CHAPTER 2

MARKETS FOR ACTIVE TRANSPORTATION

THIS CHAPTER INVESTIGATES THE MARKET FOR BICYCLING IN THE GRAND ISLAND REGION – THE NUMBER OF POTENTIAL CYCLISTS AND PEDESTRIANS AND THE PREFERENCES OF THAT POTENTIAL MARKET.

It draws heavily on new and recent census information, national trends, and the 352 citizens who responded to the Grand Island Area Bicycle and Pedestrian Survey.

Before building a major shopping center or apartment project, a developer usually commissions a market analysis, designed to determine whether enough people will shop or live there to support the effort and to define the features that will appeal to customers. Similarly, an active transportation master plan should also evaluate the size and character of the potential market. This helps assess the impact of a bicycle and pedestrian transportation program on factors such as motor vehicle traffic and emissions. It also helps us understand what t e existing and potential bicycling community wants of the program, in turn increasing the chances that active modes can reach their potential for the Grand Island area.

This market study uses two major instruments:

- Estimates of existing and future pedestrian and bicycling demand: Using a demand model developed by Alta Planning & Design that is clear, straightforward, and easy to track for future measurement.
- The results of the Grand Island Area Pedestrian and Bicycle Survey: This survey was completed by 352 people, a very satisfactory participation rate for a community of this size, and provides valuable information about the region's potential active transportation community.

EXISTING PEDESTRIAN AND BICYCLE DEMAND

Tables 2.2a and 2.2b use the Alta model to estimate existing and potential pedestrian and bicycle demand. Primary sources of information include the 2012-2016 average computations of the American Community Survey (ACS), developed by the Bureau of the Census, and 2010 Census data. The model makes certain assumptions about transportation choices of populations such as K-12 and college students. The sources of these assumptions are included in the table.

Based on this model, Grand Island has an estimated 11,350 daily pedestrian trips and about 3,900 daily bicycle trips for all purposes (including recreational activity) in 2016. Bicycling has a 0.7 % commuter mode share. This is about the same as Omaha's current bicycle mode share. Table 2.1 compares the Grand Island's bicycle mode share with that of a diverse nationwide sample of cities.

2030 Midpoint and 2040 Potentlal Demand

Tables 2.2a and 2.2b provide both projections of trips made by pedestrians and bicyclists at 50 % and 100 % completion of the proposed basic system, based on a 20 year implementation schedule between now and 2040. At the 2030 midpoint, enough infrastructure should be in place to have a significant impact on transportation choices. Realistically, this level corresponds to completion of Phase 1 of the Basic System illustrated in Chapter 7. This midpoint model paints a picture of what Grand Island's transportation could be 12 years from now with gradual implementation of an improved pedestrian and bicycle system. Given current fiscal constraints and allocation of existing funds, this assumes a relatively slow start in program implementation, accelerating as new funds become available. The Basic System midpoint assumes that:

- The city will grow at an average annual rate of 1.22 % during the next 20 years, the city's average annual growth rate since 1960.
- Walk-to-work commuters increase from about 1.12% to 2.25% of all workers.
- Transit's share of the modal mix increases from 0% to a 4%, assuming implementation of the Illustrative Plan's proposed Flexible Route concept in the 2017 Olsson transit study. It is important to note that any projection of transit use is highly speculative, as most existing service has been highly targeted to seniors.
- Bicycle commuting, encouraged by new infrastructure, could increase to about 2% by 2030.
- 15 % of K-8 students could walk to school, about 40% over the current level. This is still far lower than the 60 % of students who walked to school 30 years ago.

Applying these changes increases daily pedestrian trips from about 11,350 in 2016 to about 23,250 in 2030, doubling over the twelve year period. Bicycle trips could increase from about 3,900 to about 8,250 daily trips. These changes could have an overall impact on the overall picture in Grand Island. This model assumes that by 2030, about 8% of commuting trips will eventually be made by "active transportation" modes – transit, foot, and bicycle.

The 2040 projections suggest that active modes (including transit) may claim up to a 15 % mode share by 2040 and that 2% of Grand Island's residents will cycle to work. The number of students walking to school will increase to 20 %, still far below levels experienced twenty years ago. These assumptions result in an increase of weekday pedestrian trips from 11,350 today to about 35,200; and an increase in weekday bicycle trips from about 3,900 to about 14,750.

