EXTENDING THE MARKET: *INCREASING SUSTAINABILITY POTENTIAL THROUGH PUBLIC TRANSIT IN LEE'S SUMMIT*

by

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A REPORT

submitted in partial fulfillment of the requirements for the degree

MASTER OF LANDSCAPE ARCHITECTURE

Department of Landscape Architecture/ Regional & Community Planning
College of Architecture, Planning and Design

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Approved by:

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abstract

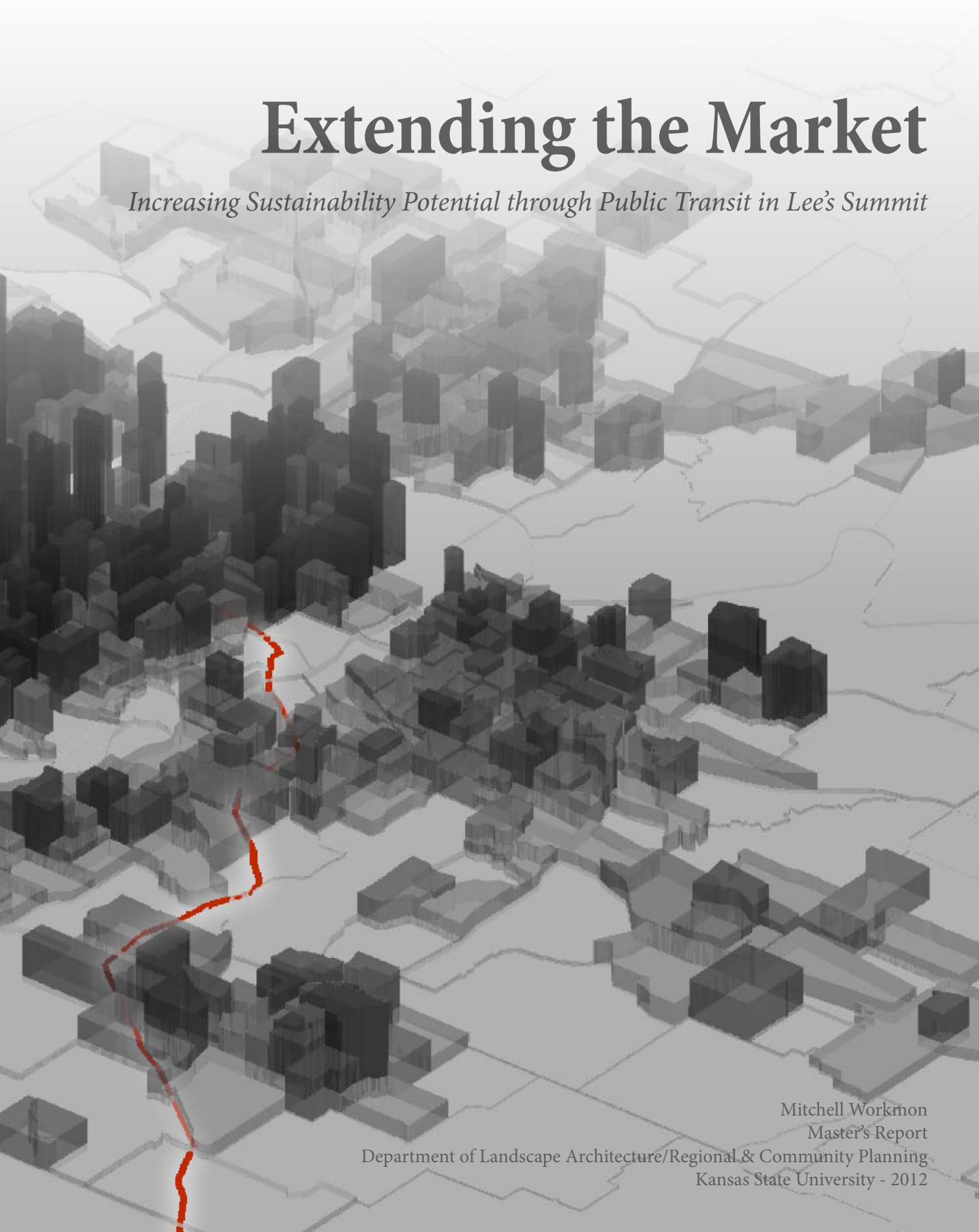
Investigating historical trends of public transportation, two distinct groups of riders are targeted. First, individuals living and working in large metropolitan centers, and second, people who are dependent upon public transit; referring to people who cannot afford personal automobile transportation, possess no driver's license, or are physically unable to drive (Garrett and Taylor, 1999). Analyzing the national demographics related to age and poverty levels, transit dependents make up only approximately 25% of the United States population. Expanding transit ridership will make our nation's transportation sector more sustainable. Public transportation systems yield exceptional benefits including economic and community vitality, gasoline consumption reduction, air quality improvement and diverse cultural interactions promoting social cohesion (Metro Transit- St. Louis, 2010).

This report focuses on ridership potential in the Rock Island Corridor, an unused rail thoroughfare in Kansas City. Local governing organizations are analyzing the corridor for future commuter rail implementation. In order to attain higher ridership and ensure long-term viability, the commuter rail must attract residents that are not dependent upon public transportation. This project maps transit dependencies along the Rock Island Corridor looking at income levels, home values, and commuting distance. The findings illustrate that Lee's Summit is not dependent upon public transit and has tremendous potential to impact the ridership and development direction along the corridor. Looking into the future of the corridor the time to plan is now. Lee's Summit is expected to see a population increase of 40,636 people (a 50% increase) by the year 2040 (Mid-America Regional Council, 2010).

The strategies applied to Lee's Summit are applicable to other similar suburbs of Kansas City, ultimately making Lee's Summit a catalyst for the region. The organization of the project is focused around three major sections. The first section explores and analyzes current public transit practice in terms of ridership and aesthetics. The second section explains a three-part strategy focused around a park-n-ride and a transit-oriented development, both supported by a municipal feeder bus system. The third section demonstrates design and program ideas for the park-n-ride station that provide the community with visions to promote smart growth and a sustainable future.

Extending the Market

Increasing Sustainability Potential through Public Transit in Lee's Summit



Mitchell Workmon
Master's Report
Department of Landscape Architecture/Regional & Community Planning
Kansas State University - 2012

Extending the Market

Increasing Sustainability Potential through Public Transit in Lee's Summit

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Major Professor Blake Belanger, ASLA, RLA

Secondary Professor Jason Brody, PhD

Tertiary Professor Huston Gibson, PhD

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CSP- *Creating Sustainable Places.*

GW- Greenwood.

JCCCCA- Jackson County Commuter Corridor Alternatives Analysis.

KC- Kansas City.

LPA- Locally Preferred Alternative.

LS- Lee's Summit.

MARC- Mid-America Regional Council.

NAPTA- National Alliance of Public Transportation Advocates.

NTS- Not to Scale.

PH- Pleasant Hill.

RIC- Rock Island Corridor.

RT- Raytown.

acknowledgments

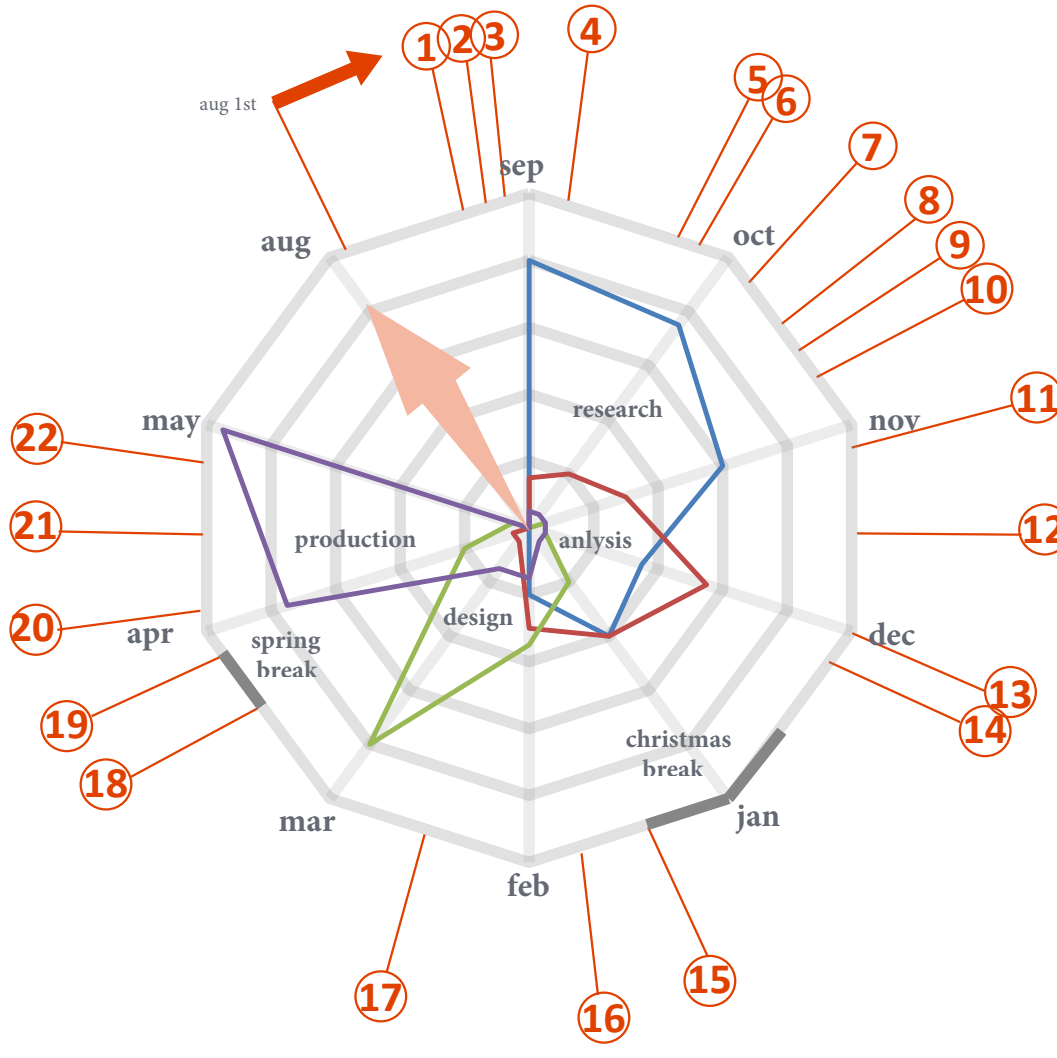
I would like to thank the Mid-America Regional Council, the Kansas State Department of Landscape Architecture/Regional and Community Planning, and my supporting project professors Mr. Blake Belanger, Dr. Jason Brody, and Dr. Huston Gibson. You all significantly progressed the academic explorations in my master's report **Extending the Market,** and I would like to express my sincere gratitude. I would also like to thank my family, friends, and peers for standing behind me throughout the journey.

preface

In the final stage of our educational endeavors, we [fifth-year, Master's Candidates of the Kansas State Landscape Architecture program] were presented with three locations for a master's report, each with its own dilemmas, forthcomings, and unique research applications . Given my interests with the local dilemmas and scope of work, I selected the project, *Creating Sustainable Places: The Rock Island Rail Corridor*, which coincidently passed through my hometown in Lee's Summit, Missouri. The project is a two semester undertaking that includes a variety of check points such as critiques, submittals, drafts, and design discussions, to ensure the successful completion of a professional Master's report. Looking at ***figure ii***, I divided the work flow for the semester into four major phases of study titled research, analyze, design, and production (see ***appendix a*** for more details on process diagrams).

Given the project location I became very intrigued and excited to investigate the Rock Island Corridor. Born and raised in Lee's Summit, I have developed relationships with the local businesses, neighborhoods, schools, and adjacent communities; all of which will be affected by future development along the Rock Island Corridor. The motivations for my Master's project are embedded in the relationships I have formed in the City of Lee's Summit, which directly ties into my personal philosophy of design.

People, whether in terms of unique groups or as individuals, have special and individualized relationships with landscapes, and many of those relationships come from the people that they share those places with. People are the reason landscapes are special. We [landscape architects] have the privilege to design places that people will want to use and spend time with their friends, family, and loved ones. To make the visions of my project a success, I want to generate concepts that allow for interaction and creates opportunities for people to enjoy the built environment with the ones they call friends and family.



1. aug 25th- project initiation
2. aug 29th- initial site visit and MARC discussion
3. aug 30th- familiarize with Design Informed
4. sep 3rd- rules of engagement due
5. sep 27th- project defintion due
6. sep 29th- discuss project with LARCP council
7. oct 4th- individual research questions due
8. oct 11th- meeting with major professor (belanger)
9. oct 18th- present initial thoughts with MARC
10. oct 25th- literature reviews and process due
11. nov 3rd- present a precedent study
12. nov 17th- precedent studies due
13. dec 1st- stakeholders meeting
14. dec 8th- semster progress due
15. jan 17th- critical date to move forward with project
16. jan 27th- small revision date
17. feb 13th- mid-crits
18. mar 2nd- annotated outline due
19. mar 26th- substantial completion
20. apr 2nd- final text due
21. apr 16th- final defense
22. apr 27th- docuement submission to graduate school

figure ii: temporal web.

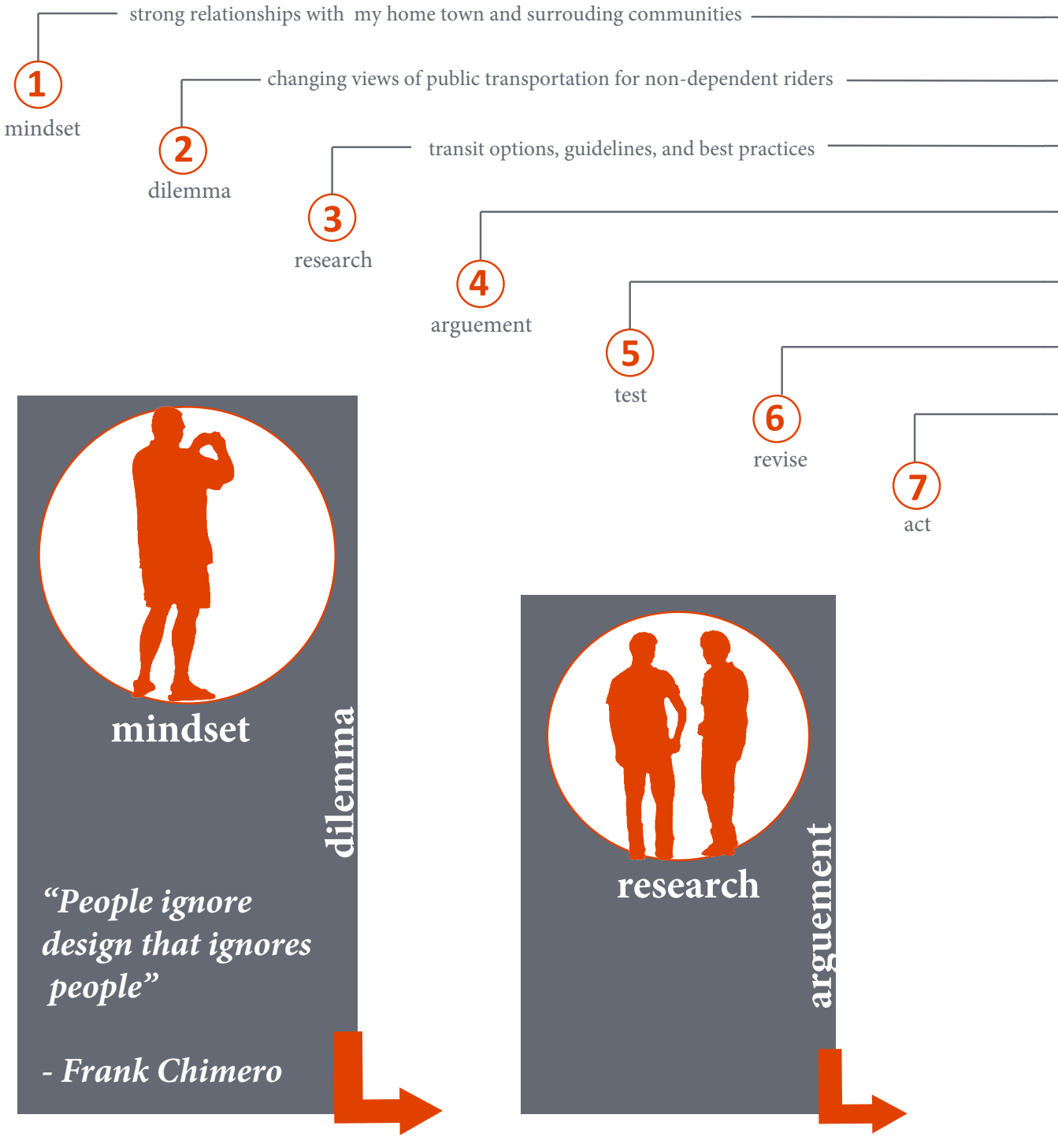


figure iii: design philosophy.

Rock Island Corridor/ Master's Project Application

implementation of specific aesthetics of transit stops can help change views

critiques with major professors, students, MARC, and community

take criticisms and adjust arguement and design features

final product, presentations

learning process

1.1

repeat

design philosophy

introduction I

improving public transit ridership

The targeted market for public transit must expand. The number of Americas who utilize public transit is relatively small. Opportunities to increase ridership and improve the level of sustainability in transportation are dwindling because of our auto-dependent society. Public transit systems can help the transportation sector of our nation become more sustainable.

Generally, people who utilize public transit in non-dense metropolitan centers, are a specific group of individuals; people who have lower income levels providing less opportunity for personal automobile transportation, older populations, and people who do not possess a driver's license. Mark Garrett and Brian Taylor stated in their article, *Reconsidering Social Equity in Public Transit* of the Berkeley Planning Journal, "the two principal markets that remain for public transit systems are downtown commuters and transit dependents: people who are too young, too old, too poor, or physically unable to drive." (Garrett and Taylor 1999, 1).

Public transportation systems yield exceptional benefits including economic and community vitality, gasoline consumption reduction, air quality improvement and diverse cultural interactions promoting social cohesion (Metro Transit-St. Louis, 2010). By extending the market into a broader population, we can improve transportation systems and increase ridership that ultimately creates support and a willingness to vote for public funding efforts. Social sustainability is a sector of the sustainability triad (social, economic, and environmental) that is often overlooked (Colantonio, 2009). With the lack of ridership diversity in public transit, there is a lack of social sustainability. Moving toward a more sustainable future, it is imperative

that the population demographics be properly represented to encourage equal ridership, or social equity. The current public transportation practices do not service a diversity of people. By targeting a select group, the public transportation industry has not evolved into a socially sustainable sector. To maximize the level of sustainability in the Rock Island Corridor, a large ridership comprised of an equitable diversity of users must be achieved.

Some common themes for social sustainability include: equity, democracy, basic needs, social justice, and cultural or community diversity (Colantonio, 2009). Specifically analyzing social sustainability is a relatively new yet important aspect of sustainability and as Andrea Colantonio (2009) suggests it can be difficult to measure (see *Social Sustainability: Linking Research to Policy and Practice* in ***appendix b***). By creating unique and specialized spaces for public interaction to occur, the opportunity for social mixing can improve and ultimately attract ridership from all of the communities in the Rock Island Corridor. The remainder of the report explores this dilemma of transit ridership, specifically in the Rock Island Corridor.

project context II


NO PARKING
ALL
TRAILERS
AND TRUCKS
OVER 6 TON
COMMUTER
PARKING
MISSOURI DEPARTMENT OF TRANSPORTATION

the rock island corridor

The ownership and initiation of the Rock Island Railroad company did not originate in Kansas City. The Chicago Rock Island Railroad Company began in 1847 in Chicago, Illinois. The lines spread out from Chicago and eventually extended to both Kansas City and St. Louis in 1902 (Metro Green Alliance, 2008). In 1964 the Union Pacific Railroad Company merged with the Chicago Rock Island line (Metro Green Alliance, 2008).

The Rock Island lines ceased activity through Kansas City in the early 1970's (Metro Green Alliance, 2008). As stated in the Encyclopedia of Chicago, "by the beginning of the 1960's, it operated over about 7,500 miles of track, had about $200 million in annual revenues," (Encyclopedia of Chicago, 2005) however the Chicago company still went through difficult times and eventually lost most assets by the late 1980's.

The Rock Island Corridor is currently owned by Union Pacific (Metro Green Alliance, 2008). As seen in ***figure 2.01***, the Rock Island Corridor line runs north from the City of Pleasant Hill and terminates at the Truman Sports Complex of Kansas City, Missouri. The line also passes through three other cities including Greenwood, Lee's Summit, and Raytown, Missouri. The Mid-America Regional Council, in a planning and vision document entitled ***Creating Sustainable Places (CSP)***, has identified five other corridors in the region that have potential for public transit implementation and greenway connections. The Rock Island Corridor is an old railroad thoroughfare and has great potential to impact Kansas City transit and the local municipalities.

There are many reasons why the Mid-America Regional Council and local communities have opted to preserve the corridor. The corridor has been preserved to provide an opportunity for transportation, economic gain, tourism, recreational opportunities, and environmental stability (Metro Green Alliance, 2008). The corridor is also the major connection to the Missouri Katy Trail State Park which extends through central Missouri. Along the Katy Trail there are biking, hiking, horseback riding, swimming, fishing, and camping opportunities (Missouri State Parks, 2012).

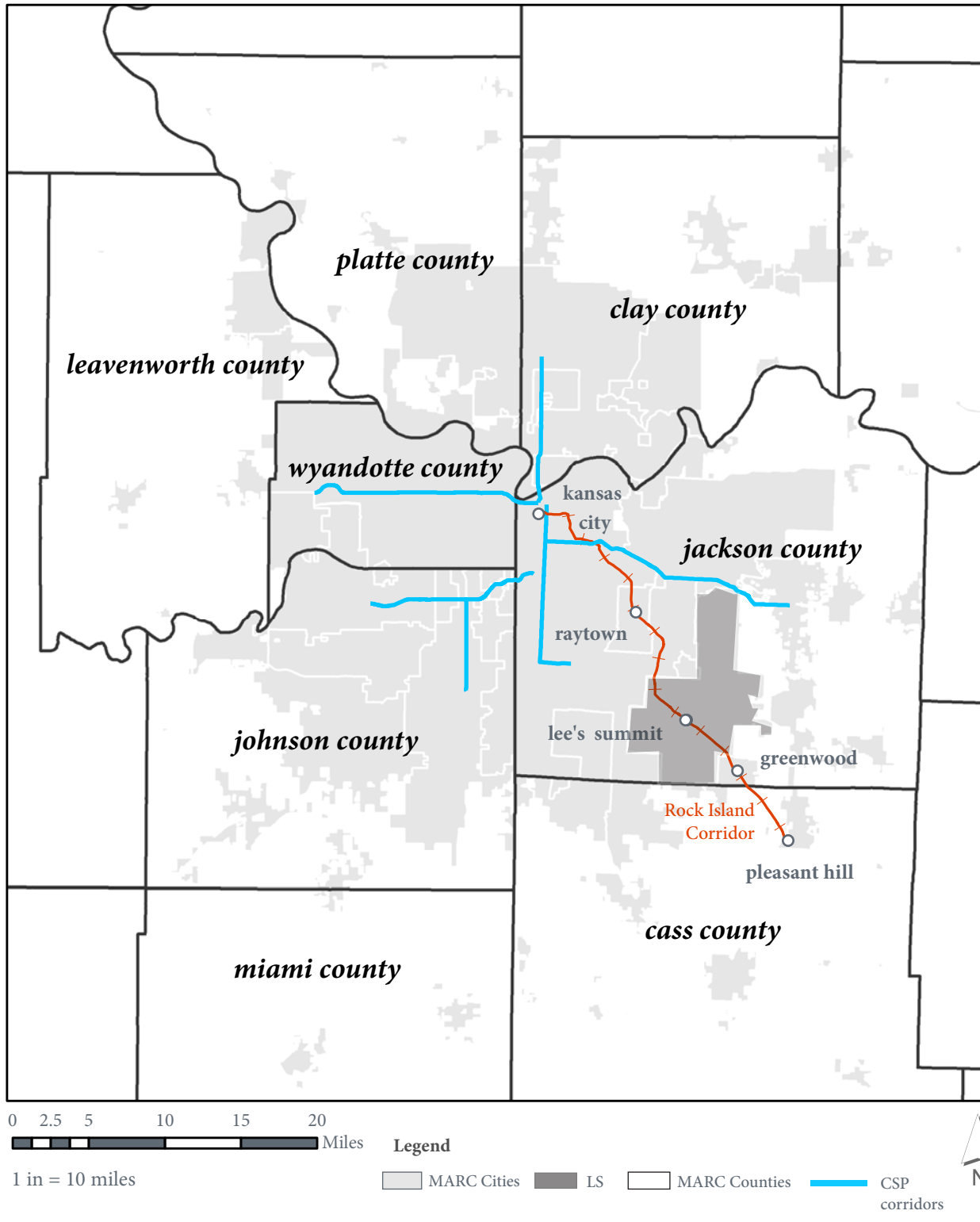


figure 2.01: rock island and greater kansas city context.

figure 2.02: corridor at truman sports complex.

figure 2.03: corridor under raytown bridge.

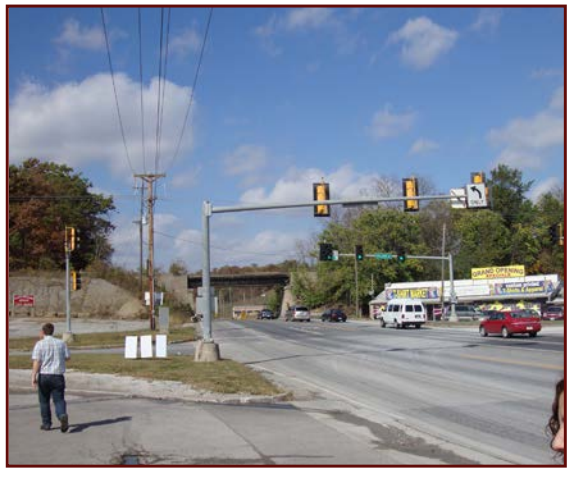


figure 2.04: corridor crossing at knobtown.

figure 2.05: corridor crossing at lee's summit.

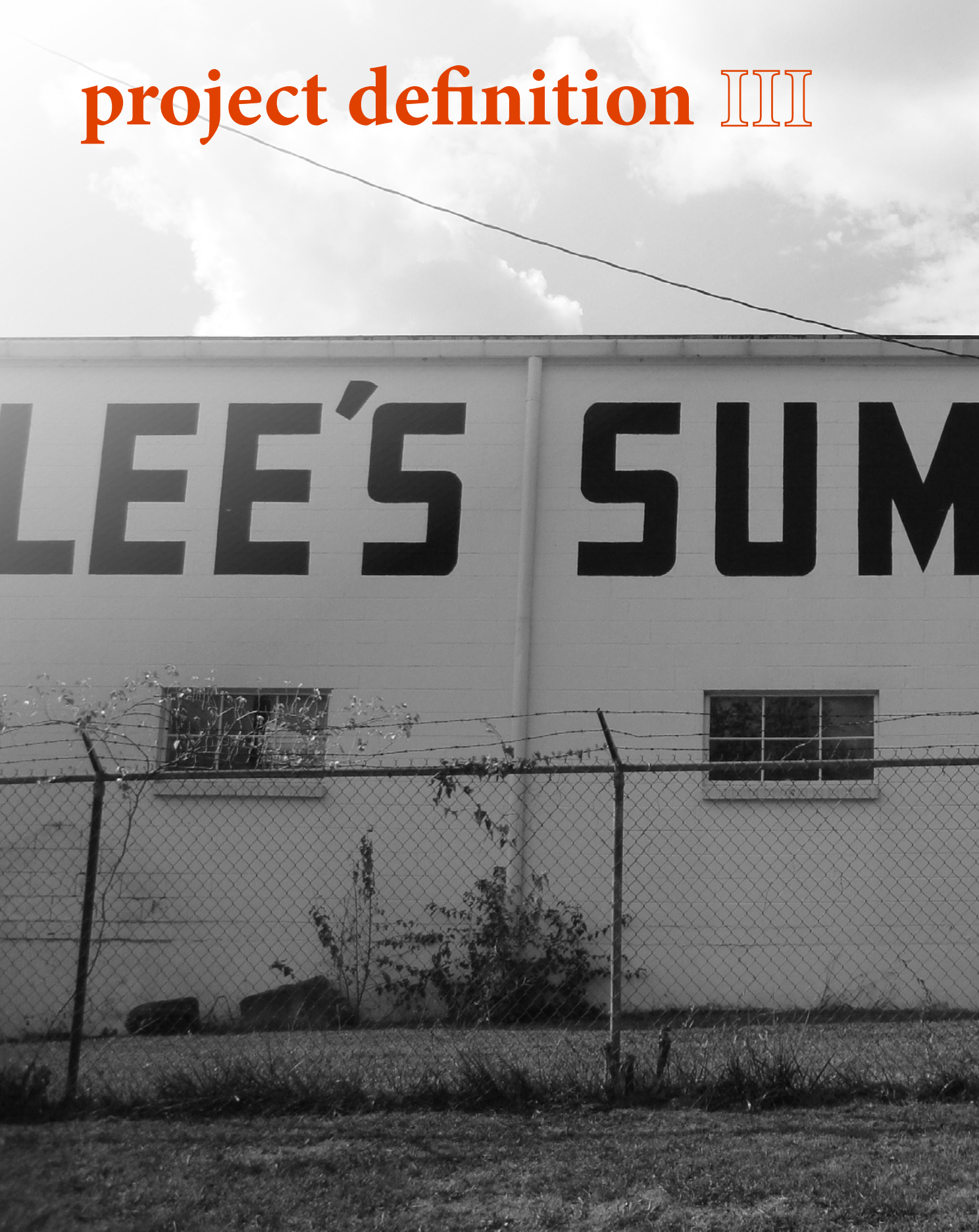
uncertain future

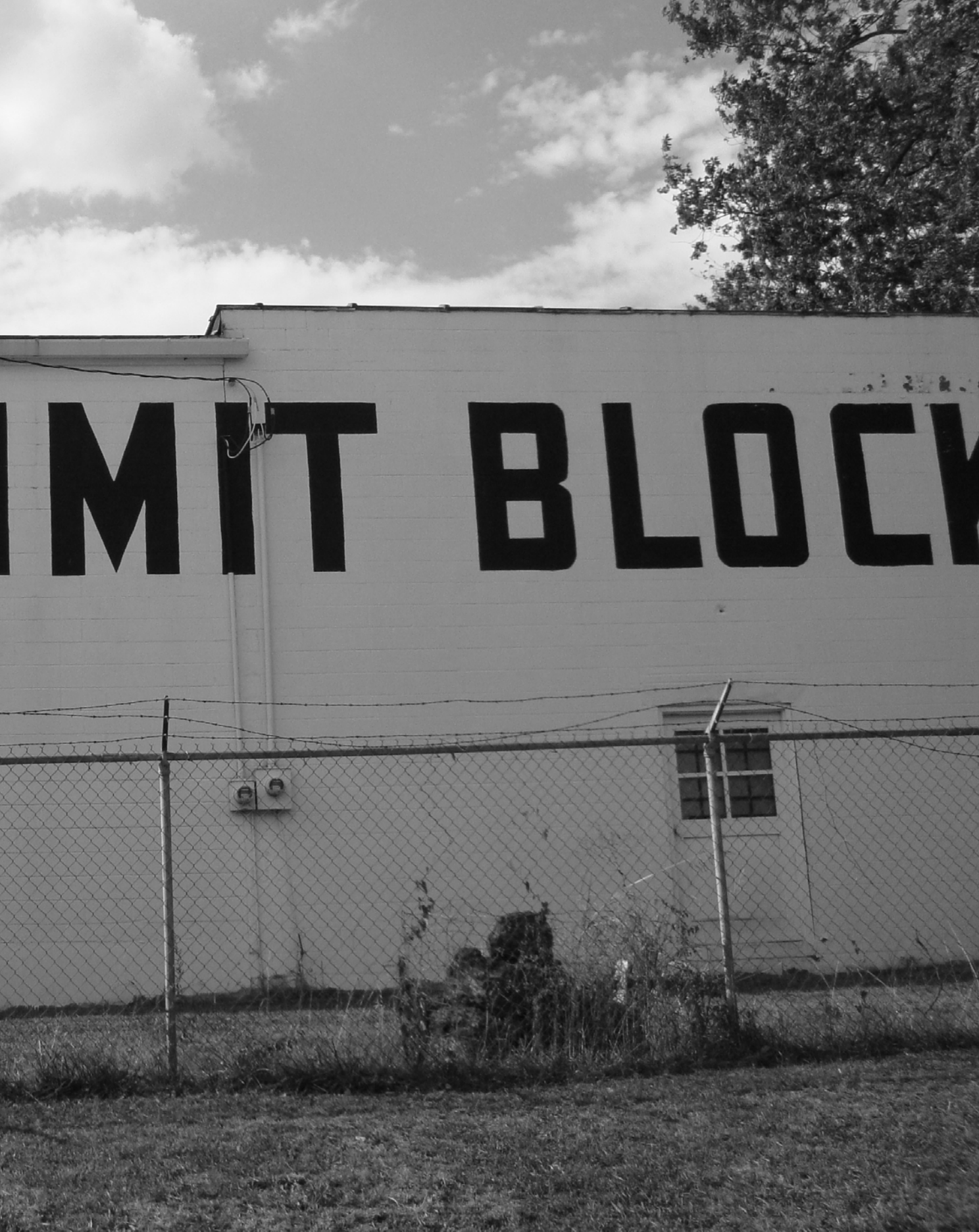
The future of the Rock Island Corridor is unknown. Negotiations are in progress between the Rock Island Corridor Coalition and the affected communities including Lee' Summit, Pleasant Hill, Kansas City, Greenwood, and Raytown (Lee's Summit Missouri Development, 2012). Union Pacific, the current owner of the corridor, is offering to sell a seventeen mile stretch that extends from the southern boundary of Lee' Summit to the Truman Sports Complex (Lee's Summit Missouri Development, 2012).

