Pedestrian Planning on College Campuses

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Abstract

College campuses provide an ideal setting to promote walking. This paper reviews best practices for campus pedestrian planning, identifying how campuses have sought to increase pedestrian travel, reduce parking demand and improve physical activity among students, staff and faculty. pedestrian planning. Through case studies of 18 North American universities, we analyze common practices and innovative strategies. We find that while campuses tend to avoid siloed pedestrian planning efforts, there are a range of innovative design, marketing and analysis strategies that are being put into place as part of wider campus master planning efforts and programs to support alternatives to the private car. When it comes to innovative treatments, such as shared streets, roundabouts and pedestrianization schemes, campus projects can provide leadership for the wider community as well.

Keywords: pedestrian planning; walking; campus transportation; campus planning; sustainable transportation; non-motorized transportation

SIDEBAR: Checklist for Pedestrian Planning

Planning Strategies

- ✓ Consider whether pedestrian needs are best analyzed through a dedicated pedestrian plan, or as part of a campus master plan, transportation plan or landscape guidelines
- ✓ Involve the campus community – students, staff, faculty and nearby residents – in identifying missing links and other challenges, and suggesting solutions
- ✓ Conduct student-led walking audits to identify opportunities for improvement
- ✓ Develop design standards for new walking paths, including minimum widths, paving materials, and lighting requirements
- ✓ Develop a hierarchy of paths – primary routes where flows will be highest, and secondary routes that may formalize existing cut-throughs
- ✓ Identify key routes that link to off-campus destinations and student residential areas
- ✓ Analyze collision data to identify safety hotspots, partnering with the campus Geographic Information System laboratory

Design Strategies

- ✓ Use pop-up and temporary signage to promote walking and improve wayfinding
- ✓ Develop a map or smartphone app to show walking times and routes
- ✓ Use lighting, plantings and other design cues to emphasize key routes
- ✓ Consider innovative strategies to reduce conflicts between pedestrians, cyclists and motor vehicles
    - A pedestrian-oriented campus core, with parking provided at the periphery
    - Roundabouts to manage pedestrians and bicycle flows at intersections
    - Colored paving to separate bicycle traffic on shared-use paths
    - Traffic calming strategies such as raised crosswalks
    - Temporary restrictions on motor vehicles, e.g. at class change times
    - Dismount zones for bicyclists

Introduction

College campuses provide a unique environment to promote pedestrian travel. The high density and mix of uses provide the foundation for a sizable pedestrian mode share, especially given that students and staff often live on campus. Coupled with that, universities have taken active measures to reduce vehicle travel, for example through car ownership restrictions, parking charges and subsidized transit (Toor & Havlick 2004).

For many campuses, the high density of uses and the heavily peaked flows at class change times make walking and bicycling the most feasible mode of travel, especially for intra-campus trips. Many research studies and best practice guides have sought to identify ways to promote cycling (Rybarczyk & Gallagher 2014) and transit (Brown et al. 2001), analyze university parking policies (Millard-Ball et al. 2004; Barata et al. 2011), model mode choice (Eluru et al. 2012), and evaluate transportation demand management programs (Riggs 2015).

By contrast, there is a conspicuous lack of research on pedestrian planning on university campuses. This efficiency of this mode depends on many things, including the infrastructure of sidewalks and paths, wayfinding, and modal conflict with motor vehicles and bicycles. Yet, in contrast to cycling, transit and driving, there is little guidance available to planners who seek to improve the attractiveness and safety of walking. Even research on non-motorized transportation tends to focus on bicycling (Rybarczyk & Gallagher 2014), and the same bicycle-centric view is found in most campus non-motorized and active transportation plans.

This paper attempts to fill the gap in research through case studies of pedestrian infrastructure and planning on 18 college campuses in North America. We highlight common approaches and innovative practices that are likely to have much wider relevance. Rather than providing technical guidance on pedestrian facility or roadway design, which is well-covered in a range of standard engineering and design manuals, we aim to provide a selective tour through planning practices that will be of use to practitioners working in university settings.

