American Podiatric Medical Association
Best Walking City Competition, 2003

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In 2003, the American Podiatric Medical Association conducted its second annual “Walking City Competition.” The objective of the study was to update and expand on the results of a previous study conducted in 2002, taking into account a wider variety of measures of walking and walking conditions and identifying the best cities for walking in the United States on a regional basis. (J Am Podiatr Med Assoc 94(2): 211-215, 2004)

Background

It is a continuing challenge to compare cities for their rates of walking, because there is no single “pure” measure of all of the walking activities that occur in a city. A previous American Podiatric Medical Association (APMA) study employed the best available statistic: the percentage of residents who walked to work without using any other form of transportation. That measure was suggested in other research. Unfortunately, the measure fails to account for people who both walk to work and use public transportation. A problem also is found with complex statistics that combine bicycling and walking so that the rate of walking alone cannot be determined.

Further, no national statistics exist on the sizable number of people who walk in cities for reasons other than work, such as shopping or sightseeing. Data on the percentage of trips made by foot are available for only a small number of larger cities. The same shortcoming applies to measures of the amount of time that residents walk for leisure. As a result, the extent of walking in cities is underestimated, and it is difficult to compare cities based on all walking activities.

Fortunately, other criteria of walking in cities have been found in addition to walking to work. For example, US Census Behavioral Risk Factor Surveillance System (BRFSS) telephone surveys of residents have collected data on their number of exercise sessions per month, as well as the number of miles that residents walked and the number of minutes walked per exercise session. These data are available for hundreds of metropolitan areas and were included here.

There are many factors known to affect walking conditions in cities. These include population density and positive conditions such as the presence of stores, as well as the absence of negative conditions such as crime. The previous APMA study included measures of air quality, rainfall, the number of parks, and other criteria. Recent research efforts by others have focused on the adverse effects on health of urban sprawl using measures of body mass index, obesity, morbidity, and so on.

Without a single “pure” measure of all of the walking that occurs in a city, APMA elected in 2002 to compare 50 cities on the basis of multiple criteria, such as the number of parks and the crime rate, as well as the percentage of residents who walk to work. Twelve criteria were considered in total, and a
A statistical procedure was used to determine the ten best measures of walking conditions. Experts ranked the importance of the measures, and those rankings were used to combine the ten measures into one composite rank score for each city. The result of the analysis was a list of the ten best walking cities in the United States.

The present study employed the same methodology used in 2002, with additional criteria used to evaluate both walking and walking conditions. More cities were included in the present study so that there would be enough cities to identify the best walking cities in various regions of the country as well as in the entire United States.

Methods

The present study design expanded on the design of the 2002 study in three ways:

More Criteria of Walking Conditions. Twenty criteria were used to measure walking and walking conditions in 2003, double the number used in 2002. The current criteria included positive measures such as the percentage of commuters who walk or bicycle to work, use of mass transit, number of exercise sessions per month (primarily walking), minutes walked and miles walked per exercise session, population density (number of people per square mile), and museum attendance per year. Negative factors included urban sprawl, annual rainfall, number of days of precipitation per year, annual snowfall, and the body mass index of residents. Additional factors included air quality (amount of pollutants emitted), rate of violent crime, pedestrian danger index, and numbers of museums, historic sites and landmarks, health and fitness clubs, and podiatrists per 100,000 population. The criteria used in the present study appear in Table 1. In 2002, the ten criteria used to measure walking conditions were percentage of residents who walk to work, crime rate, air quality index (days per year above 100), population density (number of people per square mile), pedestrian danger index, and numbers of parks, podiatrists, walking coordinators, health clubs, and sports stores per 100,000 population.

More Cities Considered. APMA selected 125 US cities with the largest metropolitan area populations for this 2003 competition, 75 more cities than were included in the 2002 study. Complete data on all 20 criteria were available for 124 of the 125 cities. Many smaller cities were included in the present study than was the case in 2002. The present study included metropolitan areas with populations as small as 407,000 and incorporated city populations as small as 100,000. In 2002, the metropolitan area populations of the 50 cities exceeded 516,000, with incorporated city populations exceeding 344,000.

More Cities Selected. The top 16 cities were selected in 2003, six more than the number selected in 2002. The present analysis was performed on a regional basis using the four regions recognized by the US Census Bureau, with the top 4 cities selected in each of the 4 regions for a total of 16 cities.

There were additional differences in methodology between the 2002 and 2003 studies. The data were more complete in 2003 than in 2002. Findings in 2003 are based on 124 of 125 cities, while the 2002 study results were based on 45 of 50 cities. In the present study, the weights used for combining the criteria were derived from factor analysis rather than the application of ranks developed by experts, as was the case in 2002.