These projections do not include technological changes that make bicycling more attractive to more people. For example, the introduction of e-bikes to the area, which use a small electric motor to assist pedal-driven bicycles, may broaden the appeal of bicycling for transportation and will certainly increase the number of people with the physical capability to ride by requiring less physical exertion. On-street infrastructure is particularly well-suited to accommodating these increasingly popular vehicles.

Table 2.1: Comparative Cities' Mode Share

City	Total Number of Workers	Walk %	Bike %
Grand Island	25,985	1.12	0.70
Omaha	204,463	2.84	0.98
Kearney	17,260	3.93	2.05
Cedar Rapids	65,912	2.95	1.76
Bellevue, WA	62,816	4.62	0.52
Bethesda, MD	31,273	6.18	2.00
Burlington, VT	22,102	20.31	4.98
Cedar Falls, IA	20,434	11.80	0.71
Des Moines, IA	100,648	2.75	0.43
Duluth, MN	41,863	5.15	0.82
Edina, MN	22,799	1.95	0.96
Evanston, IL	35,618	11.64	3.01
Fargo, ND	62,074	4.44	1.08
Fitchburg, WI	13,166	1.63	0.90
Gresham, OR	46,692	2.31	0.46
Hopkins, MN	9,595	2.53	0.67
Lee's Summit, MO	46,219	0.52	0.02
Lincoln, NE	138,108	3.13	1.54
Montclair, NJ*	18,486	4.02	0.34
Shorewood, WI	7,575	9.19	3.60
Sioux Falls, SD	84,504	2.19	0.52
Wauwatosa, WI	24,799	2.31	0.59
Wheat Ridge, CO	14,724	2.00	0.92

Source: 2012-16 ACS 5 Year Estimates
**Source: 2009 ACS 5 Year Estimates*

Table 2.2a: Existing and Projected PEDESTRIAN Transportation Trips, 2018-2040

Pedestrian Trips in Grand Island	2016 Base	2016 Share (%)	2020	2020 Mode Share (%)	2030	2030 Mode Share (%)	2040	2040 Mode Share (%)	Assumptions/Sources
Population	50,895		53,424		60,312		68,087		2016: ACS; +1.22% historic annual growth rate since 1960
Total Commuting to Work	25,985	51.05%	27,276	51.05%	30,793	51.05%	34,763	51.05%	51.05% of Grand Island population in employed workforce, ACS 2016
Walking to Work (%)	1.12%		1.5%		2.25%		3.00%		
Walking to Work (#)	291		409		693		1,043		
Work at Home	594		624		704		795		2.29% of Grand Island workers work at home, ACS 2016
Work at Home Pedestrian Trips	149	25% make one ped trip	156	25% make one ped trip	176	25% make one ped trip	199	25% make one ped trip	
Take Transit to Work (#)	178	0.69% take transit	546	2% take transit	1,232	4% take transit	2,086	6% take transit	
Walk to Transit	89	50% walk to transit	273	50% walk to transit	616	50% walk to transit	1,043	50% walk to transit	
School Population (K-8)	7,787	15.3%	8,174	15.3%	9,228	15.3%	10,417	15.3%	K-8 students = 15.3% of GI population, ACS 2016
School (K-8) Pedestrian Trips	857	11% walk to school	899	11% walk to school	1,384	15% walk to school	2,083	20% walk to school	Safe Routes to School National Partnership, 2009. 13% of children walk OR bike to school
School Population (9-12)	2,138		2,244	4.2%	2,534	4.2%	2,860	4.2%	9-12 students = 4.2% of GI population, ACS 2016
School (9-12) Pedestrian Trips	118	5.5% walk to school	135	6.0% walk to school	203	8% walk to school	286	10% walk to school	
College	1,730		1,816		2,050		2,314		College Students=3.4% of GI population, ACS 2016
College Pedestrian Trips	19	1.12%	27	1.5%	46	2.25%	69	3.0%	Same ratio as walk to work
Total Pedestrian Commuters	1,522		1,899		3,118		4,723		
Total Pedestrian Commuter Trips (Commuters x2)	3,044		3,798		6,235		9,447		2 trips for each commuter
Other Trips Ratio (commuter to non-commuter trips)	2.73		2.73		2.73		2.73		U.S. DOT, Federal Highway Administration, 2001 National Household Travel Survey, via Alta Planning & Design
Other Pedestrian Trips	8,310		10,368		17,022		25,790		Commuter Trips x Other Trips Ratio
Total Daily Pedestrian Trips	11,354		14,165		23,258		35,236		Commuter Trips + Other Trips