Literature Review

A considerable amount of work analyses transportation on college and university campuses. One key text is Toor & Havlick's (2004) book, *Transportation and Sustainable Campus Communities*, which analyzes parking, transit, bicycling and walking strategies for universities to reduce single-occupant vehicle travel, and frames college campuses as the perfect setting to promote alternatives to the private car. A

particular focus is the economics of parking, and how investment in alternatives to driving can be cheaper than expanding the supply of parking. A similar general focus on sustainable transportation planning on college campuses is provided by Balsas (2003), who describes the transportation demand management strategies of eight campuses attempting to reduce congestion and parking demand. This car-reduction strategy is employed by many campuses to promote sustainable transportation, but these measures do not always translate into better pedestrian conditions. As noted above, there is also a modal-specific literature on campus bicycling, transit and Transportation Demand Management (e.g. Whannell et al. 2012; Akar et al. 2013).

In parallel with the campus transportation planning literature, a substantial body of non-campus specific research addresses walking as a mode of transport, particularly the factors that affect walk mode share and encourage more people to walk. Some of the most important conclusions that emerge from this research relate to how characteristics of the built environment, such as density, mixed uses, and urban design characteristics, affect pedestrian mode share. For example, Handy, Cao and Mokhtarian (2006) find that traditional neighborhoods characterized by tree-lined streets, closer destinations, and greater accessibility, attractiveness, and sociability have more trips by foot.

One of the most comprehensive reviews is provided by Forsyth and Krizek (2010), who analyze more than 300 empirical studies, and conclude that the built environment and community design are strongly related to choosing walking as a mode. They find that built environments and proximity to destinations correlate with utilitarian walking in adults, and that community design elements – land use, urban design characteristics, street patterns and development intensity – were more important than sidewalks and other infrastructure with regards to walking. The authors also suggest that walking and cycling are not substitutes for driving, and hence creating an environment that promotes less driving less will not translate into more walking.

Building on these efforts, several studies have sought to systematically quantify aspects of the built environment and street design, in order to measure walkability (Hutabarat Lo 2009) or audit the quality of pedestrian routes (Clifton et al. 2007). Other parts of the pedestrian planning and engineering literature focus on safety, finding for example that roadway design, land-use and socio-economic factors all contribute to collision rates (Loukaitou-Sideris et al. 2007). Joh et al. (2012), meanwhile, identify how the attitudes of potential pedestrians interact with the built environment. The built environment is important to those who have a positive attitude towards walking, but does not influence the decision of people with a negative attitude towards walking (Joh et al. 2012).

Almost all of these studies of pedestrian mode choice, planning and safety focus on towns and cities, and say little about college campuses. To some extent, such policies, street design recommendations and research findings are transferable to campus settings. Many of the strategies recommended by Toor and Havlick (2004), such as raised crosswalks, countdown indicators and marketing campaigns, are as relevant to the wider community as to campus settings.

More commonly, however, the unique characteristics of university settings mean that the wider pedestrian planning literature is usually more relevant for municipal officials than campus planners. The audit methodology by Clifton et al. (2007), for example, is primarily designed for sidewalks, rather than the separated pathways that characterize campus environments. Findings about mode choice, meanwhile, are taken from settings where densities and ambient pedestrian volumes are low and parking is abundant and free; the conclusions are unlikely to translate directly to a university setting.

Indeed, the handful of studies that focus on pedestrian travel on university campuses yields important insights that are missing from the broader literature. For example, Toor and Havlick (2004) discuss how on-campus housing can promote walking. Kaplan (2015) identifies infrastructure barriers such as wide arterials and widely spaced crosswalks as barriers to walking at Kent State University. Loukaitou-Sideris et al. (2014), meanwhile, analyze collision data from three California universities to identify the types of campus locations that experience the most pedestrian and bicycle crashes. They conclude that crash locations fall into three distinct types: campus activity hubs, especially in areas shared by pedestrians and cyclists; campus access hubs; and through-traffic hubs, where collisions with motorized vehicles were the main concern. Both behavioral factors such as inattention and environmental factors such as narrow sidewalks and cracked or uneven roadways contributed to the incidents.

Other studies of walking on campus environments also focus on safety (e.g. Schneider, Grembek & Braughton 2013), and more are published in the grey literature. For example, the Pedestrian and Bicycle Information Center, supported by the Federal Highway Administration, provides a series of webpages on promoting safety for non-motorized road users around university campuses; discusses education, enforcement and engineering strategies; and links to example plans (PBIC 2017).

