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Transportation & Sustainable Campus Communities

ISSUES, EXAMPLES, SOLUTIONS

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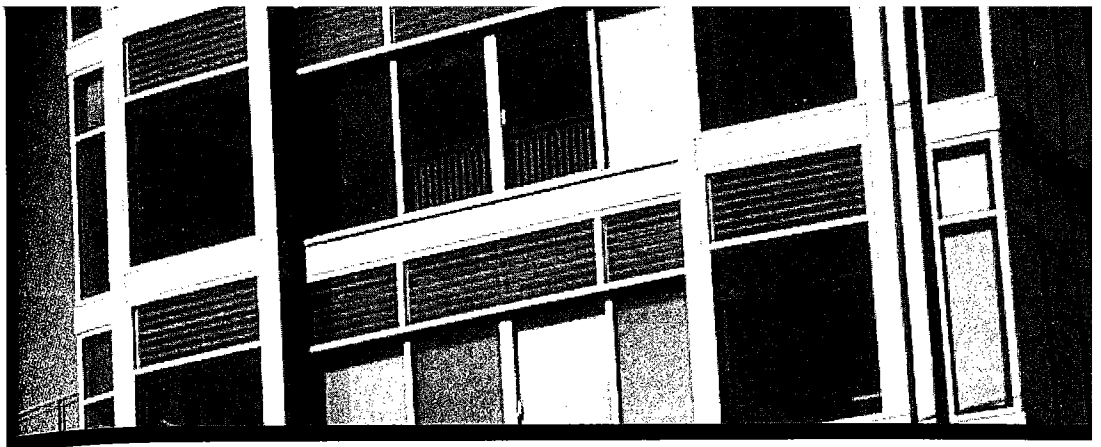


Chapter 1

CHAPTER 1

Transportation and Sustainability in Campus Communities

1.1
(OPPOSITE, TOP LEFT)
In 1927, students at the University of Michigan mourn a proposed ban on the auto in this cartoon.
Courtesy of University of Michigan, Bentley Library

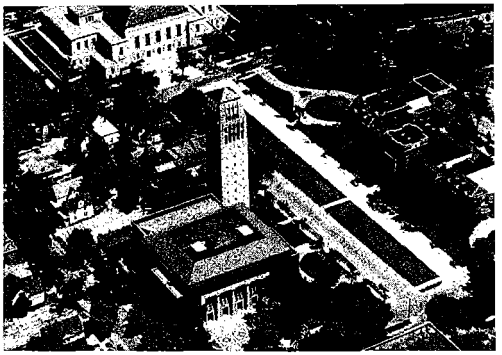
1.2
(OPPOSITE, TOP RIGHT)
Michigan's central campus mall near Burton Tower had ample parking for few cars in the early 1940s.
Courtesy of University of Michigan, Bentley Library

1.3
(OPPOSITE, BOTTOM LEFT)
The Michigan campus mall shows the increase in cars after World War II.
Courtesy of University of Michigan, Bentley Library

1.4
(OPPOSITE, BOTTOM RIGHT)
In 2003, the mall between Rackham and the Michigan library on the University of Michigan campus gives priority to pedestrians.
Photo by Val Havlick

The historic or traditional American college campus was designed around the pedestrian, and walking was the primary transportation mode for most students. Up until the 1940s most students lived on campus and arrived by bus, train, or trolley.

In the earliest years of many colleges and universities, the first buildings were located just beyond the bustling commercial center of the "host" town or city. The institutions of higher learning were often separated from the town by woods, a stream, a meadow, or some natural buffer. Among thousands of examples we could cite are Colgate University (1819) at the southern edge of Hamilton, New York, or Beloit College (1846) up on the hill above the Rock River and above downtown Beloit, Wisconsin. Old Main is the original University of Colorado (1876) edifice and it was situated several blocks south of Boulder Creek and on a predominant hill overlooking downtown Boulder, Colorado. Western Washington State University's picturesque campus (1933) began somewhat isolated from and to the south of Bellingham, Washington. Today most of these schools and thousands of other campuses are surrounded by urban development. In some cases—such as the University of Chicago, Carnegie Mellon, the Massachusetts Institute of Technology, San Jose State University, Wayne State University, or Georgetown University—not only has there been an "engulfment" of urbanization but also there have been substantial increases of population density in close proximity to the typical urban campus. These two forces, the urban swallowing of the campus and the densification of the contiguous neighborhoods, set the stage for land-use problems. Many school administrators believe the institution needs to grow in order to survive or stay competitive with other schools while the town struggles with added housing demands and traffic congestion and overspill into the community (Gurwitt 2003).