Table 2.2b: Existing And Projected BICYCLE Transportation Trips, 2010-2040

Pedestrian Trips in Grand Island	2016 Base	2016 Share (%)	2020	2020 Mode Share (%)	2030	2030 Mode Share (%)	2040	2040 Mode Share (%)	Assumptions/Sources
Population	50,895		53,424		60,312		68,087		2016: ACS; +1.22% historic annual growth rate since 1960
Total Commuting to Work	25,985	51.05%	27,276	51.05%	30,793	51.05%	34,763	51.05%	51.05% of Grand Island population in employed workforce, ACS 2016
Bike to Work (%)	0.7%		0.8%		1.2%		2.0%		
Bike to Work (#)	182		218		370		695		
Work at Home	594		624		704		795		2.29% of Grand Island workers work at home, ACS 2016
Work at Home Bike Trips	149	5% make one bike trip	31	5% make one bike trip	35	5% make one bike trip	199	5% make one bike trip	
Take Transit to Work (#)	178	0.69% take transit	546	2% take transit	1,232	4% take transit	2,086	6% take transit	
Bike to Transit	0	0% bike to transit	27	5% bike to transit	62	5% bike to transit	104	5% bike to transit	
School Population (K-8)	7,787	15.3%	8,174	15.3%	9,228	15.3%	10,417	15.3%	K-8 students = 15.3% of GI population, ACS 2016
School (K-8) Bike Trips	156	2% bike to school	327	4% bike to school	554	6% bike to school	833	8% bike to school	Safe Routes to School National Partnership, 2009. 13% of children walk OR bike to school
School Population (9-12)	2,138	4.2%	2,244	4.2%	2,534	4.2%	2,860	4.2%	9-12 students = 4.2% of GI population, ACS 2016
School (9-12) Bike Trips	21	1% bike to school	34	1.5% bike to school	63	2.5% bike to school	100	3.5% bike to school	
College	1,730		1,816		2,051		2,315		College Students=3.4% of GI population, ACS 2016
College Bike Trips	12	1.12%	15	1.5%	25	2.25%	46	3.0%	Same ratio as bike to work
Total Bike Commuters	520		652		1,108		1,978		
Total Bike Commuter Trips (Commuters x2)	1,039		1,304		2,216		3,956		2 trips for each commuter
Other Trips Ratio (commuter to non-commuter trips)	2.73		2.73		2.73		2.73		U.S. DOT, Federal Highway Administration, 2001 National Household Travel Survey, via Alta Planning & Design
Other Bike Trips	2,837		3,559		6,049		10,800		Commuter Trips x Other Trips Ratio
Total Daily Bike Trips	3,876		4,863		8,265		14,756		Commuter Trips + Other Trips

GRAND ISLAND BIKE/PED SURVEY

The estimates discussed above help quantify the size of a potential active transportation market and also help to assess some of the basic economic and health benefits achieved by reaching this market. With realistic mode projections, the Grand Island area could reach 49,992 daytime active transportation trips by 2040. The Bicycle and Pedestrian Survey helps define the preferences and opinions of these prospective cyclists and pedestrians, and provides important guidance for designing the network.

Who are Grand Island's Active Transportation Users?

While the survey is not a scientific sample, the number and diversity of responses suggested that it represents citizens with interest in active transportation. The first questions explored the characteristics of these responses, and found that:

Figure 2.3: Place of Residence of Participants

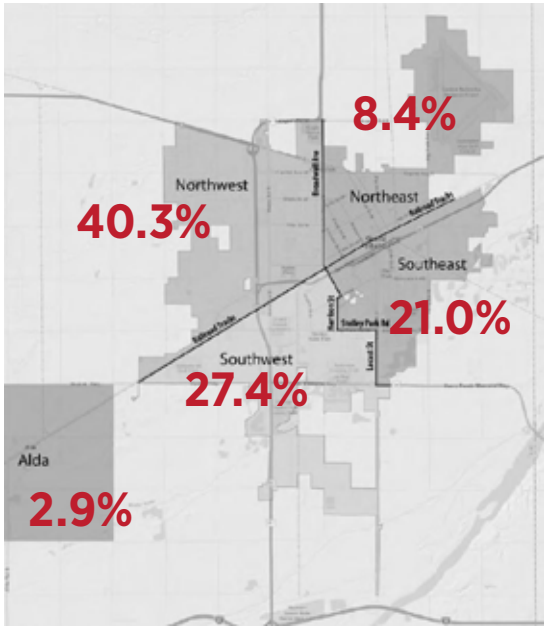
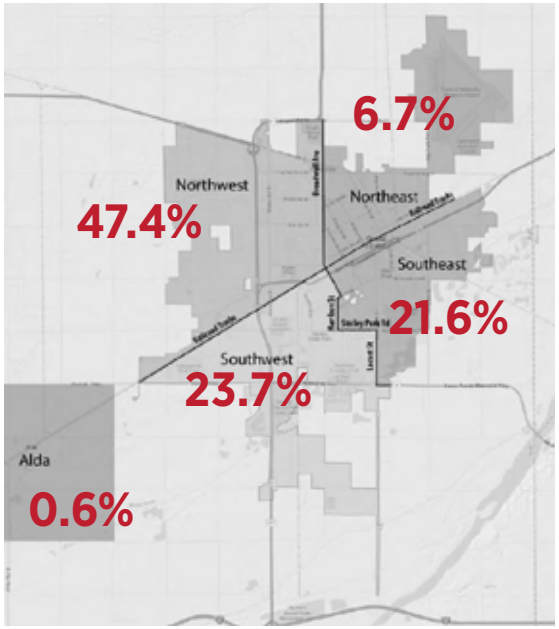


