

Sustainability Makes Dollars and Sense

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AN INTRODUCTION

Environment Omaha has suggested many changes in the metropolitan Omaha area in the hopes of improving Omaha's environment. We all want a better environment, but is it practical? What will it cost and what improvements can we expect? This document provides answers to these questions focusing on each of the five content areas of Environment Omaha's study: the natural environment, urban form and transportation, building construction, resource conservation, and community health.

What follows is a rich source of facts, case studies and comparisons that illustrates how these changes will affect Omaha. It also compares Omaha to similar cities to show where we stand. There is something for everyone here, because we all breathe, drink water, eat, travel, and use buildings. This study shows the costs and the benefits of many decisions that we make in our businesses and homes. For example:

- It costs more to build a building to higher environmental standards, but the long-run savings outstrip the costs. Water and light are used more efficiently, and employees working in a better building are more productive and healthier.
- Parks provide recreational opportunities, enhance land values, and increase the physical activity of both adults and children which yields significant short- and long-term health benefits.
- Reducing traffic saves money for the vehicle owner and the taxpayer; and reduces congestion, vehicle crashes, and air pollution. Rates of lung diseases and cancer also fall as air pollution is reduced.

This study is suggestive, but not definitive in evaluating environmental and infrastructure investments. Any specific case may differ from the results cited here, but the evidence is strong and compelling. Investors that carefully analyze the financial impact of their decisions often find they get a better return by taking a holistic, long-term approach.

As you finish reading this brief document you will remember something you already knew but may have forgotten: every living thing is connected. Therefore, waste does not go away but stays with us. We need to put all resources to their best use. So it is not a surprise that good environmental decisions are also good economic decisions.

THE NATURAL ENVIRONMENT

Case Study: “High Emitter” Households

The Center for Neighborhood Technology (<http://htaindex.cnt.org>) maintains data on housing affordability and commuting costs for every metropolitan area across the U.S. The statistics are used to geographically show which neighborhoods are experiencing the most financial stress when housing and commuting costs constitute large (and growing) portions of net household income. The data, however, also show which neighborhoods are driving the most, spending the most per month on gas, and emitting the most carbon dioxide, among other data points.

For the Omaha metropolitan area, the CNT reports that a significant portion of Omaha’s households are spending more than \$3,000 each year on gasoline alone – 32% of those living west of 72nd Street spent more than \$3,600 in 2008. Distance from work is clearly a decisive factor in commuting costs since only 8% of Omahans living east of 72nd Street spent more than \$3,600 on gasoline in 2008. What is notable, however, is the fact that in 2000, only 2% of Omahans paid more than \$1,800 on gasoline. Many authors and cities have noticed the oversized role that transportation plays in household finances, and this is evidenced locally. The average household in Omaha pays just over \$8,900 each year on automobiles alone.

The natural environment, though, also pays a steep cost. Of the households east of 72nd Street, 4% are “high emitters” – meaning they send more than 8.6 tons of CO₂ into the atmosphere each year; this compares to 51% of households west of 72nd Street which are high emitters. The effects of commuting in single-occupant vehicles are large, both on pocketbooks and the world around us, and where we live and how far we commute impacts us, the people around us, and future generations.