The unique dynamic of university communities provides distinct opportunities for planners seeking to improve the safety, attractiveness and mode share of walking. The existing body of research, however, provides them little support, with campus planning often neglecting pedestrians and the pedestrian planning literature often neglecting university campuses. In the remainder of this paper, we

begin to fill this gap through presenting insights from case studies from the United States, plus one from Canada.

Case Selection and Methods

Our case selection process primarily aimed to identify North American university campuses with an active pedestrian planning program, or innovative policies or design strategies to promote walking. An e-mail to a list serve for academic planners (PLANET) sought to gather examples of universities with pedestrian plans. Web searches, peer-reviewed articles and the grey literature identified further potential examples. Our sample is thus biased towards the campuses with the most extensive planning efforts, and is not intended to be representative. Large public universities are also over-represented in our sample. We exclude high-rise campuses such as Hunter College and Concordia University, where the buildings are located on public streets. We also exclude campuses outside North American, as the institutional and planning context will be very different. Table 1 shows the campuses included in this study.

Our methods consisted of a review of any transportation plans, consultant reports and other campus planning documents, and a search of the university website. We also reviewed the peer-reviewed and grey literatures for additional campus-specific material. In four cases (UC Santa Cruz, UC Berkeley, Stanford University and Cal Poly San Luis Obispo), campus field visits were conducted in Spring 2016 in order to realize the pedestrian experience of that campus personally, and meet with planning and transportation staff. In others, we conducted at least one telephone interview in Spring 2016 with the relevant staff. Questions sought to cover the following key topics:

- Planning: the development of a pedestrian or active transportation plan; methods to prioritize improvements; modeling tools; data collection; and design guidelines.
- Information and safety: wayfinding, marketing or incentive programs, lighting, personal safety, and information dissemination.
- Modal conflicts: the design of service roads and shared spaces; dismount zones and other bicycle restrictions; and crosswalk and intersection treatments.

Other topics covered during the interviews were specific to each campus, and identified through preliminary research or brought up by the interviewee.

Table 1 Campus case studies

Campus	Location	Public or Private	Undergraduate enrollment
California Polytechnic University San Luis Obispo	San Luis Obispo, CA	Public	19,246
Catholic University of America	Washington, DC	Private	3,572
Clemson University	Clemson, SC	Public	17,260
Cornell University	Ithaca, NY	Private	14,453
Duke University	Durham, NC	Private	6,626
Stanford University	Stanford, CA	Private	7,019
University of British Columbia	Vancouver, BC	Public	35,344
University of California, Berkeley	Berkeley, CA	Public	27,126
University of California, Davis	Davis, CA	Public	27,728
University of California, San Diego	San Diego, CA	Public	24,810
University of California, Santa Barbara	Santa Barbara, CA	Public	20,238
University of California, Santa Cruz	Santa Cruz, CA	Public	16,277
University of Colorado Boulder	Boulder, CO	Public	26,426
University of Illinois at Urbana-Champaign	Champaign, IL	Public	32,959
University of Kentucky	Lexington, KY	Public	22,223
University of Oregon	Eugene, OR	Public	20,559
University of Washington	Seattle, WA	Public	30,672
Washington State University	Pullman, WA	Public	23,867

Enrollment data: US News and World Report College Rankings, http://colleges.usnews.rankingsandreviews.com, last accessed July 28, 2016

Practices in Campus Pedestrian Planning

The following sections discuss themes that emerged among the 18 campuses studied in this paper. Rather than providing comprehensive case studies of each university, the analysis here draws out examples of common themes and innovative practices that are typified by planning efforts on several campuses.

Integration into broader plans

Many U.S. cities, including Seattle and Chicago, have a dedicated pedestrian plan that quantifies the demand for walking, identifies gaps in the network, and prioritizes projects (Stangl 2011). In contrast, none of the campuses that we studied has a dedicated pedestrian plan (despite schools like UC Davis and UC Santa Barbara having a dedicated bicycle plan). UC Santa Cruz has a pedestrian plan under development, but the analysis is not yet completed. Instead, pedestrian planning is conducted in two main ways. On some campuses such as Cal Poly, pedestrian improvements fall under the master plan,

or development plan. Elsewhere, pedestrian improvements may fall under the campus transportation plan or a landscape architecture plan.