Figure 2.4: Common Destination of Participants



- **Survey respondents represent all parts of the region.** This suggests that residents in all parts of the region are interested in active transportation and that a complete system will find an audience across all of the Grand Island area. An almost even number live north and south of the railroad corridor, with the plurality of responses coming from the northwest sector. Figure 2.3 illustrates the distribution of responses.
- **Destinations are distributed in almost exactly the same percentages as residences.** This suggests both destinations in all parts of the region, supporting the concept of a citywide network; and the likelihood of relatively short trips, also supporting an active transportation framework. (Figure 2.4)

CYCLISTS' RESPONSES

- **Responses were relatively evenly split between regular and infrequent riders.** Only about 40% of respondents reported being "regular" riders, riding at least once or twice a week or more; 17% more reported riding occasionally, and about 42% were at best infrequent cyclists. The fact that this type of sample were motivated to complete an extensive survey on pedestrian and bicycle transportation suggests an interesting opportunity for growth and relatively high interest outside a traditional bicycling community. (Figure 2.5)
- **Exercise and recreation-related purposes are by far the most frequent reasons mentioned for bicycling.** Regular exercise is by far the most popular reason for bicycling, followed by other recreational purposes (trips to parks or recreation facilities and family outings). "Utilitarian" bicycling is still relatively uncommon in Grand Island, although about 15% of respondents (51 of 348) report commuting as a purpose for their riding. (Figure 2.6)
- **The largest group of respondents are cyclists most interested in improved infrastructure.** The largest single group, about 39 %, were interested in cycling and

comfortable on low-traffic streets, but showed concerns for safety and see a real need for new facilities to expand ridership and improve safety. The next largest single group, 22%, view themselves primarily as trail users and would like to see additional trails, augmented by interested non-riders. Just over 17% fall into the "committed urban cyclist" category – people comfortable with mixed traffic but support better infrastructure to expand participation. Very small groups were at the edge of the interest spectrum – only about 1.3% responded to being comfortable in every situation and seeing no reason for infrastructure development, and 8.5% reported that they were likely to ride under any circumstances. (Figure 2.7)

PEDESTRIAN RESPONSES

- A majority of survey respondents walk regularly for a variety of purposes. Roughly 57% of participants reported walking at least once or twice a week. Only about 20% report themselves as "infrequent" or non-walkers. (Figure 2.8)

- Exercise and recreation-related purposes are by far the most frequent reasons mentioned for walking. Purposes of pedestrian trips are very similar to those of bicycling trips. About 85% of respondents report walking for exercise, and the next largest purpose categories (trips to parks or recreation facilities, family outings, and social visits) also involve recreational or leisure purposes. A much smaller group walks for utilitarian purposes such as commuting, shopping, and community destinations. Not unexpectedly, these groups are smaller than those of people who bike for similar purposes. (Figure 2.9)