Open Space & Parks

- According to the Trust for Public Lands, Omaha’s 9,560 acres of public parkland represents 12.9% of the total land area in the city. This percentage is very similar to Lincoln’s 12.4%, lower than Minneapolis’ 16.7%, and significantly lower than New York, San Francisco, Washington, D.C., and Boston, all of which devote more than 16% of urban space to parks. However, both Denver and Kansas City, with 6% and 8.6% respectively, pale in comparison to Omaha.
 - ❖ Omaha’s 90 miles of hiking and biking trails and active biking community recently earned the city the rank of 42nd on *Bicycling Magazine’s* “America’s Best Bike Cities 2010.” Minneapolis was ranked first, Denver 12th, Sioux Falls 31st, and Kansas City 33rd.
 - ❖ Richard Florida claims that cities attractive to the “Creative Class” provide “peak lifestyle experiences” through outdoor recreation that is nearby, active, and can be pursued individually.
- Large cities are beginning to find creative ways to share space with both park and transportation functions. Seattle, in the 1990s, put a “freeway cap” over I-5 near downtown, thus building a park over the highway; San Francisco replaced the Embarcadero Freeway with an at-grade, tree-lined boulevard and a 25-foot pedestrian walkway; Boston replaced its elevated freeways downtown with an expensive tunnel system; and New York, already having removed elevated portions of the West Side Highway, is currently debating whether to remove the I-895 corridor in Brooklyn and replace it with a waterfront park system.
- Parks and open spaces provide important, non-financial benefits – things like the mental health value of a walk in the woods or exposing children in urban settings to nature.
 - ❖ Other aspects of parks have a direct financial impact. Washington, D.C. receives almost \$7 million in additional property tax revenue simply because some properties are 5% more valuable because of proximity to a park.

- ❖ Homes in Portland, OR within 600 feet from a natural preserve were 19.1% more valuable than those farther away; a study of Boulder, CO found that home values decline \$4.20 for every foot the house is located farther from a greenbelt. Researchers, using U.S. Army Corps of Engineers' data, estimate that general park use (activities like dog-walking, picnicking, sitting, or playground use) are worth \$1.91 per person, per use. Athletic activities like tennis, team sports, biking, swimming, and running are worth \$3.05 per person, per use. And special uses like golfing, festivals, concerts, and special attractions are worth \$9.33 per person per use.
- ❖ Park usage in Omaha is worth between \$40 million and \$60 million, based on usage estimates provided by the city's Parks and Recreation Department.
- Cities like Omaha are concerned with the "highest and best use" of undeveloped land – that is, what type of development will accrue the greatest contribution to the local economy. It is often assumed that residential developments constitute the highest and best use of land, but they also incur significant costs compared to other land uses:
 - ❖ Commercial and industrial uses consume \$.27 of public services for every \$1 of tax revenue generated;
 - ❖ Forests, farms, and open spaces consume \$.35 of public services for every \$1 of tax revenue generated;
 - ❖ Residential neighborhoods consume \$1.16 of public services for every \$1 of tax revenue generated.
- Thus, the conversion of open land into residential developments could exacerbate the financial problems of cities particularly for low density neighborhoods.

Tree Canopies

- Omaha's 3.9 million trees provide a tree canopy over 21.2% of the city. According to the Nebraska Forest Service, the city's canopy cover is currently about half what it was in 1977.
 - ❖ Omaha's tree canopy coverage compares favorably to Lincoln's 15.8%, but pales in comparison to the national average of 27.1% for urban areas.
 - ❖ American Forests recommends 50% tree canopy cover in suburban residential areas, 25% in urban residential areas, and 15% in urban downtowns.
- Omaha's urban forests face concerning threats including the Asian longhorned beetle, gypsy moth, Dutch elm disease, and the emerald ash borer.
- Using valuation assessments from the U.S. Forest Service, and estimates from the Nebraska Forest Service, Omaha's 3.9 million trees:
 - ❖ Capture 21 trillion gallons of rainwater each year, which otherwise would fill the city's stormwater drainage systems;
 - ❖ Remove 689,084 tons of carbon from the air – including 3 million pounds of ozone and 3 million pounds of particulates;
 - ❖ Reduce summer air-conditioning costs by 56% of what they would be without trees, and reduce winter heating costs by 25%;
 - ❖ Add 1% to home sales prices – resulting in \$4.2 million in annual tax revenue for the City of Omaha alone;
 - ❖ Provide total benefits of \$265 million per year to the residents of Omaha.

Sprawl Mitigation

- The Omaha metropolitan area has been ranked as the 15th *least* sprawling metro in the U.S. (the fourth least sprawling metro among those Omaha's size). Eighty five percent of residents in the Omaha area live in an urbanized area which compares to Lincoln's 91%, Kansas City's 80%, Des Moines' 73%, and Denver's 85%.