The potential usage of the corridor is a question that designers, engineers, researchers, planners, and city officials are looking to resolve. The proposals for the corridor are focused around a public transportation line and connection to the Katy Trail. As the Jackson County Commuter Corridor Alternatives Analysis (JCCCAA) has identified, commuter rail is the preferred alternative for a method of transportation within the corridor. The decisions are evaluated based on cost, transportation potential, and the benefits of the alternative (JCCCAA, 2010). Commuter rail differs from light rail in that it generally contains: more seating, less standing room, quicker routes, and less frequent stops. The JCCCAA looked at six different types of transit scenarios with varying ranges of implementation such as, bus systems, light rail systems, commuter or regional rail systems, and even a no-build scenario (JCCCAA, 2010). The purpose of the analysis is to find the locally preferred alternative (LPA), which is the best option for the affected areas. (JCCCAA, 2010)

At this point in the development and planning process, there is great potential to envision ideas for the future of the corridor. The future for one city located within the corridor, Lee's Summit, is vital to the importance of overall social sustainability and has great potential to directly affect the ridership demographics.

project definition III

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concept of transit ridership

Extending the Market establishes a concept known as the ***Transit Dependency Theory, figure 3.01,*** that demonstrates the relationship between two different demographics of users: non- transit dependents (non-traditional) and transit dependents (traditional). The theory explains the large untapped market of riders in public transportation. This untapped market is in the upwards of 75% of the national population (based on the US Census Bureau poverty statistics or people who are above the poverty threshold and percentage of drivers or people age 16-65) and includes a group known as non-dependent riders which possess traits such as: multiple transit options, a valid driver's license, higher income levels supporting personal automobile transportation, and do not have any disabilities.

Ridership demographic factors such as household income levels may attribute to an individual's decision to use or not to use public transit. Other demographic factors that reveal a potential relationship to public transit ridership is ethnicity, age, commute time, commute distance, and lifestyle or personal values. Some of the factors such as personal values and lifestyles cannot be directly measured.

Extending the Market proposes that people with higher income levels living greater distances from employment centers (suburbs) have the ability to use personal automobile transportation and therefore may be potentially less likely to use public transportation. These types of people are called non-traditional public transit users or *non-dependents* and are typically less marketable. Inversely, people with lower income levels with little or no personal automobile transportation, higher aged people, and people living shorter distances form employment centers (urban) may be more likely to use public transportation. These types of people are traditional transit users or *dependents* and more easily attracted to public transit because of the economic and accessibility benefits received from using public transportation.

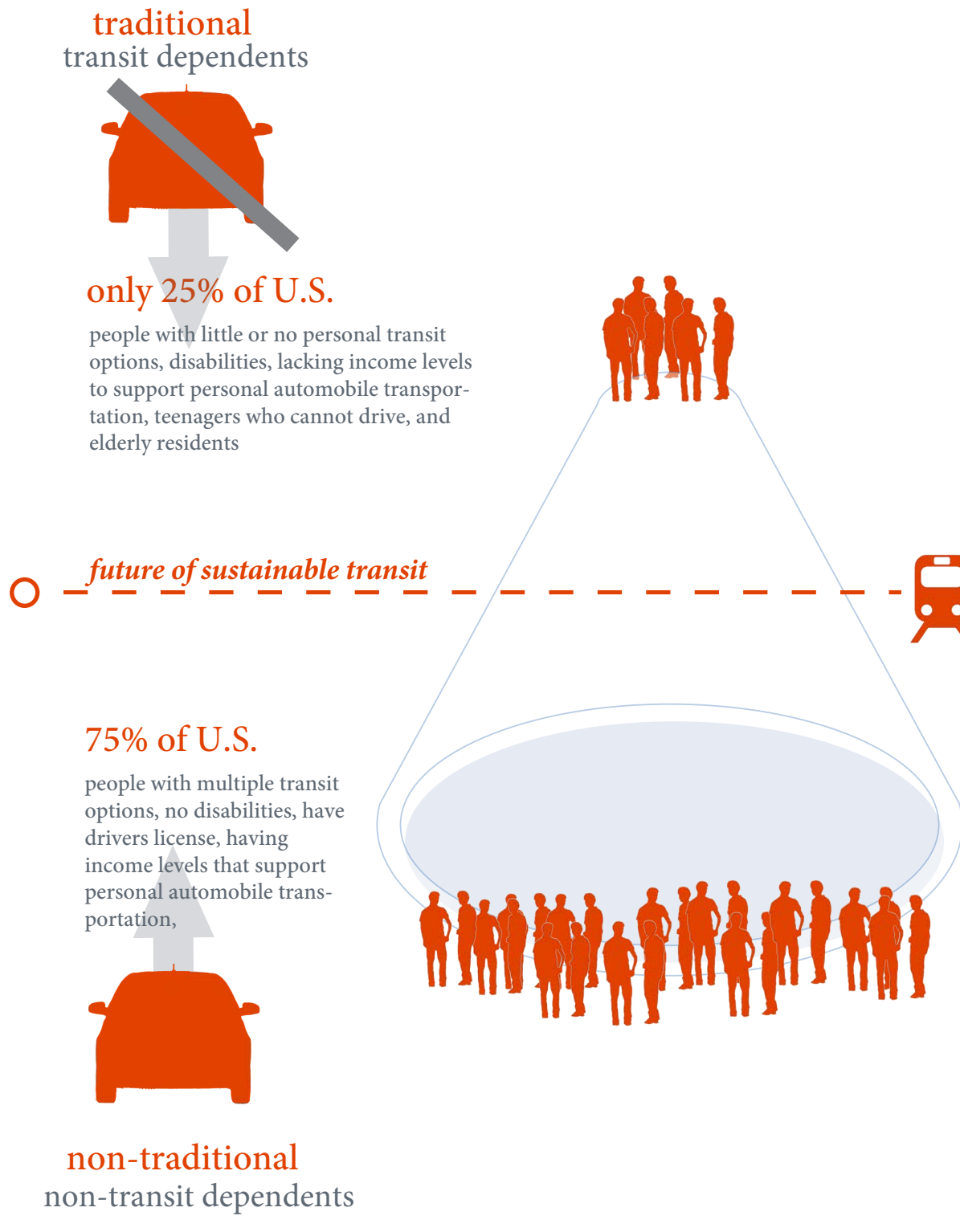


figure 3.01: transit dependency theory.

visualizing transit dependencies

The levels of transit dependency vary in the Rock Island Corridor. By identifying transit dependencies along the corridor planning efforts can be directed at specific locations to improve ridership potential of non-dependent communities.

When comparing the dependencies of public transit between Kansas City, Raytown, Lee's Summit, Greenwood, and Pleasant Hill, it is apparent that Lee's Summit and Greenwood are the least dependent upon public transit and are significantly less transit dependent than Kansas City and Raytown. Furthermore, Lee's Summit also has tremendous potential to impact the future of development around the Rock Island Corridor due to the projected population increase of 40,000 people by the year 2040 (Mid-America Regional Council, 2010). In Jackson County (encompasses all of the Rock Island Corridor), the projected population increase for Lee's Summit is more than that of Kansas City, Raytown, Greenwood, and Pleasant Hill combined.

The varying levels of dependencies along the corridor are demonstrated in a series of maps showing the differences and changes of demographic factors along the Rock Island Corridor. The three primary factors used to compare the cities of the Rock Island Corridor are: average household income, average home value, and commuting. Factors such as age and percentage of people with driving disabilities are not included because the ratios for each municipality are relatively similar and the data does not support significant differences from city to city.

Comparing average household incomes across the Kansas City metropolitan, Lee's Summit has significantly higher average household incomes (***figure 3.02***). The average household income for a Lee's Summit residence is nearly double that of Kansas City and Raytown. However, according to the US Census Bureau (2010) the average household income for the state of Missouri is $46,262, thus cities such as Lee's Summit and Greenwood are significantly above average.

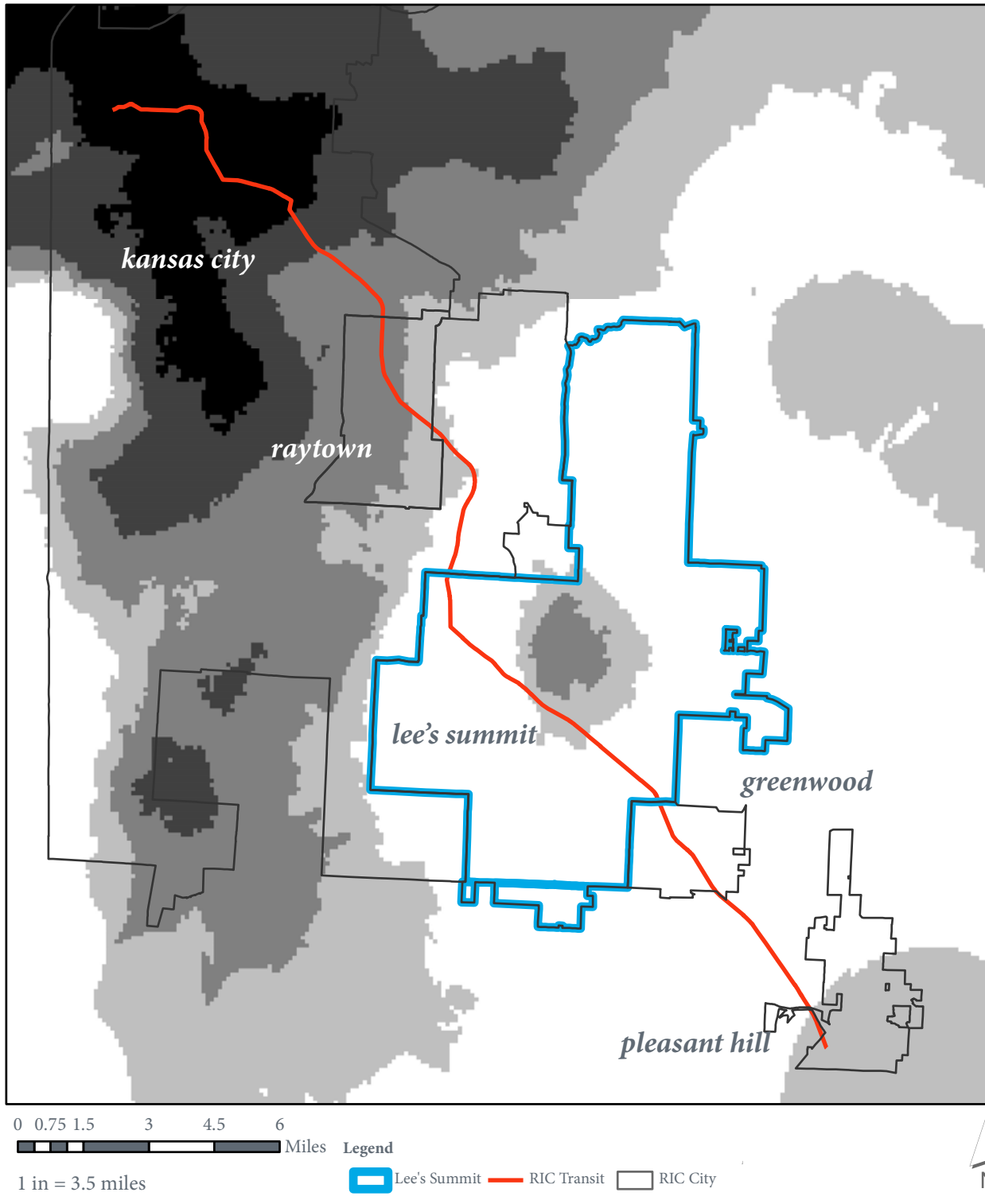


figure 3.02: lee's summit and other southeastern suburbs have highest income levels along RIC.

highest home values in lee's summit

The average home value is connected with the average income levels. Similar to the findings of the average household income gradient, Lee's Summit has the highest average home value along the Rock Island Corridor ***(figure 3.03).*** As seen in the average income gradient, all of the communities south of Raytown have significantly higher home values than that of Kansas City or Raytown.

It can be assumed that people who have higher income levels and higher home values have the financial stability to live in a desired or choice location. A portion of these people live in suburban types of living situations that are generally non-transit-oriented communities.

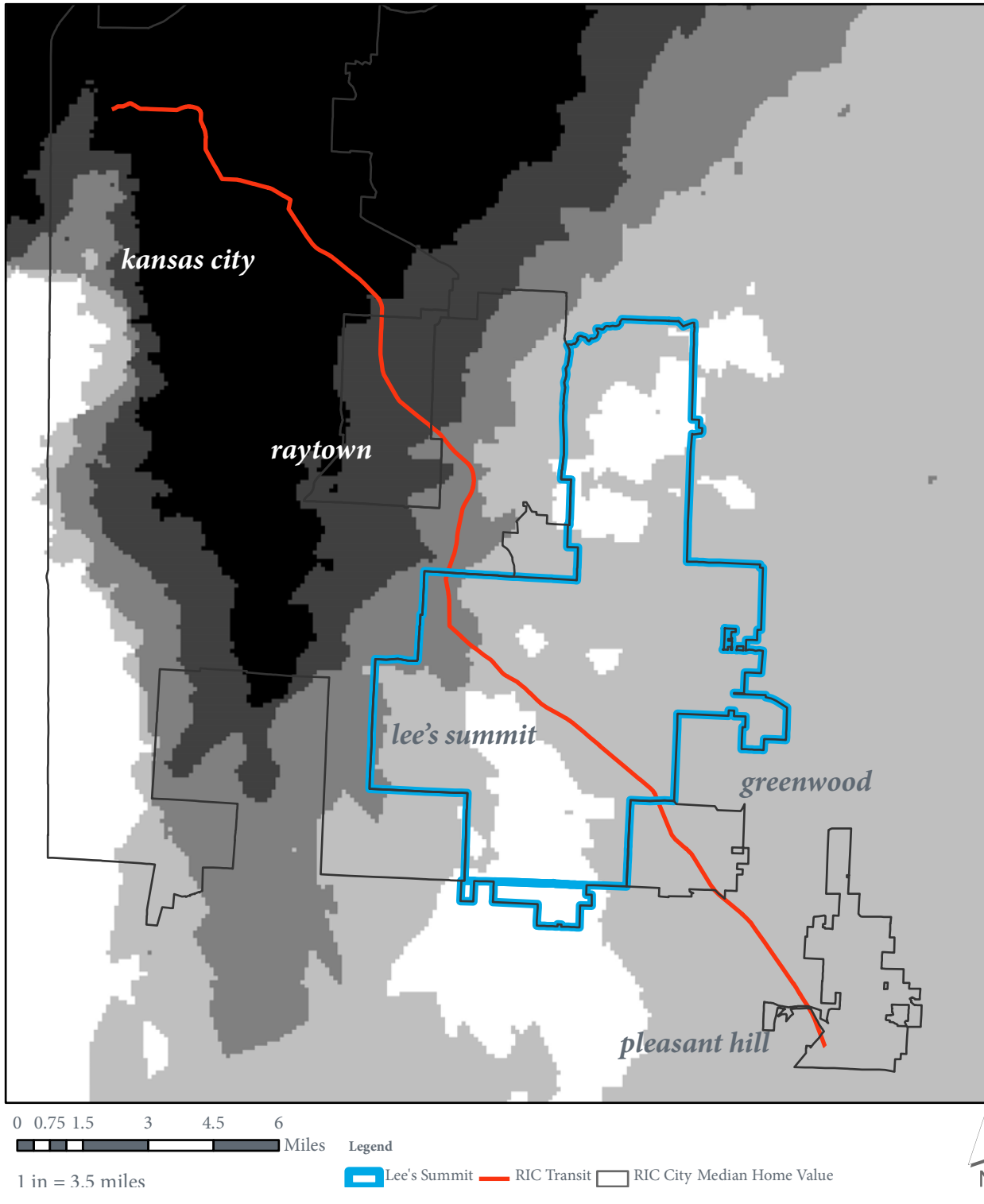


figure 3.03: highest home values along RIC are in lee's summit.

employment concentration in downtown kansas city

The areas of higher population densities across the Kansas City metropolitan similarly include the areas with the highest concentration of businesses.

Although Lee's Summit has a significant clustering of commerce and local businesses in the central region of the city, only 25% of all Lee' Summit residents work in Lee's Summit boundaries (Lee's Summit Economic Development Council, 2008). Therefore, 75% of the community is traveling, on average, a longer distance to work and a longer distance to the business and entertainment districts of Kansas City ***(figure 3.04)***. It can be assumed that paired with higher income levels the residents of Lee's Summit can afford more personal automobile transportations options thus making places such as Lee's Summit, Greenwood, and Pleasant Hill potentially less dependent upon public transit.

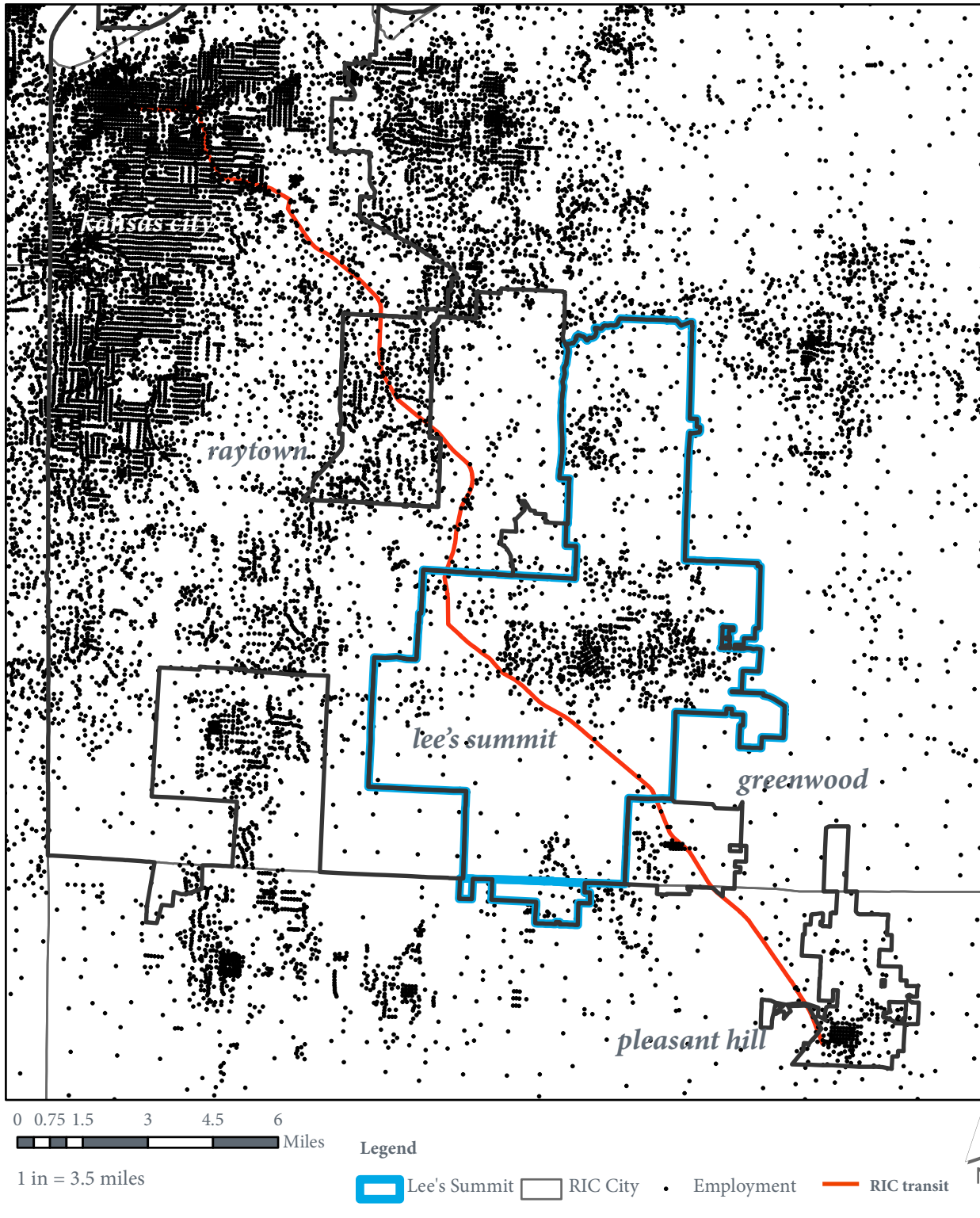


figure 3.04: employment concentration in downtown kansas city.

strong division of transit dependencies

Figure 3.05 is an overlay of the previous three dependency factor maps (income gradient, average home value, and center of employment). In summary, there is a strong division between Kansas City and Raytown, with the other three communities, Lee's Summit, Greenwood, and Pleasant Hill. It appears that residents of Kansas City and Raytown have the potential to be more transit dependent while the residents of Lee's Summit, Greenwood, and Pleasant Hill are potentially less transit dependent. People in non-dependent communities value lifestyles that suggest higher income levels which can support more expensive homes and more extensive personal automotive travel options making places such as Lee's Summit a non-transit dependent community.

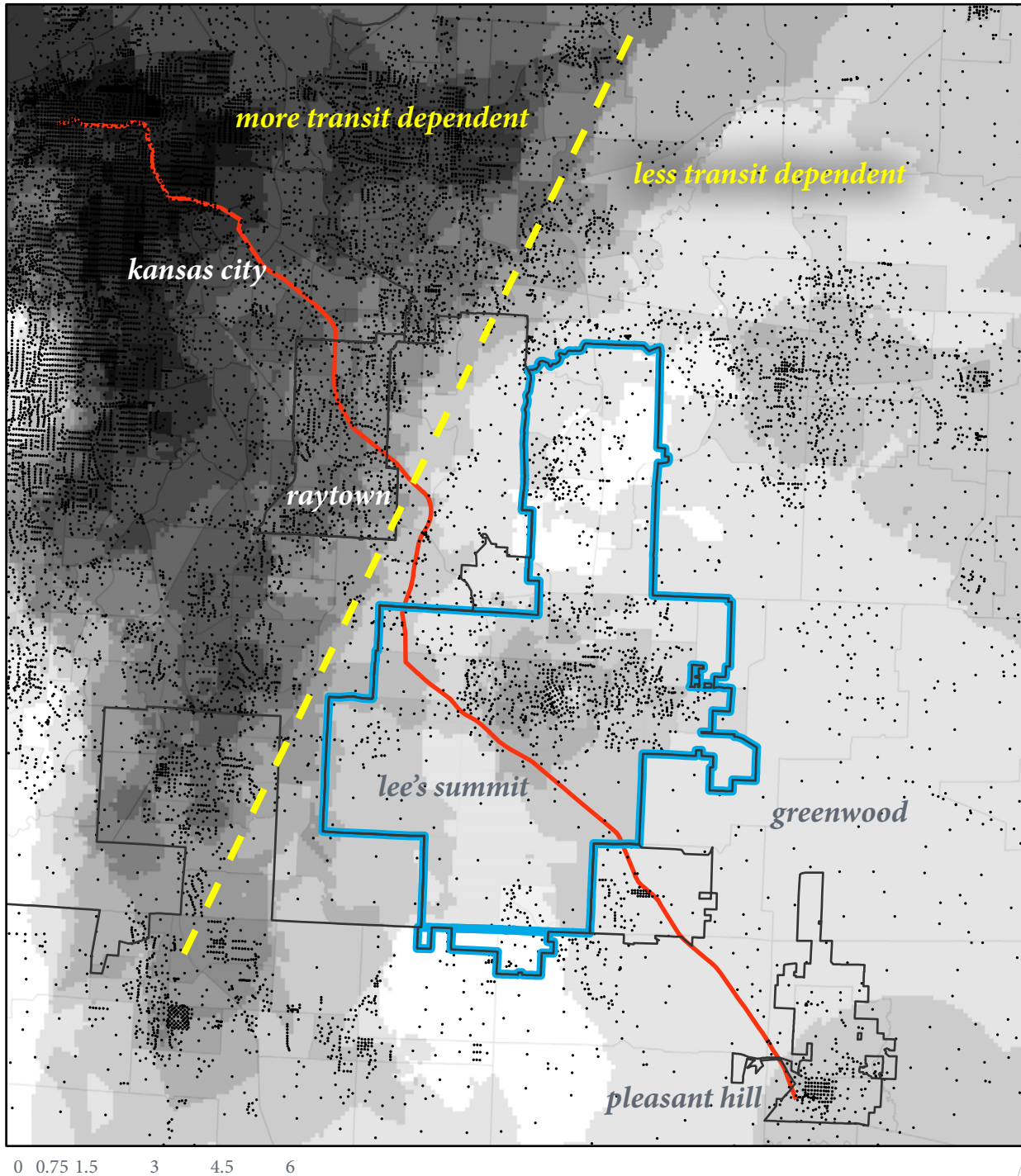


figure 3.05: strong division of transit dependencies along the RIC.

planning for lee's summit's future

The anticipated population increases for each of the Rock Island Corridor communities were projected through the year 2040 (Mid-America Regional Council, 2010). ***Figure 3.06*** illustrates four important elements that help explain transit dependency and impact potential along the Rock Island Corridor. The elements include average household income, average home value, poverty levels, and finally population growth in the next thirty years.

When comparing each of the communities in the Rock Island Corridor with these four elements, Lee's Summit stands out as a community with high impact potential. Lee's Summit has the highest income levels in the corridor which are almost double that of Kansas City. Lee's Summit also has the highest average home values and the second lowest percentage of residents who are under the poverty threshold. Lastly, looking at the growth potential among each of the communities, Lee's Summit has the second highest projected percentage of population increase in the next thirty years but more importantly has the highest projected population increase. As previously mentioned, Lee's Summit is projected to see nearly 40,000 new residents by the year 2040.

Understanding the high impact potential of Lee's Summit and looking at the type of development distribution, the community is classified as highly suburban; meaning low residential densities spread throughout. The City of Lee's Summit is not transit- oriented, thus development of a transportation system is a concern. The major dilemma is creating an appeal for the current populations in a non-transit-oriented community such as Lee's Summit, and also, strategizing future developments that can benefit both Lee's Summit and the overall ridership along the corridor.