Data Sources

Most of the data on cities used in this study were graciously provided by Bert Sperling of BestPlaces.net. BestPlaces is a leading source of information on the

| Table 1. Twenty Criteria of City Walking Conditions in 2003 |
|---------------------|------------------|
| **Criterion**                      | **Weight**  |
| Use of mass transit (vehicle miles per capita) | +0.753 |
| Percentage of people who walk to work | +0.708 |
| Number of minutes walked per exercise session | +0.654 |
| Population density (people per square mile) | +0.602 |
| Number of exercise sessions per month | +0.591 |
| Body mass index | −0.558 |
| Urban sprawl index | −0.534 |
| Percentage of people who bicycle to work | +0.510 |
| Annual attendance at museums per 100,000 population | +0.397 |
| Annual rainfall | −0.300 |
| Number of days of precipitation per year | −0.204 |
| Number of miles walked per exercise session | +0.138 |
| Air quality—emissions | +0.083 |
| Violent crime incidents per 100,000 population | −0.079 |
| Number of museums per 100,000 population | +0.072 |
| Number of health and fitness clubs per 100,000 population | +0.066 |
| Number of historic sites and landmarks per 100,000 population | −0.053 |
| Pedestrian fatalities in 2002 per 100,000 population | +0.023 |
| Annual snowfall | +0.017 |
| Number of APMA podiatrists per 100,000 population | +0.015 |
characteristics of US cities and maintains an extensive database on 331 metropolitan areas. APMA provided information on the number of podiatrists in each city in 2003.

Results

The Top Cities by Region

The four best walking cities were determined for each of the four US Census Bureau regions, denoted as the Northeast, South, Midwest, and West.

**Northeast.** The four best walking cities in the Northeast were, in alphabetical order, Boston, Massachusetts; Jersey City, New Jersey; New York, New York; and Philadelphia, Pennsylvania.

**South.** The four best walking cities in the South were, in alphabetical order, El Paso, Texas; Miami, Florida; San Antonio, Texas; and Washington, DC.

**Midwest.** The four best walking cities in the Midwest were, in alphabetical order, Chicago, Illinois; Madison, Wisconsin; Milwaukee, Wisconsin; and St Louis, Missouri.

**West.** The four best walking cities in the West were, in alphabetical order, Honolulu, Hawaii; San Diego, California; San Francisco, California; and Tucson, Arizona.

Reasons for Selection of the Cities

In 2003, the 16 cities achieved high scores for a variety of reasons. In the Northeast, Boston ranked high primarily because it had a relatively large number of museums and health and fitness clubs for a population of its size, as well as a heavily used mass-transit system and a high percentage of residents who walked to work (4.0%). Boston also rated high for air quality and had a high number of historic sites. It also had low rates of violent crime and pedestrian fatalities in 2002. New York City ranked high primarily because of its population density, use of mass transit, and very high percentage of residents who walked to work (9.3%). New York ranked first among the cities considered in the number of museums, third in annual museum attendance, and fourth in the number of historic sites and landmarks. Philadelphia had a high percentage of residents who walked to work (4.1%) and a high rate of museum attendance. Philadelphia ranked first of the cities in number of historic sites and fourth in the number of museums. Jersey City achieved a high rank for population density, the high percentage of residents who walked to work (8.6%), time and frequency of exercise, and use of mass transit.

In the South, El Paso was selected because it ranked first of the cities considered in number of exercise sessions per month as well as in the number of miles walked during each session. Miami also ranked high in the number of exercise sessions per month, while ranking high on annual rainfall but low on annual snowfall (0 inches per year). San Antonio ranked sixth of the cities in annual museum attendance as well as in the number of exercise sessions per month and minutes walked during each session. Washington, DC, ranked first in annual museum attendance and use of mass transit. Washington was third among the cities in the number of historic sites and landmarks.

In the Midwest, Chicago ranked high because of its mass-transit usage, seventh among the cities, as well as ranking fifth in both the number of museums and annual museum attendance. Madison ranked third among the cities in the percentage of residents who walked to work (6.2%) and first in the percentage of residents who bicycled to work (1.7%), as well as having a low crime rate. Milwaukee ranked high on air quality and annual snowfall. Milwaukee also had low rates of violent crime and pedestrian fatalities in 2002. St Louis ranked high on minutes walked per exercise session.

In the West, Honolulu ranked fifth among the cities in use of mass transit and percentage of residents who walked to work (5.0%), while ranking eighth in the percentage of residents who bicycled to work and the number of minutes walked per exercise session. Honolulu also had a low rate of violent crime and a high annual museum attendance for a metropolitan area of its size. San Diego had a high percentage of residents who bicycled (0.6%) or walked to work (3.4%) and ranked fourth in museum attendance. San Francisco ranked high by virtue of its population density, use of mass transit (first among the cities considered), high percentage of residents who bicycled to work, and air quality, as well as minutes walked per exercise session. Each of the cities selected in the West (Honolulu, San Diego, San Francisco, and Tucson) also reported no annual snowfall, as was the case for Miami in the South.

