Confederate Tribes of the Umatilla Indian Reservation– Nixyáawii Community School Baseline Data Evaluation Report

FINAL July 27, 2022

Introduction

This case study evaluation measures the impacts of Oregon Safe Routes to School (SRTS) 2021 Competitive Construction Grants in communities across the state. The evaluation will assess the effectiveness of individual SRTS projects, techniques, and programs designed to reduce barriers to biking and walking to and from school. Evaluation research questions include:

- What are the impacts for standalone construction grants, and combined outreach and education and construction grants?
- How do different combinations of interventions effectively address the barriers identified by communities and affect mode shift; safety; and perceptions of safety, program lifespan, and equity?

This Baseline Data Evaluation Report represents the "pre-construction" data and provides an overview of existing travel conditions and school site attributes. This report summarizes the funded improvement project, demographics of affected schools, and data from Oregon Department of Transportation (ODOT) and local roadway authority crash records, caregiver surveys, and student travel hand tallies. It is intended to contain the majority of the information needed to plan for the post-construction data collection.

Plan for the Final Case Study Evaluation Report

The Final Case Study Evaluation Report will represent the "post-construction" data. A draft outline for this report is included in Appendix A. For data consistency, the post-construction data will be collected as soon as possible after construction is complete, likely starting in spring 2021. This will reduce weather-related impacts and also allow time during the school year for families to establish or change their travel habits. In addition to the standard caregiver surveys and student travel hand tallies, post-construction data collection methods for the evaluation report may also include caregiver focus groups and surveys or interviews/travel tallys with school staff.

The Final Case Study Evaluation Report will measure shifts using the evaluation metrics laid out in this document to identify the successes of SRTS projects and provide insight on opportunities for further improvement. SRTS performance metrics measured during this evaluation process will include:

- **Mode split:** Are more students walking and biking to school after a project's completion than at the time of baseline data collection?
- **Access to safe infrastructure:** Do students have better access to sidewalks, bike lanes, or safe crossing locations on their route to school after the completion of the project?
- **Safety/perception of safety:** Do caregivers and students feel safer or more comfortable walking and biking to school after the project's completion?
- **Program lifespan/partnerships:** Is the SRTS program functioning efficiently and providing adequate support for partner jurisdictions, schools, and districts?

- **Equity:** Are students from a diversity of ethnic/racial and socioeconomic backgrounds benefiting from the investments being made?

In addition to reporting on grant effectiveness, data presented in the Baseline Data Evaluation Report and the Final Case Study Evaluation Report could be used for a variety of transportation and program planning purposes at the local level. Having a comprehensive set of quantitative data and qualitative feedback on transportation conditions and trends around these sites could help inform decisions on school/district policy, SRTS event and program planning by schools/districts/local jurisdictions, and planning for future infrastructure projects, as well as provide supporting documentation for future grant applications.

Baseline SRTS Snapshot: Nixyáawii Community School

Summary

Nixyáawii Community School is a public elementary school serving students in the Confederated Tribes of the Umatilla Reservation. It is a Title 1 school. English and Spanish are the primary languages spoken by students.

CTUIR staff identified Nixyáawii Community School as a high-priority site for SRTS improvements due to the large percentage of the students in and around July Grounds, about a mile away.

The Oregon SRTS 2020-2021 Competitive Construction Grant-funded future education and outreach activities will include: a pedestrian and bicycle safety curriculum propels for PE and summer rec, walking activity outreach, caregiver engagement tabling, and surveying, and future evaluation will include: bike/ ped traffic counts at key paths/intersections- interactive visual student survey.

Key information from Nixyáawii Community School caregiver surveys and travel tally conducted by Dani Schulte, transportation planner:

- 6 students live within a mile of the school.
- Approximately 55% of students ride in a family vehicle to school, and 42% use this mode to travel home; 37% of students take the school bus to school, and 50% take the bus home. Very few students reported walking to/from school.
- Caregivers report that travel time is the most common barrier to walking/biking to school. Other barriers include:
  - Convenience of driving
  - Concerns about safety, documentation, or criminal activity
  - Bad weather
- Most caregivers recognize the value of walking/biking to school—13 described it as healthy, and 7 described it as fun for their student.