URBAN FORM & TRANSPORTATION

Case Study: Vancouver, British Columbia

In the summer of 2009, the City of Vancouver, British Columbia embarked on an experiment. A major, congested bridge connecting downtown with populous southside neighborhoods and suburbs was proving dangerous to cyclists and pedestrians. Some officials estimated that two cyclists per month ended up in the emergency room because of incidents on the bridge. The city, wanting to encourage safe, active, and environmentally-friendly transportation, decided to close one lane in each direction of the six-lane bridge to automobiles for a three month trial period, giving pedestrians and cyclists their own dedicated lane in each direction. Skeptics predicted gridlock; the downtown business community feared they would be cut off from shoppers; and taxpayers worried about the cost. Instead, everyone – city planners included – was surprised by what happened.

Instead of gridlock, congestion actually *decreased*. It became easier for automobiles to cross the bridge because other modes of transportation were suddenly more attractive. The number of cyclists riding across the bridge jumped by 26%; female cyclists, a gauge for how safe biking in a city is, increased by 31%. Overall, the city estimated that 70,000 *more* trips were made across the bridge into downtown after the lane readjustments. Rather than each person bringing their personal automobile into downtown, they were riding mass transit, biking, or walking. And more of them came because it was safer and easier. Vancouverites from all parts of the city supported the changes by a margin of 2 to 1. Not surprisingly, the city has decided to make the changes permanent.

Transportation

- The Omaha metropolitan area has 1 mile of mass transit per capita, below the U.S. metropolitan average of 1.87 miles per capita. This compares to 1.43 miles per capita for Des Moines, 4.34 for Denver, 1.21 for Kansas City, 4.20 for Minneapolis-St. Paul, and 1.05 for Lincoln.
 - ❖ 83% of Omaha metropolitan residents commute to work by automobile, which compares to 76.2% of Denver area residents, 81.9% of Des Moines residents, 80.6% of Lincoln residents, 82.7% of Kansas City residents, and 78.7% of Minneapolis-St. Paul residents.
 - ❖ In 2007, 1.2% of metropolitan-area residents used mass transit to commute to work and 1.9% walked to work, compared to (Minneapolis) 4.8% commute via transit, 2.5% walk; (Wichita) 0.6% commute via transit, 1.6% walk; (Kansas City) 1.3% commute via transit, 1.4% walk; and (Denver) 4.8% commute via transit, 2.2% walk.
- According to the Integrated National Transit Database Analysis System, peers of Omaha's Metro system include Central Oklahoma Transportation and Parking Authority (COTPA) in Oklahoma City, OK; Birmingham-Jefferson County Transit Authority (BJCTA) in Birmingham, AL; and ABQ Ride in Albuquerque, NM.
 - ❖ Metro's 2008 operating budget of \$19.3 million was more than COTPA's \$17 million, less than BJCTA's \$20.3 million, and significantly less than ABQ's \$35.7 million.
 - ❖ In 2008, Metro's funding was \$29.52 per capita of Douglas County residents, ranking the metro area 238th of the 280 largest metro areas' transit systems in the nation in per capita funding. *Metro's funding compares to \$155.58 per capita in Denver; \$93.73 in Minneapolis; \$83.11 in St. Louis; \$67.27 in Louisville; \$53.15 in Albuquerque; \$48.46 in Kansas City; \$39.90 in Sioux Falls; \$39.47 in Topeka; \$39.34 in Des Moines; \$36.06 in Lincoln; \$30.92 in Birmingham; \$29.54 in Sioux City; \$28.67 in Tulsa; \$25.79 in Detroit; \$24.47 in Wichita; \$21.97 in Oklahoma City; \$20.97 in Fargo; and \$19.27 in Youngstown.*
- By comparison, \$179 per capita was spent on roads in the city of Omaha in 2002, compared to Kansas City's \$168; St. Louis's \$142; Denver's \$247; and Minneapolis-St. Paul's \$256.