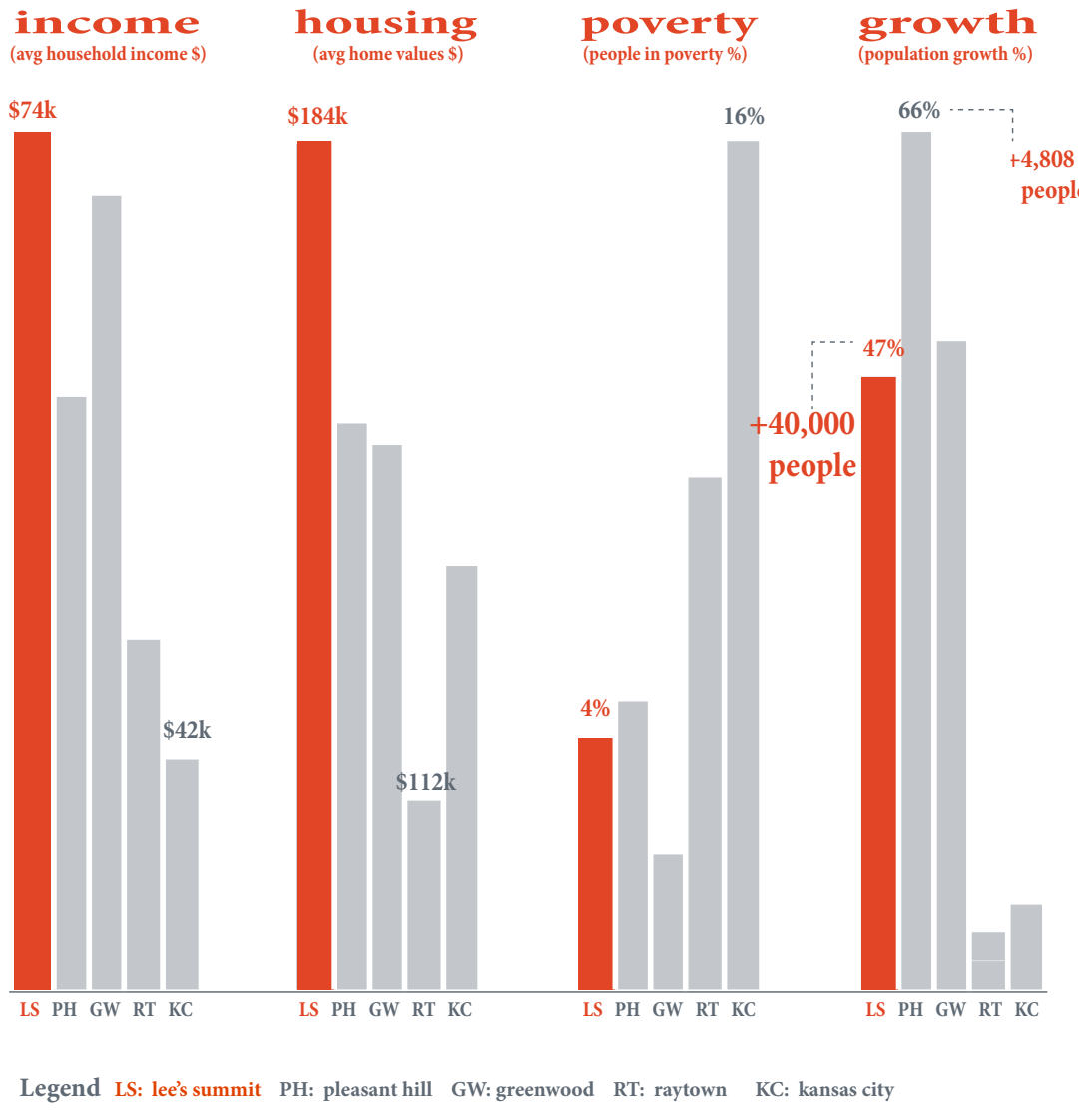


figure 3.06: transit dependency summary, lee's summit as high impact potential.

project thesis and components

By increasing ridership potential in Lee's Summit the corridor will become more socially diverse (through the addition of non-transit dependent riders) and ultimately improve the overall social interactions within the corridor. Through specific entertainment and amenity focused design, the development of a public transit system in Lee's Summit that provides aesthetic interaction, functional design, and a varying range of programmatic implementation, will help increase transit ridership along the Rock Island Corridor ultimately yield more sustainable benefits.

Three major focuses help determine strategies and considerations for Lee's Summit to implement. The first focus is developing an understanding of the transit options themselves both passenger rail and public bus. A key component of the transit options is the aesthetic characteristics and the ridership demographics. Both elements give insights to user preference and ridership distribution. The second major focus is the implementation of a three-part phasing implementation that includes a park-n-ride, transit-oriented development, and a local feeder bus system. The system should evoke a sense of practicality and convenience for the residents of Lee's Summit. The system must attempt to maximize resident access to both the commuter rail as well an intercity feeder bus system. The third and final focus is the development of a vision plan. The City of Lee's Summit can benefit from seeing potential ideas for the sites. This vision illustrates specific on-site considerations and potential programmatic ideations. Through the three different focuses, strategies can help explore and demonstrate considerations for the future of public transit in Lee's Summit.

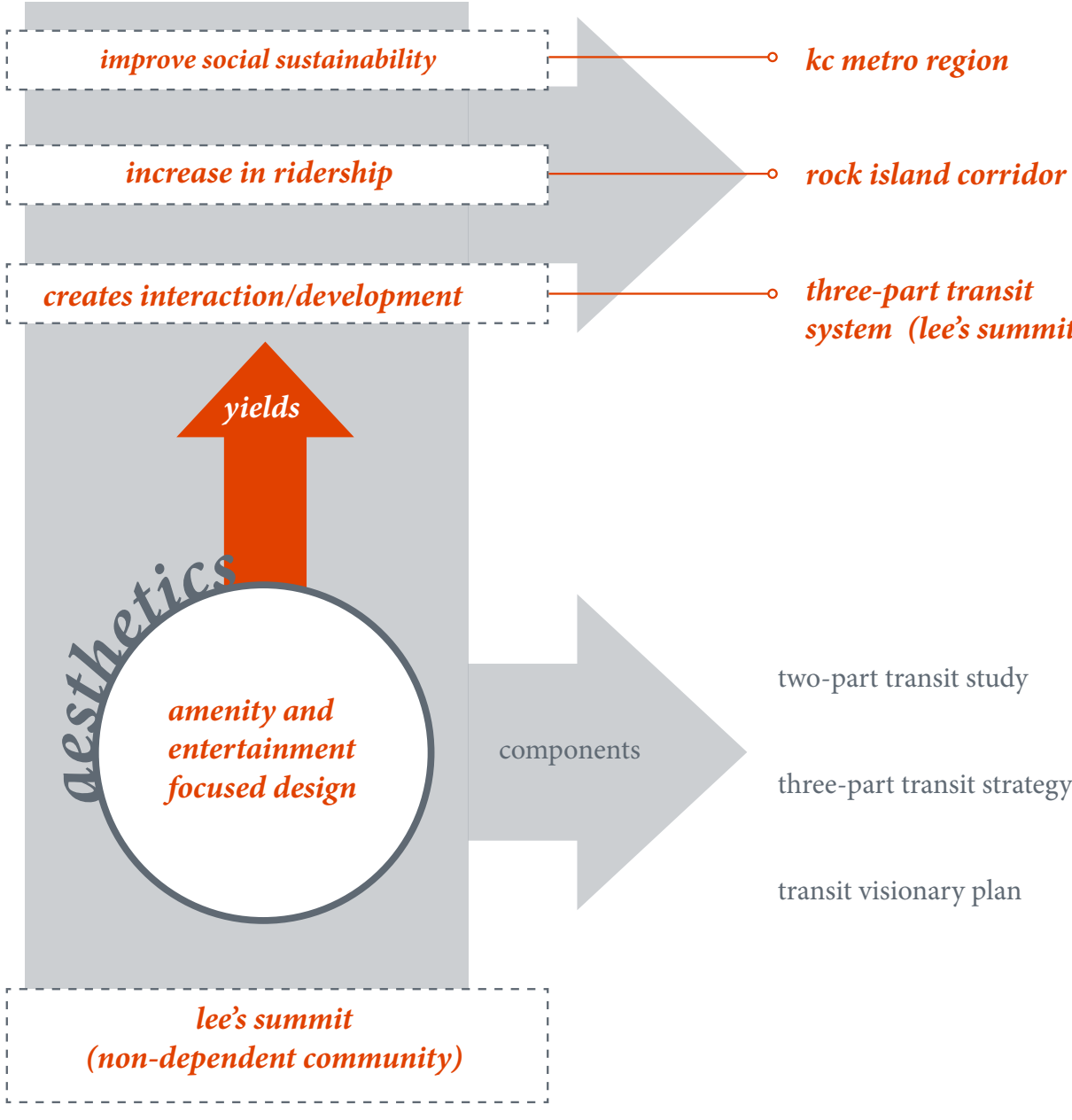


figure 3.07: project summary application and components.

scale of impact

Public transportation is important, however it is just one facet of sustainability that has received growing attention ***(figure 3.06)***. It is though however a significant part of sustainability that is lacking in Kansas City. Many other major cities such as Chicago, New York, Minneapolis, Denver, and cross-state metropolitan city St. Louis have significant public transportation systems. The population of the greater Kansas City metropolitan warrants the implementation of a transit system and cities such as Lee's Summit are imperative in the initial planning visions. Addressing public transit in Lee's Summit is a question of feasibility and implementation. Concerns with pubic transportation in Kansas City exist, in part, because of cities such as Lee's Summit. Arguments must be made to warrant the utilization of the system in non-dependent communities proving a need for public transit that will benefit the overall sustainability of the region specifically in the transportation sector.

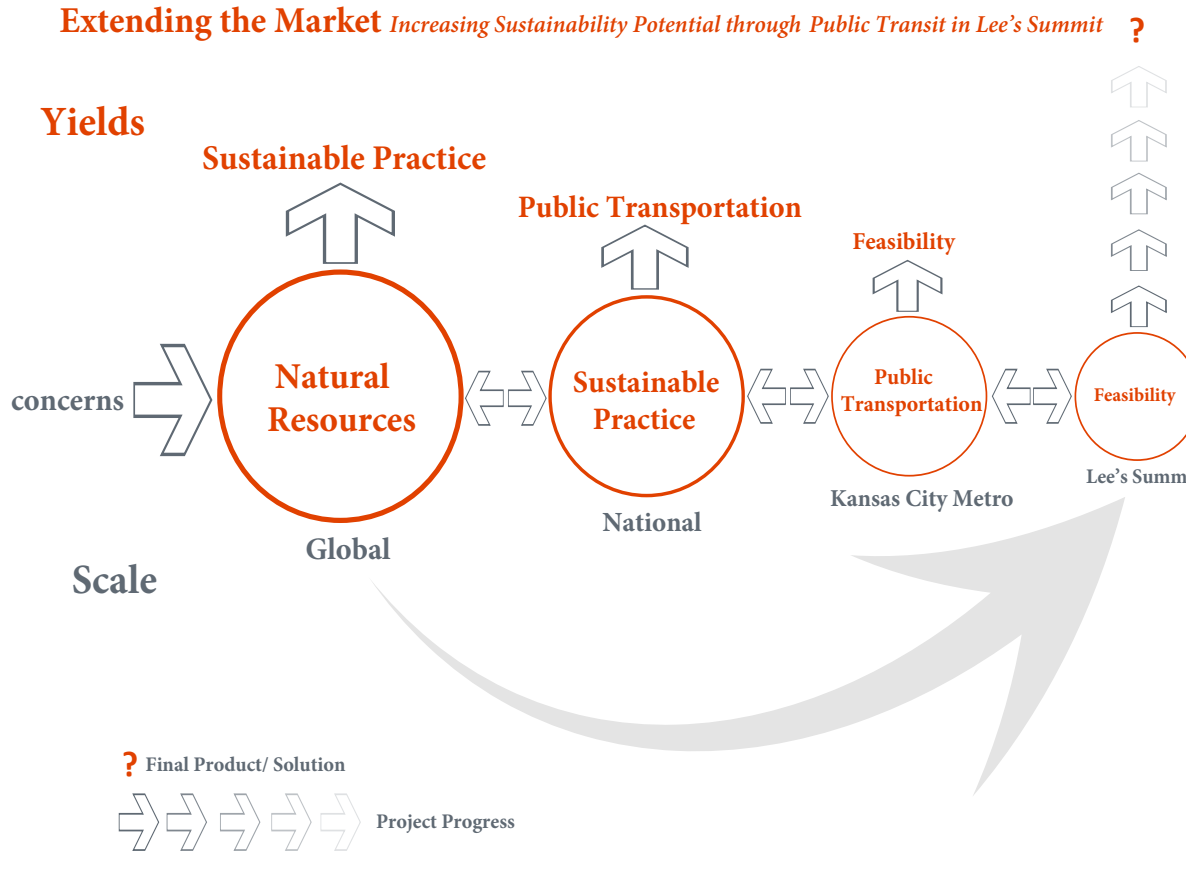


figure 3.08: public transit in kansas city is a concern.

transit studies IV

overview

To improve or increase the potential for transit ridership from a non-dependent community, ridership and aesthetic inventory studies can help establish the current practices and examine the impacts of transit stop designs. This section presents two research studies: a case study analysis of ridership in a similar American city, and a precedent analysis of transit stop designs. The studies demonstrate particular types of transportation systems that influence specific types of riders and also give a broad overview for the aesthetics of current transit stops.

The *St. Louis Metro Ridership* case study ***(figure 4.01)***, addresses the dilemma of gaining ridership from the demographic characteristics of non-dependent riders. The study looks at the distribution of riders for both the Metro Bus and the Metro Link (light rail system of St. Louis, Missouri). The study conveys the relationships between the different types of transportation methods and illustrates the different types of demographics that utilize bus and light rail.

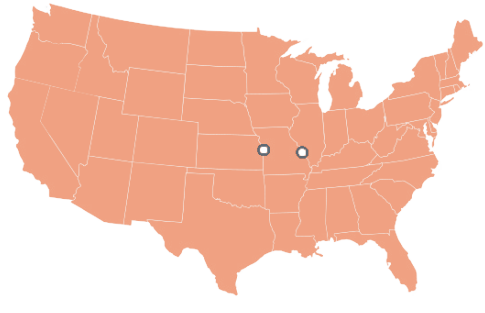
The second study is an aesthetic analysis of transit stop character that identifies a range of practices ***(figure 4.01)***. The study examines both the new or noteworthy practices attempting to improve public transit stop appearance and functionality. The analysis also looks at the more traditional methods of addressing transit stops that may be out of date and less effective. The main purpose of the study is to get a broad overview of the current practices and ultimately create an aesthetic preference gradient to help guide decisions for public transit character in Lee's Summit.

case study

st. louis metro ridership

purpose: *to understand the demographics of public transit ridership, how demographics relates to different types of public transit, and why specific demographics may use public transit*

methodology: *analyze characteristics of ridership demographics such as income levels, and car ownership to see if there are any correlations*



precedent study

bus stop aesthetic analysis

purpose: *to understand the different approaches to bus stop design and learn what types of visual characteristics are present*

methodology: *look at ten different transit stops in terms of visual characteristics of form, materiality, size, and connectivity to the existing landscape*

figure 4.01: two-part study methodology.

st. louis metro ridership

The Metro Link of St. Louis Missouri is an relevant study of a successful transit system in terms of ridership demographic distribution. The length, metropolitan population, and implementations for the St. Louis Metro system and the potential system in Kansas City are comparable. The St. Louis Metro Link was constructed in 1993 and utilized old railroad tracks for part of the line (NAPTA, 2010). The original length of the St. Louis line was 14 miles and the initial proposed track for the Rock Island Corridor is 17 miles (NAPTA, 2010).

The sample size of transit riders in St. Louis is small (only 2%) compared to the metropolitan population. When looking at ridership it is important that the traits of riders are explored to expose anomalies and congruencies. The following analysis compares incomes and car ownership statuses between St. Louis light rail riders and St. Louis bus riders. The analysis finds that in these categories, light rail riders more closely correlate to US averages than bus riders.

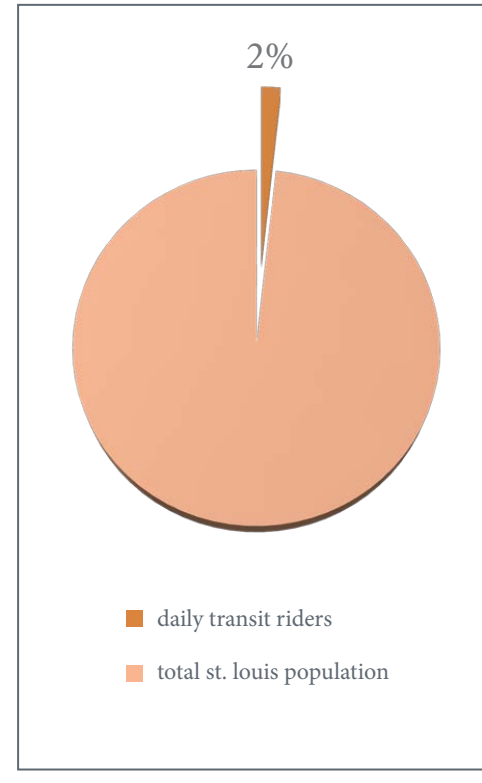


figure 4.02: relatively low percentage of population uses st. louis public transit on a daily basis.

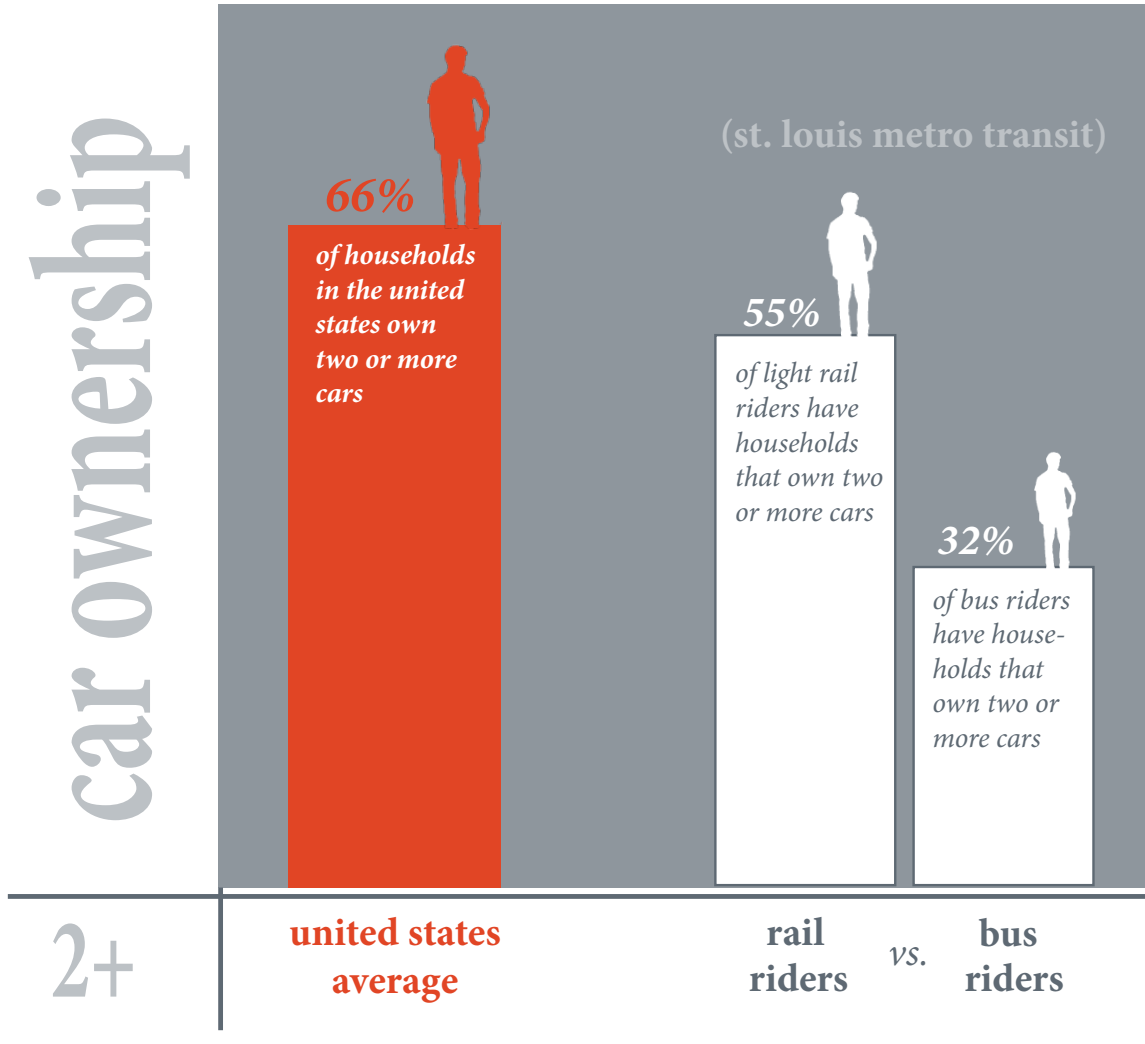


figure 4.03: US average of automobile ownership is similar to rail rider's households.

The comparisons between the light rail riders and bus system riders of St. Louis demonstrates that light rail may be a better transit option to influence non-dependent ridership. This suggests an influence toward non-dependent riders because a greater percentage of Americans are not dependent upon public transportation.

As shown in ***figure 4.03***, 66% of households in America own two or more cars, a trait that a non-transit dependent is more likely to posses (Experian, 2008). Of the light rail riders in St. Louis, 55% own two or more cars while only 32% of bus riders own two or more cars (NAPTA, 2010). The comparison may imply that a person who is less transit dependent may be more inclined to use light rail over public bus.

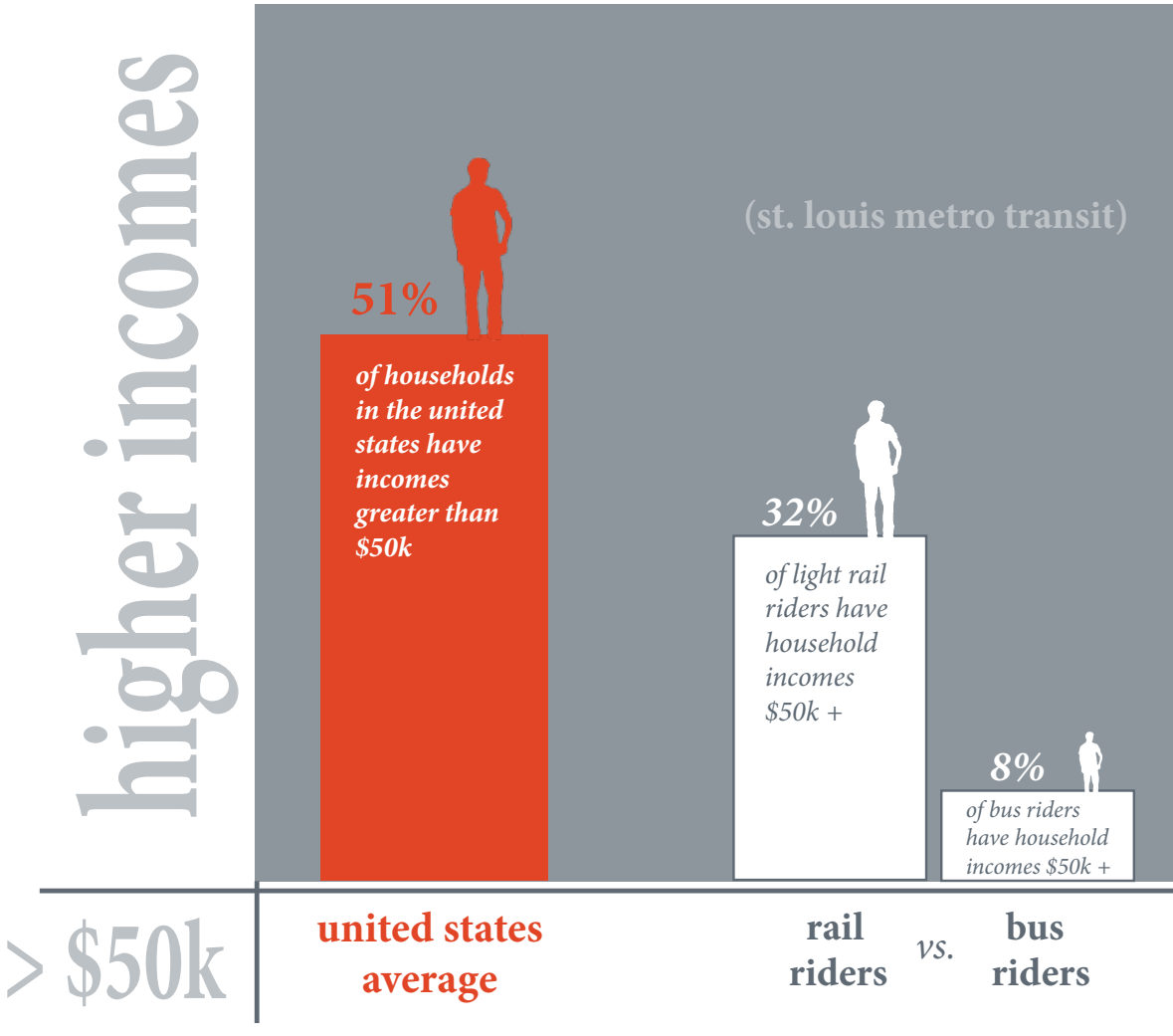


figure 4.04: a significantly greater percentage of light rail riders belong to households earning more than $50k per year.

Households possessing incomes greater than $50,000 are more likely to be less dependent upon public transportation because the income levels can more easily support personal automobile travel. According to the US Census Bureau (2010), the average household income is just above $51,000/year.

As illustrated in ***figure 4.04***, 51% of households in the United States have incomes greater than $50,000. Comparing the light rail riders to the bus riders of St. Louis, 32% of light rail riders have household incomes greater than $50,000 while only 8% of the bus riders have household incomes greater than $50,000.

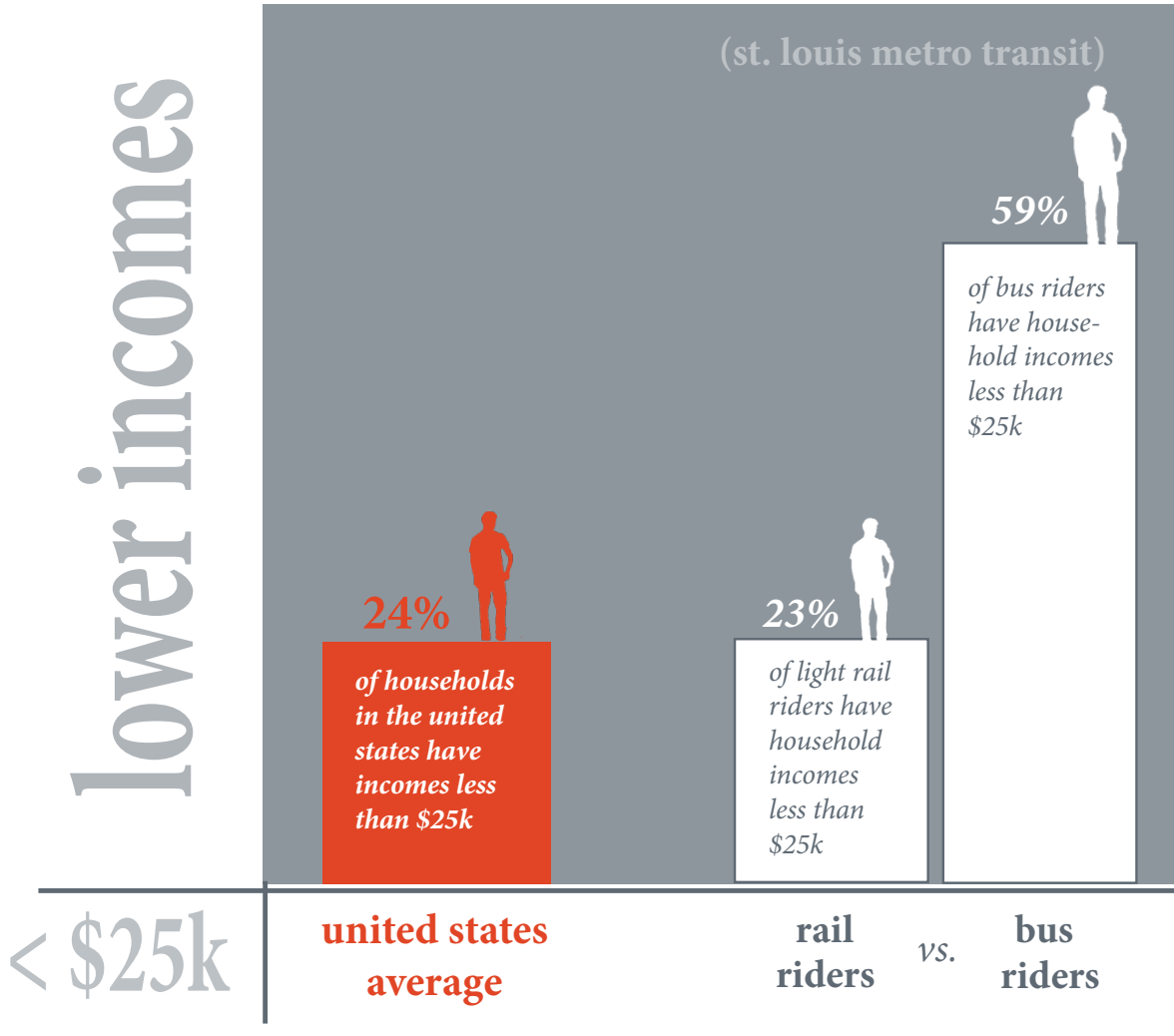


figure 4.05: a significantly lower percentage of light rail riders belong to households earning less than $25k per year.

Households possessing annual incomes less than $25,000 are more likely to be dependent upon public transportation. Households with income levels below $25,000 per year may have fewer options for personal automobile transportation. According to the US Census Bureau (2010), households with three people that make less than $17,922 are considered to be in poverty.

As seen in ***figure 4.05***, 24% of homes in the United States have incomes less than $25,000 annually. Looking at the ridership for light rail riders in St. Louis the percentages are nearly the same; 23% of people riding light rail have incomes less than $25,000. For bus riders the percentage is substantially more; 59% of bus riders have household incomes less than $25,000.

st. louis public transit is more cost effective

Although arguing for the cost effectiveness of public transportation compared to personal automobile may induce an increase in ridership, it may not be as effective with non-public transit dependents such as the Lee's Summit community. However, during times of economic struggles it could be a persuasive argument for both dependent and non-dependents in the public transportation sector.

The average person can fully utilize the St. Louis metro system in its entirety for a little more than $800 a year. That is a reasonable number particularly if you consider an average person who annually puts 15,000 miles on their medium-sized sedan spends an average of $9,519 on their vehicle, as estimated by All About Automotive (2011), including average fuel, routine maintenance, tires, insurance, license and registration, loan finance charges and depreciation costs.

The comparisons between the light rail and bus systems of St. Louis with the national average total cost per year for a mid-size vehicle shows the large difference in price over a five year period. The personal automobile cost is more than seven times the expense of utilizing public transit ***(figure 4.07).***

Fare Samples St. Louis Metro Transit

Metro Bus Fares $2.00

Metro Bus Fare with Multi-Transfer $2.75

Metro Link One-Ride Ticket $2.25

Metro Two-Hour Pass $2.75

Metro One-Day Pass $7.50

Metro Two-Hour Pass (Book of 10) $27.50

Metro Weekly Pass $23.50

Metro Monthly Pass $68.00

annual cost of metro system $816.00

figure 4.06: sample fares.