Figure 2.5: Frequency of Bicycling

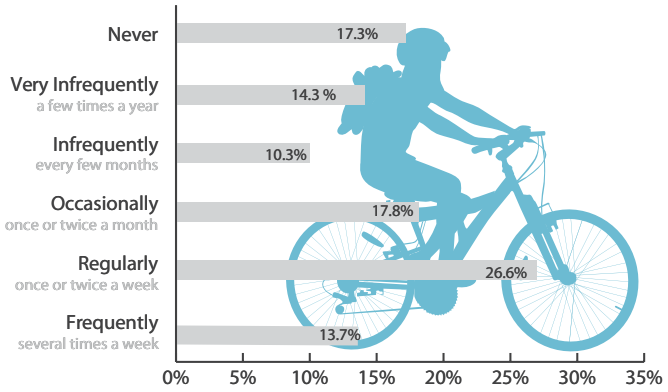


Figure 2.6: Purposes of Cycling Trips

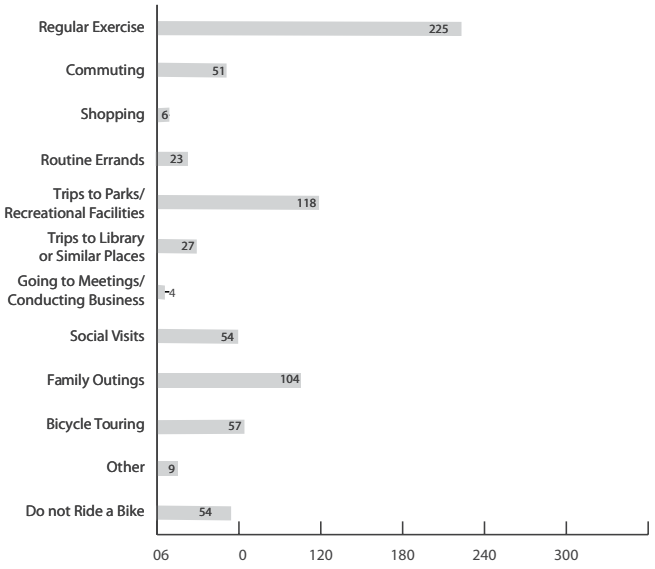


Figure 2.7: Self-Characterization of Participants

COMMITTED AND FEARLESS: I am a committed bicyclist who rides in mixed traffic on every street. I don't believe that any significant further action on bicycle facilities is necessary. **1.3%**

COMMITTED URBAN CYCLIST: I am a committed bicyclist who rides in mixed traffic on most streets, but believes that new facilities like bike lanes, bike routes, and trails are needed to improve Grand Island's biking environment for me and encourage other people to ride more often. **17.4%**

INTERESTED AND CONCERNED: I am interested in bicycling and use low-traffic streets, but am concerned about the safety of riding in mixed automobile traffic. More trails and bike lanes and routes would increase the amount of trips that I make by bicycle. **38.6%**

RECREATIONAL TRAIL USER: I am a recreational or occasional bicyclist and ride primarily on trails. I would like to see more trails, but am unlikely to ride on city streets even with bike lanes **22.4%**

INTERESTED NON-RIDER: I do not ride a bicycle now, but might be interested if Grand Island developed facilities that met my needs better or made me feel safer. **11.7%**

NON-RIDER UNLIKELY TO RIDE: I do not ride a bicycle, and am unlikely ever to do so. **8.5%**

Figure 2.8: Frequency of Walking

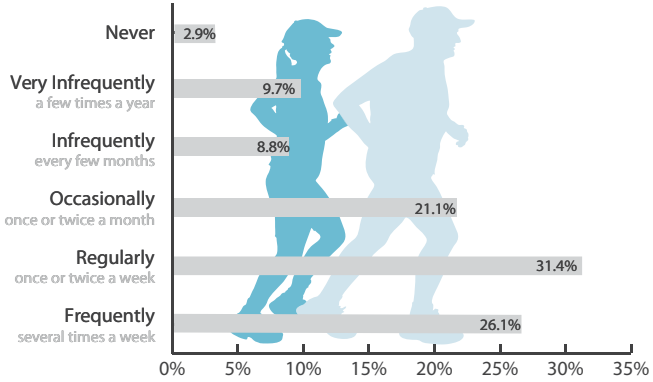
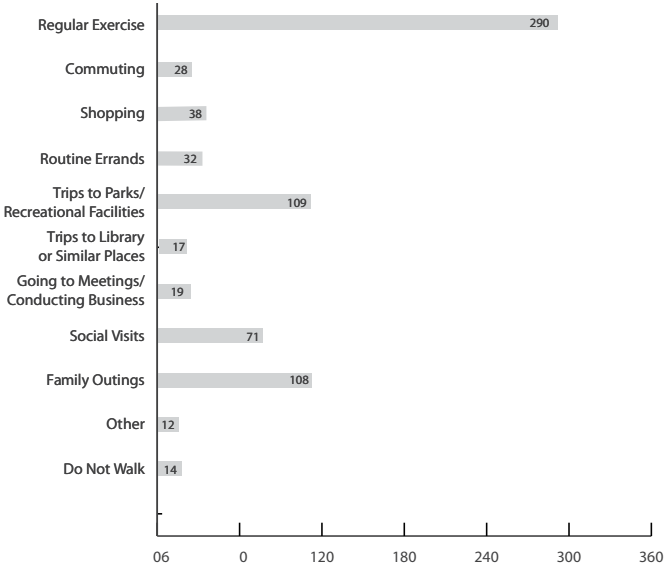