Planning for pedestrian travel as part of a development plan for new buildings or the overall campus master plan makes sense where it can govern the construction of new paths and other infrastructure, and because urban design and landscaping has a major impact on the walkability of a campus. For example, planners at Washington State University favor pathway widths of 10-12 feet for their pedestrian malls leading to major destinations. The University of Kentucky Campus Landscape Guidelines, meanwhile, specify pavement materials and call for pathway widths of 6-8 feet, depending on expected volumes. These widths are in line with general (non-campus-specific) design guidelines, which tend to specify minimum pathway widths of 6 feet, rising to 12 feet for heavily traveled routes and shared-use pedestrian and bicycle paths.[1]

Cornell University, meanwhile, uses an explicit hierarchy to inform the planning and maintenance of pedestrian routes. Primary routes are the "official" paths that cater for higher pedestrian flows, are properly paved, comply with ADA regulations, and run through developed areas of the campus around classrooms and administrative buildings. Secondary routes are often former "unofficial" paths created by students and staff cutting across grassy areas or through woodland. These secondary paths have been paved to limit environmental damages and are suited for short-distance travel to surrounding buildings or areas. A similar hierarchy is set out by Catholic University in its Campus Master Plan.

Broader transportation plans can also prioritize pedestrian improvements and include high-level policies to promote pedestrian travel. For example, CU Boulder commissioned its 2011 Transportation Master Plan from Alta, a pedestrian and bicycle transportation consulting firm, and LSC, a firm that focuses on transportation and traffic engineering. CU Boulder's master plan gives pedestrians the highest priority in their hierarchy of infrastructure projects, especially if the construction of new pedestrian infrastructure serves other modes as well. The school prioritizes infrastructure projects that resolve issues throughout the modal hierarchy.

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[1] For example, Portland's 1998 Pedestrian Design Guide (http://www.portlandonline.com/shared/cfm/image.cfm?id=84048) specifies minimum widths of 6 feet for pedestrian paths, and 12 feet for pedestrian-bicycle paths (p. D-6). Washington State DOT also recommends 12 feet widths, or more when substantial use is expected, in its Shared-Use Path Design Guidance (http://www.wsdot.wa.gov/walk/design.htm). The American Association of State Highway and Transportation Officials 2012 Guide for the Development of Bicycle Facilities recommends 11-14 foot wide shared-use paths where higher volumes (> 300 users in the peak hour) are expected.

On other campuses, however, the transportation plans focus on motor vehicle and bicycle circulation. Even if a plan states that pedestrians are a priority, the commitment may not be reflected in the proposed projects or the planning and analytical resources. The case studies also revealed that many campuses seem to favor reactive versus proactive projects for their pedestrian networks. Reactive efforts usually involve maintenance of existing infrastructure, but not expanding it.

Thus, the lack of a dedicated pedestrian plan has advantages and disadvantages. Integrating pedestrian planning into master planning efforts, particularly where design standards exist, can ensure that pedestrian needs are considered in the context of larger projects. The downside is that pedestrian travel can be neglected as plans focus on the needs of bicycles and motor vehicles.

Town and Gown Relations

Universities are closely tied to the surrounding communities. Universities are often a town's biggest employer and use a significant amount of water and resources (Balsas 2003). For pedestrian planning, the links between town and gown are even closer. One particular danger zone for pedestrian is at campus access hubs (Loukaitou-Sideris et al. 2014), where streets controlled by the local municipality interface with those under campus jurisdiction. More generally, increasing the walk mode share to campus often relies on pedestrian improvements outside the campus boundaries. At the University of Illinois at Urbana-Champaign, most of the streets even in the heart of the campus are controlled by local municipalities, making it difficult for the university to prioritize and implement pedestrian improvements unilaterally.

One example of partnerships is provided by Catholic University of America, where many of the proposed pedestrian projects in the Campus Master Plan involve intersections at the campus boundary, or on adjacent roadways. The plan also calls for redesigning crossings and sidewalks to meet design standards specified by the host city, Washington DC, through its District Department of Transportation. Another example comes from Pullman, WA where Washington State University worked with the city to formalize the "WSU Wiggle," a popular route to and from campus, and close it to motor vehicles.