- ❖ In 2002, Omaha spent \$51,840 per highway lane mile, more than Kansas City's \$37,763; St. Louis's \$38,201; and Indianapolis's \$51,591; but less than Minneapolis-St. Paul's \$68,936 and Denver's \$81,414 (both are highly fragmented metro areas in which the central city has a much smaller share of metropolitan population than Omaha).
According to the University of Central Florida, one mile of an urban freeway costs 2,500 times more per mile to build than a shared-use bike route.
Kiplinger notes that a 10-mile round-trip commute made by bike rather than car saves the commuter \$4.04 per day (\$1,050 per year), not including the cost of parking.
- ❖ As of 2008, Douglas County had .47 highway lane miles per capita, similar to .47 lane miles in Detroit and .48 in Washington, D.C., more than Portland, OR's .44, Philadelphia's .43, and Chicago's .33; less than Minneapolis's .65 and Denver's .6; and significantly less than Oklahoma City's .88, Birmingham's .99, St. Louis's 1.02, and Kansas City's 1.25.
- According to the Center for Neighborhood Technology, 23% of Omahans paid more than \$3,600 for gasoline in 2008. In 2000, less than 2% of Omahans paid more than \$1,800 for gasoline.
 - ❖ In 2008, only 8% of Omahans living east of 72nd Street paid more than \$3,600 for gasoline, compared to 32% of those living west of 72nd Street.
- 66% of Omahans living west of 72nd Street spent more than \$860 per month on transportation costs in 2008, and 81% reported not having ridden mass transit at all in 2008.
 - ❖ 22% of Omahans living east of 72nd Street spent more than \$860 per month on transportation costs in 2008, and 46% had ridden mass transit at least once in 2008.
- Across the nation, mass transit spurs economic development in urban areas.
 - ❖ According to the American Public Transit Association, for all cities in the U.S. in 2008, for every \$1 invested in public transportation, \$5 was generated in economic returns.
Every \$1 invested in public transportation returns up to \$3 in business sales.
The Victoria Transport Policy Institute reports that every \$25,000 invested in public transportation creates 1 job; every \$1.5 million invested in highway spending creates 1 job.
 - ❖ Mass transit is a source of tax revenue through increased sales, property valuations, and wages.
Northern Virginia has generated \$2.1 billion in increased tax revenues from the suburban D.C. Washington Metrorail system.
Taxable value around transit stations in Dallas was 25% higher than comparable locations in the metropolitan area.
 - ❖ Individuals in transit-intensive areas save \$22 billion in transportation costs each year.
Individuals can save \$8000 by using public transportation and by living with one less car.
83% of the elderly say public transit provides easy access to things needed for everyday life.
Public transit is a vital link for 51 million Americans with disabilities.
 - ❖ Americans support increased funding for public transit.
76% of all transit-related ballot initiatives in the U.S. were passed in November, 2008.
In a 2009 survey, 92% of Omaha's young professionals want to see improved public transportation options.
- Urban Street Building Patterns
 - ❖ A 4-lane arterial, with a 45 mph speed limit, moves 2,400 vehicles per hour; Two 2-lane surface streets, with a 30 mph speed limit, moves 3,600 vehicles per hour.
Areas with low street connectivity (for example, suburban style neighborhoods with cul-de-sacs) worsen traffic by funneling it to main arterials which have to be widened when growth occurs.
Areas with high street connectivity with a grid network of streets (for example, most of Omaha east of 72nd Street) disperse traffic by providing more routes. Increased traffic is accommodated through multiple modes.
 - ❖ Of the 180 needed street and highway improvements identified by MAPA, less than 10 are in Omaha, east of 72nd Street.

Parking

- Because 99% of all trips by personal car in the U.S. use a free parking place, parking is subsidized, thereby encouraging more driving.
 - ❖ Current estimates place the subsidy of free parking at \$5 per day, per driver.