Figure 2.9: Purposes of Walking Trips



DESTINATIONS

An active transportation network should get people where they want to go. The survey listed a number of different community destinations or destination types, and asked respondents to rank them based on the importance of good bicycle and pedestrian access to them. Figure 2.10 describes the results, indicating the number of participants who considered good access important or very important. These in turn suggest the places that the network should serve.

Top priority destinations include the city's trails, schools, parks, neighborhood parks, schools, and the library. Retail and commuter destinations group at much lower importance levels, again reinforcing the preponderance of bicycling for fitness and recreational uses in the Grand Island area.

GRAND ISLAND STREETS

Much of the survey was designed to assess the comfort of current and prospective bicyclists with different types of bicycle environments. The survey asked participants to respond to a gallery of photographs of Grand Island streets and infrastructure installations from other parts of the country. Through their responses, participants assessed:

- Whether the setting is comfortable for most or all cyclists.
- Whether the setting is comfortable for the respondent, but not necessarily for less capable cyclists.

The displays in Figure 2.11 group images of various Grand Island streets on the basis of their combined favorability ratings. Groupings are based on the % of respondents who considered the facility comfortable for both other users and themselves. and show the following results:

- The most comfortable (over 85 % favorable) settings include either completely separated paths, both along roads and on exclusive right-of-way, or quiet

neighborhood streets such as Oak Street and Stagecoach Drive. This indicates a reasonable level of user comfort with quiet streets. given the fact that relatively few of the respondents characterize themselves as fully comfortable in mixed traffic.

- The next highest-rated groups (50-85 % favorable) include some relatively busy streets, including Custer Avenue, 13th Street, and Fonner Park Road. This indicates at least some comfort level with key candidate streets for a network that could be strengthened by some infrastructure improvement.

- Most people are uncomfortable with major arterial streets, two-lane corridors with significant traffic, and several major pedestrian crossings, including trail crossings of major streets.

Another level of interpretation is the difference between settings rated as "comfortable for me" rather than "comfortable for most people" by a substantially larger number of people. These suggest situations that experienced riders find satisfactory for themselves, but not suitable for less capable cyclists. One determining factor was the perceived or indicated amount of traffic for a particular situation. More experienced bicyclists were more comfortable dealing with-

higher traffic volumes than less experienced riders.

INFRASTRUCTURE APPROACHES

Figure 2.12 displays a series of bicycle and pedestrian infrastructure approaches in use around the country. These are grouped by the percentage of respondents rating each image as "comfortable for most or all users" – a higher standard of comfort than used to evaluate Grand Island streets in Figure 2.11. This different, stricter measure is directed toward the goal of expanding the role of active modes in the overall transportation framework, rather than simply providing existing bicyclists and pedestrians with better or more comfortable facilities (a valid goal in itself, to be sure).

Figure 2.10: Importance of Bicycle and Pedestrian Access to Community Destinations