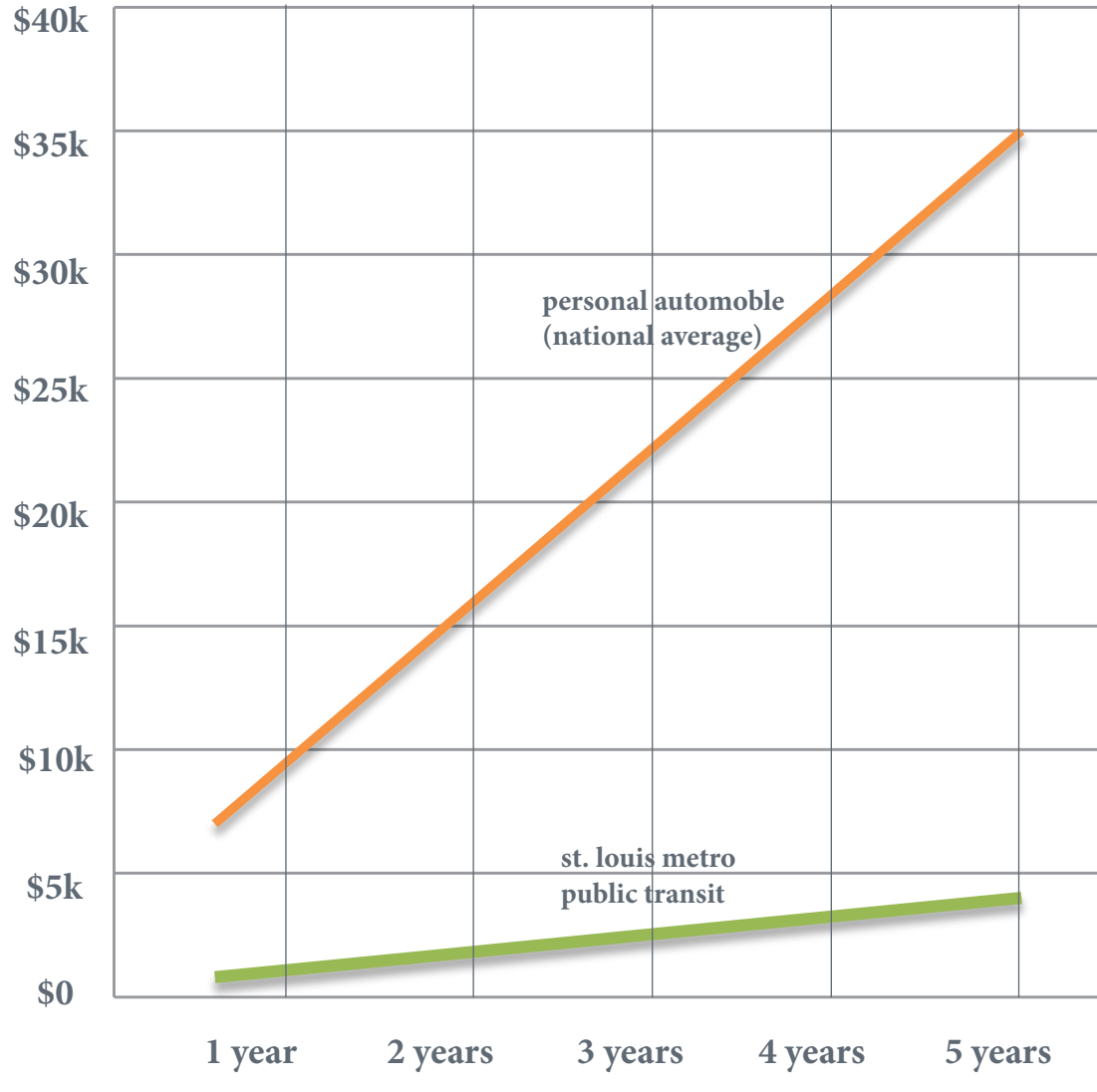


figure 4.07: cost comparisons: st. louis public transit vs. personal automobile ownership .

increasing ridership from destinations along line

Inventorying the recreational, entertainment, and weekend type of uses along the Metro Link light rail line, an abundance of destinations are present that could potentially attract riders. For a stronger community connection, the transit should be utilized to gain access to destinations other than employment centers such as sporting events, fairs, holidays, and shopping districts. The Metro Link provides access to a multitude of amenities such as airports, professional athletic complexes, and shopping centers ***(figure 4.08).*** Some researchers may even say that this is one of the better qualities of the transit system (NAPTA, 2010). It could also explain why some of the non-transit dependent ridership is much higher for the Metro Link.

The access to entertainment districts and recreational destinations may be promising, however according to some research the access to employment centers may be limited. When the Metro system first began in 1993, there were approximately 45,000 riders utilizing the system each day (NAPTA, 2010). However, seventeen years later the light rail system has grown from the original 14 miles to 46 miles and seen little to no daily ridership increase (Metro Transit-St. Louis, 2010)

A study completed by the Brookings Institute, a nonprofit organization dedicated to high quality research for our nation's economy and government, examined the one hundred largest metropolitan areas and how well the respective transit systems provide access to jobs (Berube et al, 2011). St. Louis' Metro Transit system ranks 68th out of 100. According to the Brookings report, 56% of the metropolitan area has access to the transit, or lives within a 3/4 mile range of a stop (Berube et al, 2011). The number is relatively low when looking at some of the other higher ranking metropolitan areas, however the low coverage may be partially due to the extent of the metro boundaries of St. Louis County which extend over 8,400 square miles (US Census Bureau, 2010).

figure 4.08: st. louis metro transit activity inventory.

bus stop aesthetic inventory

The following inventory images look at the characteristics of bus stops. There are a range of solutions attempting to improve the appearance of public transportation. However, some of the transit stops are not different from the traditional shelter and bench stop. Proper transit stop aesthetics could improve transit ridership for non-dependent riders. Public transportation systems are often devalued by non-dependents because they may look dirty, unkempt, unappealing, or inactivate due to a lack of program, amenities or character.

Based on a visual study or inventory study of five different types of new, innovative or modern transit stops and five old or traditional types of stops, two characteristics stand out that may prove to affect aesthetic qualities of bus stops. One component that improves bus stops is an added amenity that is not typical of the traditional square shelter design with a bench, trash can, and sign. One example of an added amenity is air-conditioning. Looking at the climate of Dubai, this sense of relief from the elements has the potential to invite new users. It provides a level of comfort, complexity, and convenience to the average user. Although an air-conditioned transit stop may not be practical for the changing climate of Kansas City, it is still an interesting way to improve a sense of relief from the climate conditions. Other examples of added amenities are: free wireless internet, restrooms, play or entertainment elements, and interactive touch screen interfaces.

A second component that improves bus stops is the aesthetic characteristics. By solely adding pieces of artwork, the image of transit stops is not significantly improved. New bus stop designs must have a new character or image that strays away from the traditional shelters. Examples of poor bus stop aesthetics include: flyers, two-dimensional art, temporary displays, and marketing displays.

example one, minimalistic

The bus stop shown in ***figure 4.09*** is an example of stop that provides no visual access and no separation from both pedestrian and vehicular traffic. The bus stop does not provide any means of shelter or seating. The person waiting for the bus is exposed to all of the outdoor elements that may cause discomfort when waiting for a bus; elements such as the sun, rain, wind, and snow. The bus stop also does not designate a specific waiting area. This type of implementation is uninviting and lacks visual interest.

figure 4.09: example one, minimalistic.

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example two, traditional

The bus stop shown in ***figure 4.10*** is an example of stop that provides the basic needs that a bus stop should possess such as a shelter and a bench. The structure and the bench are permanent and allow for a designated place for people to wait, however the aesthetic character of these elements are simple, uninviting, and provide little or no user connection. The bus stop is placed in a setting that is uninviting as well. There is little space between the bus stop and the street, a nearby utility box, and no landscaping or urban design elements for people to see or interact with.

figure 4.10: example two, traditional.

example three, temporary

The bus stop shown in ***figure 4.11*** is an example of stop that provides an added unique character with local artwork, however the manner in which the artwork is displayed and the overall appearance of the bus stop has not changed. The bus stop provides the typical amenities such as a shelter and bench. This type of artist add-on doesn't give the users a new view of public transit it just simply adds a temporary alteration. For public transportation to move forward, bus stops must receive a new identity.

figure 4.11: example three, temporary.

example four, display

The bus stop shown in ***figure 4.12***, is an example of stop that provides the essential elements but does not work well for long term use. The bus stop is not easily replicable and may not be as successful in multiple installations. The temporary installation appears to be an advertisement or publication for a special event. This type of stop may draw a crowd or add additional conversation amongst users but in the long run it may not be as practical for an new public transportation system. This type of temporary installation is best used as a "grand opening" advertisement attempting to draw immediate attention.

figure 4.12: example four, display.

example five, funded

The bus stop shown in ***figure 4.13*** is an example of a modernized standard stop but with a unique funding effort. The JCDecaux company bought and designed all of the elegant bus stop shelters and signage for Chicago, Illinois and in return the company gets sole access to the advertisement space (JCDeaux, 2009). This type of bus stop program great way to acquire funding for a bus stop shelter. The shelter provides added amenities such as ambient lighting and modern appeal however the bus stop does not demonstrate a unique change to the image of public transit stops.

figure 4.13: example five, funded.

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example six, informative

The bus stop shown in ***figure 4.14*** is an example of stop with digital LED screens that allow riders to see schedules, delays, and other important rider information. By adding this layer on the existing shelters, the bus stops can appear to be a more sophisticated and advanced system like that of light rail and regional rail systems. These types of systems can be implemented from the beginning of a project or added to the bus system at a later time.

figure 4.14: example six, informative.

example seven, amenity

The bus stop shown in ***figure 4.15*** is an example of stop that provides a unique amenity that many other bus stops may no provide. This bus stop located in Dubai, a very warm and dry climate, provides air conditioned shelter. When users are waiting for the bus they can do so in the comfort of an enclosed structure. This type of amenity may not be practical because of the investment that would have to put into these transit systems, however it is an interesting idea that is not seen often in the United States.

figure 4.15: example seven, amenity.

example eight, artistic

The bus stop shown in ***figure 4.16*** is an example of stop that provides the necessary conveniences of shelter and seating and the additional amenities such as lighting and trash receptacles. The reason this transit stop is successful in terms of form and function, is because of the artistic incorporation of the stop into the existing landscape. This bus stop has been implemented so that a person, unfamiliar with the area may not be able to identify this as a bus stop without signage. This type of bus stop may be beneficial for attracting non-transit dependents.

figure 4.16: example eight, artistic.

example nine, incorporated

The transit stop shown in ***figure 4.17*** is an example of a transit stop that has ample seating and a multiple shelters. This type of stop is visually pleasing with a rhythmic placement of shelters that are directly related to the adjacent green space. A combination of the materiality, scale, and surrounding setting makes this transit stop visually appealing and an interest for potential transit riders. The incorporated landscape is what makes this large stop successful.

figure 4.17: example nine, incorporated.

example 10, new form

The bus stop shown in ***figure 4.18*** is an example of bus stop located in Curitiba, Brazil. These structures represent all of the qualities and conveniences of a traditional bus stop shelter with the aesthetic characteristics of something not seen in typical practice. The system in Curitiba is efficient too. The riders pay when they enter into the structure rather than paying when they get on the bus. From that point passengers simply board as they would if they were riding a subway or light rail. This type of stop provides complete enclosure from the street while riders wait and might create appeal for non-dependent populations.

figure 4.18: example ten, new form.

findings

Designing transit stops to promote ridership and transit popularity is about creativity. Looking at the different bus stops and the design implementations, there are two common elements of almost all bus stops; a shelter and a place to sit. These elements however can be implemented in a variety of ways. More successful bus stops are molded into the surrounding landscape. The following is a list of ten summary considerations from the bus stop aesthetic analysis study:

1. If possible, design bus stops from the beginning with an integrated concept

2. Think of hierarchy of stops in the system (more iconic if presented as a major station or stop)

3. Consider applications of technology and modernized cultural interactions

4. Provide the essential elements, such as a shelter and bench in a non-traditional fashion

5. Provide disability access for buses with stairs

6. Consider unique design solutions utilizing recycled materials

7. Bus stop potentially could stand as a piece of art

8. Provide amenities such as signage and scheduling

9. Consider the complications for users and attend to those needs

10. Temporary programs may initiate interaction for first time users

It may be difficult and potentially ineffective to propose guidelines related to the aesthetic character of public transportation because each transit stop will have unique contextual surroundings and specific dilemmas to address. Looking at ***figures 4.19*** and ***4.20,*** examples of the different levels of development, cost, identity, aesthetic quality, and impact, for transit stops are presented. The figures show recommendations for both bus stops and park-n-rides. The purpose of the aesthetic gradient diagrams is to show a progression of transit stop solutions and illustrate recommendations for Lee's Summit and other non-dependent communities.

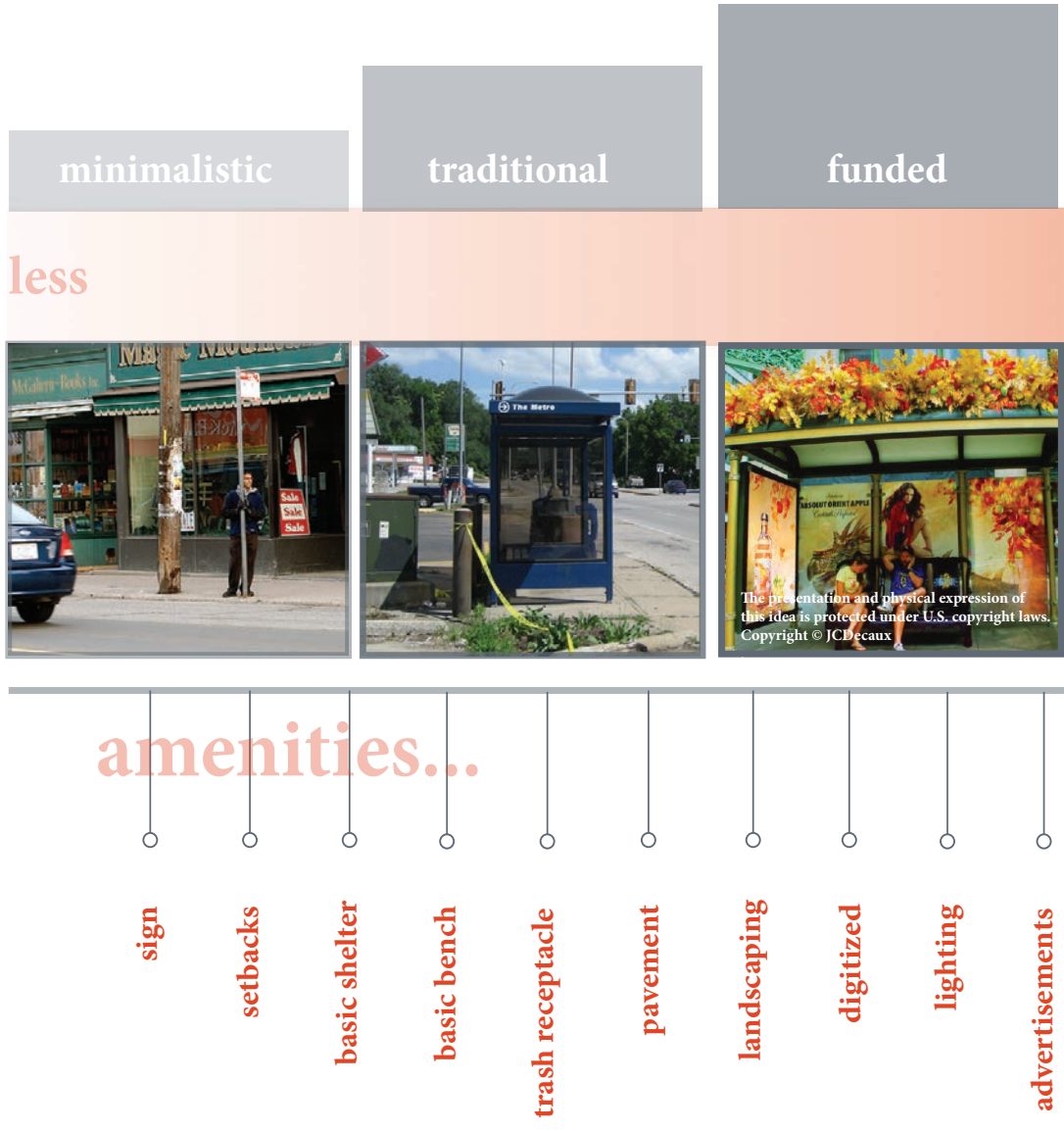


figure 4.19: transit aesthetic preference: bus stops.

The aesthetic gradient for bus stops ranges from a single bus stop sign that designates a bus stop location to an incorporated piece of landscape that blends into the contextual fabric. If public transit is to be successful in Lee's Summit and attract non-dependent ridership, then the implementations for the bus system must be toward the higher end of the gradient in terms of aesthetic quality, identity, and development. This may in turn suggest more funding be put into the bus stop systems.

incorporated

artistic

new form

more

changing image

air-conditioning

lockers

art

recycling

wi-fi

bike racks

restrooms

play elements

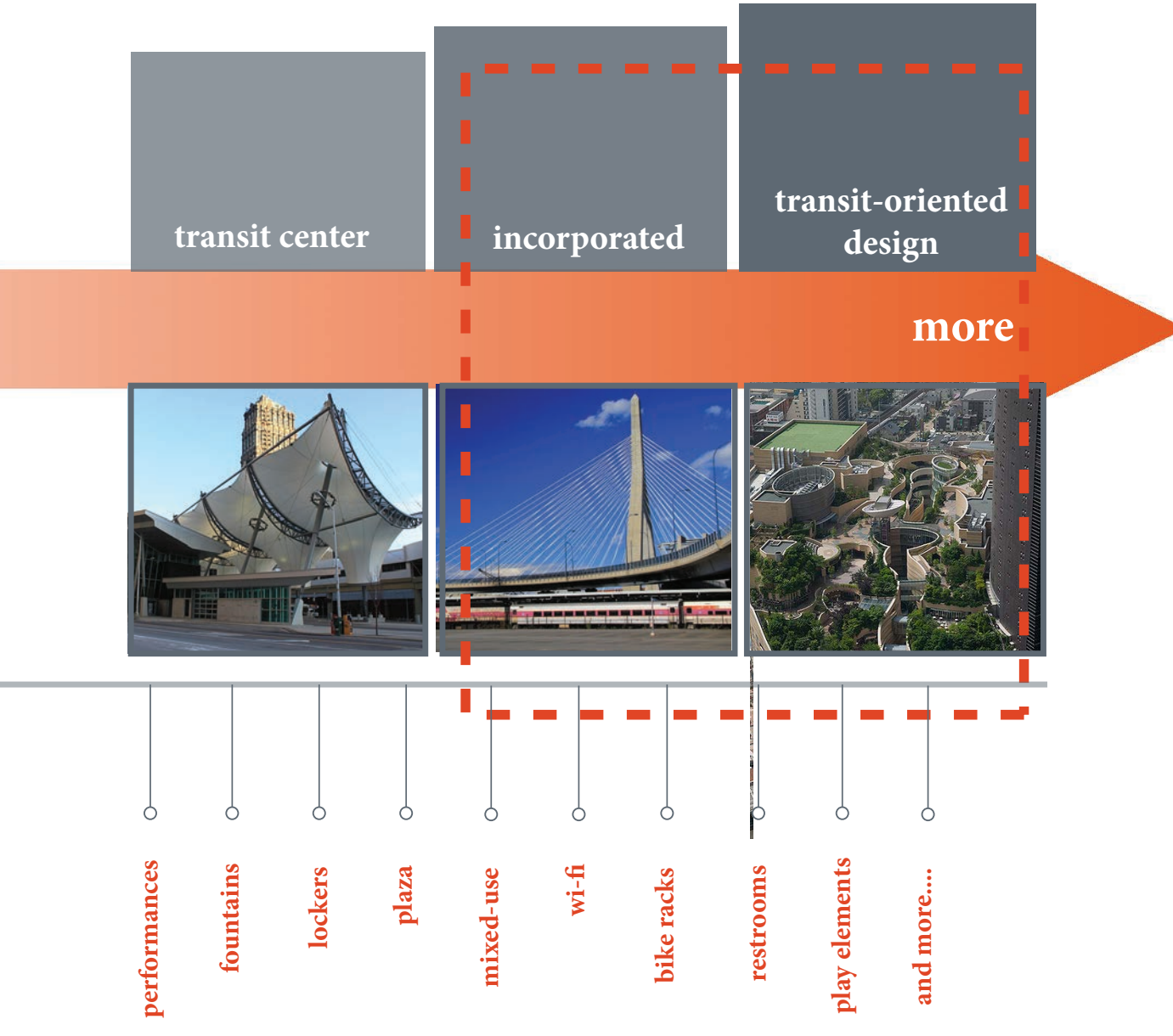
and more....

gradient for
cost, impact, aesthetic, developed, & identity

recommendation

figure 4.20: transit aesthetic preference: park-n-rides.

The aesthetic gradient for park-n-rides ranges from a simple parking lot along the highway to a mixed-use structure and fully implemented transit-oriented design. As the *St. Louis Metro Ridership Study* indicates, commuter rail may attract more ridership than bus systems and it may attract non-dependent riders better than bus systems. However, just as it is recommended for the public bus system in Lee's Summit, it is important for the two commuter rail stops to demonstrate high levels of aesthetic quality, identity, and development and may in turn suggest the need for more funding.


transit center
incorporated
transit-oriented design
more
performances
fountains
lockers
plaza
mixed-use
wi-fi
bike racks
restrooms
play elements
and more....
gradient for
cost, impact, aesthetic, development, & identity
recommendation

strategies V

transit stop locations

The Jackson County Commuter Alternatives Analysis (JCCCAA) selected commuter rail as the preferred option. The JCCCAA (2010) has located two stops to be implemented and further developed, both park-n-ride stations, intended to service the residents of Lee's Summit.

The first stop, located at the Charles David Hartman Sports Complex, or Hartman Park was labeled by the JCCCAA as a small park-n-ride while the second stop located at route 291 near Stuart Road was labeled as a large park-n-ride ***(figure 5.01).***

The typologies for large versus small park and rides are as follows: "Large park-and-ride: a park-and-ride lots in a suburban setting with greater than 50 parking spaces, transfer locations for feeder buses, with a station, platforms / shelter, ticket vending, and amenities including convenience retail, and digital message boards providing rider information among other station amenities. Small park-and-ride lot: with the same amenities as described above but with 50 or fewer parking spaces" (JCCCAA, 2010).

In an attempt to focus specific development both stops were analyzed to suggest development direction, land-use application and site identity. The two stops possess both advantages and disadvantages. Both sites have direct access to downtown Lee's Summit, which is beneficial for the local economy and community vitality. ***Extending the Market*** proposes a community bus feeder system called the Summit Shuttle. This municipal bus system with routes named after the Lee's Summit High Schools' mascots, is designed to take people to and from the commuter rail as well as take people to and from the major focuses in Lee's Summit such as the downtown area, Summit Woods Shopping Center, and Legacy Park.

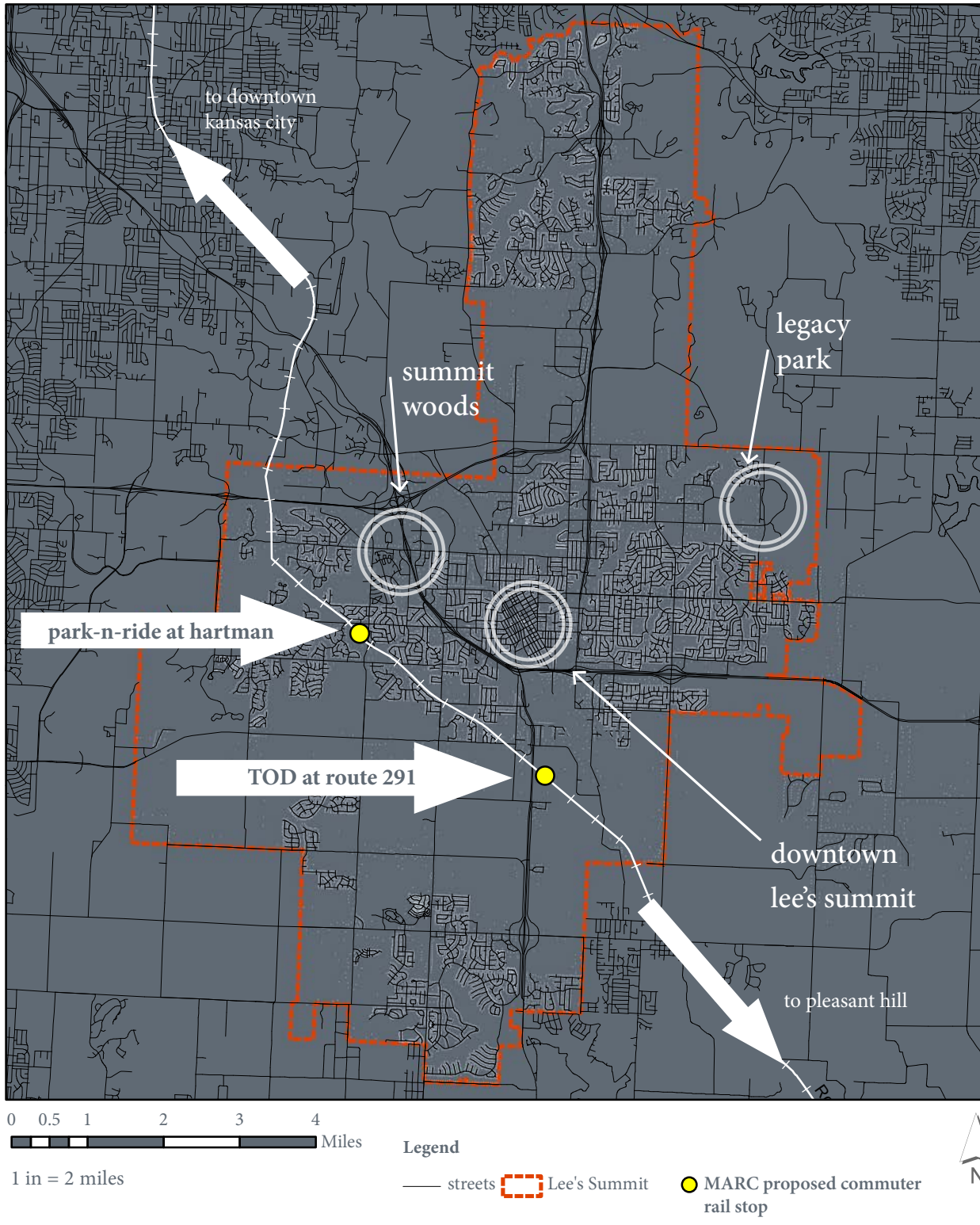


figure 5.01: transit stop locations.

three-part phasing implementation

Extending the Market proposes a three-part phasing process for the implementation of a transit system in Lee's Summit. Phase one of the public transit system implementation is a PARK-n-Ride at Hartman Park. The primary targeted demographic is current non-transit dependents. The Summit Shuttle feeder bus line associated with this phase is called the Titan Line. The vision for this site is an entertainment/ recreation site designed to bring multiple levels of activity and celebratory program encouraging ridership, specifically non-transit dependents on publicly owned land that allows for continued adjacent single family growth.

Phase two of the public transit system is a transit-oriented development park-n-ride at Route 291 and Stuart Road. The primary targeted demographics include young adults and empty nesters. The feeder line associated with this phase is called the Tiger Line. The vision for the transit oriented development is a mixed-use site that provides opportunity for new development, allows for a higher density, concentrates residential development, provides housing for empty nesters and pushes or moves the proposed industrial areas out of the central population hub.

Phase three of the public transit system implementation is the additional Summit Shuttle Circuit intended to target the north eastern portion of the central population hub. These households have poor access to the commuter rail lines and by adding this circuit, riders can access all of the major points of interest in Lee's Summit as well as gain access to the commuter rail stops. The circuit is called the Bronco Line. The goal for the circuit is that once the transit stops are established and events have successfully been implemented, the bus line can allow for more potential for downtown influx and increased ridership.

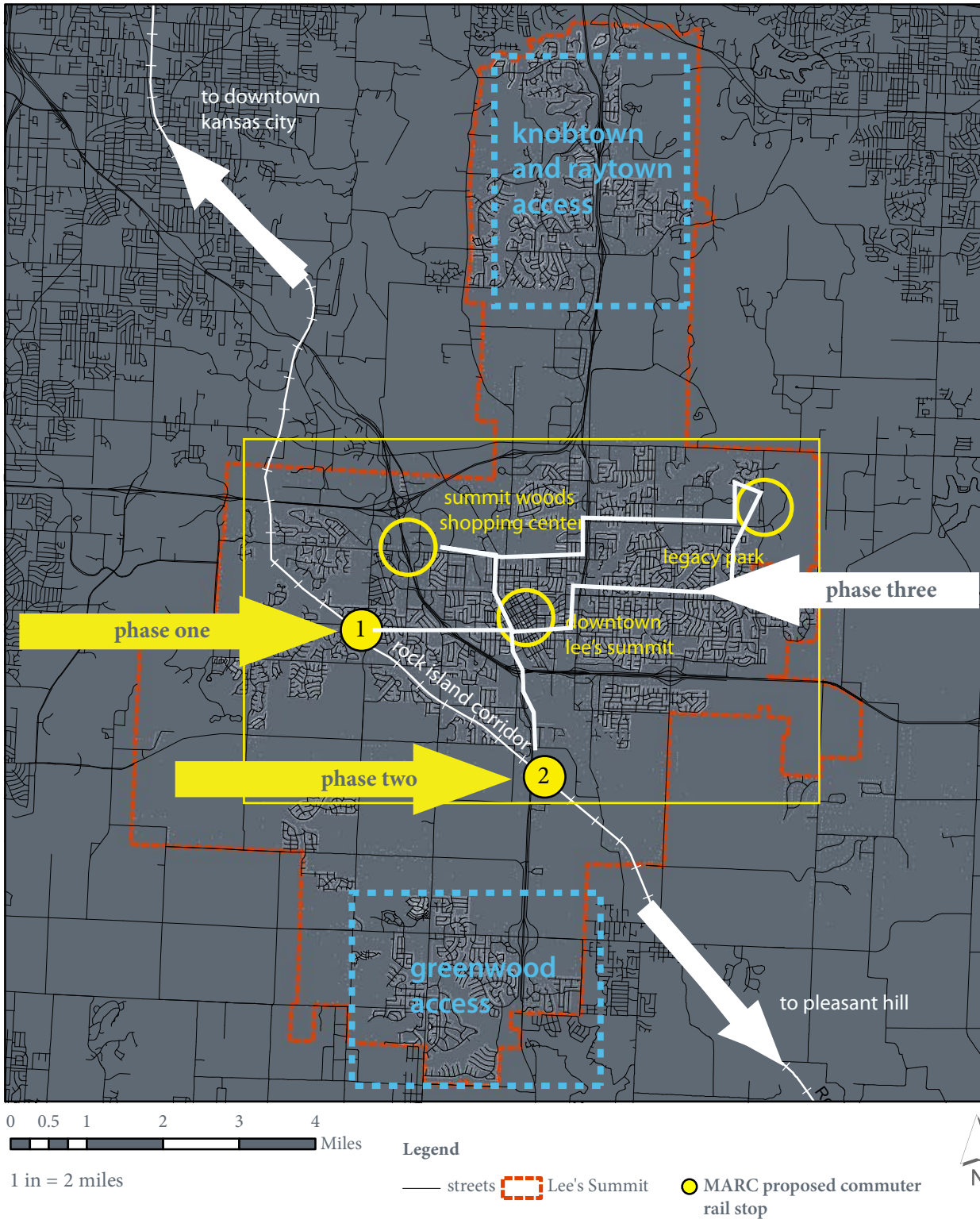


figure 5.02: three-part phasing implementation.

summit shuttle bus system

A feeder bus system supports the local economy and can help improve the experience and activity in downtown Lee's Summit ***(figure 5.03)***.