Contact Information

JURISDICTION:	**Confederated Tribes of the Umatilla Indian Reservation**
CONTACT:	Donald Sampson, donaldsampson@ctuir.org
SCHOOL DISTRICT:	Umatilla School District
CONTACT:	Dani Schulte, danischulte@ctuir.org

Enrollment and Demographics

Nixyáawii Community School is a Title 1 public school enrolling 78 students in ninth through 12th grade. The school serves the Umatilla Indian Reservation and the surrounding area, with targeted CTUIR tribal heritage curriculum. English is the primary language spoken by students, and less than 5% are registered to be Ever English Learners.[1]

ENROLLMENT: 78[2]

GRADE LEVELS SERVED AND SCHOOL TYPE: 9-12th, Public

STUDENT ETHNIC/RACIAL DEMOGRAPHICS:

American Indian/Alaska Native: 81%
Asian: 0%
Black/African American: 0%
Hispanic/Latino: 10%
Multiracial: 5%
Native Hawaiian/Pacific Islander: 0%
White: 4%

PREDOMINANT LANGUAGES SPOKEN IN GREATER SCHOOL DISTRICT: [3]

English: 624
Spanish: 785

STUDENTS LIVING WITHIN 1-MILE OF SCHOOL: NA

TITLE 1 STATUS: Yes[4]

EVER ENGLISH LEARNERS: NA[5]

FREE AND REDUCED-PRICE LUNCH ELIGIBILITY: NA[6]

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[1] Unless otherwise noted below, demographic data are from the Oregon Department of Education Fall Membership Report SY2020-2021 Data, https://www.oregon.gov/ode/reports-and-data/students/Pages/Student-Enrollment-Reports.aspx
[2] Oregon Department of Education, SY 2020-2021 https://www.ode.state.or.us/data/reportcard/Media.aspx
[3] Oregon Department of Education Language Use Survey, SY 2020-2021 https://www.oregon.gov/ode/schools-and-districts/grants/ESEA/EL/Pages/LanguageUseSurvey.aspx
[4] Title 1 schools are schools where 40% or more of students are enrolled in USDA's Free and Reduced-Price Meals Program. Oregon Department of Education, SY 2018-2019 https://www.oregon.gov/ode/schools-and-districts/reportcards/reportcards/Pages/Accountability-Measures.aspx
[5] Oregon Department of Education, SY 2020-2021 https://www.ode.state.or.us/data/reportcard/Media.aspx
[6] Oregon Department of Education, SY 2020-2021 https://www.oregon.gov/ode/students-and-family/childnutrition/cacfp/Documents/Site%20Eligibility%20for%20CACFP%20and%20SFSP.pdf

Community Context and Place Type

Place type describes attributes of a built environment, including access to destinations, density, walkability, mixing of uses, and presence of transit. The evaluation team compiled the Oregon Department of Land Conservation and Development's (DLCD) measures of place type for each community studied.[7] Each attribute is rated as "**Very Low, Low, Medium, or High**" by the block group. Place type characteristics provide important context for transportation opportunities and challenges in a community and influence the transportation decisions people make.

Nixyáawii Community School is located on the Confederated Tribes of the Umatilla Indian Reservation, about 4 miles from the city limits of Pendleton. According to the Place Type Tool, the area surrounding Nixyáawii Community School is categorized as Low Density/ Rural with very low densities of housing and jobs**,** and very low accessibility to jobs and services. The development type is Employment with 1,077 people residing and 1,651 people working within the census block. The area has a high level of access to regional employment centers and destinations, and a medium mix of uses; however, the overall level of street connectivity in the area is characterized as "very low."

AREA TYPE describes the role of each neighborhood district compared to the rest of the region (regional center, close-in community, suburban/town, low density/rural)	**Low Density/ Rural** • Very low densities of housing and jobs • Very low accessibility to jobs and services • Generally, outside of UGB, or undeveloped areas within UGB • Auto-dependent transportation, due to low activity densities
DEVELOPMENT TYPE describes more detailed physical characteristics of each neighborhood (transit-supportive development, mixed-use, employment, residential, rural/ low density):	Employment • Land use is dominated by commercial or industrial activities • Low diversity of land uses • Jobs/Housing balance: mostly jobs • Missing either the density or street design required of mixed Use

JURISDICTION POPULATION (ACS 5-YEAR ESTIMATES):	The population of Pendleton is 16,733
CENSUS BLOCK GROUP POPULATION (2010):	2,077 people
NUMBER OF JOBS IN CENSUS BLOCK GROUP (2010):	1,651 jobs
ACCESS TO DESTINATIONS describes the number of regional jobs within 5 miles:	High
DENSITY LEVEL- jobs and households per acre within ¼ mile:	Low
DESIGN LEVEL- level of street connectivity, pedestrian-oriented street density:	Very Low
DIVERSITY LEVEL- Mix of housing and employment:	Medium
TRANSIT LEVEL- Afternoon peak hourly **transit service within ¼ mile:**	Low

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[7] More information about OLCD's Place Type Tool is available at: www.oregon.gov/lcd/CL/Pages/Place-Types.aspx

Project Description

A map of the project improvements from the Nixyáawii Community School grant application is included in Appendix B.