Urban Form

- Omaha continues to compare well to other U.S. cities in terms of sprawl. The Smart Growth Network recently ranked Omaha the 5th least sprawling metropolitan area of the largest 83 metropolitan areas in the nation.
 - ❖ The Omaha area ranked 7th in the country for having a strong downtown.
 - ❖ The metropolitan area ranked 18th for encouraging mixed uses through zoning.
 - ❖ Omaha ranked 35th for both population density and street connectivity.
- Omaha's population density of 3,480 people per square mile is significantly lower than Minneapolis's 7,023 and St. Louis's 5,761; lower than Portland's 4,215 and Denver's 4,124; and higher than Des Moines' 2,618, Cedar Rapids' 2,031, Kansas City's 2,402, and Wichita's 2,370.

BUILDING CONSTRUCTION

Case Study: A Pennsylvania manufacturing firm

In 2003, a Pennsylvania company built a new 37,000 square foot facility for its manufacturing operations and headquarters. The 45-employee company decided to build to LEED's Silver rating by relocating on a 17-acre brownfield site in an urban area. In addition to its reclaimed brownfield location, the new facility featured automated lighting sensors, natural ventilation, clerestory windows, VOC-free carpet and paints, and carpet and partitions made from recycled materials.

Employee surveys done before and after the company's move to its new facility suggests that employee productivity rose by as much as 36%, at least partially due to the building's green features. Self-reported employee satisfaction rose substantially among all types of employees, with most changes attributable to better lighting, including more daylight; better air quality; closer regulation of air temperature; and better use of outdoor views from employee workspace.

A post-move cost-benefit analysis reveals that the per-square-foot cost of the new facility is almost 20% lower than the old, non-green building – even without factoring employee productivity. Per-square-foot water consumption fell from 12.47 gallons in the old building to 8.24 gallons; total energy consumed per square foot fell 42%, from one million BTUs per square foot to 675,000. Analyzing the choice to build green, the company's executives concluded that it made sense environmentally and financially.

One often-overlooked aspect of the benefits of green buildings are human resource-related. Ninety-four percent of a facility's per-square-foot costs are worker-related – including salaries. Thus, any improvements to worker productivity are reductions of a company's per-square-foot costs, and green buildings result in more satisfied, healthier, and more productive employees.

Green Buildings

- Costs
 - ❖ A LEED certified office typically costs 0.66% more to build than a non-certified building; a silver rating costs 1.91% more; gold, 2.23%; and platinum, 6.8%.
Average extra cost of green buildings is between \$3 and \$5 per square foot more than non-green buildings.
- Benefits - environmental protection, occupancy, and health impacts.
 - ❖ Buildings cause 50% of the nation's carbon emissions, more than the transportation or industrial sectors combined.
 - ❖ According to U.S. Green Building Council data, a LEED certified building is 8% more energy efficient than a non-certified building; a LEED silver building is 30% more efficient; and gold, 37% more efficient. On average, buildings built to LEED specifications across all levels are 28% more energy efficient than those not built to LEED specifications.
 - ❖ Green buildings on average decrease water use by 40% and waste-related costs by 70% more than non-green buildings.
 - ❖ Over 20 years, the energy costs of green buildings are roughly \$5.80 per square foot lower than non-green buildings.
Net benefits of green buildings over 20 years ranges between \$53 and \$71 per square foot.
 - ❖ The average LEED building between 2003 and 2007 sold for 10% more than non-LEED buildings.