The Top 16 Best Walking Cities, 2003

In the present study, the 16 best walking cities (controlling on region) were, in alphabetical order, Boston, Chicago, El Paso, Honolulu, Jersey City, Madison, Miami, Milwaukee, New York, Philadelphia, San Antonio, San Diego, San Francisco, St Louis, Tucson, and Washington, DC. These are the same 16 cities identified in the regional analysis. Other cities would be included in a top 16 city analysis if the results
were calculated for all regions combined (as a national analysis) rather than region by region. Nationally the 16 best walking cities were, in alphabetical order, Bergen, New Jersey; Boston; Bridgeport, Connecticut; Colorado Springs, Colorado; Honolulu; Jersey City; Madison; Nassau, New York; New York; Philadelphia; San Antonio; San Diego; San Francisco; Scranton, Pennsylvania; St Louis; and Tucson.

In 2002, the ten best walking cities in alphabetical order were Boston; Chicago; Cleveland, Ohio; Denver, Colorado; New York; Philadelphia; Portland, Oregon; San Francisco; Seattle, Washington; and Washington, DC. Those cities were profiled in an article on the top ten walking cities in the United States.6 Six of the 2002 top ten cities were selected in the present study as well.

Discussion

The present study confirmed the findings of previous research by Ewing et al4 that urban sprawl is positively related to obesity (inferred from body mass index) and that these conditions are negatively related to measures of walking. The importance of physical activity such as walking was recently demonstrated in a landmark statistical analysis of the relationship between urban sprawl (using measures developed by the advocacy organization coalition Smart Growth America) and US Census Bureau measures of health such as body mass index, obesity, and morbidity taken from the BRFSS telephone surveys. At a county level, sprawl was related to obesity and body mass index. In urban areas, the metropolitan sprawl index was significantly related to the number of minutes walked for leisure.4 The present study also found positive relationships between museum attendance and walking to work and exercising. More research is needed on incentives to encourage walking.

The results of the 2002 APMA study1 agreed with the findings of other researchers that walking in cities can be encouraged by the provision of parks and effective crime prevention, coupled with increased population density.2,3 More research is also needed on disincentives to walking such as crime and pedestrian injuries and fatalities. Ewing et al4 recently called for additional research to develop better measures of walking. Other criteria related to walking might also be examined, such as the number of walking and hiking paths and trails, the number of quaint shops, movies, and fine restaurants, the presence of public markets, and the number of free events held downtown. Negative factors that might reduce walking such as the number of Code Red days per year (days with an air quality index of above 150) could also be examined. Additional statistical research could also be performed to determine the relationship of new criteria to the present criteria, and to investigate in more detail how climate and weather conditions affect urban walking activity.

New data-collection methods could be employed to study promising criteria. For example, Craig et al7 used trained observers to rate Canadian neighborhoods on characteristics related to walking such as the number and variety of potential walking destinations (mix of facilities), the accessibility of walking routes such as sidewalks and trails, and the opportunity for social interactions, such as seeing people at sidewalk cafes. These ratings on the environment were then related to census data on walking, controlling on factors such as income that are related to walking. Surveys of city officials are also suggested as a way to obtain current information on promising criteria such as urban development and pedestrian safety initiatives. Future walking city competitions should be expanded to encompass other cities, including more small cities. Analyses could be performed controlling on city size, as results tend to favor the larger, older cities with mass-transit systems and high population density.

Epilogue

Previous research on walking is troubling in that it has shown that over time walking has decreased in the United States (as well as in Canada, Europe, and Australia) as suburban development has necessitated the increased use of automobiles and reduced the opportunity for people to walk to work or to shop.2 A study in Britain found that people in urban areas walk more than those in suburban or rural areas.3 Given the increasing prevalence of obesity, a major public health problem, efforts to understand and increase walking in cities as a healthful, inexpensive exercise are invaluable. Such efforts could also be beneficial to the economy by helping cities to encourage tourism and consumer behavior. This APMA program of continuing research on the conditions that increase (and decrease) walking activity in cities is timely and promises to make a significant contribution to addressing some of the nation’s important social and economic issues. The positive nature of this program (“Best Cities”) reflects well on the Association, compared with the typical “urban sprawl” announcements, which primarily attack cities for their failure to control suburban development.

To leverage its impact, APMA might consider forming coalitions with other organizations (and cities) interested in encouraging walking, and in sup-
porting joint efforts to encourage the collection of better census data on all forms of walking and health conditions in US cities.

References


