



KANSAS
HEALTH
INSTITUTE

Potential Health Effects of Proposed Public Transit Concepts in Wichita, Kansas

Kansas Health Impact Assessment Project



Executive Summary

EXECUTIVE SUMMARY

Overview of Concepts

As the Wichita City Council prepares for a vote on proposed changes to the city’s transit system, the Kansas Health Institute (KHI), in collaboration with the University of Kansas School of Medicine – Wichita, and with assistance from the Hugo Wall School of Urban and Public Affairs at Wichita State University, conducted a Health Impact Assessment (HIA) to examine how those changes might affect the well-being of Wichita area residents (Table I).

HIA is a practical tool that assesses the health impact of policies, strategies and initiatives in sectors that indirectly affect health, such as transportation, employment and the environment. The overall goal of HIA is to inform decision-makers of potential health benefits and adverse health effects of proposed actions and to support identification of appropriate policy options.

Table I. Potential Health Impacts of Wichita Transit Concepts

TRANSIT SYSTEM	DESCRIPTION	MARGINAL INCREASE IN LEVEL OF ANNUAL RIDERSHIP	POTENTIAL POSITIVE HEALTH IMPACTS
Current	Hub-and-spoke system with the most geographic coverage out of all proposed concepts, but no night or Sunday service.	N/A	N/A
Concept A (Grid)	Grid system with increased frequency, night and weekend service and routes traveling north and south, although slightly less geographic coverage than the current system.	+1,040,000 rides	● ● ●
Concept B (Optimization)	Optimization of current hub-and-spoke system with greater frequency for higher ridership routes and elimination of lower ridership routes.	+991,000 rides	● ●
Concept C (Reduction)	Reductions from the current hub-and-spoke system, including elimination of Saturday service, fewer routes and reduced hours of operation, but provides coverage to transit-dependent populations.	-331,000 rides	●
Concept D1 (Extension)	Extension of current routes to surrounding Wichita communities such as Andover, Derby, Goddard and Valley Center, with hourly service.	+425,000 rides	●
Concept D2 (Commuter)	Extension of current routes to surrounding communities such as Andover, Derby, Goddard and Valley Center, with morning and evening trips for commuters.	+39,000 to +185,000 rides	●

Note: Symbols represent expected potential positive health impacts, on a scale of 1 to 3, where 3 represents the greatest number of positive health impacts. Concept D1 or D2 can be combined with one of the other concepts presented (e.g., A+D1). The concept description and marginal increase in level of annual ridership were developed by the Kansas Health Institute based on the review of the *Wichita Transit Community Outreach* study prepared by Olsson Associates, March 27, 2012.

Source: KHI HIA Transit Project, 2013.

Over the past year, Olsson Associates developed three new concepts (A-C) and two add-on concepts (D1 Extension and D2 Commuter) that include transit system changes based on community recommendations but do not directly take health into consideration. The proposed concepts differ in service coverage, frequency, hours of operation and annual cost. Additional funding will be required to initiate and sustain these changes.

The HIA details how each of the proposed public transit concepts could affect the health of Wichita residents. Specifically, the HIA explored transit-related factors that influence health including air quality, injury, exposure to secondhand smoke, access to employment, health care, food sources and educational and recreational resources.

Key Questions

The HIA considered three key research questions related to the proposed transit changes in Wichita:

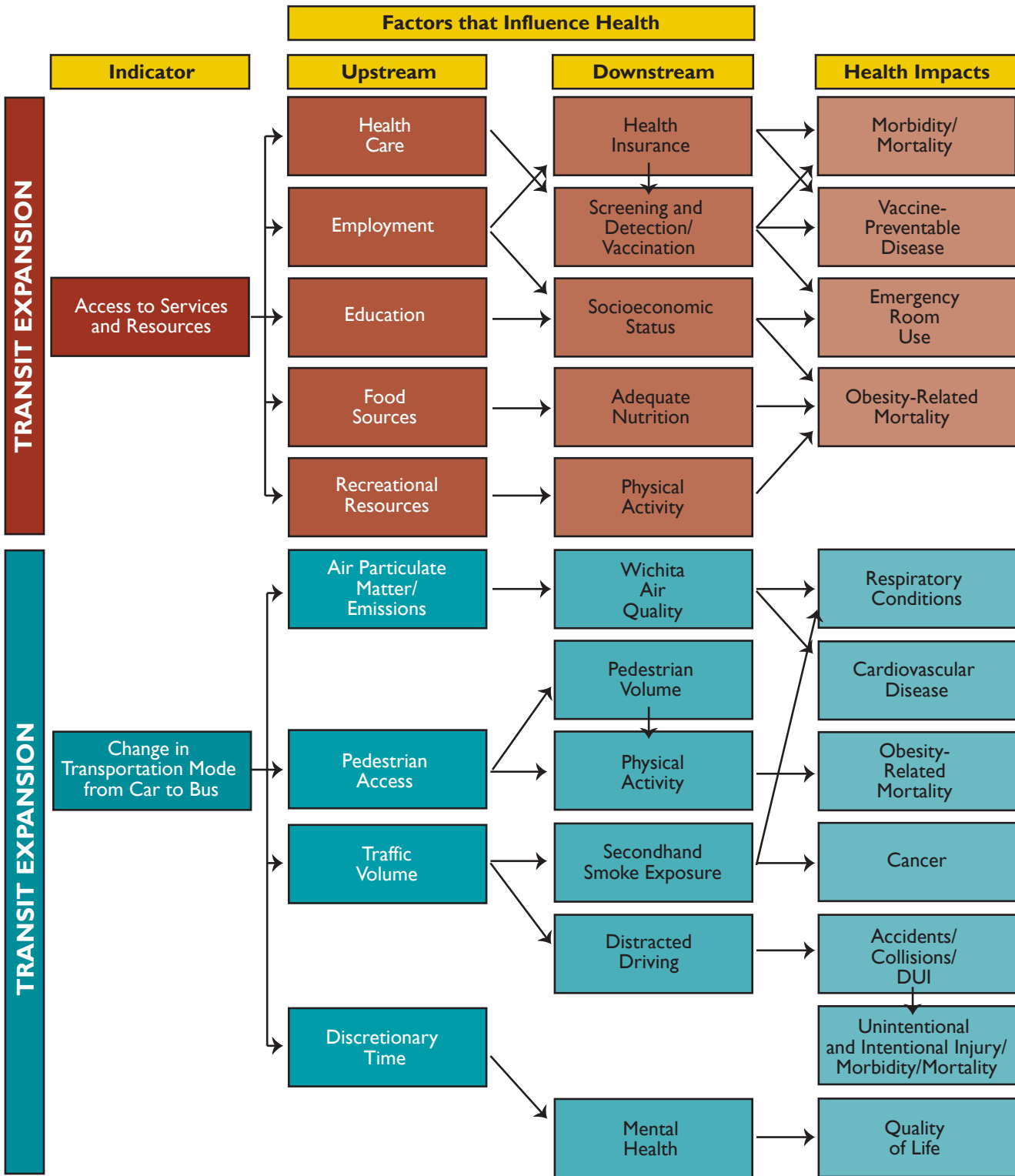
- Will the proposed transit changes affect access to employment, health care, food sources and educational and recreational facilities?
- Will changes in access to these services improve the health of Wichita residents?
- How will a change in transportation mode from car to bus affect the health of Wichita residents?

Key Findings

The HIA uncovered potential positive and negative health impacts associated with each of the proposed transit concepts (Figure 1). In addition, the HIA assessed the relative extent of these impacts on vulnerable populations. Access to services can have a greater effect on vulnerable populations because they may have less access to transportation outside of public transit. This could affect their ability to access services and goods such as healthy foods. Low-income populations are six times less likely than other Americans to own a car.¹

Overall, the HIA found that the potential health impacts of each transit concept are determined largely by two variables: the relative access to key health-supportive services provided by each concept and the relative ability of each concept to shift people from their cars to public transit for some of their transportation needs. In order to increase access to services and maximize potential health benefits associated with this increase, the HIA developed the recommendations described in Tables 2–12. For a full list of findings and recommendations, please see Appendix D.

Figure 1. Pathway Diagram: How Transit May Affect Health



Note: The pathway diagram illustrates potential relationships between transit and health. The pathway diagram doesn't describe direction of the projected impacts (increase or decrease) or the nature of these impacts (negative or positive) due to the multiple transit concepts (A, B, C, D1 and D2) and their differential effects on health.

Source: KHI HIA Transit Project, 2013.

Health Impacts Related to Changes in Access to Services

Access to services is one factor that can influence health and quality of life. The degree to which people have access to food sources, employment, health care and recreational and educational facilities influences the quantity and quality of food choices they can make, the timeliness of screening, diagnosis and treatment of health issues, as well as the amount of physical activity they achieve.

According to the HIA, the health of people who do not have a reliable car or social network will be most affected by changes in the transit system. In general, Concept A (Grid) will increase access to all services, especially for low-income residents who live in the southeast part of Wichita. All other concepts will affect access to services differently. For example, Concept B (Optimization) will increase access to employment and educational services while decreasing access to health care facilities. Concept C (Reduction) will decrease or limit access to services across the board. This is especially true for people who do not have access to reliable transportation.

The findings were developed based on a literature review, community input and secondary data analyses. The recommendations are intended to inform relevant decision-makers as they consider Wichita Transit changes. The recommendations are drawn from the findings and are intended to maximize health benefits while minimizing risks.



Wichita, 2012.