- ❖ A 2008 study in San Diego found that LEED-certified office buildings had occupancy rates 3-4% higher than non-LEED-certified buildings, Energy Star buildings had occupancy rates 2% higher than non-Energy Star buildings. The same study found that LEED-certified office buildings generally commanded per-square foot rents 38% higher than non-LEED-certified buildings.
- ❖ According to the U.S. Green Building Council, silver-certified LEED buildings improve the indoor environmental quality by 56% and gold by 88%.
- ❖ According to the *Building Research & Information* academic journal, green buildings frequently feature:
 - Ventilation systems which reduce air borne harmful microbes;
 - Lower toxicity of furniture and various building materials;
 - More daylight;
 - Indoor plants and natural vegetation.
- ❖ Improved air quality and access to daylight and natural vegetation has been shown to have significant productivity implications, leading to lower worker absenteeism and reduced exposure to “Sick Building Syndrome.”
 - Worker productivity in green building offices is 2-16% higher. Worker-related costs, including salaries, account for 94% of a building’s total per-square foot cost.
- New construction vs. renovation
 - ❖ Due to the individual, site-specific nature of construction projects and the many variables involved, it is not possible to uniformly say which option is the least environmentally invasive. However, the Athena Institute created a tool to help determine whether new construction or renovation is a better option: <http://www.environmental-expert.com/files/3712/articles/4009/4009.pdf>
- Nebraska
 - ❖ As of July 28, 2010, there were 17 buildings in the state certified by LEED, 9 of which are in the Omaha metropolitan area.
 - ❖ As of 2006, Omaha had 2 gold- or platinum-level LEED-certified buildings, more than Minneapolis, Kansas City, or St. Louis (which each had 1), and Des Moines, Wichita, and Sioux City (which had none).
 - ❖ Once completed, TD Ameritrade’s new headquarters in Old Mill will be one of the largest Platinum LEED-certified buildings in the nation.

Green Roofs

- Depending on urban building density, roofs represent as much as 32% of horizontal surface area in cities and 40-50% of all impermeable surfaces. The environmental benefits of “green roofs” are a reduction in rainwater runoff; heat insulation, resulting in lower cooling costs; sound insulation; air quality improvements, significant for human resource concerns; and reduction of urban heat island impacts.
 - ❖ A 3,500 square feet roof can capture as many as 52,000 gallons of rainfall. Some estimates indicate that each dollar invested in green roofs generates a dollar savings in sewer overflow systems.
 - ❖ The cooling cost reduction for an 8-story building is approximately 10% and for a 2-story building costs decline by as much as 50%.

RESOURCE CONSERVATION

Case Study: San Francisco, California

In the fall of 2009, San Francisco, California enacted one of the most progressive recycling programs in the country. Enacting a city-wide composting program, residents were given three bins – one for landfill-bound trash, one for recycling, and one for food scraps and leftovers. The city enacted the program in response to citizen queries about what they could do to protect the environment. As the city's sustainability officer notes, composting costs very little, it's very simple for residents to do, and it does not require a complex municipal system to administer.

Since the program went into effect, San Franciscans are composting between 400 and 500 tons of food waste each day, which the city then sells to area farms and wineries in the Napa Valley. The program has also had significant benefits for landlords who have been able to reduce their garbage collection service by as much as 50%; for apartment dwellers who no longer have to tolerate the stench of garbage; and for the city as a whole which is now diverting 72% of its garbage stream away from landfills. The program, city officials say, is an important step toward the city's ultimate goal of sending *no* waste to landfills by 2020.

Climate Change Impacts

- The consumption of fossil fuels has been estimated to account for almost 2/3 of global emissions of greenhouse gases, with the U.S. share projected to rise 39% between 2002 and 2025.
- Globally, 2010 has been the warmest year on record to date.
- Certain land use patterns have been shown to negatively affect attempts to reverse climate change.
 - ❖ Exposure to extreme heat and cold cause increased rates of death, particularly unseasonably hot days that occur in late spring or early summer. Urban heat islands exacerbate this problem.
 - ❖ Urban heat islands, at least partially caused by suburban sprawl, lower the rate of evaporation, increase the amount of heat stored in the atmosphere, remove vegetation, and cover permeable, natural surfaces with impermeable asphalt and rooftops. More dense building patterns would help alleviate this problem.

A 2008 study found that summers are growing hotter at a faster rate in U.S. cities which have sprawled more than those which have maintained higher levels of density.