1.5
(ABOVE)
The cost of adding parking by building structures can exceed $30,000 per net new space.
Photo by Francoise Poinsatte

The University of Michigan demonstrates a typical transformation from a pedestrian-oriented campus plan to one that became saturated with automobile trips. From the 1880s until 1920, the landscaped corridor of the central campus was a pedestrian place. In the 1930s and 1940s parking for the infrequent automobile was provided. In the period between 1960 and 1990 the once peaceful strolling mall was modified to accommodate car parking. In recent years some car parking has been eliminated and replaced by flower gardens and seating for students and visitors.

The number of students who own cars has increased over time. Today there is a common and rather widespread problem of automobile overspill beyond campus parking facilities onto the neighborhoods surrounding the campus. In many communities, housing in close proximity to a campus has become a premium. As student-housing scarcity occurs, middle- and low-income students resort to housing that is farther from campus and somewhat more affordable. This tends to increase automobile travel. As campus parking facilities fill each day, and as parking rates rise, student car com-

muters search for parking in neighborhoods already heavily populated by students—most of whom have a car and have used the public and private car parking areas for their auto storage needs.

Short-term car parking, with a car space "turning over" four to six times a day, tends to change the livability of a neighborhood by increasing the noise, litter, vandalism, and general degradation of the residential environment that come from the increased number of student vehicles. The car storage overspill is a documented nuisance, and blight has now become a trademark of most large university neighborhoods where student enrollment outpaces the town's ability to absorb the greater number of cars that are brought to school by increasing numbers of students.

We have contacted 150 campus planners and parking management officials at university and college campuses around the country. (Please see the Appendix for a list of respondents and institutions contacted.) In our survey of nearly 8 percent of the 3,300 colleges and universities, only six reported that they had no parking problems on campus or in nearby university neighborhoods. The University of North Carolina–Charlotte reported they have 2,000 empty car spaces per day and Warren Wilson College in Asheville told our research team that "they have more spaces than cars." No freshman cars are permitted at Warren Wilson (on the basis of educational priorities), which has 800 students and 375 faculty and staff. This is certainly the exception rather than the rule in our survey of colleges and universities. The overwhelming number of responding schools report "severe to critical" parking overspills into their communities. It should be no surprise when the average student-staff-faculty population ratio to available car parking spaces is approximately 4:1, according to our study of institutions of higher education.

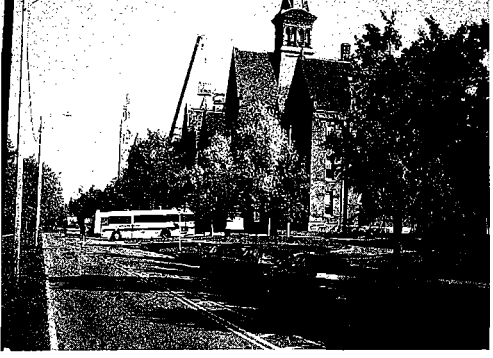
There are at least three schools of thought on how the student auto overabundance can be managed. One approach is to increase the supply of car storage and parking areas (University of Arizona Parking and Transportation Services 2003). The costs of this approach vary from city to city and campus to campus. A second position is for the academic institution to rely on the free market system to meet increasing demand. This approach is where the institution relies on private facilities and outside parking providers. Some say this is the status quo, a do-nothing stance. The third

1.6
The University of California–Santa Cruz provides an example of a comprehensive demand management approach to campus transportation. The campus provides a bike trailer and van to assist bike commuters up steep roads on inbound trips—a unique TDM tool.
Courtesy of University of California–Santa Cruz

technique can be called the demand management approach. Instead of increasing the supply of parking the university would explore ways in which the demand for parking could be reduced (Shoup 1997).

Later in the book examples of transportation demand management (TDM) will be discussed in more detail, but it should be noted here that effective parking demand management, which reduces neighborhood overspill, is composed of multiple tools for specific town and campus conditions. The toolkit usually contains specialized parking permits, various forms of bus service and bus shuttles, and differential parking prices related to distance from campus. Other components in a TDM toolkit could include effective bike paths, storage lockers and other biking facilities, and special incentives for vanpool and carpool parking that are "close in." Some schools are experimenting with free bikes, such as those that are seen scattered around campus at the University of Florida–Gainesville.