Table 2. Key Findings and Recommendations: Access to Health Care

ACCESS TO HEALTH CARE	
OVERVIEW	FINDINGS
<p>Two of the primary reasons for disparities in access to health care are lack of health insurance and cost of services. However, the availability of transportation options can improve or decrease access to health care. Findings from the literature review and stakeholder input indicate that improved access to transit will help link Wichita residents to health care services. In general, data analyses show that Concept A is more likely to increase access to health care and result in positive health impacts (e.g., reduction in vaccine-preventable disease).</p>	<ul style="list-style-type: none"> • Access to reliable transit increases the likelihood of primary care and chronic care visits and decreases the number of emergency room visits. • All three concepts (A, B and C) would limit access to at least six hospitals and several health care facilities. • Concept A is most likely to increase access to health care and result in positive health impacts (e.g., reduction in vaccine-preventable disease). • Increasing access to health care depends on timeliness and frequency of transit services and increased access for vulnerable populations. Concepts A and B would increase timeliness and frequency of transit services.
	RECOMMENDATIONS
	<p>Wichita Transit should consider:</p> <ul style="list-style-type: none"> • Locating bus stops near health care offices and specialty clinics, especially those that serve children.* • Encouraging health care organizations to inform and link their patients to available transit services.

*The HIA Transit Advisory Panel rated the recommendation high in terms of its priority.

Source: KHI HIA Transit Project, 2013.

Table 3. Key Findings and Recommendations: Access to Employment

ACCESS TO EMPLOYMENT	
OVERVIEW	FINDINGS
<p>The research and stakeholders suggest that a lack of access to transit can be a barrier to employment for workers without a stable form of transportation. Some characteristics that make transit more attractive for workers are wide geographic coverage, timeliness and frequency. Given that only Concept A meets these characteristics, it is likely to result in increased access to employment and associated positive health impacts (e.g., increased life expectancy).</p>	<ul style="list-style-type: none"> • Typically one of the most predominant uses of transit is to get to work, but Wichita may not follow this trend. • Concepts A and B increase timeliness and frequency of services, which improve access to transit, especially for shift workers, while C does not. • The hub-and-spoke system doesn't provide easy access to jobs outside downtown Wichita. However many of the jobs in Wichita are located elsewhere. • The impact on the Wichita economy resulting from additional Wichita area resident payroll earnings would be \$6.1 million annually for Concept A, \$3.1 million annually for Concept B and \$1.2 million annually for Concept D1.
	RECOMMENDATIONS
	<p>Wichita Transit should consider:</p> <ul style="list-style-type: none"> • Exploring the reasons for low ridership in the southeast part of Wichita. • Increasing frequency of bus routes and availability of routes at night or on weekends to align the transit schedule with shift workers' needs.* • Exploring the viability of a grid system.

*The HIA Transit Advisory Panel rated the recommendation high in terms of its priority.

Source: KHI HIA Transit Project, 2013.

Table 4. Key Findings and Recommendations: Access to Food Sources

ACCESS TO FOOD SOURCES	
OVERVIEW	FINDINGS
<p>Food choices affect the health and well-being of individuals. Food and dietary choices are influenced by many factors (e.g., economic, social, physical). Although improved access to stores with healthy options doesn't necessarily mean that individuals will change their food choices, it provides the opportunity to make healthy dietary choices.</p> <p>Stakeholders noted that Wichita residents could benefit from increased access to grocery stores. The analysis shows that Concept A would increase access to food sources through wider geographical coverage and increased timeliness and frequency. Similar to access to employment, transit characteristics such as timeliness and frequency as well as direct routes are more likely to affect shoppers' choice of food sources. Additionally, the extent of positive health impacts associated with increased access to grocery stores will largely depend on residents' food choices.</p>	<ul style="list-style-type: none"> • In general, people who are more likely to use bus service for grocery shopping do not have access to alternative modes of transportation. • The use of a bus for grocery shopping also depends on available places on the bus to store groceries. • The use of transit for grocery shopping is dependent on convenience (e.g., proximity, timeliness).
	RECOMMENDATIONS
	<p>The Metropolitan Area Planning Department should consider:</p> <ul style="list-style-type: none"> • Locating future grocery stores near transit routes. This can be achieved through zoning changes or other incentives. <p>Wichita Transit should consider:</p> <ul style="list-style-type: none"> • Using buses with a low floor area for rolling carts on the routes that have the most grocery stores. • Reviewing and changing the two-bag limit on buses to a higher number, such as six.*

*The HIA Transit Advisory Panel rated the recommendation high in terms of its priority.

Source: KHI HIA Transit Project, 2013.



Wichita, 2012.