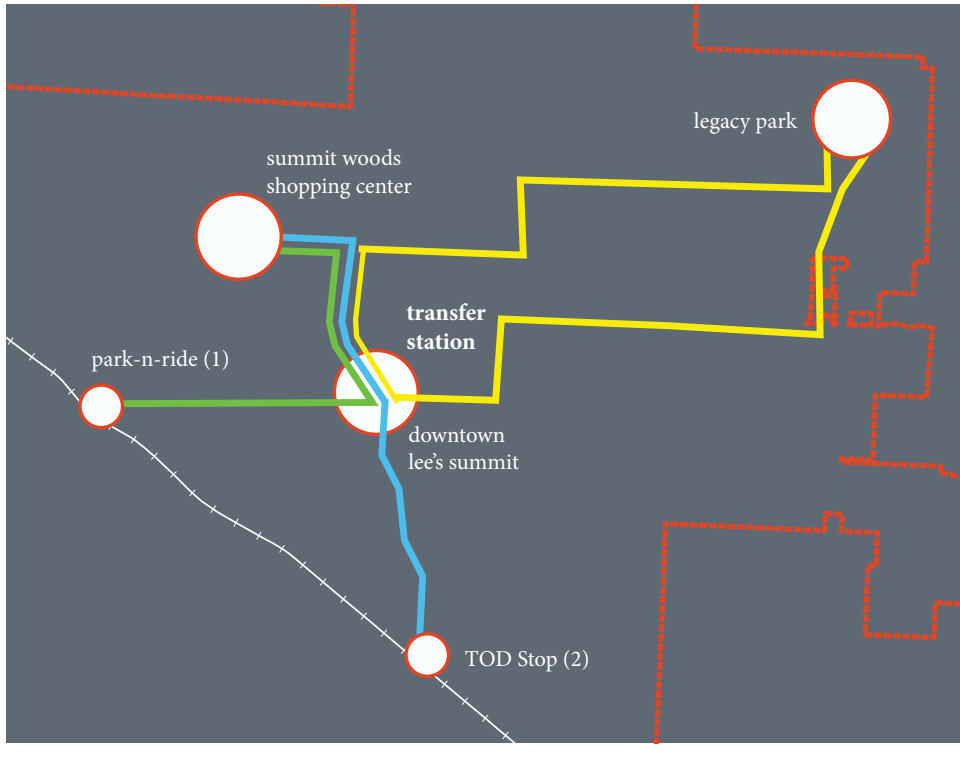


figure 5.03: routing diagram.

NTS N

Phase one, a single route services the immediate development at Hartman Park to initiate ridership and create excitement and intrigue for non-dependent riders. The route would be created in conjunction with the development of the transit stop.

Phase two, a single route in addition to phase one services the secondary development at the TOD and service all types of riders. It would be established in conjunction with the development of the TOD stop off of Route 291.

Phase three, a circuit beginning in downtown Lee's Summit would service the north east residents and be implemented if the need or desire presents itself. This phase would require a transfer station in the downtown area for residents to get on a different bus to reach a desired destination .

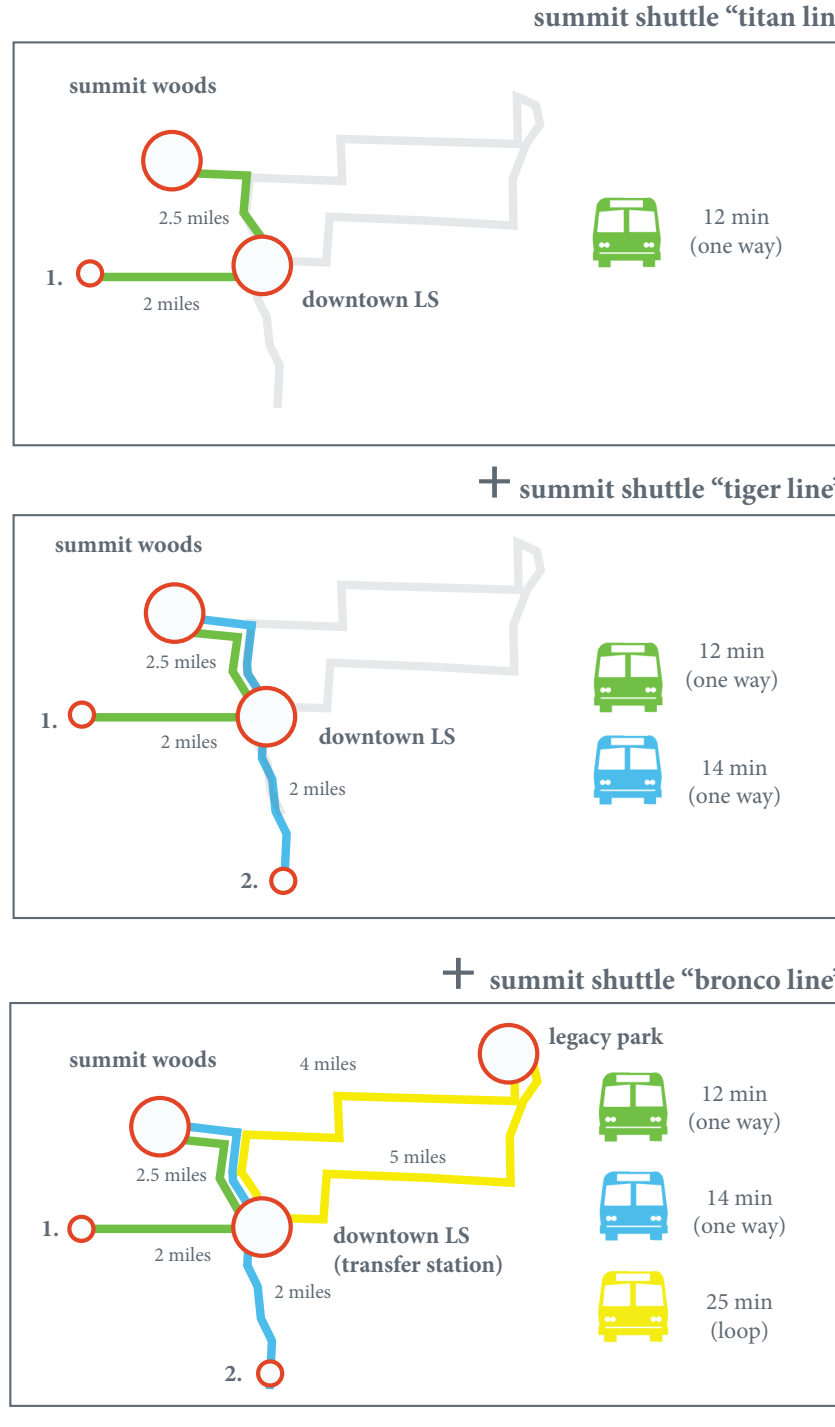


figure 5.04: bus phasing system.

NTS

land-use amendments

Analyzing ***figure 5.05,*** two major elements stand out in the current land-use of Lee's Summit. One, downtown Lee's Summit and the surrounding neighborhoods are situated in central Lee's Summit and the rail line bypasses the outer extremities of these areas. Two, there is a large amount of open or green fields adjacent to the rail. The green fields are available and valuable land that possess great potential for future development surrounding the Rock Island Corridor.

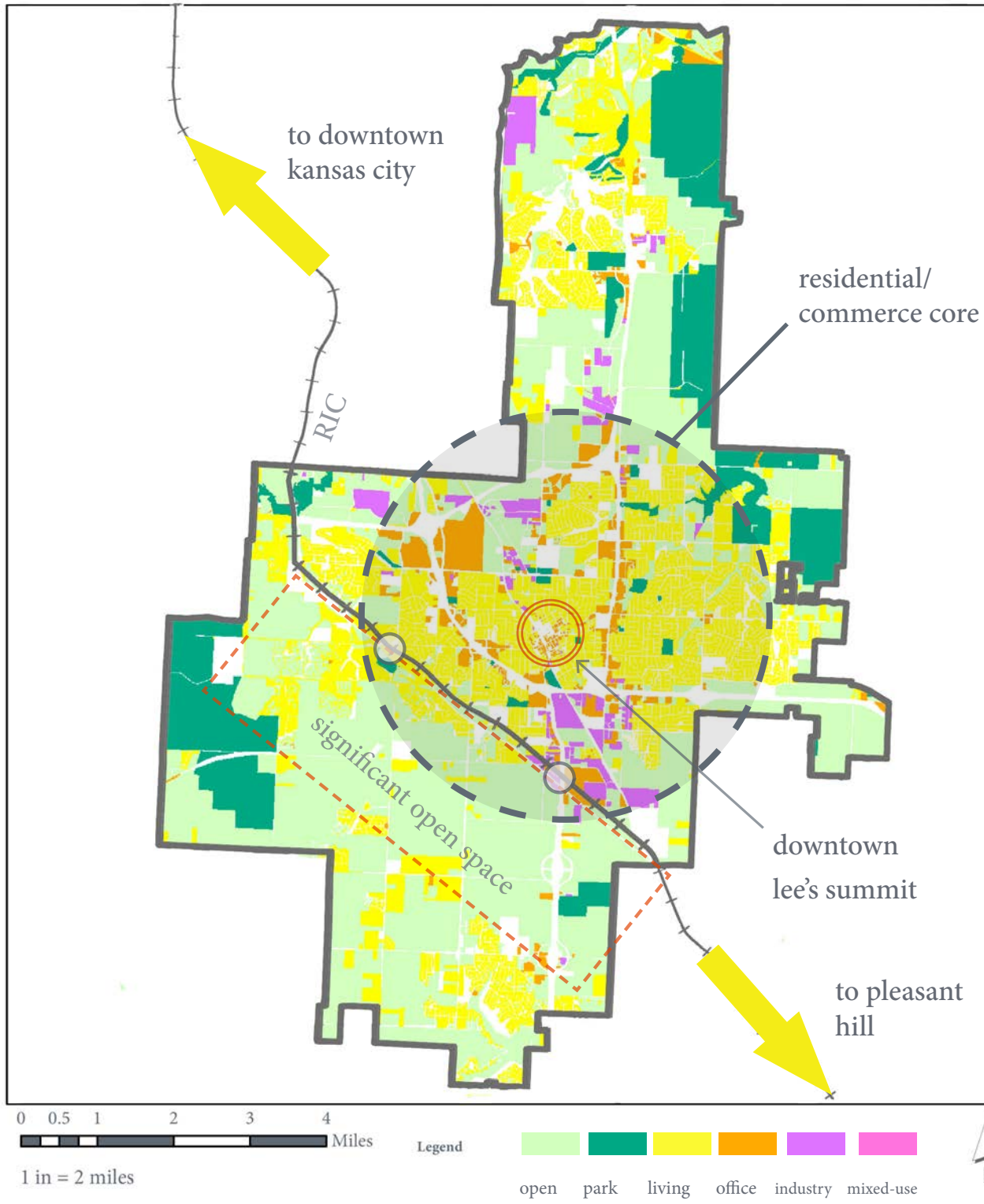


figure 5.05: current land-use has available land west of corridor.

2040 land-use plan over extends community core

The 2040 land-use plan illustrates a large placement of single-family units sprawling toward the southwest boundaries of Lee's Summit ***(figure 5.06)***. By extending the residential fabric the community begins to sprawl and lose the strong core of residential development that promotes community cohesion.

The land adjacent to the proposed TOD is deemed as heavy industry. Currently, some industry exists such as the Toys-R-Us distribution center, however if a TOD was implemented at route 291 and Stuart Road, then the use would change to mixed-use and the industry could be relocated to a more remote or less centralized location in Lee's Summit.

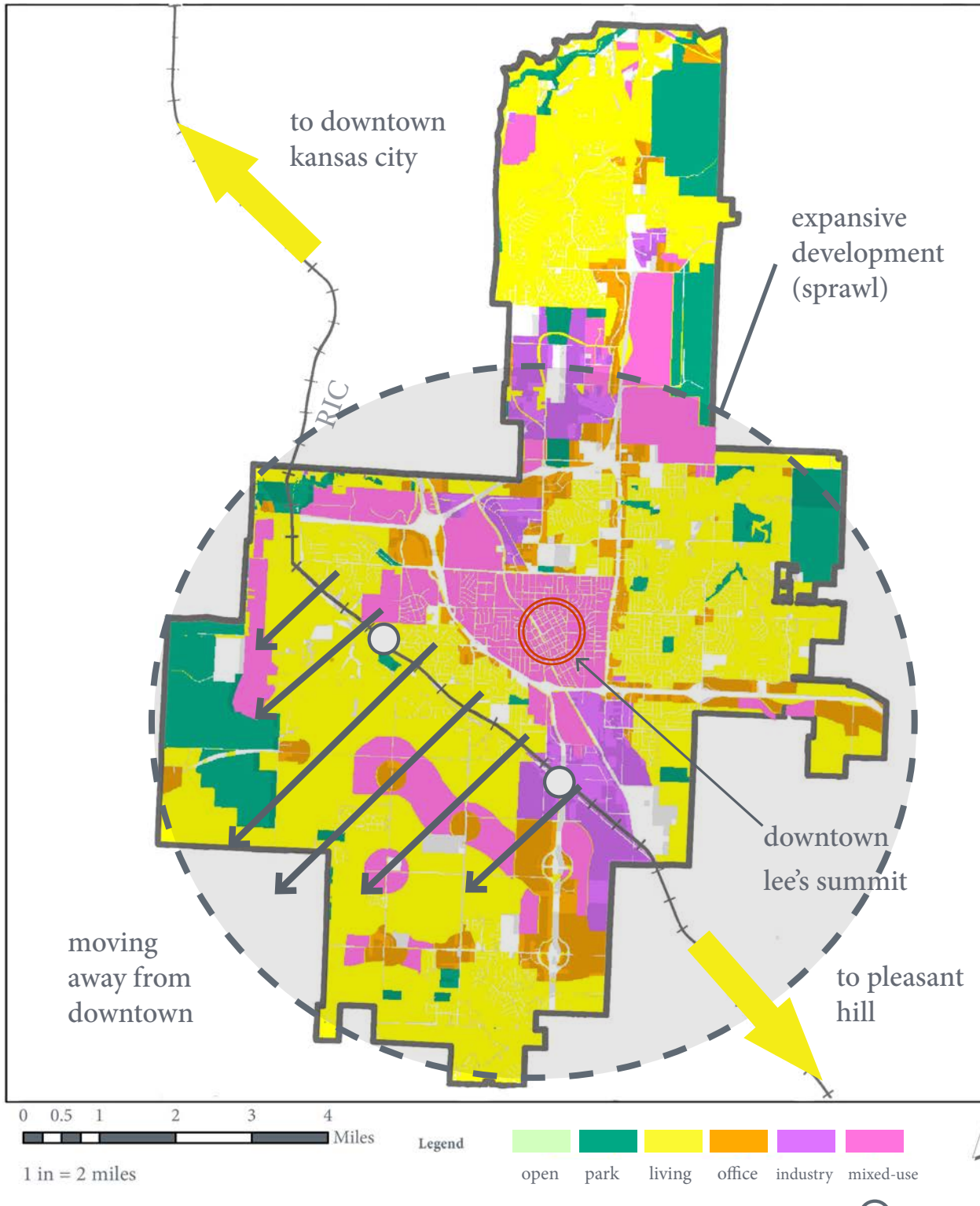


figure 5.06: 2040 land-use plan over extends community core.

adjusted land-use plan, stronger residential fabric

The new land-use map proposed by this project was created with a vision of new and vibrant communities to flourish around the two proposed commuter rail stops along the corridor ***(figure 5.07)***. The new land-use plan proposes higher residential densities in the form of town homes, duplexes, and apartments in the proposed southern stop while expanding the current single family neighborhood type of developments in the proposed northern stop. This adjusted land-use plan also preserves a large portion of the open space west of the Rock Island Corridor and pushes the proposed industry out of the residential core.

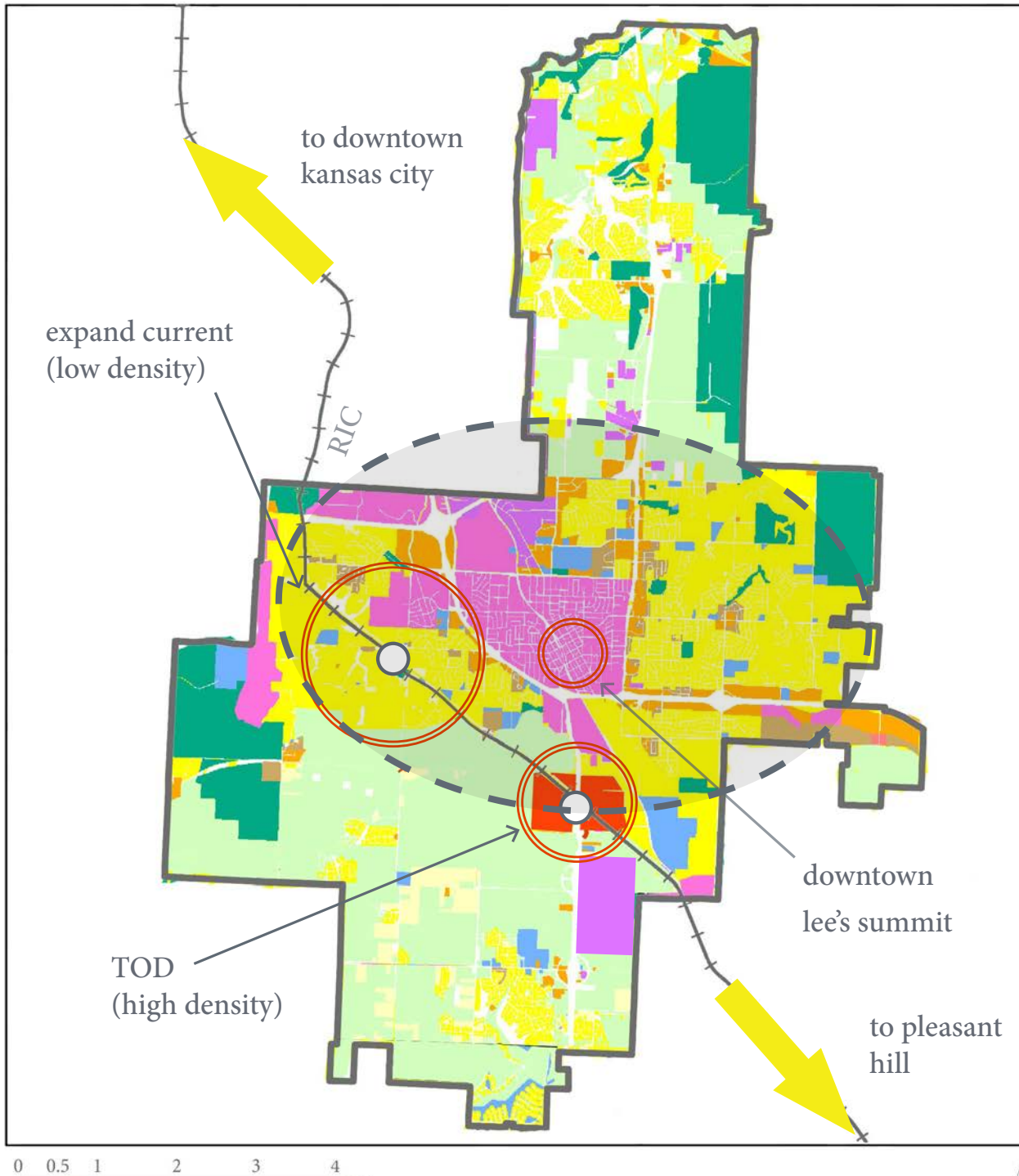


figure 5.07: adjusted land-use plan allows for stronger residential fabric.

access

Understanding the mean center of population can help understand the current accessibility to the potential public transportation for residents of Lee's Summit. By suggesting the different transit stops along with the relative development recommendations and bus system, the number of residents can have increased access to public transit in Lee's Summit. However, looking at the current population of Lee's Summit, the average household does not have adequate access to the proposed rail line stops ***(figure 5.08).***

Looking at the mean center of the population density in Lee's Summit and comparing that to the historic downtown in Lee's Summit, the relationship is very close. This implies that residents, on the average, are in close proximity to downtown Lee' Summit and have access to grocery stores, shopping, gas stations, and other types of community services. However the mean household does not have access to the rail line in a five minute drive.

The analysis and tabular information shown in ***figures 5.09, 5.10, 5.11, 5.12, 5.13***, and ***5.14*** demonstrate the varying levels of access to public transit both in terms of pedestrian access and vehicular access. The term access refers to either a five minute drive for vehicles or a fifteen minute walk (equivalent to a half mile walk). The accessibilities of the current land-use were calculated based on specific housing unit distribution while accessibility for the 2040 land-use plan and the revised land-use plan were estimated based on the current housing densities. The results reveal a poor level of access to both the proposed commuter rail and bus system for the current land-use and the 2040 land-use plan. As demonstrated in ***table 5.02*** the revised 2040 plan show significant access improvements in all categories.

Although a relatively significant portion of the current population has access by a five minute drive, a greater percentage of people can have convenient access to the rail by personal automobile, bus, and walking, through the residential development strategies.

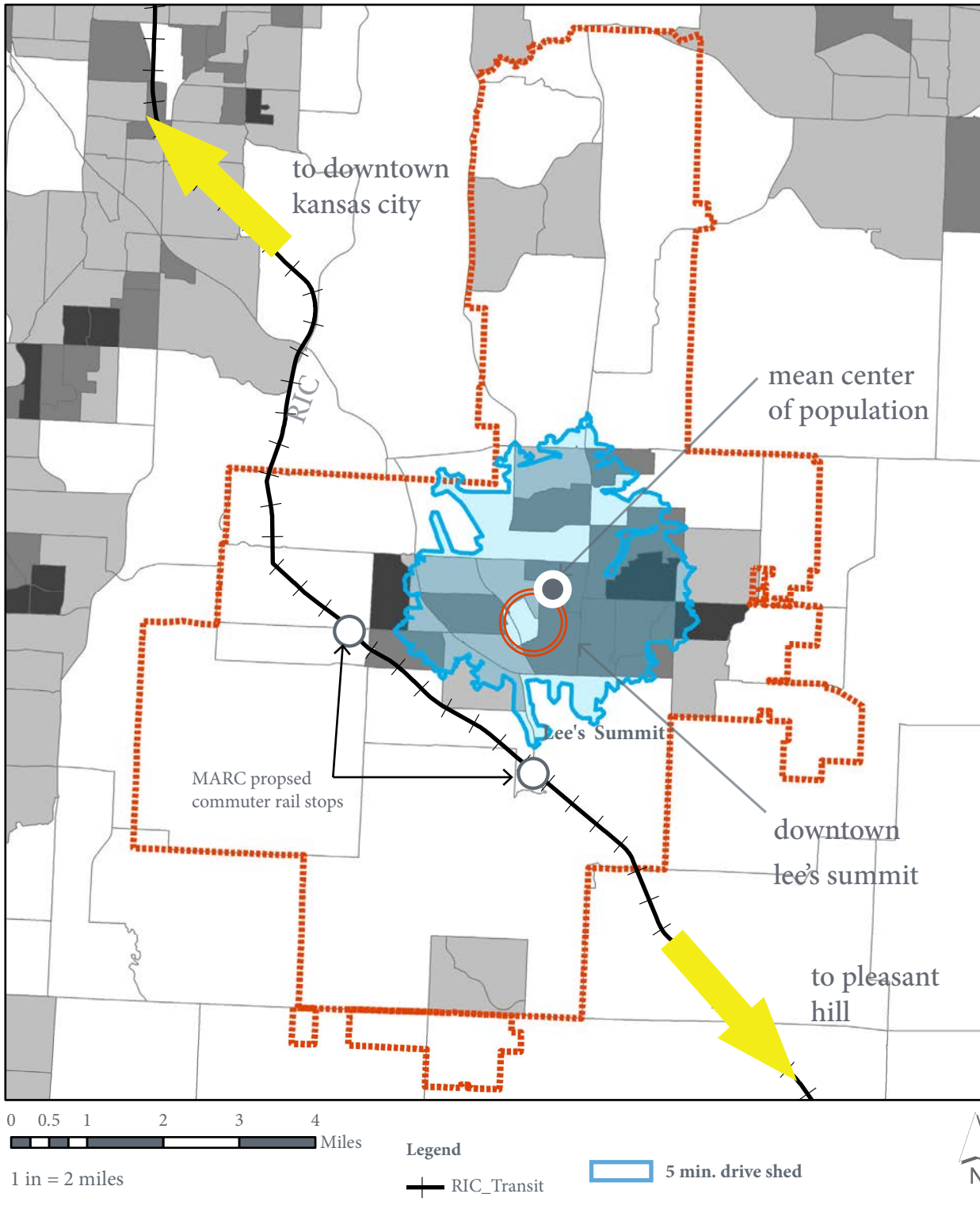


figure 5.08: median household has poor access to potential rail stops.

current land-use		
automobile access(bus system)	**Number**	**Percentage**
housing units	34,365	100.00%
units in a 5 minute drive	8,639	**25.14%**
pedestrian access(bus system)	**Number**	**Percentage**
housing units	34,365	100.00%
units in a 15 minute walk	8,413	**24.48%**
autmobile access (commuter rail)	**Number**	**Percentage**
housing units	34,365	100.00%
units in a 5 minute drive	8,639	**25.14%**
pedestrian access (commuter rail)	**Number**	**Percentage**
housing units	34,365	100.00%
units in a 15 minute walk	1,085	**3.16%**

table 5.00: public transit access table (current).

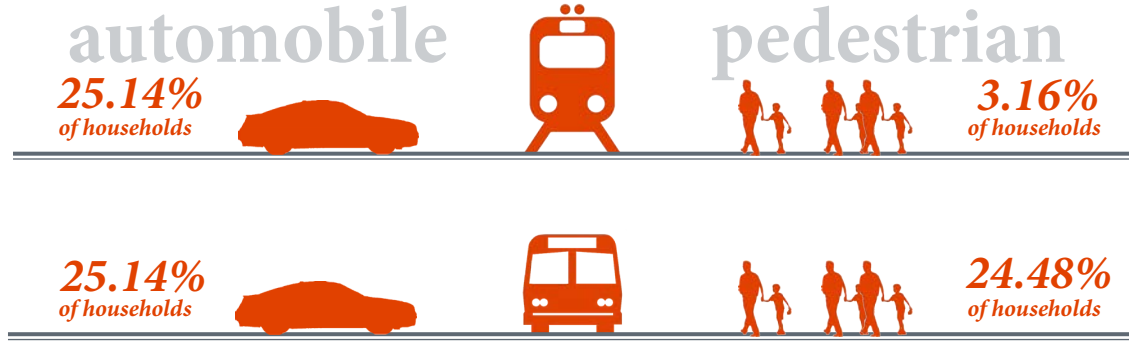


figure 5:09: public transit access (current).

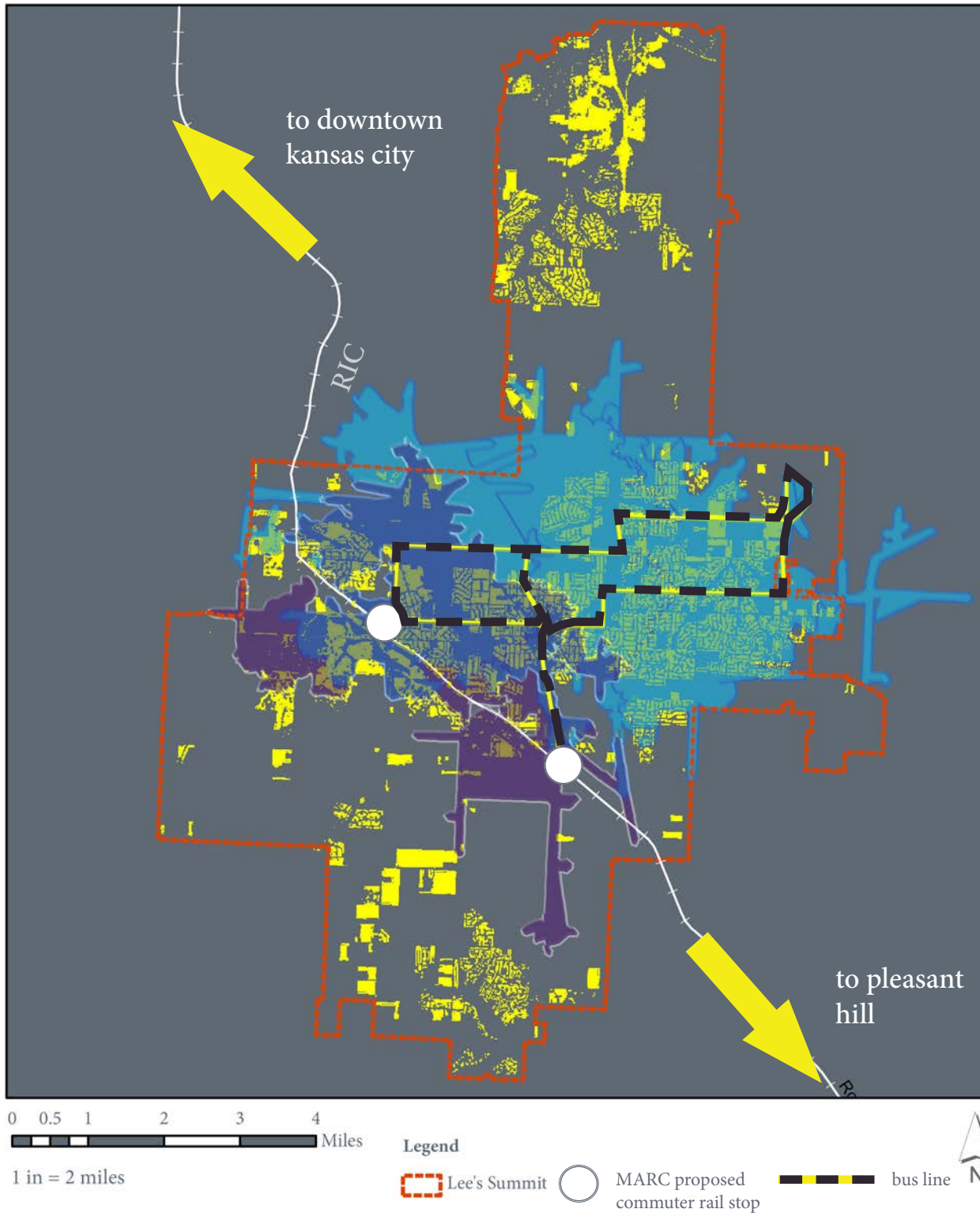


figure 5.10: potential access to public transit (current land-use).

