

(*BMI ≥30, or ~ 30 lbs. overweight for 5’ 4” person)
We cannot escape our DNA...
....no matter how hard we try
Diseases and injuries cost the lives of hundreds of thousands of Americans each year. Here, we present the 15 leading causes of death - both diseases and injuries are represented.

Use your mouse and click the rings. See the "odds of dying" from any of the diseases or injuries presented. The 'odds of dying' is reported here as the number of people expected to produce one death from a particular cause. This number is calculated by dividing the United States population, approximately 300 million people, by the number of deaths from each cause during 2002. Using this method, 771 people would be expected to yield one death from active smoking. In contrast, 5,862,353 Americans would yield one death from exposure to the dry cleaning chemical, perchloroethylene.

Explore the other Risk Ring page, Exposures, by pressing the menu button at top. Or visit the Riskometer, and the Data pages.

Leading Causes of Death, 2002
Source: American Council on Science and Health
2002 data based on 2,443,387 total U.S. deaths
Pedestrian Survival Rates – Vehicle Speeds

% survive

<table>
<thead>
<tr>
<th>Speed (mph)</th>
<th>20mph</th>
<th>30mph</th>
<th>40mph</th>
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<tbody>
<tr>
<td>% survive</td>
<td>95%</td>
<td>55%</td>
<td>15%</td>
</tr>
<tr>
<td>% die</td>
<td>5%</td>
<td>45%</td>
<td>85%</td>
</tr>
</tbody>
</table>
Conventional Street Design

Life at > 35 mph
Context-Sensitive Design
- how we reduce auto dependency -
Transect as Organizing Tool
Transect as Organizing Tool

TRANSECT ZONING CATEGORIES

T1 RURAL RESERVE
T2 RURAL PRESERVE
T3 SUB-URBAN
T4 GENERAL URBAN
T5 URBAN CENTER
T6 URBAN CORE

U1 KARLET
U2 VILLAGE
U3 TOWN
U4 CITY

URBAN VILLAGE
QUARTER (KRIER)
TRANSIT ORIENTED DEVELOPMENT - URBAN TOD
TRADITIONAL NEIGHBORHOOD DEVELOPMENT - TNOD
LIVABLE NEIGHBORHOOD
NEIGHBORHOOD UNIT - 1929
CELL

CORRELATION OF COMMUNITY NOMENCLATURE
CONTEXT:
Right Tools for the Right Place

DPZ Transects
CONTEXT:
Right Tools for the Right Place

SmartCode 9.0
Context: Right Tools for the Right Place

www.ite.org/css/
Context-Sensitive Overview of Transportation Modes and Facilities
AUTOMOBILES
- Design Speed
- Lane Widths