Table 5. Key Findings and Recommendations: Access to Education

ACCESS TO EDUCATION	
OVERVIEW	FINDINGS
<p>There is a strong correlation between an individual’s level of education and their health status. For example, research shows that greater educational attainment has been associated with eating healthier, getting exercise and avoiding risk factors such as drinking excessively and smoking. However, the association between access to transit and educational attainment is less clear. The literature review didn’t identify the lack of public transportation among commonly cited barriers to education. On the other hand, stakeholders suggested that reliable transit services could benefit students who don’t have cars or don’t know how to drive, or that have working parents. Stakeholders also noted that access to transit could provide students with opportunities to participate in after-school activities.</p> <p>According to data analyses, Concept A is more likely to increase access to educational facilities.</p>	<ul style="list-style-type: none"> • Concepts A and B provide more frequent and timely access to K-12 school programs and university classes held later in the evening, while Concept C does not. • Unlimited access transit passes purchased by local universities for all students may be beneficial for the university, students and transit agency. • Easy access to a university does not increase higher education participation, but it can affect institutional choice and student retention.
	RECOMMENDATIONS
	<p>Wichita USD 259 should consider:</p> <ul style="list-style-type: none"> • Identifying the need for transit services to access after-school activities and classes. • Collaborating with Wichita Transit to address any identified needs for education sector employees and students, including available public transportation during off-peak hours for activities and evening classes.* <p>Universities in Wichita should consider:</p> <ul style="list-style-type: none"> • Working with Wichita Transit to develop a universal pass for students.*

*The HIA Transit Advisory Panel rated the recommendation high in terms of its priority.

Source: KHI HIA Transit Project, 2013.



Wichita, 2012.

Table 6. Key Findings and Recommendations: Access to Recreational Resources

ACCESS TO RECREATIONAL RESOURCES	
OVERVIEW	FINDINGS
<p>Convenient access to recreational resources could help Wichita residents increase their physical activity levels. Higher levels of regular physical activity are associated with lower mortality rates for both older and younger adults. However, research findings didn't provide a clear picture regarding the association between transit and utilization of recreational resources. Some findings from the literature review suggest that proximity of recreation resources to transit stops increased their utilization. Stakeholder feedback echoed research findings. Although stakeholders noted that increased access to recreational resources will be an asset for the community, they didn't list this issue among their top community priorities.</p>	<ul style="list-style-type: none"> • Convenience is an important part of getting people to exercise, and it is possible that increasing access to recreational resources through public transit will increase exercise. • The Centers for Disease Control and Prevention (CDC) Community Guide recommends improving access to places for physical activity along with an informational campaign to educate residents about the enhanced service. • Concept A would be more likely to increase access to recreational resources.
	RECOMMENDATIONS
	<p>City of Wichita, Park and Recreation in collaboration with Wichita Transit should consider:</p> <ul style="list-style-type: none"> • Incorporating questions about recreational-related transit use in future assessments. • Increasing coverage of routes used to access recreational resources. <p>Wichita schools should consider:</p> <ul style="list-style-type: none"> • Establishing shared-use agreements so school grounds can be used as physical activity centers during non-school hours and including transit officials in that planning.

Source: KHI HIA Transit Project, 2013.



Wichita, 2012.

Health Impacts Related to Changes in Transportation Mode from Car to Bus

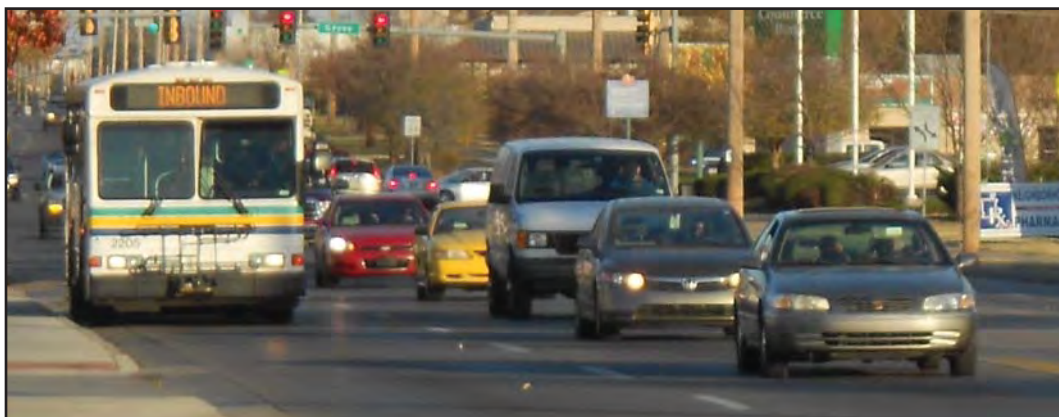
Changes in transportation mode from driving a car to riding the bus can result in a number of positive and negative health impacts. Specifically, Wichita can observe improved air quality due to an increase in transit ridership and a decline in car use. Another potential benefit associated with public transit is increased walking time. Public transportation users potentially achieve up to 30 minutes of physical activity each day. Individuals who take public transit also reduce their risk of being involved in a car accident or being a distracted driver and may experience less exposure to secondhand smoke.