2040 land-use plan		
automobile access(bus system)	**Number**	**Percentage**
housing units	54,208	100.00%
units in a 5 minute drive	13,639	**25.16%**
pedestrian access(bus system)	**Number**	**Percentage**
projected housing units	54,208	100.00%
units in a 15 minute walk	11,413	**21.05%**
autmobile access (commuter rail)	**Number**	**Percentage**
projected housing units	54,208	100.00%
units in a 5 minute drive	15,639	**28.85%**
pedestrian access (commuter rail)	**Number**	**Percentage**
housing units	54,208	100.00%
units in a 15 minute walk	2,085	**3.85%**

figure 5.01: estimated public transit access (2040 plan).

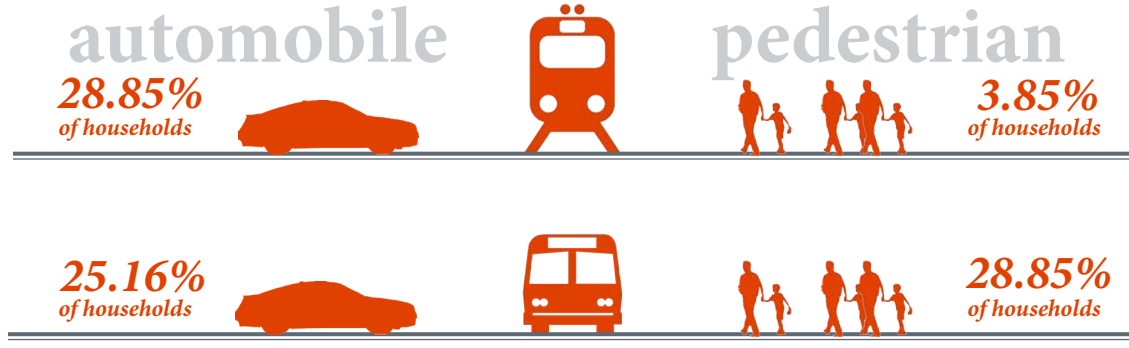


figure 5.11: poor public transit access (2040 plan).

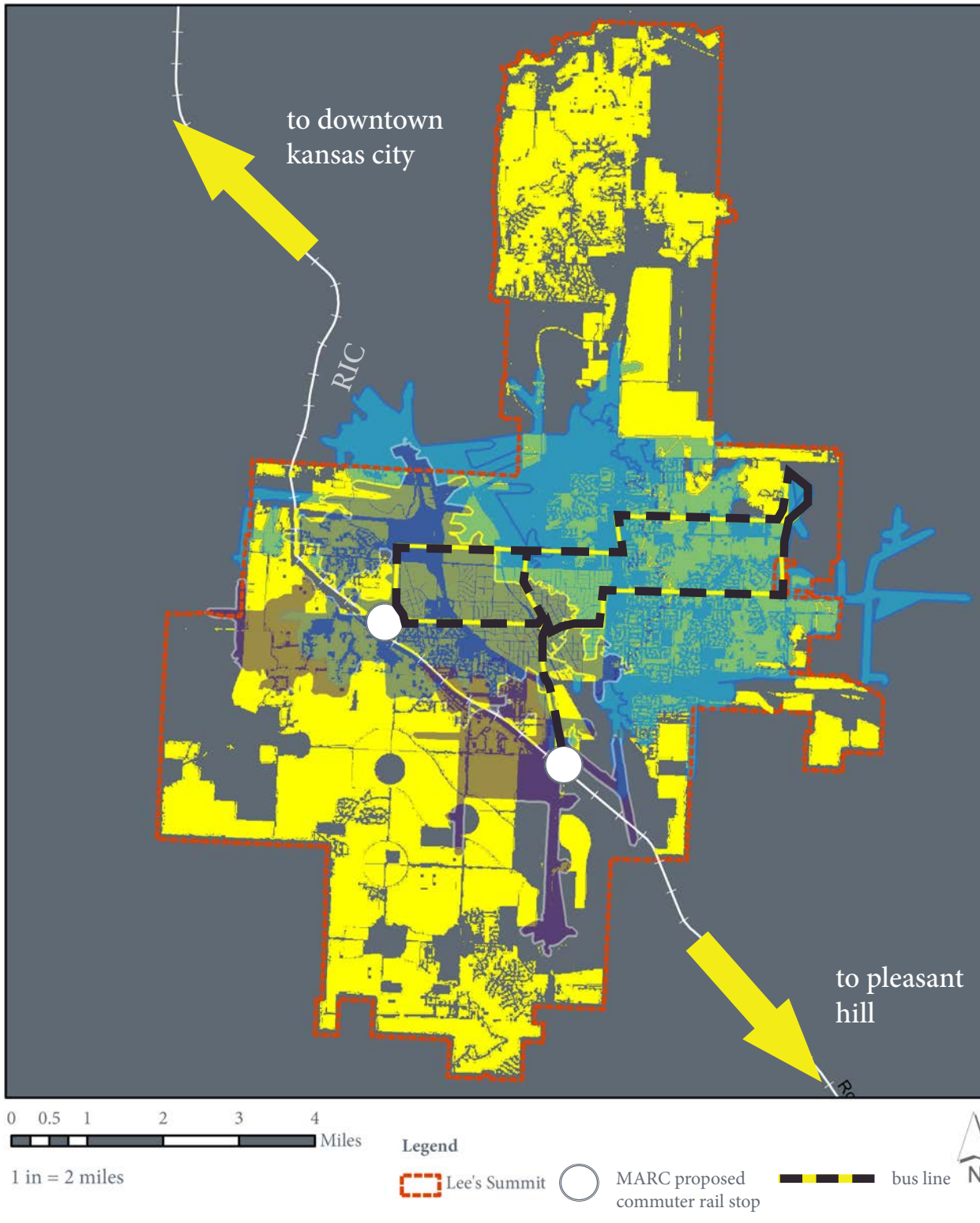


figure 5.12: potential access to public transit (2040 land-use).

revised 2040 land-use plan		
automobile access(bus system)	**Number**	**Percentage**
projected housing units	54,208	100.00%
units in a 5 minute drive	39,193	**72.30%**
pedestrian access(bus system)	**Number**	**Percentage**
projected housing units	54,208	100.00%
units in a 15 minute walk	26,413	**48.73%**
autmobile access (commuter rail)	**Number**	**Percentage**
projected housing units	54,208	100.00%
units in a 5 minute drive	28,482	**52.54%**
pedestrian access (commuter rail)	**Number**	**Percentage**
projected housing units	54,208	100.00%
units in a 15 minute walk	16,085	**29.67%**

table 5.02: estimated public transit access table (revised 2040 plan).

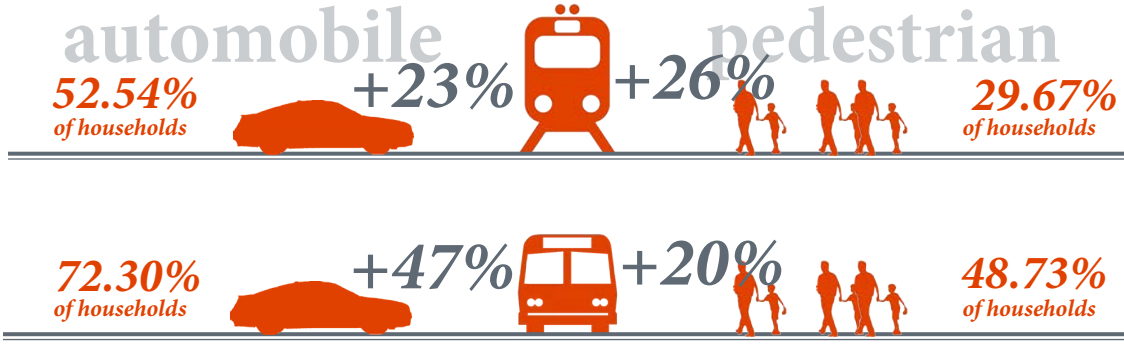


figure 5.13: improved public transit access (revised 2040 plan).

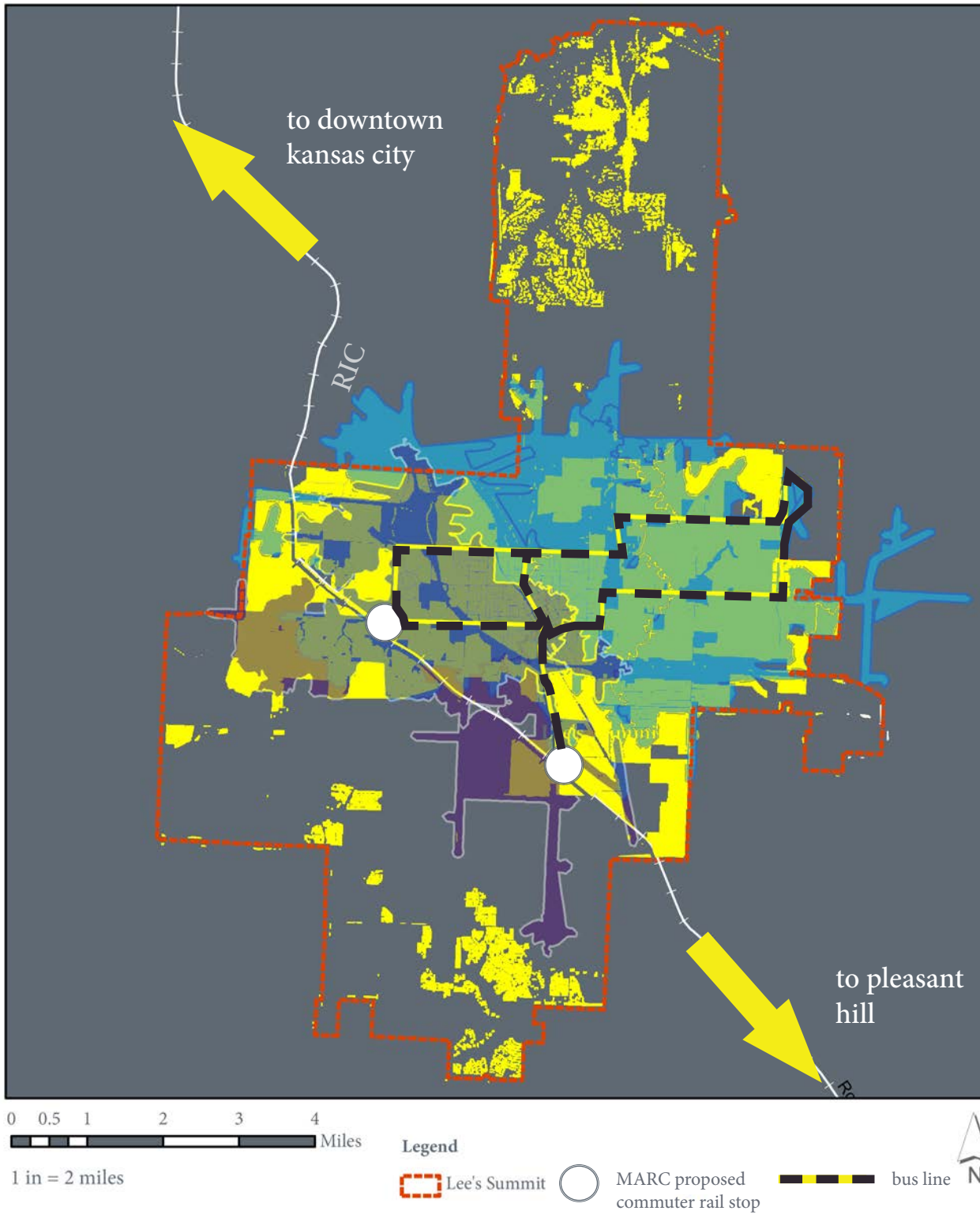


figure 5.14: potential access to public transit (revised 2040 land-use).

transit vision VI

park-n-ride at hartman park

The current program of the Charles David Hartman Memorial Sports Complex, or Hartman Park, is a community public park with basic amenities. The park currently sits on 20 plus acres of land that is tucked into a single family residential development. There is approximately 10 plus acres of a wooded and riparian zone adjacent to the site, on the north western portion, and is bounded by a creek on the far west and the Rock Island Rail Corridor on the east. The park currently has no usable park shelters but contains a playground, restroom facility, ¾ mile trail, three lighted softball diamonds, and a parking lot providing 250 spaces.

figure 6.01: rock island corridor at hartman.

figure 6.02: on-site playground.

figure 6.03: hartman park program inventory.

large portion of park to be preserved

Although Hartman Park is not the primary destination for youth and adult athletics in Lee's Summit (Legacy Park is the largest), the site is utilized for adult softball leagues and youth baseball/ softball practices. The softball fields are an important piece of recreational opportunity for the community and the adjacent parking is sufficient to accommodate a large influx of users. The natural park just north of softball diamond #1 is a great place for the nearby residences to walk and acts as an outlet for children attending the softball games who are uninterested in the games. Thus it is proposed that the softball fields, parking lot, trail system and neighborhood park be preserved. However this project suggests that it may be beneficial to save a portion of the natural neighborhood park for future developments nearest the rail line and adjacent to the existing open space.

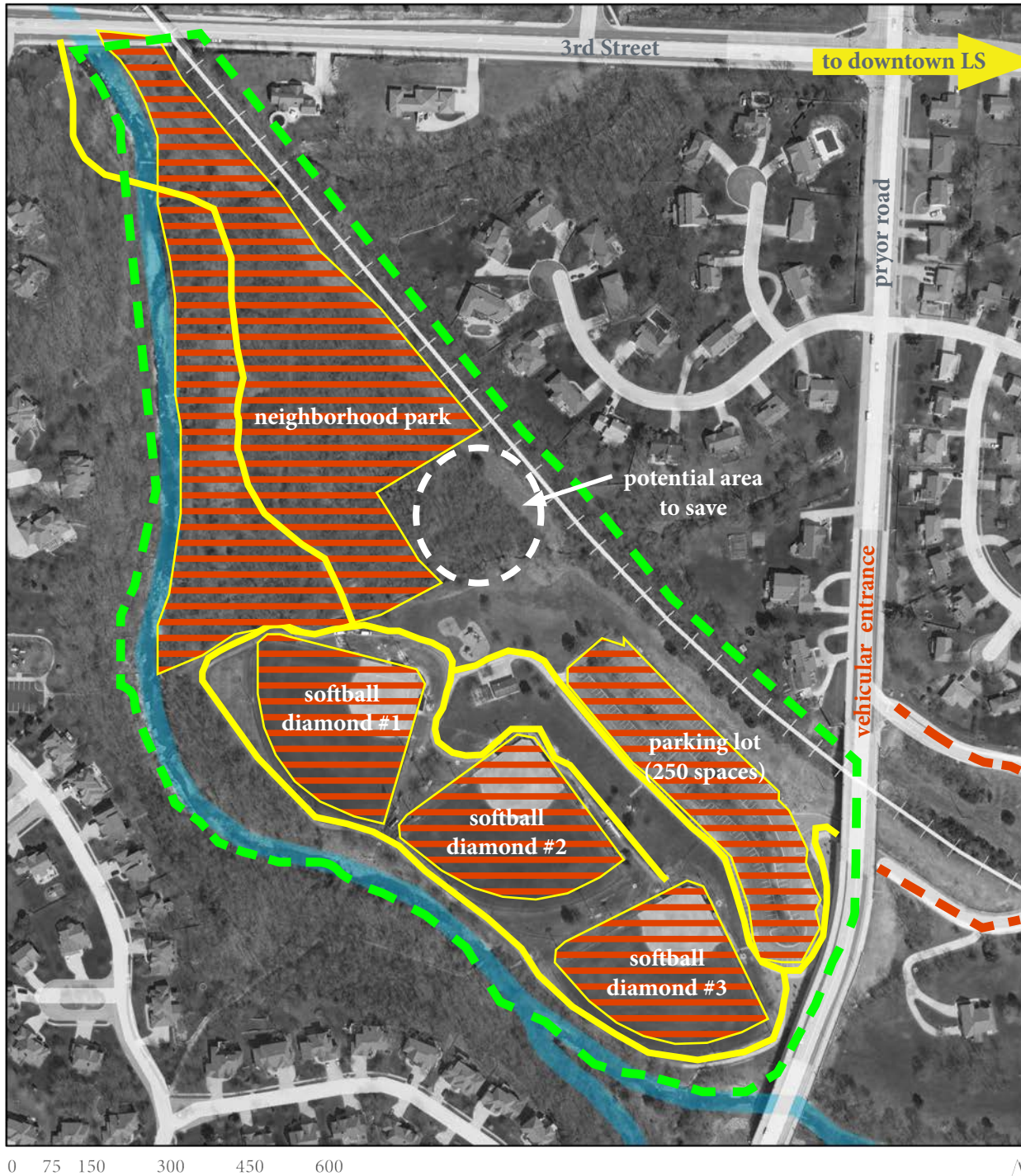


figure 6.04: site program to preserve.

general suitability analysis for site programs/rail

One of the initial considerations for envisioning the park is locating developable land. The map, (***figure 6.05)***, illustrates three levels of suitability for two components: first, the platform for the commuter rail, and second, the potential program space to be added to the site (such as plazas, play spaces, and additional athletic fields, explained more on page 102-105). The breakdown of the slope percentages are as follows: slopes 21% and above are not suitable for platforms or additional program space, slopes 11-20% are somewhat suitable, and slopes 0-10% are highly suitable. The suitability analysis shows that the proposed potential area to save for future development is somewhat to highly suitable for development.

figure 6.05: general suitability analysis for site program/rail.

rail platform adjacent to developable land

The most suitable location for the commuter rail platform is directly adjacent to the developable open space for potential program to occur. The areas show in red in ***figure 6.06,*** are locations along the rail unsuitable for the implementation of a commuter rail platform (assuming the platform would not require a tunnel that cuts through the large slopes adjacent to the rail platform). The dashed yellow line represents a small drainage way and development in this area should be cautious not to disrupt the current drainage way into the nearby creek. The areas labeled in green represent the best locations to develop site program and commuter rail platforms.

figure 6.06: rail platform adjacent to developable land.

program concepts and considerations

The importance of the PARK-n-ride at Hartman is to offer a place of entertainment and recreation that spurs interest for non-dependent riders. The image of the PARK–n-ride is critical and the site is currently equipped with the necessary space requirements for different on-site elements to occur.

By utilizing the destination points of Kansas City to attract riders and related activities of those destinations to elements on-site, the ability to increase transit awareness is greatly improved. The destination and on-site connection visions are broken down into four major categories: dining and nightlife, game-day, music, and arts, and community celebration (***figures 6.08, 6.09, 6.10, and 6.11***). As illustrated in ***figure 6.07***, the overall goal for the PARK-n-ride is to provide amenities and programs on-site so that the user is attracted to both the site and the purpose/destination of travel. The four major destination and on-site connection visions could include a variety of expressions such as entertainment, recreation, outdoor dining, and relaxation. There are four main ideas for the site:

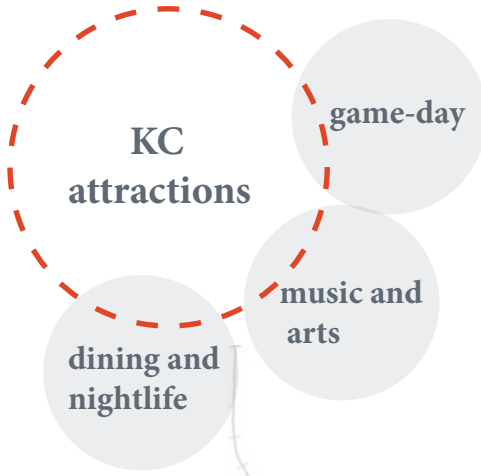
The first idea is the implementation of a *sports plaza*; a paved and artistically formed outdoor space utilized by a multitude of users. Activities or designs are tailored for uses such as skating, tailgating, basketball, local performances, holiday related events, children play spaces, and more. The sports plaza events coincide the activities and events for the *game-day* and *music and arts* visions. Along with all of the additional features of a typical plaza, the sports plaza still functions as transition zone to the ticket booth and transit platforms. An example of a multi-use plaza is a skate plaza, a hybrid multi-purpose space that allows for user creativity and programmatic transformations (***figures 6.12, 6.13, 6.14, 6.15, and 6.16***).

The second idea for the site program is a regulation or "play-size" multi-purpose field allowing the opportunity for additional Lee's Summit youth sports teams to practice and recreate during the tailgate celebrations. Similar to the sports plaza the events and programs of the multi-purpose field intersect with the *game-day* vision. The location of the field could be located next to the most western softball diamond #1 and connect to the sports plaza.

The third idea is the expansion/ conversion of the concession area into a small coffee shop, convenience store, and dining establishment to provide a greater selection of snacks or light meals for the local youth and adult recreation activities as well as sales for the local rail traffic. The concession expansion intersects the dining and nightlife visions and could be a great interest point for Lee's Summit residents who are looking to start their own unique dining establishment.

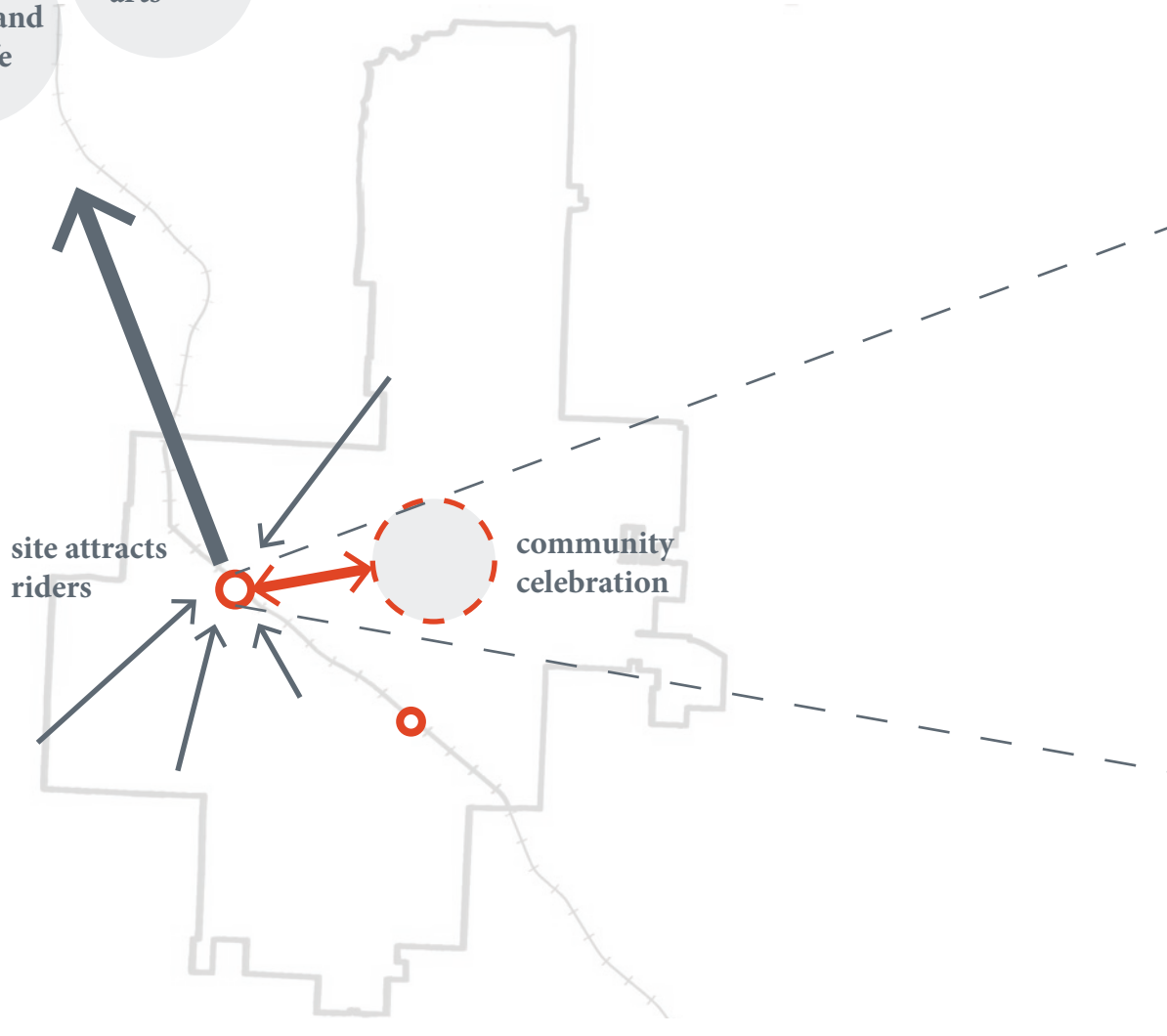
The fourth idea for the potential park implementations is the commuter rail platform and coordinating bus stop. The platform and bus stop drop-off and pick-up points should include unique kiosks, signage, large shade structures, aesthetic materials and digital scheduling systems.

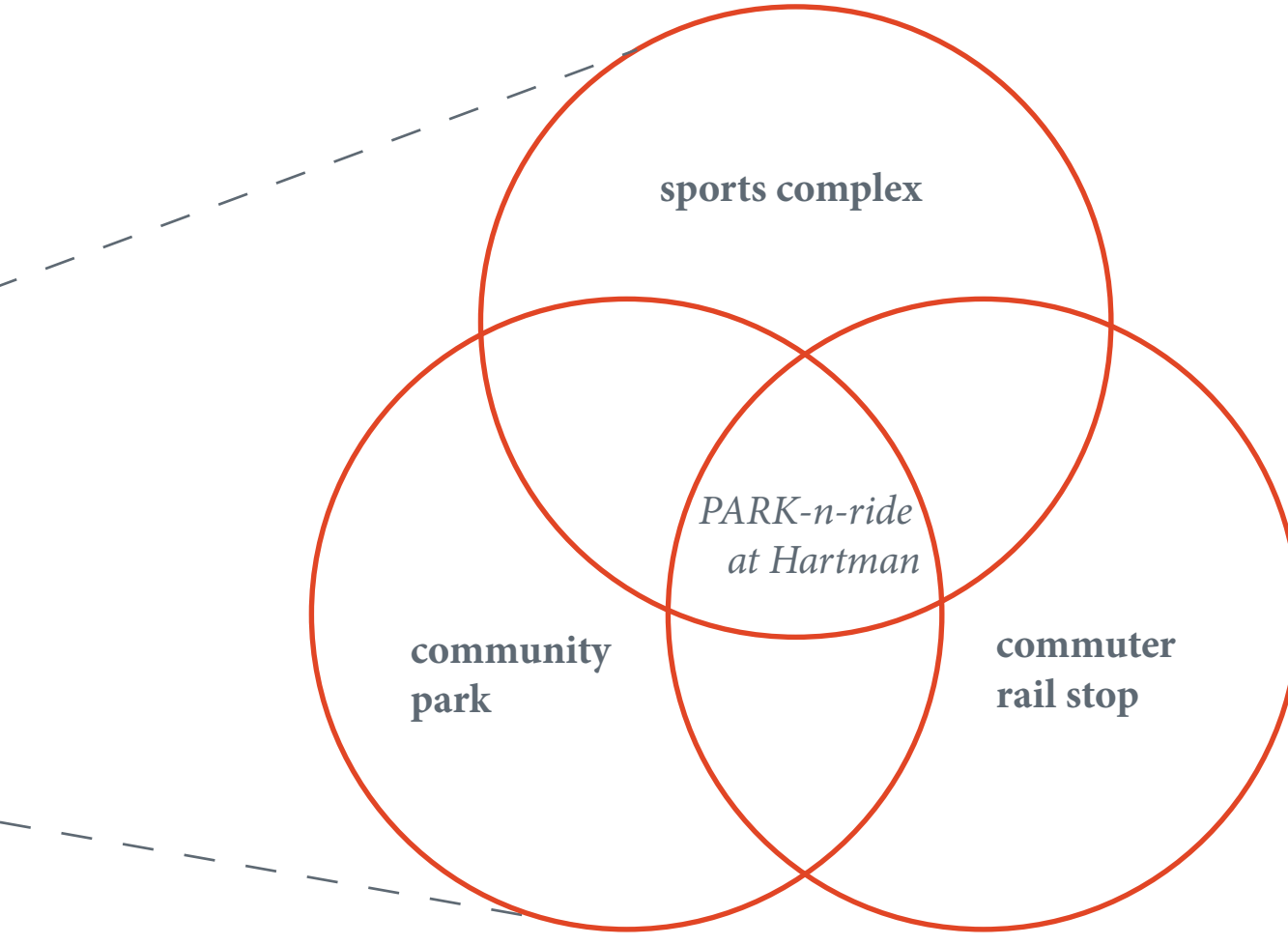
Each of the four site ideas should implement creatively integrated amenities such as lighting, seating, trash receptacles, and bike racks making the site highly usable and convenient.



strategies

marketing schemes, digital advertisements, public input, programs, on-site events, connected activity, "ride and dine" passes, "ride and play" passes, and group events





potential programs
mixed-use plaza, multi-purposed play field, concession area expansion, and a commuter rail platform

figure 6.07: concept for destination and on-site connection visions.

dining and nightlife

The transit stop at Hartman Park has the potential to attract Lee's Summit ridership by utilizing the dinning and nightlife activities of Kansas City as a point of interest. Some of the interest points include places such as Bristol's Seafood Grill, Kobe Japanese Steakhouse, Fiorella's Jack stack BBQ, Grinder's, McFadden's, Savoy Grill, Michael Smith's, Lidia's, and other restaurants/bars located in the Power and Light District of Kansas City.

The site can reflect the character of those types of entertainment districts through the implementation of unique lighting effects, pavement patterns, and high-end landscaping, and unique on site activities.

figure 6.08: dining and nightlife vision.

game-day

The transit stop at Hartman Park has the potential to attract Lee's Summit ridership by utilizing the professional sporting events of Kansas City as points of interest. Some of the interest points include the Kansas Chiefs, Kansas City Royals, BIG XII Basketball Tournament, Professional Bull Riding events, and special NCAA football games such as the Boarder War Game and Farmegeddon game. The site can reflect the character and activity of those types of events through the implementation of site programs such as community tailgating that includes food, music, and games.

figure 6.09: game-day vision.

music and arts

The transit stop at Hartman Park has the potential to attract Lee's Summit ridership by utilizing the musical and art events of Kansas City as points of interest. Some of the interest points include the AMC Main Street Theater, KC Live! PBR Big Sky, Midland by AMC, and the Sprint Center. The site can reflect the character and activity of those types of events through the implementation of site elements such as temporary or permanent art installations, unique amenities, programs promotions, local music shows, effect lighting, and material change.

figure 6.10: music and arts vision.

community celebration

The transit stop at Hartman Park has the potential to attract an influx of people into Lee' Summit by utilizing the community events occurring in downtown Lee's Summit as a point of interest. Some of the community events include Oktoberfest, Spring Open House, the farmer's market, Downtown Days, Halloween Parade, Music in the Park. and the St. Patrick's Day Parade. The site can in turn be a destination point for the users of the commuter rail and attract people to the local events. The feeder buses would take the people to and from the events in downtown Lee's Summit.

figure 6.11: community celebration vision.

plaza example, the skate plaza at midtown

The skate plaza concept is a visionary idea for the Midtown development in Westminster, Colorado. The drawings and concepts were produced in an academic design studio at Kansas State University. This project is an example of a multi-purposed plaza that allows for the interaction of people doing different activities and simultaneously using different sections of the site.