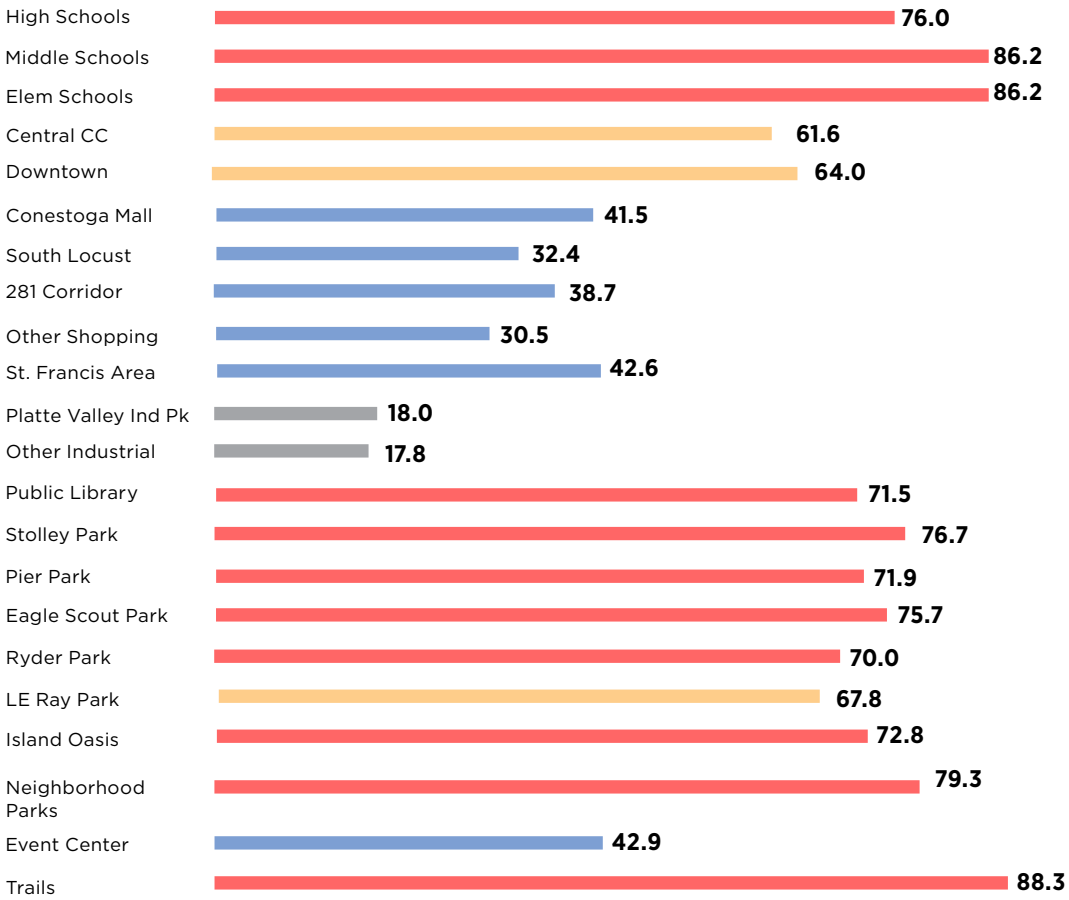


Table displays % of respondents reporting destinations as "important" or "very important" for pedestrian and bicycle access.

Figure 2.11: User Comfort of Various Grand Island Contexts

% of participants reporting the facility is comfortable for most users and for themselves