One of the most extensive partnerships is in Berkeley, CA, where SafeTREC (Safe Transportation Research and Education Center) has a wealth of collision data and pedestrian travel information from the perimeter of campus where the majority of modal conflict occurs. The university also conducts Community Pedestrian Safety Training workshops using SafeTREC analytic tools like mapping of

pedestrian crash hotspots. Training workshops are tailored to the needs of different California communities, and designed to help cities with developing their own Pedestrian Safety Action plan (Schneider, Grembek, Braughton, et al. 2013).

Incentive, education, or activity programs

Incentives, team activities, and educational programs can help to change people's transportation behavior, and Toor and Havlick (2004) cite these programs as one of the simplest ways to achieve a more pedestrian friendly campus. In some cases, incentive programs are part of wider Transportation Demand Management efforts, and support the use of all alternatives to the private car – not just walking. Stanford University Commute Club members receive up to $300 per year to forgo a parking permit and agreeing to commute by walking, transit or other alternatives to single-occupant vehicle.

At UC Santa Cruz, the annual Walk to Class Challenge Day encourages students to register and commit to walking for intra-campus trips on a given day, with a raffle and T-shirts as incentives. (The physical separation of the campus from the city makes walking to off-campus destinations impractical, given the distances of two miles of more to reach the campus boundary from most classrooms and residences.) The University of Kentucky, meanwhile, has an incentive program for its employees to walk to work, offering a subsidized Fitbit for participation in an active team program.

Data for planning

Pedestrian planning almost everywhere is hampered by a lack of data. In contrast to motor vehicles, there is little information on volumes and flows (Ryus et al. 2014), counts can be expensive to collect, and many communities lack comprehensive maps on basic issues such as sidewalk coverage. Travel surveys often underreport walk trips, and collisions involving pedestrians may be underreported as well, especially if there were no major injuries.

Campus pedestrian planning is also hampered by data collection and analysis constraints. However, the availability of technical resources, for example through campus research centers or Geographic Information System laboratories, and the ability to harness student efforts means that universities are often in a better position than their municipal counterparts. One example is the UC Berkeley SafeTREC program noted above, which received state funding to collect and analyze collision data from the periphery of the campus, a danger zone for bikes and pedestrians (Schneider, Grembek, Braughton, et al. 2013).

Targeted data collection efforts also occur as part of campus planning. At the University of Washington, development of the Campus Landscape Framework included an online survey where respondents placed icons over their favorite places on campus to walk, sit or bicycle, and on areas that needed improvement. Nearly 2,000 respondents provided more than 37,000 icons and nearly 8,000 comments, and the data enabled "hotspot mapping" of iconic landscapes, pedestrian and bicycle circulation, and landscapes with potential for improvement.

A related area where data collection and analysis capabilities have improved conditions for campus pedestrians is in wayfinding. These efforts are discussed in the following section.

Wayfinding

Campus-specific online maps, often with accompanying smartphone apps, have arisen in recent years to complement commercial map providers and signage. Duke University provides one example where classrooms, libraries, bikeshare stations, parking locations and other points of interest are included on a custom map using the Google Platform. The information that is provided includes an average walk time and distance, as well as a set of walking instructions and transit services that are nearby. Another feature that this map includes is that of Bike Amenities. This map was produced through the data collection efforts of a graduate student, and the completed map is used by students, visitors, and faculty members alike.

UC San Diego has a similar walk time map that displays the average walk time from places on campus, but unlike most schools, uses color gradients to highlight areas of low and high pedestrian activity. UC Berkeley, University of British Columbia, University of Kentucky, and Cornell University also have similar maps as part of their pedestrian projects. In the case of the University of Kentucky, the map shows the areas that are within a 5-minute walk of each bus stop.

The University of Oregon, meanwhile, launched a smartphone app in 2010 that provides an interactive map, shows safe nighttime routes and wheelchair accessible routes, and offers a "fixthis" feature for users to give feedback about maintenance issues that need attention (e.g. sidewalk conditions). The app is introduced during the week of welcome for incoming first-year students but stays available for download the entire year.

Physical signage for pedestrians was implemented by the University of Kentucky, through the civic start up campaign Walk Your City. The program installed 80 signs, as shown in Figure 1, on and around campus to indicate nearby destinations, the time it would take to walk there, and a QR code that can be

scanned with a smartphone for directions (Stevens 2015). An evaluation using before and after surveys of faculty and staff found substantial increases in walking following the signage campaign (Ickes & Wiggins 2016).