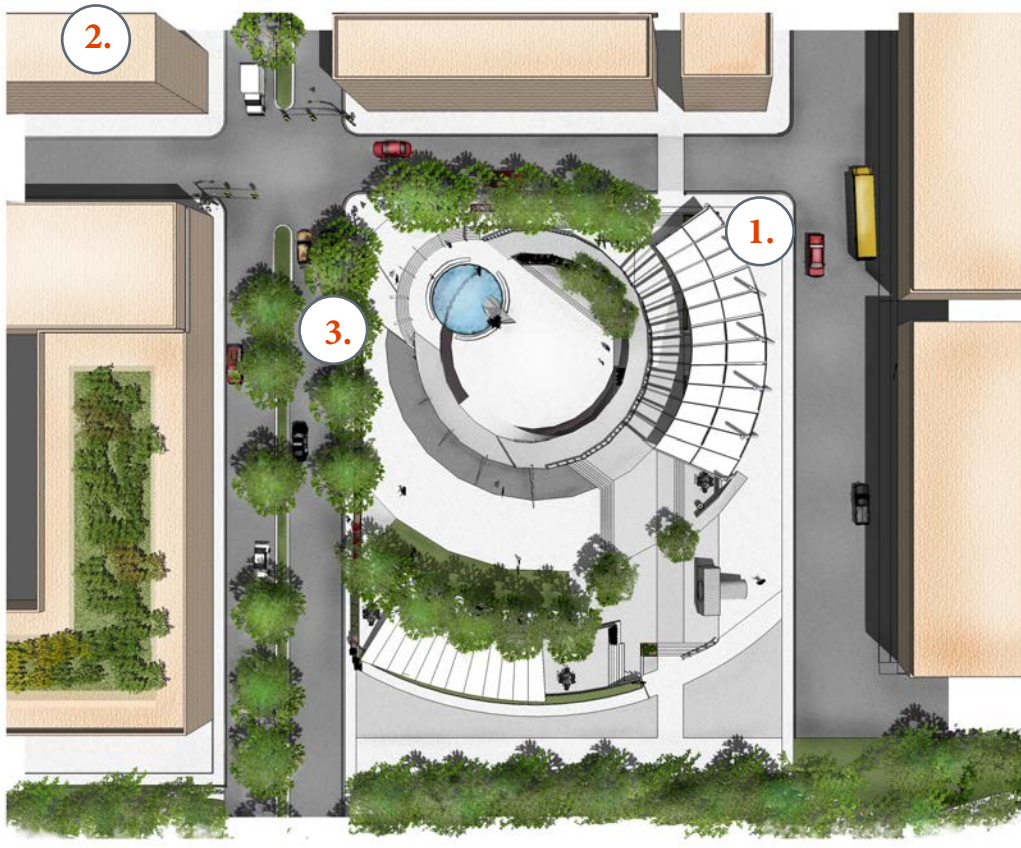


figure 6.12: skate plaza site plan.

NTS

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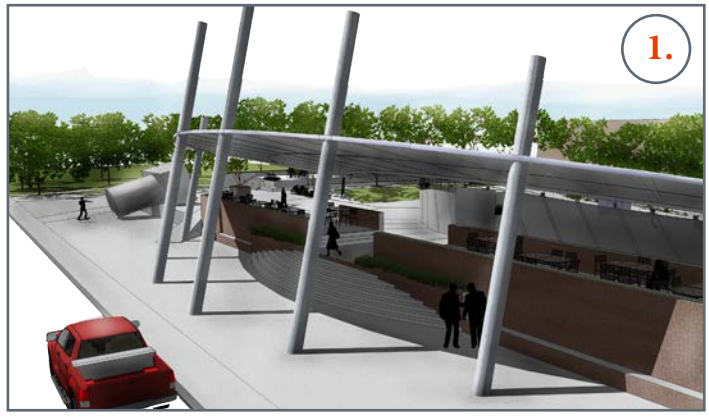


figure 6.13: integrated outdoor dining.

figure 6.14: rooftop view.

figure 6.15: social mixing.

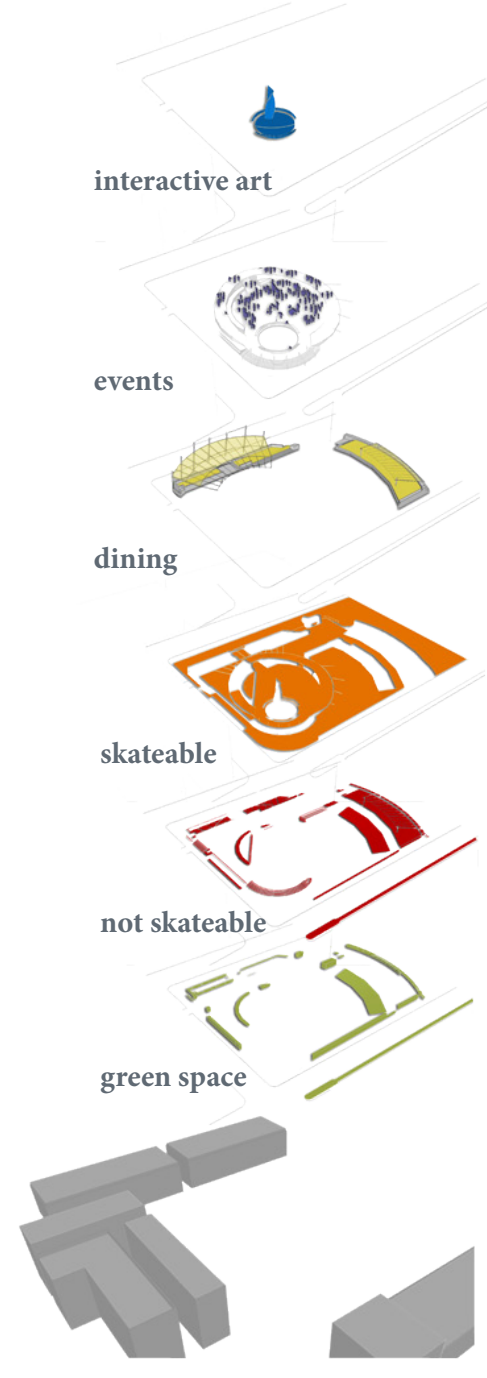
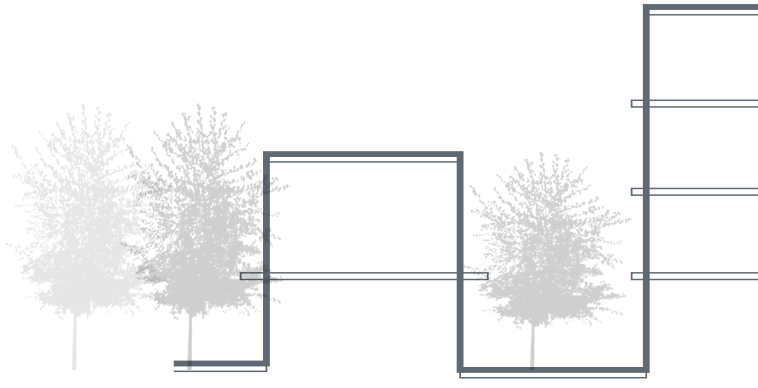


figure 6.16: important elements

transit-oriented development

The current condition of the proposed park-n-ride stop off route 291 is open space and is situated between Thompson Drive and Stuart Road. The concept for the TOD is a place of residency and a unique lifestyle opportunity to draw both young adults as well as interest current residents of Lee's Summit who are known as empty nesters and looking to downsize and move to a smaller community with accessible amenities. Transit-oriented developments exist in all different types of residencies and vary in size. The concept for the TOD is to develop high density mixed-use spaces (residential, office, and commercial buildings) around the commuter rail stop to maximize access by foot and bicycle. From the central transit hub the densities begin to slowly shift into lower densities such as seen in the current residential distribution in Lee's Summit.



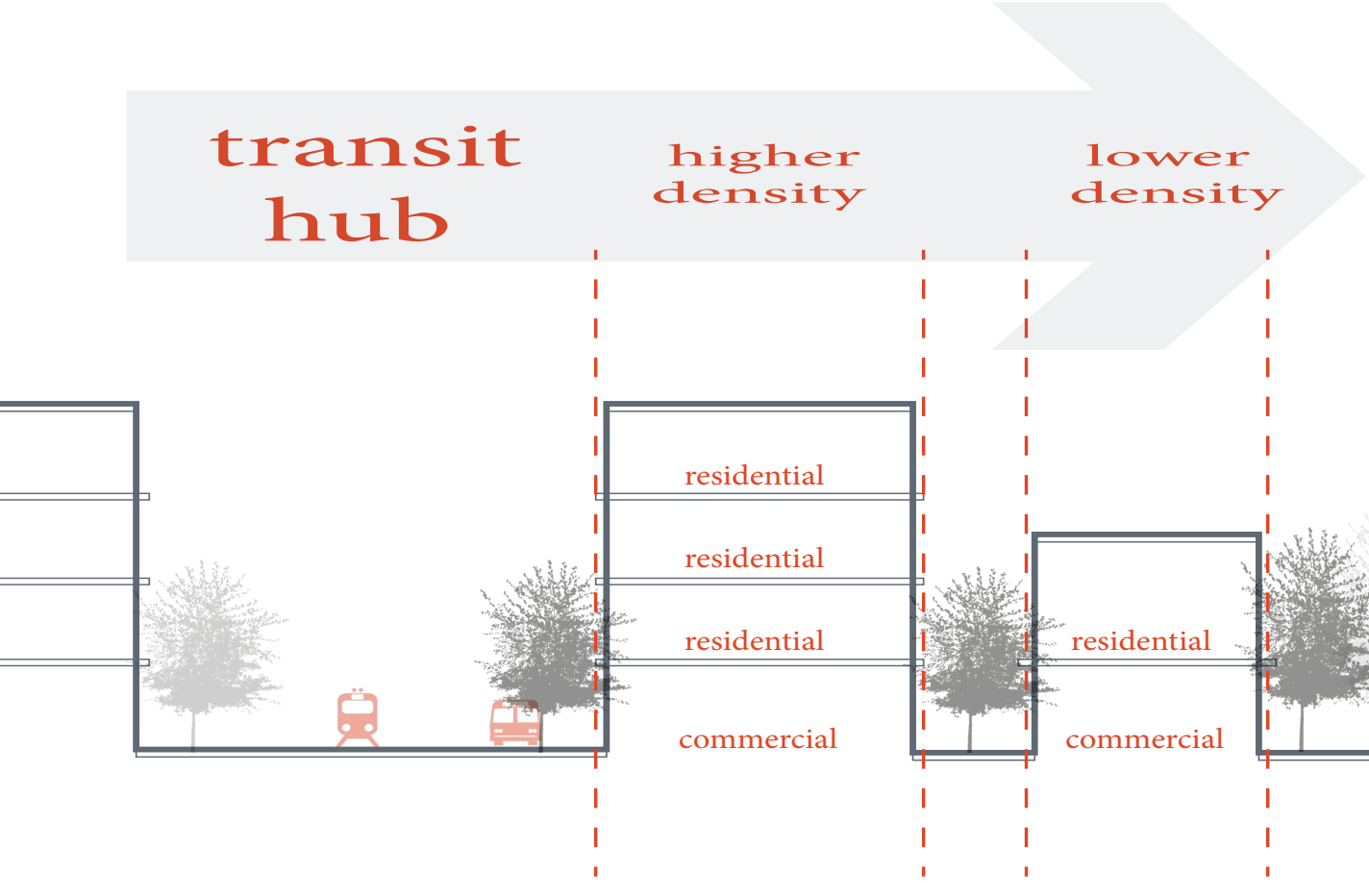


figure 6.17: moving from transit center with higher densities to lower densities.

project summary


NO
SMOKING

benefits of public transit

As previously mentioned public transportation systems yield exceptional benefits including economic and community vitality, gasoline consumption reduction, air quality improvement and diverse cultural interactions promoting social cohesion (Metro Transit- St. Louis, 2010). By extending the market into this larger target group we can improve our transportation systems and move towards a more sustainable future. The specific benefits of gaining ridership from non-transit dependent communities such as Lee's Summit are shown in ***table 7.00***.

Public transit in Lee's Summit allows for both local benefits and benefits for community members riding the transit to destinations such as the Truman Sports Complex and the Sprint Center. The local benefits for the community include: free parking at the transit stops, new housing options, celebratory opportunities at the commuter rail stops, incorporation of new technologies in local parks, and acts as a viable option for travel during times of poor driving conditions. The local benefits for Lee's Summit city officials include: improved commerce (more tax dollars) bring more influx of people into downtown Lee's Summit, a need for new residential developments (construction) and also broadens the residential opportunities in the central population hub allowing for positive growth.

The benefits for the community members riding the transit to downtown Kansas City include: elimination of traffic congestion and parking fees, providing safe transportation alternatives, and the implementation of new developments along the rail such as office developments, commercial developments, and entertainment districts.

general benefits	kc greater metropolitan	nation
economy	keeps buying more local	more sustainable commerce
environment	better air quality	smaller carbon footprint
transportation	more options, less traffic	saves fossil fuels
societal	social mixing	improves social sustainabiltiy
specific benefits	**community**	**city**
public transit systems in LS (PARK-n-ride at Hartman, TOD of Route 291, and Summit Shuttle System)	free parking for chiefs/royals games	less road traffic and less road construction
	ability to tailgate and celebrate closer to home	creates new options of residency in LS
	less traffic congestion for downtown destinations	helps keep commerce in LS, more tax dollars
	eliminates parking difficulties in downtown KC	helps puts LS on the forefront of suburban transit
	creates a place for new activities to occur	improves air quality in LS
	allows for free time while traveling to desination	allows for a tighter residential fabric
	incorporates new technologies into parks in LS	brings more non-residents to downtown LS
	ability to travel during poor driving conditions	brings more residents to downtown LS
	creates new options of residency in LS	keeps activity in LS

table 7.00: benefits of public transit go beyond larger scale improvements.

catalyst for kansas city metropolitan

By adding significant ridership distributions from Lee's Summit residents into the Rock Island transit system, social diversity and social sustainability can be achieved. All of the cities along the corridor are equally vital to transit ridership, however it may be difficult to add significant ridership from cities such as Lee's Summit because public transit does not fit into the community member's current needs, values, and respective lifestyle choices.

Lee's Summit has the potential to act as a catalyst and also as a model for attracting non-dependent ridership transit implementations across the greater Kansas City metropolitan. Looking at ***figure 7.01***, the transit dependencies across the Kansas City metro are illustrated. Along the two southwest corridors there is a relatively large grouping that makes up the largest concentration of non-transit dependents. The major non-dependent cities are all on the Kansas side of state line and the following communities are part of the concentration: Leawood, Lenexa, Mission Hills, Overland Park, Prairie Village, and Shawnee. The 2040 projected population increase for these areas suggests that there is great potential for development strategies, similar to Lee's Summit. The major projected population increases are in Lenexa, Overland Park, and Shawnee. Overland Park is projected to see a population increase of nearly 75,000 residents, Lenexa is projected to see an increase of nearly 25,000 residents, and Shawnee is projected to see and increase of nearly 29,000 residents (MARC, 2010). Although each of the cities possess its own dilemmas connecting to public transit, the same principles of aesthetics and amenities are applicable. All of the communities listed in the concentration of non-dependent communities can benefit from the aesthetic guidelines and visionary concepts of this project.

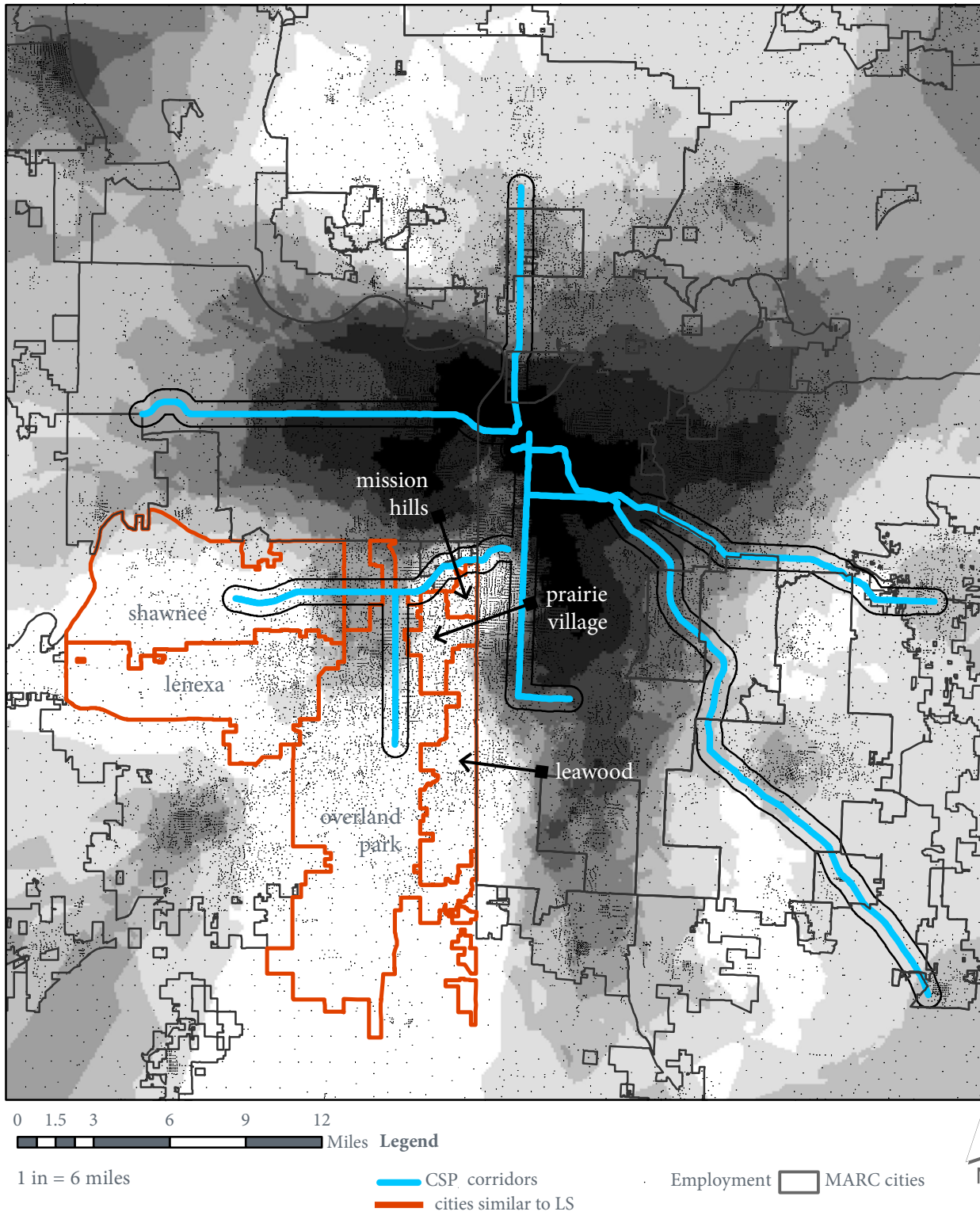


figure 7.01: strategy applies to two more of the six identified MARC corridors.

reflection

The successful implementation of a public transportation system in non-transit-oriented communities such as Lee's Summit is feasible. Establishing better ridership and user attraction can be completed through strategic planning along with unique site design efforts. Although ***Extending the Market*** does not give a detailed design for Hartman Park, the visions, concepts, strategies, and case studies are to help direct the planning efforts and envision potential for the site. I believe focusing visionary concepts toward entertainment and amenity-based ideas is a good place to begin for public transit in Lee's Summit.

The three major parts that help determine a beneficial strategy or outlook for Lee's Summit can be summarized into these key pieces; first, awareness and understanding of public transit, second, maximizing access and convenience, and third, visions for aesthetic character and entertainment-based programmatic structure.

Looking at the project in its entirety, three components could be reinterpreted and further studied. First, the concept of ridership dependencies could be further explored. To pin down a more accurate ratio of dependents to non-dependents, people that live in the central business districts of major metropolitan cities should have been subtracted from the equation. By doing so the dependent versus non-dependent comparison would have given the project a more detailed perspective of public transit dependency. This would have been difficult to accomplish however; knowing how many large metropolitan cities should be apart of "dense metropolitan center" would have been difficult to define.

Second, my visions were based on research and knowledge rooted in personal insights and planning and design judgements. Lee's Summit public surveys would help me or any designer, better understand the desires and needs of the community. Through the surveys, designers can obtain insights to site program needs and better strategize ideas for the public transit system. Specific questions pertaining to Lee's

Summit resident's connection with destination points along the Rock Island Corridor would help build stronger arguments for the transit vision concepts.

Third, a housing market analysis is necessary. By projecting the types of housing needs for the year 2040, a more detailed understanding could be obtained to direct the development potentials encompassing the two commuter rail stops. This report does not address housing market analysis, however this information would contribute to planning and phasing and implementation.

Overall the primary goals of the project were achieved. The residents and public officials of Lee's Summit were provided with a concept, strategies, and visions for the future. The progression of decisions made from this point forward are important and I hope that the information in this project brings attention the importance of not solely public transit but the aesthetic qualities of transit design. I look forward to seeing developments in Lee's Summit and along the Rock Island Corridor. Planning for public transportation systems is an exciting and lengthy process, but with proper planning efforts the greater Kansas City metro will reap great benefits and move toward a more sustainable future.

index VIII

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glossary of terms

The following list is a collection of important terms, groups, and ideas related to changing the public view of public transportation and creating equity in public transit ridership. (highlighted items are specifically derived from a piece of literature or source)

A

access- referring to the ability for people to reach and utilize public transportation

aesthetics- referring to the appearance of transit stops including bus, light rail, and regional rail

age- referring to the different age groups utilizing public transportation services

alternative analysis- "is the local forum for evaluating costs, benefits, and effects of a range of transportation alternatives" (MARC, 2011)

American Public Transit Association- organization with aims "to strengthen and improve public transportation, APTA serves and leads its diverse membership through advocacy, innovation, and information sharing." (APTA)

american public views- referring to how the people of our country look at different types of public transportation

B

bus rapid transit- type of public transportation that runs quickly stops often, and has upscale branding (MARC, 2011)

glossary of terms (f-j)

E

efficiency- referring to the time it takes for public transportation to get from point a to point b compared to that of a personal vehicle

energy- referring to the fuel consumption that transportation vehicles consume

ethnicity- referring to the distribution of different races that are present in public transportation

express bus- a type of transit system that could be implemented in the Rock Island Corridor, makes limited stops, with nicer amenities for the riders (MARC, 2011)

F

functionality- referring to the practicality of transit stops for people of all ages, races, and abilities

G

gas prices- one major influence on energy consumption

Greenwood- one of five cities located in the Rock Island Corridor, smaller population, little diversity

guidelines- a list or grouping of ideas, strategies, and thoughts related to good public transit planning and operations

glossary of terms (k-p)

K

Kansas City- one of five cities located in the Rock Island Corridor, larger population, most diverse

L

Lee's Summit- one of five cities located in the Rock Island Corridor, larger population, little diversity

light rail- a type of transit system that could be implemented in the Rock Island Corridor, low volume of passengers, electric powered, operations in mixed traffic (MARC, 2011)

locally preferred alternative- best option for the area in terms of economic, environmental, and social means (MARC, 2011)

M

mass transit- both public and private transit systems that can move a large number of people

Mid-America Regional Council- a non profit organization that provides facilitating duties to advance the region (MARC, 2011)

N

no build- a possible option for the Rock Island Corridor that is being considered by the Jackson County Commuter Corridors Alternative Analysis group (MARC, 2011)

glossary of terms (p-s)

P

pro-social individuals- people who believe that they posses an attitude towards the bigger picture and society (Van Vugt, 1996)

public transit appeal- the facets of public transportation that make a person want to utilize the system

public transit best practices- the best strategies, guidelines, and principles to follow regarding public transit

R

Raytown- one of five cities located in the Rock Island Corridor, middle size population, average diversity

regional rail- a type of transit system that could be implemented in the Rock Island Corridor, high volume of passengers, long distances, most amount of infrastructure needed, high cost (MARC, 2011)

Rock Island Corridor Coalition- group formed to protect the Rock Island railroad corridor (connection to the Katy Trail State Park) from Pleasant Hill to Kansas City for the ultimate purpose of trail and transportation uses (MARC, 2011)

S

social equity- providing equal opportunity for people, generally thought to bring lower class to upper class, more middle

glossary of terms (s-t)

system monitoring- a means by which a group or city can measure and record the important aspects of public transit

T

traffic management system- a possible alternative for the Rock Island corridor that with help make traffic management more efficient, however there are no major infrastructure or new system implemented (MARC, 2011)

transit dependents- people who do not have the financial ability to own a car, people who are physically unable to drive such as teenagers and the elderly (Garrett and Taylor, 1999)

transit feeder services- methods to get people to the major transit stops such as buses, bike paths, sidewalks, and taxis

transit ridership- referring to who and how many people utilize public transportation

transit stops- the places where buses, light rail, trains, and street cars stop to pick-up and drop off passengers

appendix a

Appendix a is a series of diagrams that demonstrate some of the preliminary ideas and concepts from the initial stages of the project. Each of the ***figures*** explains important considerations and processes for the development of the project to better explore research direction.

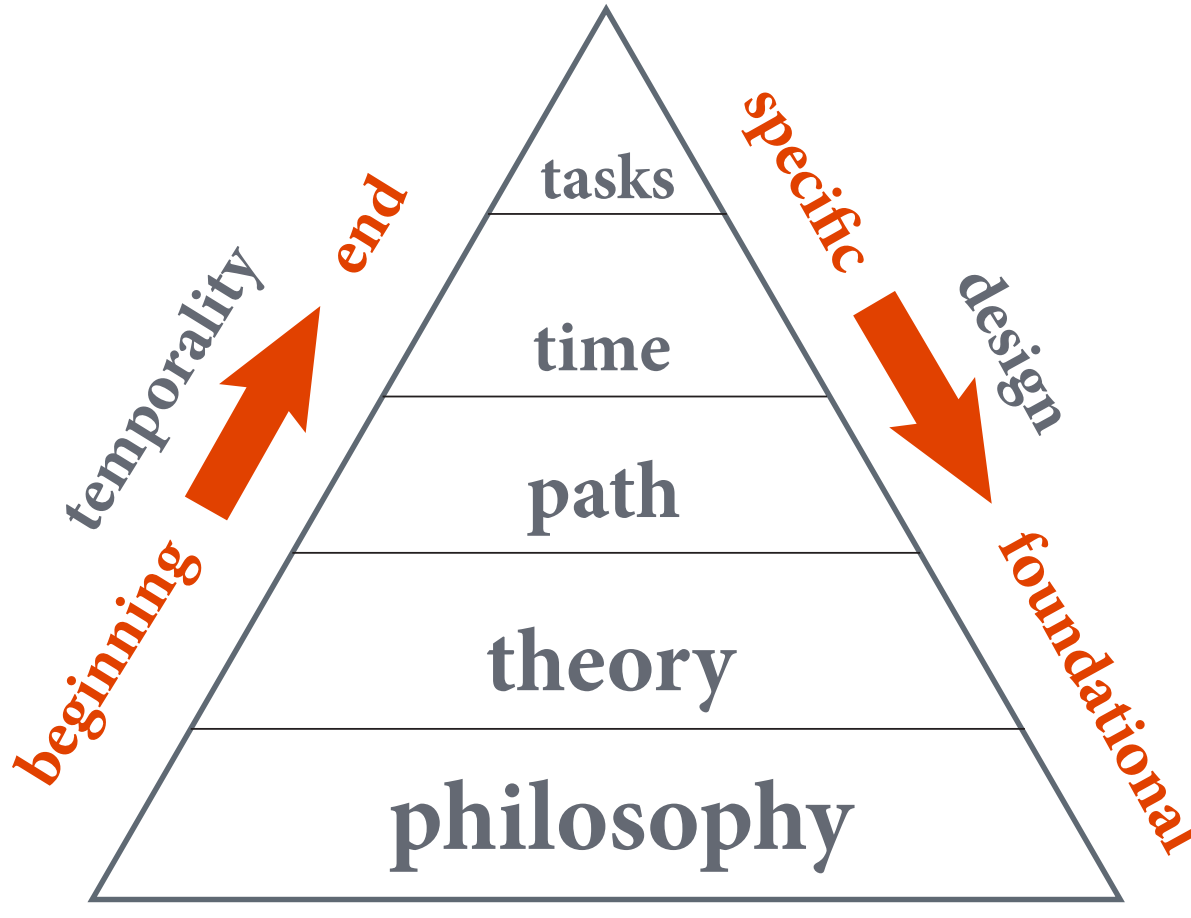
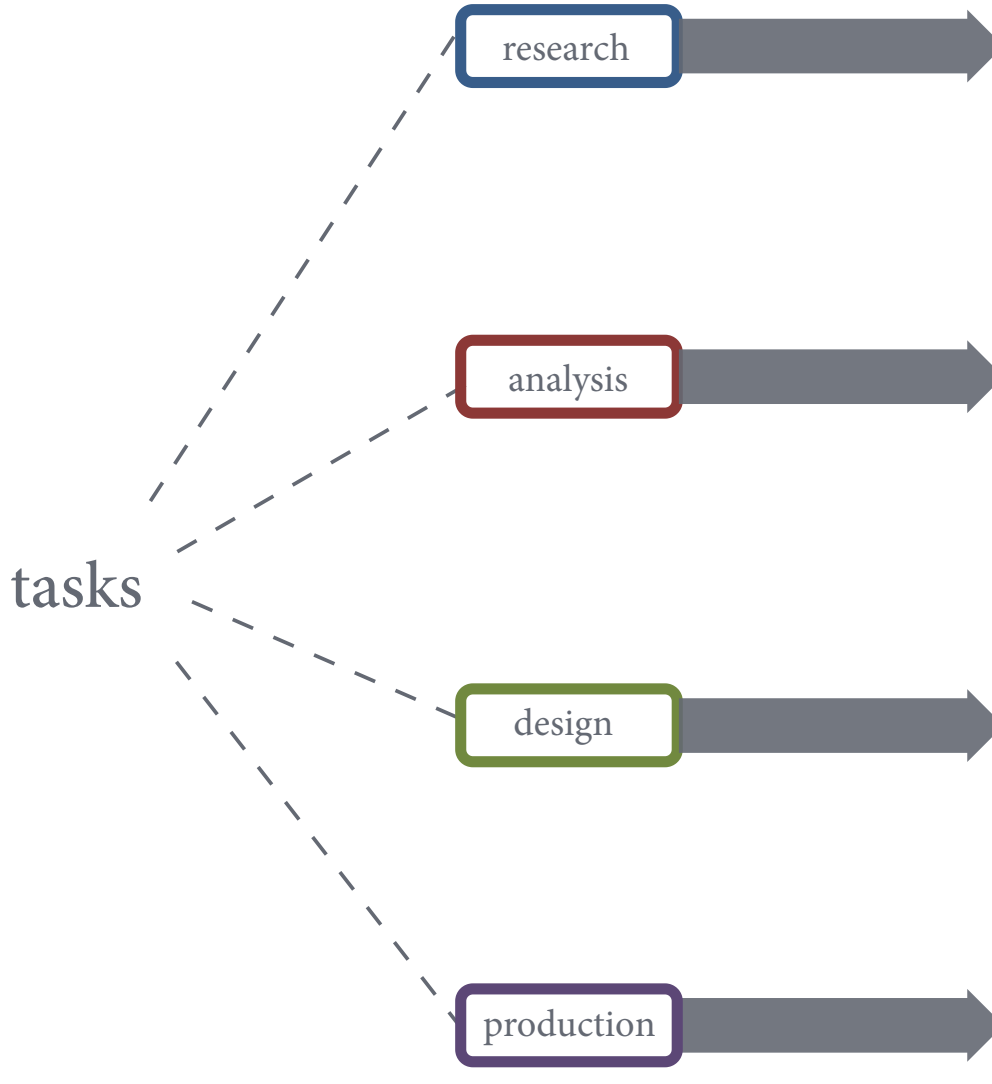


figure 8.01: project process summary.

based on
mindset. dilemma.