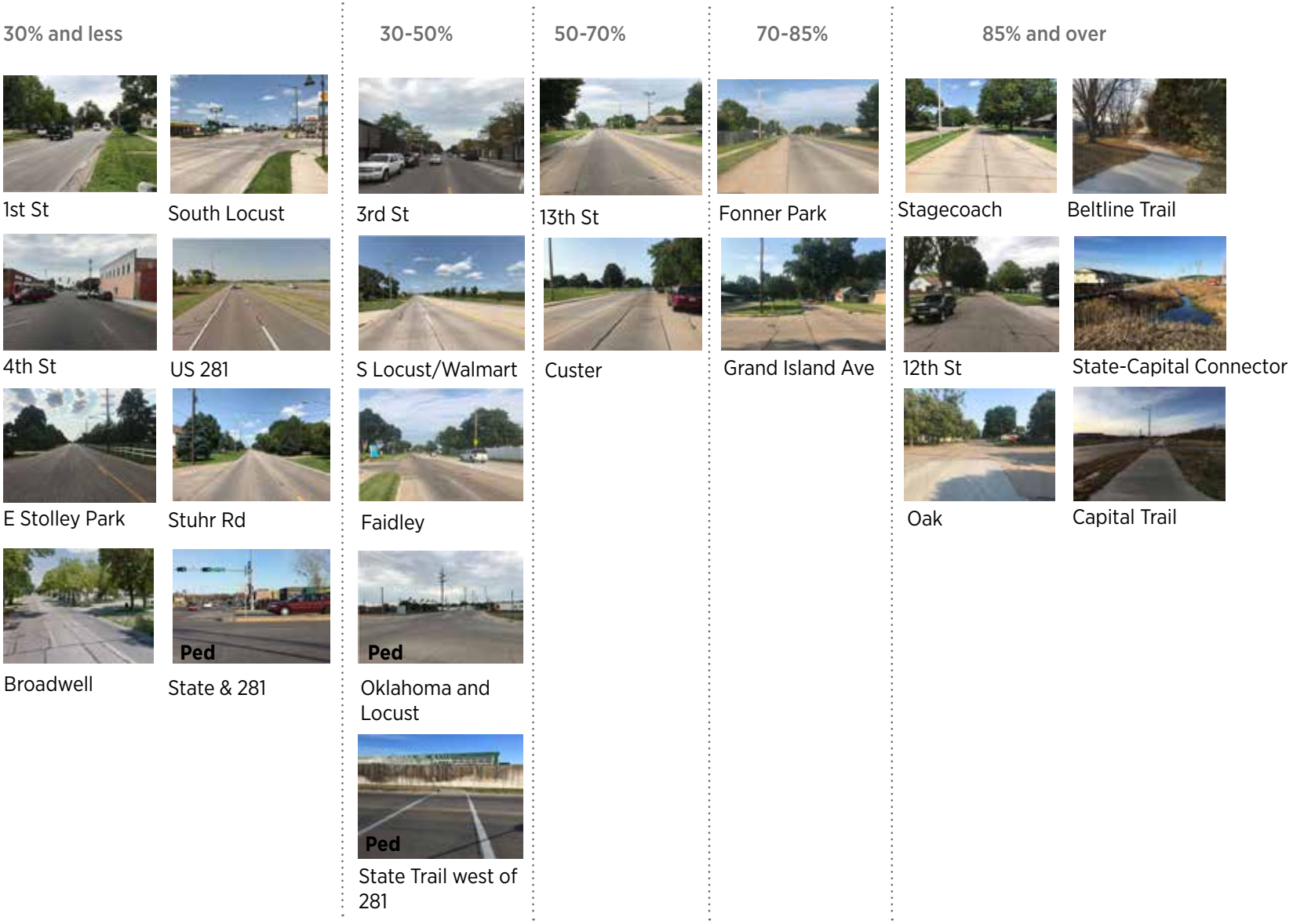


Figure 2.12: User Comfort of Various Infrastructure Solutions

% of participants reporting the facility is comfortable for most users

The results of FIgures 2.11 and 2.12 suggest that:

- The highest level of comfort is associated with physically separated facilities – trails on exclusive right-of-way or on-street facilities that have a physical buffer or barrier between the bicycle/pedestrian environment and motor vehicle travel lanes.
- Views of enhancements to local and neighborhood streets are divided, with about half of respondents viewing them as comfortable for most users – a lower percentage than physically separated facilities. However, many of these respondents viewed these facilities as "comfortable" for themselves.
- Higher visibility facilities (physical separation, vertical bollards, green paint) appear to make some difference in people's perception of comfort for most users.
- Painted conventional bike lanes or shared lane markings on busy streets are not seen as comfortable for most users.

Figure 2.13: Effectiveness of Various BICYCLE Actions

Very Effective or Effective Over 70%	Very Effective or Effective 50% - 70%	Very Effective or Effective Less than 50%
Buffered bike lanes	More bike parking	Bicyclists May Use Full Lane signage
More trails	Bike lanes	Shared lane markings
Widened sidewalks/ sidepaths on major streets	Designated on-street bike routes to key destinations	Motorist education
Bike safety programs for kids	Strong advocacy organization	Better law enforcement
Better pedestrian and intersection control of major streets	More special and community events	Improved bicycle safety education
More safe routes to schools projects	Challenges and promotions for bicycle commuters	Bike share program
	More information about clubs, events, programs	Showers at workplaces
	Bike/ped-friendly project design	
	Wayfinding signage	
	Better pavement markings at intersections	
	Better sidewalk ramps	
	Countdown crossing signals	

IMPORTANCE OF VARIOUS ACTIONS

Responses to a list of possible actions to improve Grand Island's bicycle and pedestrian environment indicated a strong priority for infrastructure programs. Figure 2.13 tabulates the responses to this list. Initiatives that ranked highest included protected bike lanes, more trails, and sidepaths. Highly rated pedestrian initiatives focused on improved pedestrian and intersection controls at major streets and safe routes to schools projects. Bike education programs directed to children were also considered highly effective.

A variety of other actions were viewed as effective by a majority of respondents, notably including wayfinding, bike lanes (presumably on streets with comfortable traffic volumes), events and promotional programs, and a designated on-street network. From a pedestrian perspective, better pavement markings at intersections and sidewalk ramps were viewed as effective programs.

Less effective actions included shared road signage, shared lane markings, bike share programs, and bicycle safety education for motorists and riders.


NO
MOTOR