Pollution

- According to the Center for Neighborhood Technology, 32% of households east of 72nd Street emit more than 6.5 metric tons of CO₂ per year (4% emit more than 8.6 tons of CO₂ per year). This compares to 77% of households west of 72nd Street which emit more than 6.5 metric tons of CO₂ per year (51% emit more than 8.6 tons of CO₂ per year).
- According to Bert Sperling and Peter Sander, Omaha's metropolitan air quality – composed of particulates, ozone, and byproducts – scored 34 on a scale of 1-100, where 100 is best. This compares favorably to other regional metropolitan areas: Minneapolis/St. Paul, 29; Lincoln, 35; Kansas City, 30; Wichita, 24; Des Moines, 34; and Denver, 27; but is noticeably lower than the total U.S. average of 37.
- According to Bert Sperling and Peter Sander, Omaha's water quality – including but not limited to drinking, storm runoff, and groundwater – scored 54 on a scale of 1-100, where 100 is best. This compares to other regional metropolitan areas: Denver, 87; Des Moines, 61; Kansas City, 33; Lincoln, 31; Minneapolis/St. Paul, 23; and Wichita, 39; and is slightly higher than the national average of 52.

- Cancer mortality measures the amount of pollution exposure. In the Omaha metropolitan area, the CDC reports that 223 people out of 4,000 can be expected to die of cancer. This compares to 146 in Denver; 230 in Des Moines; 211 in Kansas City; 209 in Lincoln; 192 in Minneapolis/St. Paul; and 216 in Wichita.
- The National Morbidity, Mortality, and Air Pollution study estimates as many as 52,000 deaths are caused by air pollution in the U.S. each year. Omaha's share would be 353 deaths per year, assuming Omaha's air pollution – and exposure to air pollution – is equivalent to the national average.
 - ❖ More people in the U.S. die each year from air pollution than from firearms, illicit sexual behavior, and illegal drug use combined.
 - ❖ One European study found that half of all morbidity from air pollution is a direct consequence of the prevalence of motorized vehicles.
- Per capita vehicles miles traveled (VMT) is almost 10 times larger than in 1950.
 - ❖ Individuals in the Omaha area drive 22.7 miles per capita; slightly less than the national average of 24 miles per capita.
- Pre-natal exposure to air pollution is correlated with fetal demise, pre-term delivery, and low weight at birth.
 - ❖ A study of suburban Buffalo, NY found correlations between rates of asthma in children and vehicle counts on streets in the child's neighborhood; higher traffic counts led to higher incidences of asthma in children.

Alternative Energy

- Wind energy has been described as “capital-intensive.” Turbines and the physical, mechanical parts account for 71% of the total costs, while connection to the existing electrical grid accounts for 12% of capital expenses.
 - ❖ European case-studies show that operation and maintenance represents the fastest-falling cost category because economies of scale can be achieved. German wind turbines have experienced downtime of less than 2% since 1997 helping lower per-kilowatt hour costs.
- The factor that has the greatest impact on reducing the per-kilowatt cost of wind energy is simply the presence of wind. Thus, a wind farm in Nebraska would have a lower per-kilowatt hour cost than a wind farm in the Southeast U.S. because of environmental and geographical conditions creating windier conditions.
- Wind turbines today generate 180 times more electricity than those in 1986 – and at half the total, per-kilowatt hour cost. This is partially due to larger turbines, economies of scale, reduction of the civil costs of building wind farms, active public and private research and development, and improvements in the supply chain. Costs were projected to fall an additional 10% by 2030, and a further 5% by 2050.
- Nebraska produced 73 megawatts in 2006 and was ranked 18th in megawatt capacity from wind powered sources. Kansas produced 365 megawatts; Iowa, 931; Minnesota, 895; Colorado, 291; and North Dakota, 178. Wind power accounted for 1.0% of electrical power purchased in Nebraska, significantly below Iowa's 6%, North Dakota's 5.1%, Wyoming's 5.1%, Minnesota's 3.8%, Oklahoma's 3.5%, Kansas's 3.1%, and South Dakota's 1.5%.

COMMUNITY HEALTH

Case Study: Tremont Community Garden, Bronx, New York

The term “food desert” has created a growing awareness about the lack of ability to purchase fresh fruits and vegetables in large portions of American cities. Residents of food deserts, who are disproportionately poor and minority, often have plenty of fast food and convenience store outlets from which to purchase food, but this has resulted in significant diet-related community health issues. Following a diet plan recommended by a doctor is extremely difficult for people who live in neighborhoods with no grocery stores or markets.