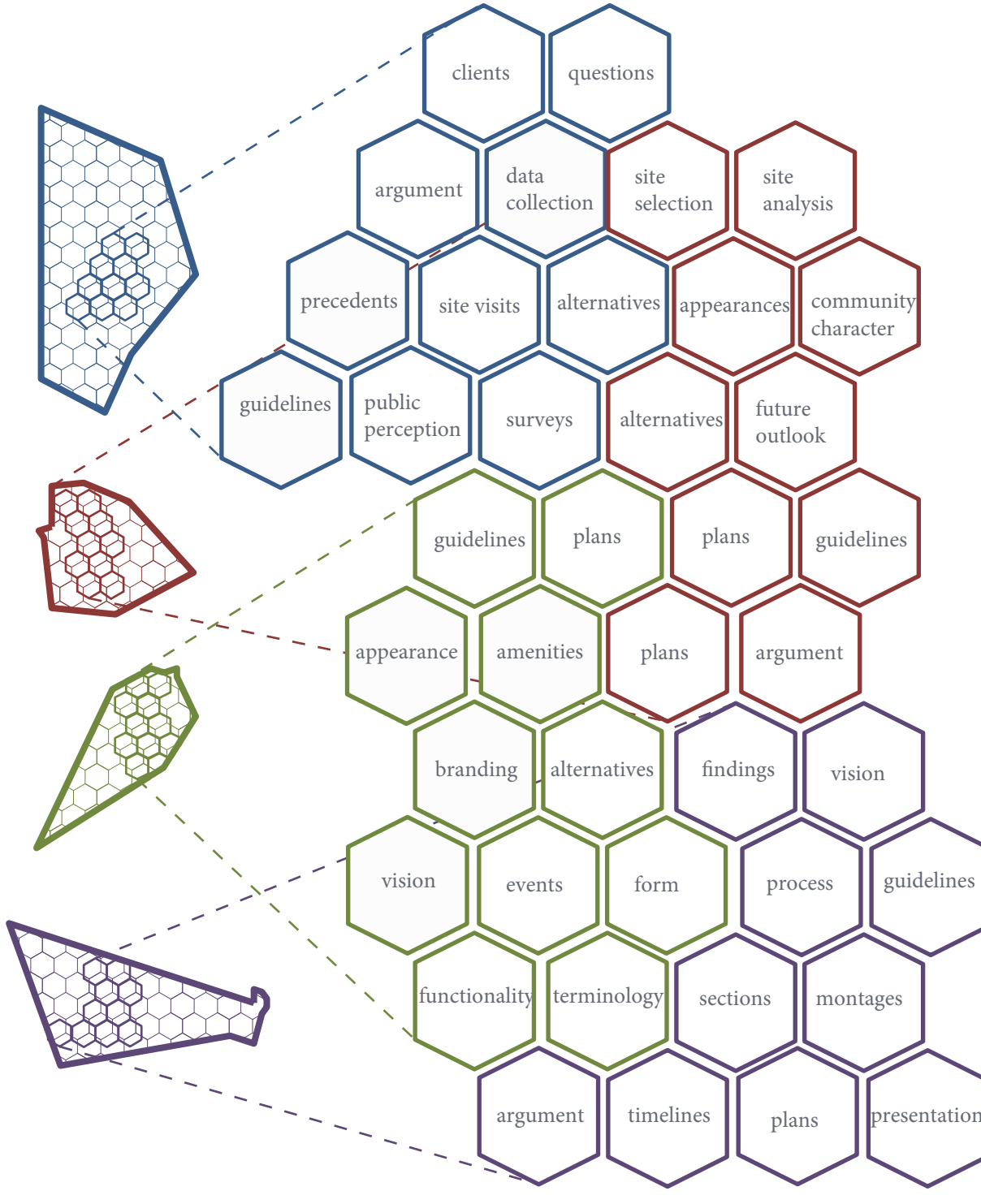


figure 8.02: project task divisions.

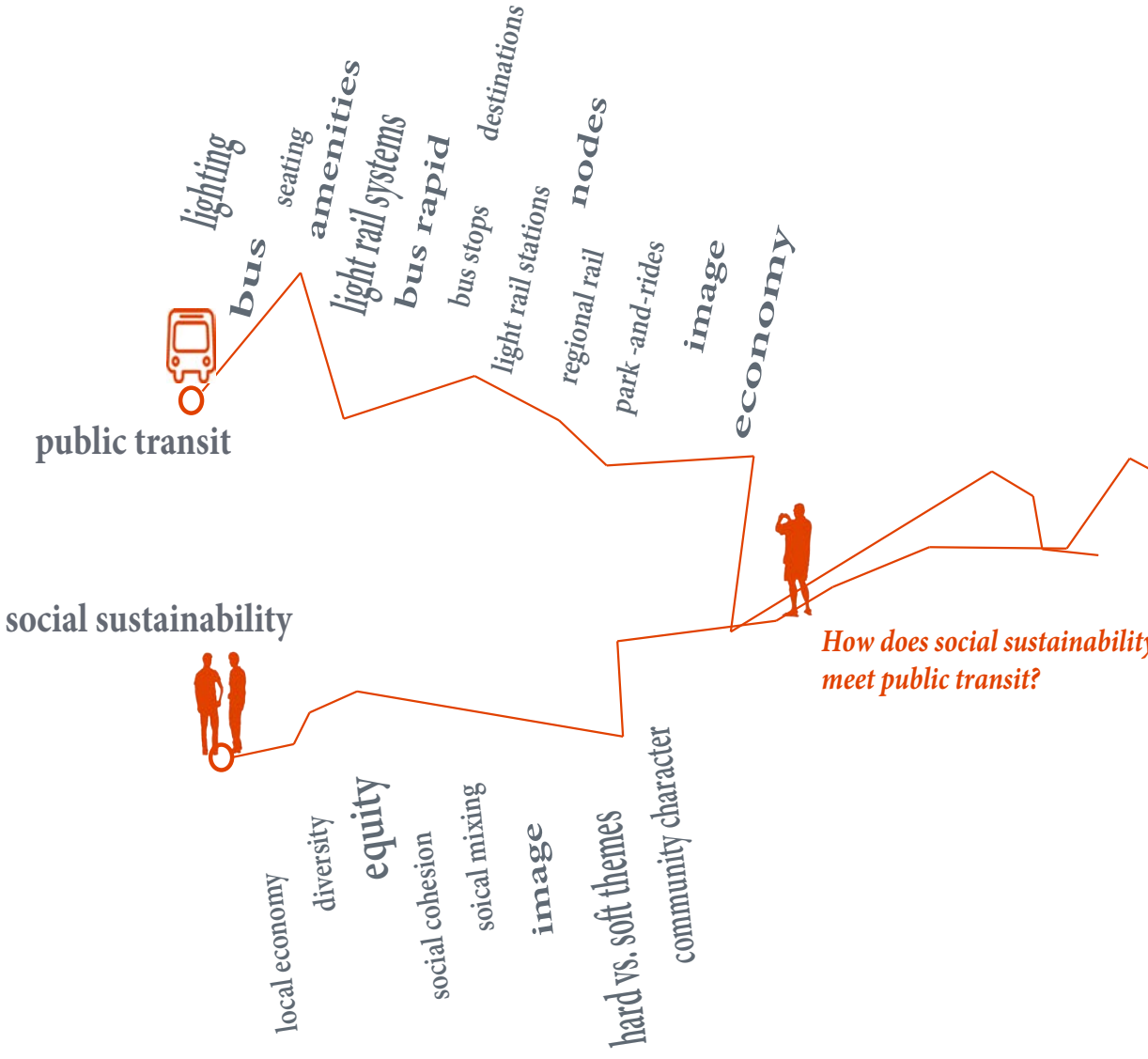


figure 8.03: theoretical path.

appendix b

Appendix b is a significant review of literature that influenced the project development. The literature summary analysis, ***figure 8.04***, explains the significance of each piece of literature related to the project guidelines, dilemma, statistics, theory, and methodology. Following the literature summary is the collection of literature reviews that influence though process and project development.

1 Bellevue Light Rail Best Practices

2 Transit Friendly Design Guide. City of Calgary.

3 Colantonio, Andrea. Social sustainability: Linking research to policy and practice.

4 Garrett, Mark and Taylor, Brian. "Reconsidering Social Equity in Public Transit"

5 JCCCAA Open House No. 1. Jackson County Commuter Corridors Alternative Analysis.

6 Kubik, M. Consumer Views on Transportation and Energy (Third Edition).

7 LSC Transportation Consultants, Inc. Rural Transit Stop Design Guidelines.

8 Neff, John and Pham, Larry. A Profile of Public Transportation Passenger Demographics and Travel

9 Park And Ride Program Source Guide 2010. Caltrans.

10 Sanchez, Thomas. "The Connection between Public Transit and Employment: The Cases of Portland and Atlanta".

11 Van Vugt, M. et al. Commuting by car or public transportation? A social dilemma analysis of travel

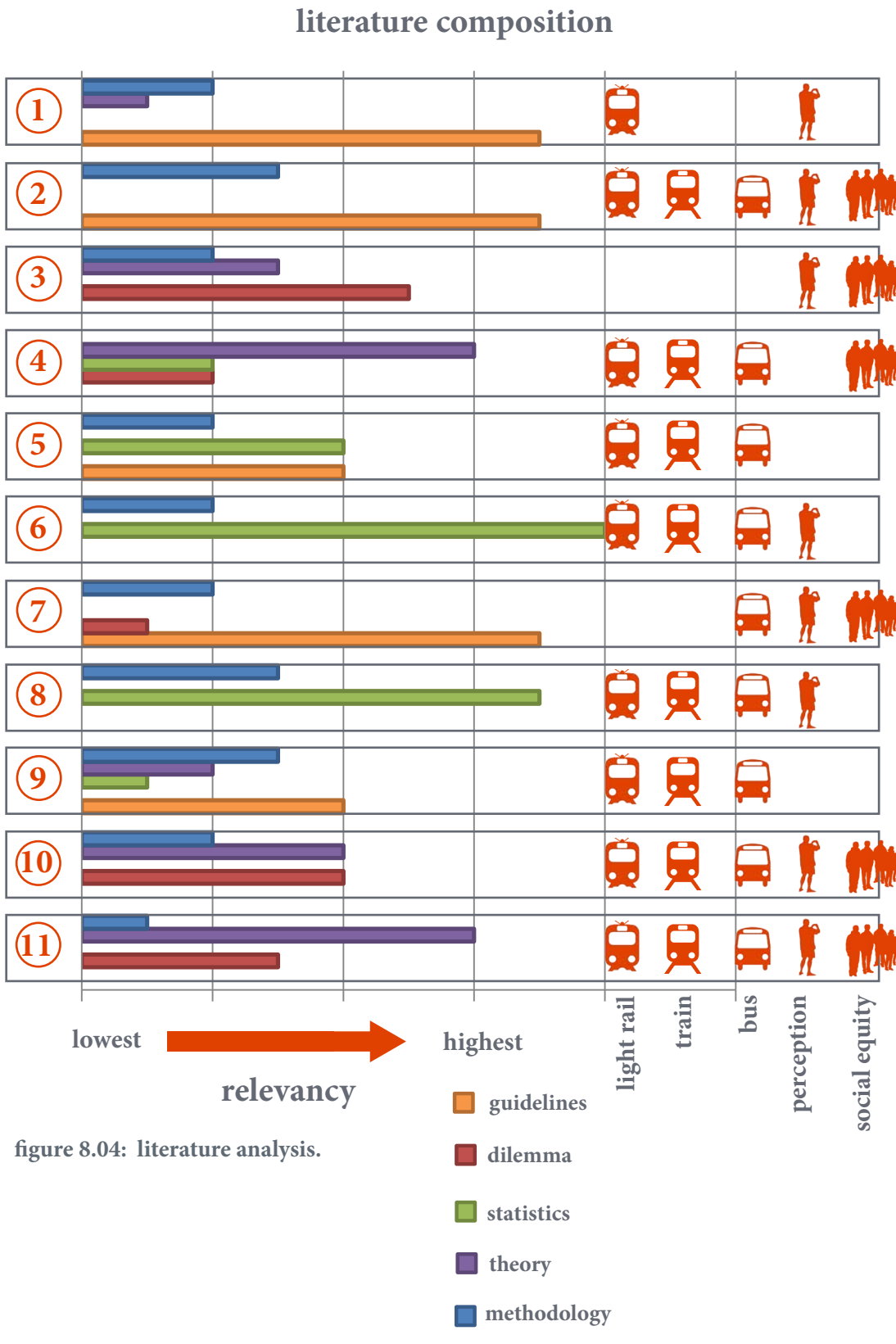


figure 8.04: literature analysis.

Consumer Views on Transportation and Energy (Third Edition)

M. Kubik
Technical Report
2006

Kubik, M. Consumer Views on Transportation and Energy (Third Edition). National Renewable Energy Laboratory. 2006: appendixes, accessed October 7, 2011. DOI: nrel.gov/docs/fy06osti/39047.pdf

Key Terms

gas prices, American public views, energy

Findings and Relativity

The report is a series of surveys conducted both over the phone and through the internet in a grouping of years between 1977 and 2005. The surveys examined the American public views about fuel and energy consumption specifically related to transportation. The survey information revealed a few general trends that may help aid the argument for the implementation of a transit system in the Rock Island Corridor. Specifically looking at some of the data, people who took the surveys chose "walking" and "taking the bus" as the least preferred choices when given the following question: "What has been your or your family's primary response with regard to your vehicle or vehicle travel and the currently high gasoline prices? (Kubik, TABLE 2.2.3A) If public transportation is something that will help promote sustainability within the suburban communities along the Rock Island Corridor then we must change the perception of public transit because even with higher gas prices people do not appear to utilize more sustainable modes of transportation. The surveys are also referenced in tables in the back of the report that show the distribution of income levels, housing types, other demographic data of the individuals who responded to the surveys. With this data inferences can be made about the type of people who answered the questions. An interesting result of the data demonstrates that income level did not have any effect on people's preferences related to not using public transportation during times of elevated gas prices.

How can we as transit designers and sustainable thinkers make utilizing more sustainable forms of transportation appealing to those who don't require it?

Social Sustainability: Linking Research to Policy and Practice

Colantonio, Andrea
Paper
2009

Colantonio, Andrea. Social sustainability: Linking research to policy and practice. Paper presented at Brussels, Belgium. 20 accessed September 14, 2011. http://ec.europa.eu/research/sd/conference/2009/index_en.cfm

Key Terms
'hard' and 'soft' sustainability, social sustainability

Findings and Relativity
The paper looks at the opinions of the differing definitions, components, themes, and approaches to social sustainabilit over the past two decades. Explanations of the different opinions related to social sustainability as explained by the author can begin to demonstrate the complexity of the topic. As stated in the introduction, "The paper argues that traditional 'hard' social sustainability themes such as employment and poverty alleviation have increasingly been complemented or replaced by 'soft' and less measurable concepts such as happiness, social mixing and sense of place in the social sustainability debate" (Colantonio, 1). Metrics that have been developed in the past have explained that over two thirds of the categories and concerns were related to factors of environmental apprehensions (as stated by Therivel, 2004 in Colantonio). The social factors are beginning to emerge. The paper also looks at new ways of measuring the more traditional means of social sustainability. Colantonio gives a great example related to poverty. "The traditional approach to measuring poverty involves establishing an income threshold and calculating how many individuals, famil or households fall below it (Townsend and Kennedy, 2004)." However in today's realm of social sustainability we shoul be "measuring more than just a number that is supposed to mean poverty. The more traditional ideas are insufficient and if there was a metrics created then possibly we could look into data that relates to "manifestations – e.g. ill-health, inadequate housing, limited access to basic services etc- in a multi-dimensional index that integrates the processes and factors…" (Colantonio, 18).

How can we create metrics to measure or understand things such as poverty, equity, educational level ect.?

continued development

Commuting by car or public transportation? A social dilemma analysis of travel mode judgments

Van Vugt, M. et al.
Paper
1996

Van Vugt, M. et al. Commuting by car or public transportation? A social dilemma analysis of travel mode judgements. European Journal of Social Psychology. 1996, accessed October 3, 2011. http://www.professormarkvanvugt.com/files/CommutingbyCarorPublicTransportation-EuropeanJournalofSocialPsychology-1996.pdf

Key Terms
Pro-social individuals, pro-self individuals, travel time, efficiency

Findings and Relativity
The following paper discusses the view and opinions of a person's perception of public transportation compared to that of a car. The following situations were given in a survey and then the answers were recorded to attempt to find out what it is that makes people travel the way that they do.

"To summarize:
(a) In contrast to public transportation, cars severely pollute the environment.
(b) The travel time by public transportation is longer (60 minutes) than by car (40 minutes).
(c) The variability in travel time by public transportation is much smaller (58-62 minutes) than by car (24-56 minutes).
It is a weekday morning. At about 8:30 a.m. you want to arrive at work. Please decide whether you want to commute by car or public transportation.".

The findings showed that there are two types of motivations that fall into a personal or self-interest category as well as a social category. People in both groups believed that they would be more inclined to use public transportation for efficiency reasons. This leads my research to look into travel time, as well as the precision of traveling by car compared to that of traveling by public transportation.

How can efficiency be maximized in the Rock Island Corridor for the different types of possible transit?

continued development

The Connection between Public Transit and Employment: The Cases of Portland and Atlanta

Thomas Sanchez
Paper
1999

Sanchez, Thomas. "The Connection between Public Transit and Employment: The Cases of Portland and Atlanta". APA Journal. 1999, accessed September 28, 2011. https://wiki.umn.edu/pub/ TPPTransp/TPPTranspStakeholders/ Connection_Between_Public_Transit_and_Employment.pdf

Key Terms

unemployment, access

Findings and Relativity

The following paper argues that the infrastructure specifically associated with public transportation, is designed or planned by such a manner that it only provides access for the middle-upper class citizens. The paper continues to argue that there are racial disputes related to the issues. As quoted by Martin Luther King Jr. in *The Connection Between Public Transit and Employment: The Cases of Portland and Atlanta*, "If transportation systems in American cities could be laid out so as to provide an opportunity for poor people to get a meaningful employment, then they could begin to move into the mainstream of American life…The system virtually has no consideration for connecting the poor people with their jobs" (Sanchez, 284). Other consideration for the planning of American cities as demonstrated with Portland and Atlanta, were associated with themes of relativity and proximity. Sanchez describes how the readily accessible employment opportunities for lower class citizens are jobs that require higher educational backgrounds that the lower class citizens may not have. Essentially the affordable housing is located next to employment centers that do not market jobs for lower class citizens.

Why do we only want public transit systems for the use of lower-class citizens rather than an equitable whole?

continued development

Reconsidering Social Equity in Public Transit

Mark Garrett and Brian Taylor
Journal Article
1999

Garrett, Mark and Taylor, Brian. "Reconsidering Social Equity in Public Transit". Berkeley Planning Journal, 13: 6-27. 1999, accessed October 17, 2011. http://www.uctc.net/papers/701.pdf

Key Terms
transit dependents, downtown commuters

Findings and Relativity
The journal article argues that public transportation, particularly bus systems, has shifted towards a market for two groups of people; downtown commuters and people who are physically unable to drive due to age or health concerns as well as lacking the income to own personal transportation. There must be efforts to change the appeal or at least the user groups of public transportation if communities are looking for an increase in ridership, especially a ridership that included a diversity of individuals. Twenty years ago this was the mindset of public transportation as stated by Garrett and Taylor, "Rising personal income, the greater availability of automobiles, low fuel prices, and substantial public investment in metropolitan street and freeways systems have combined to reduce the general demand for public transit. Still, many people without regular access to automobiles depend on public transit as their main mode of transportation. For these 'transit dependents' the continued availability of public mass transit is vital for access to schools, jobs, medical care, and other necessities of life (Garrett and Taylor, 6).

How many public transit dependents are in the Rock Island Corridor now? Thirty years?

continued development

Transit Friendly Design Guide

Calgary Transit Division
Report/Guidelines
2006

Calgary Transit Division. Transit Friendly Design Guide. City of Calgary. 2006, accessed on October 20, 2011. http://www.calgarytransit.com/pdf/transit_friendly.pdf

Key Terms

comprehensive transportation plan, transit treatment, transit friendly

Findings and Relativity

The design guide created by the Calgary Transit Division is a comprehensive document that explains the techniques and strategies that should be implemented to move forward with a sustainable future plan. Understanding that transit is very important the division has paid close attention to the long range plans that have been established so that there is a strong correlation with previous plans and emerging ideas. I believe that there are some extremely important takeaways from this document. Considering the idea of "long-range and comprehensive transportation plans" I must look into the plans, both current and proposed future, already established by the cities in the corridor as well as their connection with surrounding plans. The design principles which may be useful to look further into are as follows:

"1. Provide Appropriate Community Densities

2. Minimize Walking Distance

3. Provide Mixed Land Uses

4. Organize Density, Land Use And Buildings To Benefit From Transit

5. Create A Pedestrian Friendly Environment

6. Route Transit Into The Community

7. Reduce Transit Travel Time 8. Build Quality, User Friendly Transit Facilities

What are the current and future comprehensive plans of Lee's Summit and surrounding communities?

continued development

A Profile of Public Transportation Passenger Demographics and Travel Characteristics Reported in On-Board Surveys

John Neff and Larry Pham
Report
2007

Neff, John and Pham, Larry. A Profile of Public Transportation Passenger Demographics and Travel Characteristics Reported in On-Board Surveys. American Public Transportation Association. 2007, accessed on October 20, 2011. http://www.apta.com/resources/statistics/Documents/transit _passenger_characteristics_text_5_29_2007.pdf

Key Terms

American Public Transit Association (APTA)

Findings and Relativity

A highly useful document for my research, the on-board public transit surveys sampled nearly half of a million transit riders. The large sampling combined with the techniques combines for what the American Public Transit Association says is a highly accurate survey system. All of the data collected from the surveys is beneficial because it really expresses the demographic makeup of public transit ridership. Some of the more relevant findings include information on age, ethnicity, and income. Knowing the ethical data for the entire United States there is a significant difference than that of the transit riders demographic: "The largest portion of transit riders, 40.6 percent, describe themselves as White/Caucasian while 33.1 percent describe themselves as Black/African-American, 14.3 percent as Hispanic/Latino, 5.5 percent Asian/Pacific Islander, and 6.6 percent as multi-ethnic or other ethnicities" (Neff and Pham, 22). The information yielded from the surveys was also interesting in terms of household income. "Incomes of transit riders differ by vehicle mode. Only 20.8 percent of rail modes trips are made by persons from households with annual incomes less than $25,000 while 43.4 percent of bus riders are from households with these lower income levels. Conversely, 30.3 percent of rail mode riders have incomes of $75,000 or more while only 11.5 percent of roadway mode rides are taken by persons with these higher household incomes. The percentage of rides taken by persons with higher incomes increases for larger population groups (Neff and Pham, 24). Looking into some of the demographic results related to age there is poor ridership for teenagers, young adults, and senior citizens. If we are two create sustainable communities then there must be more of a push towards those demographic groups.

Why is the ethnic demographic data skewed for public transportation, particularly for bus transit?

continued development

Bellevue Light Rail Best Practices

Light Rail Best Practices Committee
Report
2008

Bellevue Light Rail Best Practices. Final Committee Report. 2008, accessed on October 20, 2011. http://www.bellevuewa.gov/pdf/PCD/062708_Final_Doc%282%29.pdf

Key Terms

case study tours, transit feeder services

Findings and Relativity

The publication created by the City of Bellevue was established to help the city make informed decisions about light rail and to understand the 'do's and don'ts' of light rail design and operation. Some of the important guidelines in the report explain how the community should be involved, how the character of each stop should be representative of the area, the importance of transit feeder services, and finally how the light rail should connect "somewhere to somewhere". Although the end goal for Bellevue was to establish a transit system that linked multiple cities including Seattle, the guidelines are beneficial for any type of transit project. A new concept, although simple and useful, called case study tours was a tool the city used to familiarize the committee members with similar light rail projects. Instead of looking up precedent studies via books, journals, and the internet, the committee members visited three cities, similar in nature to that of Bellevue, "to ride the system, talk with riders, and explore the relationship with the surrounding land uses" (3). Along with the tours, the committee members met with the local transit agencies to have discussions about the systems. In the meetings they could learn about dilemmas, best practices, and considerations the city have to work through. An interesting finding stemming from the research conducted for the project indicated that "...people are willing to walk about one-half mile to a light rail station – this translates to an actual walk time of approximately ten minutes rather than a one-half mile distance radius. For this reason, the pedestrian environment within a ten-minute walk of transit stations is very important to encouraging ridership" (31).

What is the representation or image of Lee's Summit and how could that fit into a transit stop? Is there a bigger picture?

continued development

Park And Ride Program Resource Source Guide 2010

Caltrans
Report
2010

Park And Ride Program Source Guide 2010. Caltrans. 2010, accessed on October 20, 2011. http://www.dot.ca.gov/hq/traffops/systemops/hov/Park_and_Ride/Park_and_Ride_Program_Resource_Guide.pdf

Key Terms
park and ride, transit ridership

Findings and Relativity
The report explains the importance, goals, and necessary steps to add or implement park and ride locations into an existing transit system. As demonstrated by Caltrans, an authority and transportation group, the following points are issues that are present when contemplating park and ride implementation:

"Deliverability (can it realistically be completed?)
Connectivity to transit
Level of support (Regional Transportation Planning Agency/Metropolitan Planning
Organization [RTPA/MPO] and transit operator)
Impact on freeway congestion (Level of Service improvement)
Tangible and measurable increase in transit ridership
Ability to leverage State funds with matching funds" (3).

When looking at the mobility pyramid of importance for the Caltrans group it appears that system monitoring and evaluation is very important and is something that should be an initial consideration for transit systems.

How much less highway congestion would consider to be beneficial for the roadways in the Rock Island Corridor?

continued development

JCCCAA Open House No. 1

Jackson County Commuter Corridors Alternative Analysis
Presentation
2010

JCCCAA Open House No. 1. Jackson County Commuter Corridors Alternative Analysis. 2010, accessed on October 20, 2011.
http://www.kcsmartmoves.org/pdf/jacksonAA/JCCCAA-Open-House-Presentation-Sept2011.pdf

Key Terms
alternatives analysis, Locally Preferred Alternative (LPA)

Findings and Relativity
The presentation for the Alternatives Analysis of the Rock Island Corridor provides significant information with regards to the different types of transit options that could be implemented in the corridor. The options include six different scenarios with the first being a "no build" scenario. The purpose of the analysis is to find the locally preferred alternative, which is the best option for the area. Looking at the different possibilities for the corridor is crucial if I am to look at the ridership equity for public transit because that could mean different considerations for different types of public transit. The other alternative scenarios are a traffic management system, express bus, bus rapid transit, streetcar/light rail transit, regional rail. Some of the reasons that the corridor is being looked at for transit options is listed below:
"1. Current transit services are insufficient for meeting the current and future mobility needs within the corridor(s).
2. Travel times of the current transit system are not time competitive as an alternative to the automobile.
3. Reliability of the current transit system will suffer with additional congestion.
4. The reverse commute market from the inner core of Kansas City, Missouri to outer suburban employment areas is largely underserved and underused because the existing systems do not make reverse commuting easy for those who are transit dependent." (11) This presentation has brought forth great questions regarding the development of my project and suggests that I look into social equity for a multitude of options in the corridor.

How can I look at and decipher different aspects of social equity for these different types of pubic transit?

continued development

Rural Transit Stop Design Guidelines

LSC Transportation Consultants, Inc.
Presentation
2008

LSC Transportation Consultants, Inc. Rural Transit Stop Design Guidelines. California's Public and Community Transportation Conference and Expo. 2008, accessed on October 19, 2011. www.caltransit.org.

Key Terms

American Disabilities Act (ADA), accessibility

Findings and Relativity

The transit stop guidelines presented in the document are specifically related to bus stops. Although a bus stop appears to be an insignificant feature of public transit it is extremely important for the visual appearance as well as the functionality of the system. LSC Transportation Consultants say that the stops are important for these key reasons:

"Key element in the overall experience provided to transit passengers, as they are used by all fixed-route passengers as part of every trip

Ensure access by persons with disabilities

Allow for effective transit operations

A vital part of a transit program's public image

Properly designed, bus stops can be an attractive part of a neighborhood and minimize the impacts of transit passengers on adjacent properties" (1).

The document provides useful guidelines however nothing is mentioned about aesthetics. In the images provided the bus stops appear to be the typical small glass shelter with a bench, trash can, and a street light. Furthermore the document iterates the importance of ADA accessibility, which is a very important feature of bus stop design however, there is little to no discussion about the relationship between the surrounding landscape elements other than paving material. I believe that I can use the document to demonstrate how design guidelines lack important feature about aesthetics and branding of bus stops.

continued development

How can aesthetics be added in guidelines and best practices?

11

Extending the Market

Increasing Sustainability Potential through Public Transit in Lee's Summit