An alternative approach, exemplified by UC Berkeley and UC San Diego, aims to make wayfinding more intuitive, and allow people to navigate with less need for maps or signage. UC San Diego uses distinct plant selection to steer pedestrians towards their Library Walk. At UC Berkeley, primary paths are prioritized for lighting upgrades, in order to encourage pedestrians to use more heavily traveled and direct routes. As defined in the 2017 Campus Lighting Master Planning Study, the primary paths connect transportation hubs and major facilities, particularly those with nighttime use, and have the highest pedestrian volumes. Secondary paths are subject to the same illumination standards (0.5 footcandles), but are a lower priority for lighting improvements.

UC Santa Barbara embodied this notion when it moved to protect its pedestrians with the installation of light tunnels from campus to the adjacent Isla Vista neighborhood where many students live and socialize. The tunnels are lined with thousands of motion-activated solar-powered LED lights, serving as a bright bridge from main campus to the community. This creative design was inspired by art professor Kim Yasuda, and has created a movement within to the community to provide sources of light for nighttime pedestrians.

Figure 1 "Walk Your City" Signage at the University of Kentucky

Image credit: M. Ickes, WalkUK, University of Kentucky. Used by permission.

Innovative Infrastructure

Pedestrian-focused infrastructure projects that have been implemented in the case study campuses range from small-scale islands and bulb-outs to grade-separated crossings. One example of the latter is CU Boulder's $7 million Broadway underpass (Figure 2), which was built in 1994 to link the campus with The Hill commercial district. Campus planners credit the underpass with reducing both collision rates and travel times for all modes. Grade-separated crossings are usually discouraged in pedestrian best-practice guidance (e.g. NACTO 2013) as they often increase walking distances and pose security risks from crime. However, they can be beneficial in contexts such as CU Boulder where the topography and facility design means that pedestrians still follow a direct route, the underpass or overpass is well lit and ventilated, and pedestrian volumes are high.

Figure 2 Broadway underpass, CU Boulder

Image credit: Tsiouvaras Simmons Holderness. Used by permission.

Roundabouts represent a further type of innovative infrastructure project that can slow vehicle speeds, and improve pedestrian flow and safety compared to signalized intersections (NCHRP 2010). US municipalities have often been reluctant to introduce roundabouts (NCHRP 2007), but some of the earliest and most enthusiastic adopters have been university campuses. Stanford University (Figure 3) uses them to mitigate modal conflicts between cars, bikes, and pedestrians. According to campus

transportation staff, the roundabouts have reduced travel time, increased safety, and contributed to the improved circulation of traffic. Stanford has installed three more on Campus Drive since the first one opened in 2014. In the Stanford examples, the relatively low design speeds, median islands, and the placement of crosswalks set back from the yield line help to make them pedestrian-friendly.

Roundabouts are also used by Stanford and other universities to mitigate conflicts between pedestrians and bicyclists at busy intersections, even on streets where motor vehicles are prohibited. Stanford has installed two more bike and pedestrian roundabouts within the main campus to facilitate flows and reduce collisions. Other schools with a large mode share of bikes like UC Santa Barbara (Figure 4) and UC Davis employ similar roundabouts to great effect. The roundabouts aid both pedestrians and cyclists by slowing cycle speeds, facilitating turning movements, and avoiding the challenge of non-compliance by cyclists at stop signs.

Other innovative techniques that university campuses have been relatively quick to consider or adopt involve traffic calming strategies, which aim to increase pedestrian safety by slowing down vehicle traffic. The University of Illinois at Urbana-Champaign is looking into installing scramble crosswalks, which prioritize pedestrians by stopping all traffic in a signal cycle and allowing pedestrians to cross diagonally. Catholic University of America is exploring raised crosswalks to slow down traffic (shown in Figure 5 as implemented at UC Irvine), and the University of Oregon has implemented sidewalk islands for the same purpose. Other techniques include speed humps to force cars to slow, and chicanes to narrow the road to encourage slower driving.

Figure 3 Roundabout at Escondido and Campus Drive, Stanford University

Image credit: Stanford University. Used by permission.