Table 7. Key Findings and Recommendations: Air Quality

AIR QUALITY	
OVERVIEW	FINDINGS
<p>According to the research findings, increased transit ridership has been associated with a decline in car use and potential benefits including improved air quality, lower asthma rates and decreases in other respiratory conditions. Stakeholders expressed concerns about local air quality but were divided on whether the proposed changes to the transit system would be sufficient to affect air quality.</p> <p>The data analyses for Wichita suggested that Concepts A and B would likely result in slight decreases of personal car use. However, Concept C would not yield the same benefit. It is important to note that improved air quality also would depend on the type of buses used in Wichita.</p>	<ul style="list-style-type: none"> • In terms of overall air quality, high ozone levels are the primary concern for Wichita. • Ozone levels depend on many things, including other pollution sources, weather, and type/age of engine and fuels used. • Projected increases in transit ridership under Concepts A and B would improve overall air quality but may not decrease ozone levels.
	RECOMMENDATIONS
	<p>Wichita Transit should consider:</p> <ul style="list-style-type: none"> • Implementing various strategies, including those suggested in the HIA report (e.g., improve timeliness and frequency of buses, develop a universal pass for students), to increase ridership and thereby improve overall air quality in Wichita.*

*The HIA Transit Advisory Panel rated the recommendation high in terms of its priority.

Source: KHI HIA Transit Project, 2013.



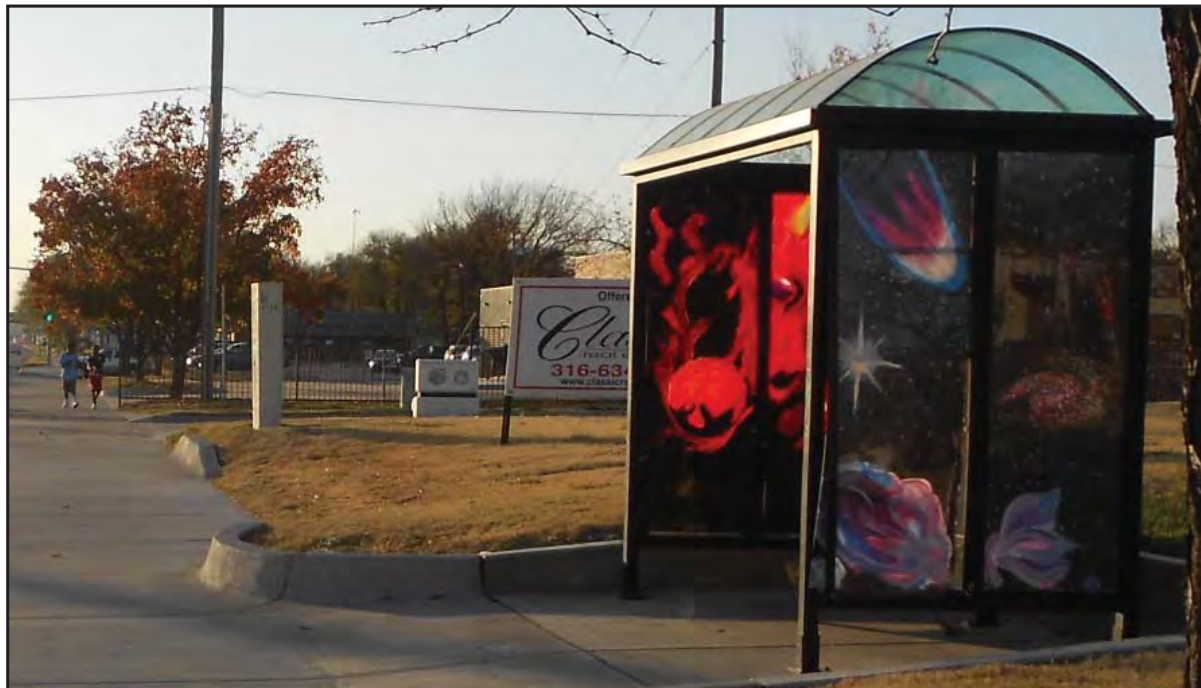
Wichita, 2012.