No one parking demand management tool works all by itself, nor is one parking reduction plan appropriate for every campus. Each institution and



1.7
(ABOVE LEFT)
Campus shuttle buses reduce the need for student cars on the University of Vermont campus.
Photo by Spenser Havlick

1.8
(ABOVE RIGHT)
The SKIP high-frequency bus route serving the University of Colorado area carries three times as many people as the more traditional route it replaced.
Photo by Spenser Havlick

community should craft an array of parking management technologies that fit the needs of the student body and faculty. Campuses that are primarily residential-based have different parking and traffic challenges from a commuter college or junior college, which tend to be more automobile dependent more hours of the day and evening. Universities with a medical center and medical schools as a part of their central campus have different peak demand periods than a liberal arts college with 80 percent or higher residential enrollment.

Factors That Influence Campus Transportation Policies

There are seven major factors that influence the transportation policy and practices on university and college campuses. These factors play different roles of importance at different educational institutions, but they are all at work to one degree or another.

BOX 1.1 | **TRAVEL DEMAND MANAGEMENT AT THE UNIVERSITY OF CALIFORNIA–SANTA CRUZ**

Wes Scott, director of Transportation and Parking Services (TAPS) at the University of California–Santa Cruz, has become a champion of traffic demand management (TDM) practices. The Santa Cruz campus is nestled amidst a redwood forest with a campus population of 17,000, but with only 5,000 parking spaces. Scott has implemented an array of TDM practices as an alternative to cutting down redwoods for car lots and as an economically wise decision.

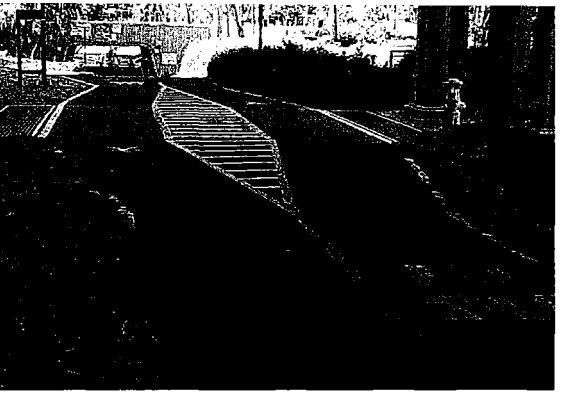
The UC–Santa Cruz TDM tools include carpools that carry 300 people per day, vanpools transporting 100 per day, a transit pass system that moves 525 students each day, and a differential pricing system for parking permits. The TAPS parking permit for close-in parking costs $684 per year and the remote lots cost $384 annually. Freshmen and sophomores

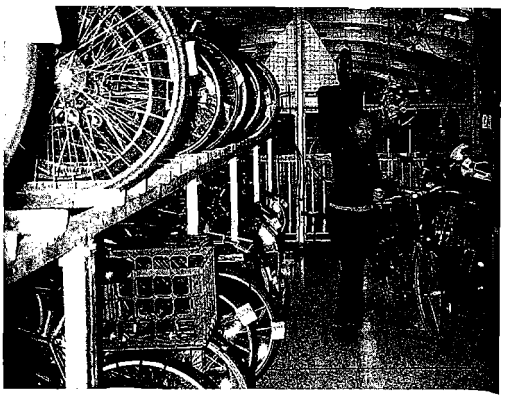
1. The physical layout of the campus as driven by campus growth, the campus master plan, and aesthetic considerations. Aesthetics and the value of campus green spaces influence parking and transportation programs.
2. The philosophy about transportation priorities as determined by the governing body (regents, trustees, etc.) or student initiatives and implemented by university administration.
3. Resources available, both staff and funding, to create efficient campus transportation options.
4. The physical transportation infrastructure in the surrounding region. Urban campuses differ from suburban and rural campuses.
5. Residential campuses differ from commuter campuses.
6. The trend of more students and employees living farther from campus in order to achieve rent or homeownership savings.
7. The cost of parking.

In a university that has doubled or tripled its student population in the past forty years in a densely built up urban area, three options exist. The administration could call for a cap on growth, or increased density, or it could require a satellite or sister campus. The University of Michigan–Ann Arbor is a model for using the satellite campus to accommodate growth. Their North Campus is intended to accommodate new growth, research

are not permitted to have cars on campus. Scott reports, "We stack vehicles in the aisles of remote parking lots and have created 400 new 'virtual' parking places." Like many other progressive campuses, Santa Cruz has a comprehensive Web page that displays all the alternative mode options, parking regulations, and penalties. Because there is a buffer zone between the scenic campus and the city of Santa Cruz, there is not an aggravated condition of campus car overspill.