Figure 4 Bicycle-pedestrian roundabout, UC Santa Barbara

Image credit: Adam Millard-Ball

Figure 5 Raised Crosswalk, UC Irvine SLO

Image credit: Adam Millard-Ball

Managing Conflicts

The high volumes of people on foot mean that pedestrianized streets are found on many campuses, whether through closing the entire campus core to motor vehicles (as at Stanford), or converting key streets into pedestrian malls. At the University of British Columbia, Main Mall was reconstructed in 2012, with pick-up and drop-off traffic prohibited and the curbs and asphalt replaced with decorative pavers. Other campuses are looking to follow, such as Washington State University, where the Campus Master Plan envisions turning Stadium Way, a cut through and primary campus access, into a pedestrian mall.

In other cases, roads may be open for service vehicles and to provide access to parking. Such roads operate as de facto "shared streets," where pedestrians have effective priority and tend to walk in the center of the road. Recognizing this reality, CU Boulder prohibits service vehicles from operating on pathways during class change times when pedestrian volumes are highest.

The relocation of parking facilities to the campus periphery can also reduce conflicts between pedestrians and motor vehicles, particularly in high activity areas around academic buildings and residences. This strategy is being pursued by Cornell University and UC San Diego, through relocating parking close to the outer edges of campus.

Even where streets are closed to motor vehicles, however, conflicts may remain between pedestrians and bicycles, and in some cases skateboarders. Some campuses have sought to segregate different non-motorized users in order to mitigate these conflicts. UC Berkeley has "dismount zones" for cyclists in the campus core. Cal Poly San Luis Obispo (Figure 6) and UC Santa Barbara, meanwhile, have colored lanes throughout their campuses to designate semi-segregated bike lanes, while CU Boulder and UC Davis use physical barricades to separate and designate lanes. UC Santa Barbara also has designated and marked skateboard lanes (Figure 7).

Figure 6 Green bike lanes through the campus core, Cal Poly SLO

Image credit: Stephanie Holmes

Figure 7 Skateboard lanes, UC Santa Barbara

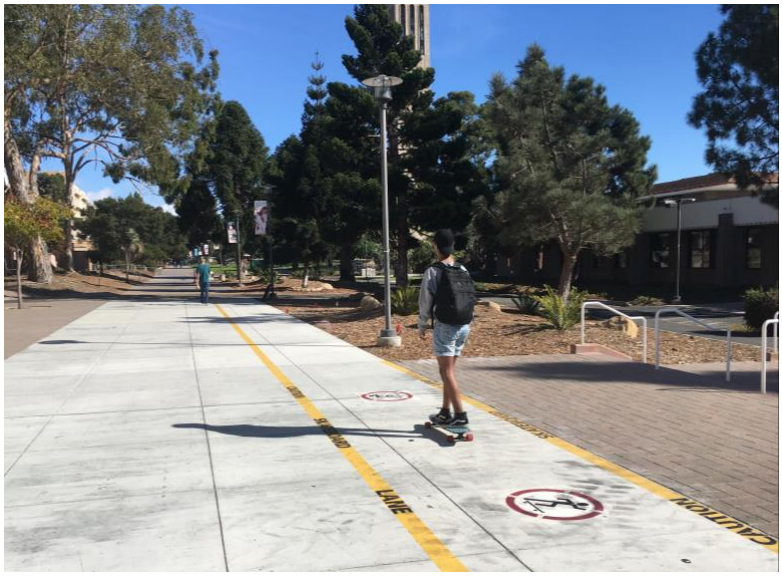

Image credit: Adam Millard-Ball

Conclusion

Even without explicit planning, college campuses cater to high volumes of pedestrians. High density, the need for students and faculty to move between classes and other buildings throughout the day, and the concentration of parking at remote locations on the campus periphery, mean that walking is often the dominant mode, at least for intra-campus trips. While some municipalities face the challenge of missing sidewalks and almost no trips being made by foot, university campuses start from a high baseline mode share.

In spite of this natural advantage to promote walking, there is little guidance available to campus pedestrian planners that takes account of the special institutional and physical circumstances. In this paper, we help to fill this gap, by illustrating a range of practices at our case study campuses that may be transferable to the reader's own setting. We find that while campuses tend to avoid siloed pedestrian planning efforts, there are a range of innovative design, marketing and analysis strategies that are being put into place as part of wider campus master planning efforts and programs to support alternatives to the private car. When it comes to innovative treatments, such as shared streets, roundabouts and pedestrianization, campus projects can provide leadership and inspiration for the wider community as well.

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