Table 8. Key Findings and Recommendations: Pedestrian Access and Physical Activity

PEDESTRIAN ACCESS AND PHYSICAL ACTIVITY	
OVERVIEW	FINDINGS
<p>Individuals who use public transit are more likely to spend time walking and engaging in other forms of physical activity. Walking to and from transit can help a physically inactive population obtain the recommended level of physical activity, and studies have shown that people who utilize public transit increase physical activity in other parts of their life. Community stakeholders expressed interest in this issue, emphasizing the importance of integrating transit planning with city planning.</p>	<ul style="list-style-type: none"> • People who receive an employer-sponsored transit pass are more likely to use transit to get to work and meet physical activity recommendations. • When public transportation is easier to access (e.g., bus stops are conveniently located), individuals are more likely to walk to access transit and meet their physical activity recommendations. • Public transportation users potentially achieve up to 30 minutes of physical activity daily. • Increases in ridership under Concept A can be expected to translate into additional community health care savings of \$76,141 per year due to walking and receiving the recommended physical activity. Concept B would yield similar savings of \$72,528 per year and C would decrease the level of current health care savings by \$24,231 per year.
RECOMMENDATIONS	
	<p>Wichita employers in collaboration with Wichita Transit should consider:</p> <ul style="list-style-type: none"> • Subsidizing the cost of bus passes to encourage ridership instead of car use and improve employees' health status.* <p>Wichita Area Metropolitan Planning Department in collaboration with Wichita Transit should consider:</p> <ul style="list-style-type: none"> • Placing bus stops in locations that are connected to sidewalks, crosswalks, and pedestrian and bike paths when possible.* • Integrating and aligning transit plans with city zoning.

*The HIA Transit Advisory Panel rated the recommendation high in terms of its priority.

Source: KHI HIA Transit Project, 2013.



Wichita, 2012.

Table 9. Key Findings and Recommendations: Traffic Volume

TRAFFIC VOLUME	
OVERVIEW	FINDINGS
<p>Utilization of public transit may have several positive health effects associated with decreased traffic volume, including a reduction in vehicle-related injuries. Research suggests that bus occupants have a lesser risk of injury in comparison with other modes of transport. However, the increased use of transit stops has been associated with more pedestrian-motor vehicle collisions. Effective strategies to address this issue include increasing the number of people walking and biking and improving pedestrian and bicycle infrastructure.</p>	<ul style="list-style-type: none"> • Bus occupants had the least risk of injury compared to car or bike users, pedestrians or motorcycles. • Vulnerable populations, such as the elderly or children, are at a greater risk for motor vehicle-related fatal injuries. • Traffic volume and population density are the main influencers on pedestrian crashes. • A threshold effect shows that as more people walk or bike, the injury rate decreases because drivers are more aware of the cyclists and pedestrians. • Wichita would observe annual savings due to reduced traffic injuries for Concept A (\$532,000) and Concept B (\$513,000). However, for Concept C, the cost of traffic injuries would increase by \$172,000.
	RECOMMENDATIONS
	<p>Wichita City Council should consider:</p> <ul style="list-style-type: none"> • Choosing the concept that will increase ridership most to reduce motor vehicle injuries. <p>Wichita Area Metropolitan Planning Department should consider:</p> <ul style="list-style-type: none"> • Continuing to plan and create an infrastructure conducive to walking and biking in order to meet the threshold for reducing pedestrian-related injuries.*

*The HIA Transit Advisory Panel rated the recommendation high in terms of its priority.

Source: KHI HIA Transit Project, 2013.

Table 10. Key Findings and Recommendations: Secondhand Smoke Exposure

SECONDHAND SMOKE EXPOSURE	
OVERVIEW	FINDINGS
<p>Changing from driving a car to riding the bus can help reduce exposure to secondhand smoke, as smoking is not permitted on Wichita buses. Potential positive health impacts associated with reduced exposure to secondhand smoke include decreased risk of lung disease, heart disease and respiratory conditions. However, transit users might be exposed to secondhand smoke at the bus stops and experience associated health risks.</p>	<ul style="list-style-type: none"> • One in five children is exposed to secondhand smoke in cars. Switching from car to bus, where smoking is not allowed, could help decrease children’s exposure to secondhand smoke. However, the extent of health impacts will depend on individual’s overall exposure to secondhand smoke and the extent of their use of transit versus a car.
	RECOMMENDATIONS
	<p>Wichita City Council should consider:</p> <ul style="list-style-type: none"> • Restricting smoking in bus stops. <p>Sedgwick County Health Department and health organizations should consider:</p> <ul style="list-style-type: none"> • Increasing efforts (e.g., publications, announcements, media) to inform car users about the potential negative health impacts of secondhand smoke exposure in cars on adults and especially children.* • Utilizing ad spaces on buses and shelters to highlight the benefits of transit as a way to reduce exposure to secondhand smoke.

*The HIA Transit Advisory Panel rated the recommendation high in terms of its priority.

Source: KHI HIA Transit Project, 2013.