Biking is heavily promoted in the Santa Cruz TDM portfolio and bike paths are abundant on the campus and in the town. To make the bicycle a favored mode, Scott's TAPS operation has created a bike shuttle service. Cyclists load their bikes on a trailer, jump on the van, and are taken to related drop off points on the Santa Cruz campus. One hundred faculty, staff, and students use this bike shuttle service daily.





1.9
(ABOVE LEFT)
The University of California–Santa Barbara is among the most bike-friendly campuses in America. Well-designed infrastructure improves safety for cyclists and pedestrians.
Courtesy of James Wagner

1.10
(ABOVE RIGHT)
The University of California–Berkeley bike service center provides an extra incentive for students and faculty to bike to campus, purchase parts, get repairs, and rent or store bikes.
Photo by Spenser Havlick

facilities, and academic buildings. Portland State University, Arizona State University, Wayne State University, and University of Wisconsin–Milwaukee have all opted to increase density. These campuses tend to reduce dependency on the auto by providing improved bicycle access, safe pedestrian facilities, and shuttle bus service.

The University of Washington–Seattle is an example of a school committed to land-use and transportation sustainability practices. Because of improved alternate mode facilities and decreased auto dependency, and "despite ten years of population growth, University of Washington's peak hour traffic levels today remain below 1990 levels. Of the campus population, 75 percent now arrive on campus using an alternative to driving alone. We have avoided building 3,600 new parking spaces saving as much as $100 million in construction costs" (University of Washington Transportation Office 2002).

A second important factor that influences transportation choices and policy is the philosophy of transportation priorities held by student leadership and the governing body of the institution. If a campus student council or other student leadership group such as a president's scholar class or an environmental center demonstrates the need for more efficient mobility, the faculty and administration can be encouraged to support changes. If a chancellor or president also favors alternate modes, this may be seen by the college or university staff as an invitation to be creative, more car-free, and inclined to use land more efficiently. If the trustees, students, or administration are fearful of reduced admission applications due to car restrictions on freshmen or car-reduction practices such as high parking fees and high parking fines, the institution may try to accommodate more cars by adding

more parking, may provide more parking permits, and may not fund alternative modes of transportation.

In most cases the governing board of a college or university does not send out a directive on transportation behavior. Changes toward sustainable transportation policies and practices correlate with a well-organized and visionary campus transportation department or office. In some cases such as the University of California–Davis, and more recently the University of Colorado–Boulder, the hierarchy of transportation priorities has been stipulated in a transportation plan with the pedestrian ranked first, followed by bicyclists, buses, and lastly, automobiles. However actual implementation may differ from this hierarchy with auto facilities such as car parking getting a much larger piece of the budget pie than other modes.

The initiative for the pedestrian-bicycle-bus hierarchy usually originates in the campus planning and transportation offices or in discussions with student leadership. If there is an active student government or environmental organization, the student leadership can be mobilized to assist the staff in designing and implementing pedestrian and bicycle facilities. For example, Colorado State University in Fort Collins is one of several large schools that have a bicycle service center at the student union. With a centrally located "bike station," services such as bike repairs, bike rentals, and bike parts are easily available to the student body. The University of California–Berkeley has their bike service center inside the BART (Bay Area Rapid Transit) station, which is contiguous to the UC Berkeley campus. In addition to sales and minor repairs, very secure bike storage is available while the students are in class.

1.11
Several campuses, including Portland State University, use trolley or rail service to augment commuting options.
Courtesy of Tri-Met

For transit, pedestrian, and bicycle modes to be provided at adequate levels, the administration must believe in the importance of these non-car options and the financial resources must be pledged to provide them. Undergraduate students who are typically on a campus four to five years cannot bear the full responsibility of implementing a reduced auto policy. Normally the first- and second-year student is overwhelmed making educational, social, and financial adjustments to college life. Perhaps in the junior year elective courses will be taken in transportation planning, environmental impact assessment, resources management, or urban design. The student explores the related literature and good examples of cities with

low car use. It may be then that the student is inspired to seek an elected office on the student council. If elected, the "transportation candidate" has less than one-and-a-half years to influence a campus master plan that has a ten- to twenty-year blueprint for the campus. Our research shows that the most comprehensive alternate-mode programs are on campuses that have good student–staff partnerships and a full-time transportation coordinator, as is the case at the University of Arizona and University of Washington.