To address this and other community deterioration concerns, the Trust for Public Land in East Tremont in the Bronx, New York, maintains the Tremont Community Garden on land which formerly served as a dumpsite. The community garden today has 40 members – along with a waiting list – and for \$25 a year, residents can grow their own fresh food in the urban environment. Elementary students, sponsored by a nearby church, help with chores and garden in their own small plot; teenagers play basketball nearby and protect the garden against vandalism. The Trust for Public Land reports that the community garden has played a role in stabilizing the community, become a catalyst for neighborhood action, and helped “green” the neighborhood, all while providing residents with fresh fruit and vegetables.

Obesity

- 66.3% of all adults in the U.S. above the age of 20 were overweight or obese in 2003.
 - ❖ Child and teen obesity rates are 4-5 times greater than in the early 1970s.
 - ❖ 29% of Nebraskans are obese; 50% more than in 1990.
- The CDC estimates that obesity contributes to 300,000 premature deaths each year.

Parks & Land Use

- The CDC recommends that all urban residents live within ¼ mile of a park or green space.
 - ❖ Scholarly articles estimate that access to a park, green space, or place to exercise results in a 5% increase in aerobic capacity, weight loss, and feeling more energetic.
 - ❖ The RAND Corporation found that girls who live close to parks are much more physically active than their counterparts who live farther away.
- The provision of parks and green space in the U.S. is correlated with income and race – poor and minority communities have much less access to parks than wealthier communities.
- RAND further found that living in a sprawling area automatically ages its residents by 4 years because of reliance on the personal automobile and less biking and walking.
 - ❖ Residents of sprawling areas walk less and have higher body weights and higher rates of hypertension than their counterparts in more densely populated communities.
 - ❖ In Atlanta, residents of sprawling neighborhoods were 35% more likely to be obese than residents of compact neighborhoods.
- Each hour spent driving each day corresponds to a 6% increased risk for obesity.

Transportation

- The *American Journal of Public Health* reported, “land-use and transportation decisions can facilitate or obstruct the creation and maintenance of healthy communities.”

- 14% of trips taken by automobile in the U.S. are less than ½ mile in distance; an additional 27% of trips are less than 1 mile in distance. A total of 63% of all trips taken by automobile are less than 5 miles in distance, which the CDC calls “bikeable.”
- The American Public Transportation Association reported in August, 2010 that individuals in transit-intensive areas exercise more often, have longer life expectancies, and are healthier than residents of communities without quality mass transit. Communities with quality public transportation also have lower rates of pollution and fatal car wrecks.
- Data compiled by the Victoria Transport Policy Institute also show that transit users are more than five times likely to walk daily compared to non-transit users. This was true across all income levels.
 - ❖ Americans who ride mass transit walk an average of 19 minutes per day, compared to the 6 minutes walked by non-transit riders.

Pollution

- Cancer mortality measures the amount of pollution exposure. In the Omaha metropolitan area, the CDC reports that 223 people out of 4,000 can be expected to die of cancer. This compares to 146 in Denver; 230 in Des Moines; 211 in Kansas City; 209 in Lincoln; 192 in Minneapolis/St. Paul; and 216 in Wichita.
- The National Morbidity, Mortality, and Air Pollution study estimates as many as 52,000 deaths are caused by air pollution in the U.S. each year. Omaha’s share would be 353 deaths per year, assuming Omaha’s air pollution – and exposure to air pollution – is equivalent to the national average.
 - ❖ More people in the U.S. die each year from air pollution than from firearms, illicit sexual behavior, and illegal drug use combined.
 - ❖ One European study found that half of all morbidity from air pollution is a direct consequence of the prevalence of motorized vehicles.
- Pre-natal exposure to air pollution is correlated with fetal demise, pre-term delivery, and low weight at birth.
 - ❖ A study of suburban Buffalo, NY found correlations between rates of asthma in children and vehicle counts on streets in the child’s neighborhood; higher traffic counts led to higher incidences of asthma in children.

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