Table 11. Key Findings and Recommendations: Distracted Driving

DISTRACTED DRIVING	
OVERVIEW	FINDINGS
<p>Distracted driving encompasses a range of behaviors, such as texting and talking on the phone, that take a driver’s attention off the road. Drivers may be distracted visually (eyes off the road), manually (hands off the wheel) and/or cognitively (mind off the road). Everyone on the road is at risk of being involved in an accident involving a distracted driver. However, individuals who ride the bus avoid becoming a distracted driver, even if they text and ride. Therefore, potential negative health impacts may be avoided if a proportion of these individuals choose to ride the bus rather than drive.</p>	<ul style="list-style-type: none"> • In general, distracted driving causes one in six fatal vehicle collisions. • The HIA team estimates that 80 percent of new transit riders will have switched from passenger vehicles to public transit. • As a result of switching to public transit under: <ul style="list-style-type: none"> • Concept A, about 0.19 percent fewer individuals would encounter the risk of distracted driving each year. • Concept B, about 0.18 percent fewer individuals would encounter the risk of distracted driving each year. • Concept C, about 0.06 percent <i>more</i> individuals would encounter the risk of distracted driving each year.
	<p style="text-align: center;">RECOMMENDATIONS</p> <p>Sedgwick County Health Department and health advocacy organizations should consider:</p> <ul style="list-style-type: none"> • Increasing efforts (e.g. publications, announcements and/or media) to inform people about the health risks associated with distracted driving. • Utilizing ad spaces on buses and shelters to highlight transit as a way to reduce distracted driving.

Source: KHI HIA Transit Project, 2013.

Table 12. Key Findings and Recommendations: Discretionary Time

DISCRETIONARY TIME	
OVERVIEW	FINDINGS
<p>Some evidence suggests that discretionary time is associated with better mental health and quality of life. People that have discretionary time might spend it on activities that improve their health. However, the extent of positive health benefits associated with discretionary time would depend upon its use.</p>	<ul style="list-style-type: none"> • As a result of increased frequency of service and/or optimized routes, annual discretionary time would increase under: <ul style="list-style-type: none"> • Concept A by 34,887 hours, saving \$253,000 (\$103 per rider) each year. • Concept B by 141,719 hours, saving \$1,027,000 (\$424 per rider) each year. • There would be no measureable change in discretionary time under Concept C. • Based on these findings, Concept B would likely result in more health benefits associated with discretionary time than the other two concepts.
	<p style="text-align: center;">RECOMMENDATIONS</p> <p>Wichita City Council should consider:</p> <ul style="list-style-type: none"> • Choosing or giving priority to a concept that maximizes populations’ discretionary time.

Source: KHI HIA Transit Project, 2013.

Table 13. Potential Impact of Transit on Access to Services and Other Factors

Health Factor or Outcome	Expected Change to Wichita (Based on Literature and Data)	Expected Health Impact	Magnitude of Impact	Likelihood of Impact	Distribution (Population Mostly Affected)	Quality of Evidence: Scale 1–3 (3 is Strongest)
ACCESS TO SERVICES AND RESOURCES						
Access to Health Care						
A	Increase	Positive	Medium	Likely	Low-income, immigrant, elderly, disabled	***
B	Mixed	Mixed	Medium	Likely		
C	Decrease	Negative	Low	Likely		
DI	Increase	Positive	Low	Uncertain		
Access to Employment						
A	Increase	Positive	Medium	Likely	Shift workers, low socioeconomic, students (day and evening), unemployed	**
B	Mixed	Mixed	Medium	Possible	Shift workers, some low socioeconomic, students, unemployed	
C	Decrease	Negative	Medium	Possible	Low socioeconomic, students (day)	
DI, D2	Increase	Positive	Low	Possible	Residents of outlying communities, commuters	
Access to Food Sources						
A	Increase	Mixed	Medium	Uncertain	Low-income, immigrant, elderly, disabled, individuals without car	***
B	Mixed	Mixed	Medium	Uncertain		
C	Decrease	Negative	Medium	Uncertain		
Access to Education						
A	Increase	Uncertain	Low	Uncertain	K-12 students (and parents) and college students	*
B	Decrease	Uncertain	Low	Uncertain		
C	Decrease	Uncertain	Low	Uncertain		
DI, D2	Increase	Uncertain	Low	Uncertain		
Access to Recreational Resources						
A	Increase	Uncertain	Low	Uncertain	Wichita community members	*
B	Decrease	Uncertain	Low	Uncertain		
C	Decrease	Uncertain	Low	Uncertain		

Note: Only applicable concepts are listed in the table.

Legend is available in Appendix A (page A-1).

Source: KHI HIA Transit Project, 2013.