Once the transportation master plan for a campus has been approved the support of the student body becomes very important. Most student governing bodies require an election or referendum in order to increase student fees for, let us say, a student bus pass. A bike service center, improved bicycle racks, nighttime safety lights, and emergency phones for walking safety may all require a vote of the student body if a student fee increase is required. Dollar amounts for fees to provide a semester-long bus pass and other transportation upgrades range from about $10 to $30 per semester. It averages about $15, but is considerably higher at some schools. In some cases the transportation "amenities" are folded into general student fees. In other cases some funding for transit, bike, or pedestrian facilities comes from parking permits, parking fines, and from general funds (as is the case with a portion from general fund for the University of Colorado faculty/staff bus pass).

No college or university campus is an island. The degree to which the college community uses alternate modes of transportation is influenced by the availability of transportation options other than an automobile. If the campus town or city has an inadequate or inefficient transit system, students will normally use this as an excuse for needing a car at college. If the campus has an excellent bicycle network but there is not connectivity with town bike paths, students will be reluctant to bike to town for recreation, shopping, or other errands. This is the complaint of students from Lewis and Clark University at the southern edge of Portland, Oregon. Portland State University, on the other hand, is located near the central business district of Portland and has access directly to a new trolley line and connections to the Portland light rail system known as MAX.

Students and staff cannot be expected to make significant shifts toward alternate modes of transportation if bike paths, transit routes with

1.12
Caltrain in the San Francisco Bay Area offers commuters a designated car in which to store bicycles.
Courtesy of Caltrain

frequent headway (time between bus arrivals), and safe pedestrian routes are not available in the community and larger region. The University of Miami in Coral Gables, Florida, is easily accessible by rail service and linked by the Hurricane Bus Shuttle to the campus. Stanford University has excellent regional transportation connections with heavy rail commuter service (Caltrain) from San Francisco and light rail from San Jose and cities in the Bay Area to the south of Palo Alto. To further lure non-car users, Stanford and Palo Alto have provided a bicycle service center for repairs, rentals, and storage in the passenger rail station east of the Stanford campus. One of the coaches on Caltrain has been converted to handle primarily bicycles similar to the custom of European railroads that have had special bicycle carriages on passenger trains for more than twenty-five years.

Information technology also has begun to play a role in reducing car trips. Coursework by correspondence has taken on a new meaning with the widespread use of the Internet on campuses. In recent years courses have been taught where both the student and the instructor stay at home. Tests and assignments are coordinated by e-mail and examination answers and

1.13
Caltrain allows the commuter to board right along with his/her bicycle.
Courtesy of Caltrain

term papers are returned to the professor electronically. A student and teacher may never see each other during the semester except for the hypermedia transmission on the Internet that streams the image of the instructor live to the student's computer screen. In any case, no auto trip is taken to the campus for that class.

Do we want the trend of heavy reliance on the automobile to be destined as a permanent feature of the American university campus? Will the sea of asphalt parking lots and high-rise parking structures obliterate the tranquil ambience of the academic ivory towers of the past? In Chapter 2, The Transportation Demand Management Toolbox, we present strategies for reducing car use and car impact. The campus sustainability movement may provide an impetus away from the current dominance of the student automobile culture.

Today sustainability has become a major theme in many campus-planning policies (Keniry 2003). Colleges and universities that have shrinking budgets are seeking ways to make financial and other resources last

longer. The practice of sustainability seeks to use resources more effectively without diminishing their supply for future generations. Recycling of paper, glass, metals, and plastics by towns and colleges has become widespread (Eagan and Keniry 1998).

In the twenty-first century, energy efficiency and conservation are goals of campus facility managers. It is becoming common to restore and rehabilitate old campus buildings instead of demolishing them (Browning 2003). Xeriscaping on campus, community garden plots, and water-efficient appliances in dormitory and classroom facilities are outcomes of a campus sustainability policy (Sowell et al. 2003). Perhaps the most difficult practice to change is the fifty-year trend of automobile dependency on American campuses. Will student body and university administrative leadership rise to the challenge of student car dependency on the campuses of America? This remains to be seen. The chapter that follows will shed light on this debate and discuss possibilities of reducing auto use on and near campuses.

Colleges and universities of the future can be expected to draw larger numbers of students, including nontraditional students and members of the larger community to the campus. Film festivals, athletic events, theater and music presentation, business workshops, lecture series on world affairs will continue to create campus destination trips. Townspeople who come to the campus will appreciate the tranquility and beauty that a pedestrian-dominant campus provides.

For institutions of higher education to carry on their historical functions as repositories of knowledge and centers of culture and learning in a community, wise transportation management should be part of the formula for their continued sustainability, success, and models of livability.

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