Table 13 (cont.). Potential Impact of Transit on Access to Services and Other Factors

Health Factor or Outcome	Expected Change to Wichita (Based on Literature and Data)	Expected Health Impact	Magnitude of Impact	Likelihood of Impact	Distribution (Population Mostly Affected)	Quality of Evidence: Scale 1–3 (3 is Strongest)
CHANGES IN MODE OF TRANSPORTATION FROM CAR TO BUS						
Air Quality						
A	Decrease	Positive	Low	Unlikely	Wichita community members, people with respiratory conditions, children	***
B	Decrease	Mixed	Low	Unlikely		
C	Increase	Negative	Low	Unlikely		
Pedestrian Access						
A	Increase	Positive	Medium	Likely	Wichita community members, employees	***
B	Increase	Positive	Medium	Likely		
C	Decrease	Negative	Medium	Possible		
Traffic Volume						
A	Decrease	Positive	Low	Possible	Wichita community members, elderly, children	***
B	Decrease	Positive	Low	Possible		
C	Increase	Negative	Low	Possible		
Distracted Driving and Secondhand Smoke Exposure						
A	Mixed	Mixed	Low	Possible	Wichita community members, people with respiratory conditions, children	**
B	Mixed	Mixed	Low	Possible		
C	Increase	Negative	Low	Possible		
Discretionary Time						
A	Increase	Positive	Low	Possible	Transit riders (i.e., transit-dependent)	*
B	Increase	Positive	Medium	Possible		
C	No change	Uncertain	Low	Possible		

Note: Only applicable concepts are listed in the table.

Legend is available in Appendix A (page A-1).

Source: KHI HIA Transit Project, 2013.

Conclusion

This HIA explores the potential health impacts of each of the three Wichita Transit concepts — A, B, C — and the two extension routes, D1 (Extension) and D2 (Commuter). In order to develop findings and recommendations and project potential health impacts, the HIA used multiple data sources, including a review of relevant literature, interviews with key local and state leaders, stakeholder engagement meetings with community members and secondary data analyses.

Overall, the HIA team found that Concept A is more likely to produce a larger number of positive health effects. These are associated with increased access to food sources, employment, health care and educational and recreational resources due to broader transit coverage. In particular, the community could experience increased consumption of nutritional food associated with increased access to food sources as well as early detection and treatment of health conditions associated with increased access to health care facilities (Table 13, pg. xxi). However, the extent to which Concept A will improve access to services and result in positive health effects will depend upon increased frequency and longer hours of operation for the transit system.

Transit's overall impact on the economy is based on the idea that a local industry such as public transit supports others in the community (i.e., workers spend locally). Estimates for the proposed concepts' impact were based on transit industry demand earnings on the Wichita Metropolitan Area. The economic analysis projected that Concept A would likely yield larger economic benefits in comparison to the other concepts. Concept A is projected to provide about \$6 million of additional annual payroll earnings to the economy. In addition, Wichita's economy could also benefit from reduced traffic injuries and increased discretionary time. The decrease in traffic injuries due to increased use of public transit could lead to over \$500,000 in economic savings per year for Concepts A and B. Concept C, however, yields \$172,000 in economic savings due to reduced traffic injuries. When considering the value of discretionary time, Concept A potentially saves each transit rider around \$100 per year, but Concept B yields even more savings valued at over \$400 per year. For full results, please see Table 14 on page xxiv.

Wichita's transit system provides an essential service for individuals without a car, low-income residents, the elderly and others who depend on it for transportation. Because these people may be disproportionately affected by any changes to the current structure when compared to the general population, routes should be planned and prioritized based on their needs. Recognizing the importance of transit service for these populations, Concepts B and C will not produce similar health

benefits. For example, Concept B will not provide transit coverage to southeast Wichita, decreasing access to services for residents of this lower-income area. Concept C will provide coverage to this area but decrease frequency and hours of operation, making public transit a less reliable and viable means of transportation. In considering the overall impacts of both, Concept B will likely result in more positive health benefits than Concept C, as it would provide access to other parts of Wichita for transit-dependent residents with its increased frequency, longer hours of operation and weekend service, as shown in Table 13, page xxi.

Table 14. Economic Analyses of Selected Indicators

CONCEPT	WICHITA AREA RESIDENTS' ADDITIONAL PROJECTED PAYROLL EARNINGS	TRAFFIC INJURIES		DISCRETIONARY TIME	
		PERCENT OF INJURIES AND FATALITIES	ECONOMIC SAVINGS FROM REDUCED TRAFFIC INJURIES	CHANGES IN DISCRETIONARY TIME (HOURS)	VALUE OF DISCRETIONARY TIME INCREASE
A	\$6.1 million	-0.09 traffic fatalities and -5 injuries	\$532,000	34,887 hours	\$253,000 (\$103 per rider)
B	\$3.1 million		\$513,000	141,719 hours	\$1,027,000 (\$424 per rider)
C	Not estimated	+ 0.03 traffic fatalities and +1.6 injuries	\$172,000	No measureable change	N/A

Note: Only applicable concepts are listed in the table.

Source: McCarthy Snyder, N., & Bannon, C. (2013). *Economic Analysis of Health Impact Assessment of Wichita Transit*. Wichita, KS: Hugo Wall School of Urban and Public Affairs.



Wichita, 2012.



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