PROBLEM STATEMENT:	The new location of the Nixyáawii Community School requires local residents to cross one or two highspeed highways without any pedestrian crossings or complete pedestrian paths. The majority of walking students live between 1 and 1.5 miles of the school in relatively dense Tribal residential subdivisions. Any walking students must cross Mission Road or Highway 331, and walk the last 1/2 mile to the school on the shoulder of either the 40mph road or 45mph highway.
DESCRIPTION OF BARRIERS TO WALKING AND BIKING:	These three projects have been identified as highest priority because they close the most glaring gaps along high-speed roadways for commuting students, which include: incomplete pedestrian networks, lack of ADA access and high road speeds. The new infrastructure project will also serve students who may not commute, but who visit the only nearby commercial establishment, Mission Market, for lunch. Based on community reports, the prevailing route currently used by students for that purpose involves walking along Highway 331 on a steeply sloping gravel shoulder, which has not been improved for pedestrian or bicycle use, although this has been identified as a CTUIR and ODOT goal in transportation plans for at least 20 years.
PROJECT DESCRIPTION:	The highest identified priority is to complete a safe path between the dense residential area known as July Grounds to the school. This will also serve many closer residents in dispersed rural residential homes between July Grounds and the school. The project involves three components: 1. Crosswalk and pedestrian visibility improvements at the Mission Road and Highway 331 Intersection 2. Pedestrian pathway along Highway 331 3. School zone sign installation on Timíne Way
ESTIMATED PROJECT TIMELINE:	July 2023
PRIORITY SAFETY CORRIDOR?[8]	Yes

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[8] A road where the posted speed or 85th percentile speed of traffic is 40 mph or greater OR if and two of the following apply: posted speed limit of 30 mph or greater, more than two lanes or a crossing distance greater than 30 feet, 12,000 AADT or greater, has a demonstrated history of crashes related to school traffic.

OUTREACH AND EDUCATION:	CTUIR, Yellowhawk health clinic, and the Nixyáawii School participated in the Project Identification Program, meeting biweekly. After pivoting away from planned in-person engagement due to COVID-19, we received support from Alta Planning to develop and launch a web map-based survey and spread this input tool around the community via local newspaper, official Tribal Facebook pages, and handbills with the COVID-19 lunch distributions. We also distributed an area map activity which could be drawn on and submitted by mail or in person at the tribal government building. A virtual site assessment meeting was held on June 24th, 2020, and was attended by all three road jurisdictions operating on the reservation, and a school board representative.

Access Analysis for Students Walking and Biking to School

The project team conducted an analysis to estimate the number of people who would gain walking and biking access to Nixyáawii Community School when the project improvements are constructed, shown in Table 1 and Figure 1. First, the project improvements were evaluated to understand the geographic areas that would gain safe access to the school once the funded project was constructed. Next, American Community Survey (ACS) data was used to estimate the number of people and the number of school-age children that live within the new access areas.

This analysis estimates that approximately 12 students, or 4% of the school-age population living within a mile of the school, would gain safer walking or biking access to the school.

Table 1. Access Analysis Results[9]

METRIC	VALUE
Total Population of New Access Areas	72
School Age Population of New Access Areas[10]	12
Percentage of Students within the School Areas Gaining Access[11]	4%

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[9] Due to the lack of residential zoning in the surrounding area, the population served is based on the proportion of land coverage in the new access area compared to the School Area, assuming an even distribution of population density across the area.

[10] Calculated using the proportion of school-age children (5-17 years old) within the census block group.

[11] The School Area is defined as the area within the school enrollment area that is within one mile of the school.

Figure 1. Nixyáawii Community School New Access Area for Students Walking and Biking

Nixyaawii Community School
Students with New Access to
Walking and Biking

Estimated Number of Students: 12
Proportion of Students within 1 Mile: 4%
To view the methods for this analysis, please see Appendix.

- Applicant School
- Other School
- New Access Area
- New Crossing Improvement
- New Sidewalk Improvement

Baseline Data

The following section presents pre-construction data, which will be compared against similar data collected after the project has been constructed, in order to estimate the impact of the improvements.

Staff Travel Tally

DATE COLLECTED: **February 8, 2022**

DATA COLLECTION PROCESS: Staff Travel Tally with Dani Schulte

SUMMARY OF DATA COLLECTION AND METHODOLOGY

Due to the COVID-19 pandemic and the risk in conducting in-person travel tallies, Dani Schulte provided the Alta Planning + Design Safe Routes to School team an account of current travel conditions at Nixyáawii Community School. Dani Schulte answered questions about typical travel mode-share to and from Nixyáawii Community School at the time of the travel tally.

SUMMARY OF RESULTS:

Nixyáawii Community School travel tally data from 2022 indicates that a majority of students travel by family vehicle in the mornings (55%) while 3% of students walk to school (see Figure 2). The school bus was the second most common mode, with 37% of students using this mode to get to school. Bikes were used by 1% of students to get to school and home, and carpool was also used by 4% of students to get to school.

Figure 2. Student Mode Split by Time of Day, 2022 Staff Travel Tally Data
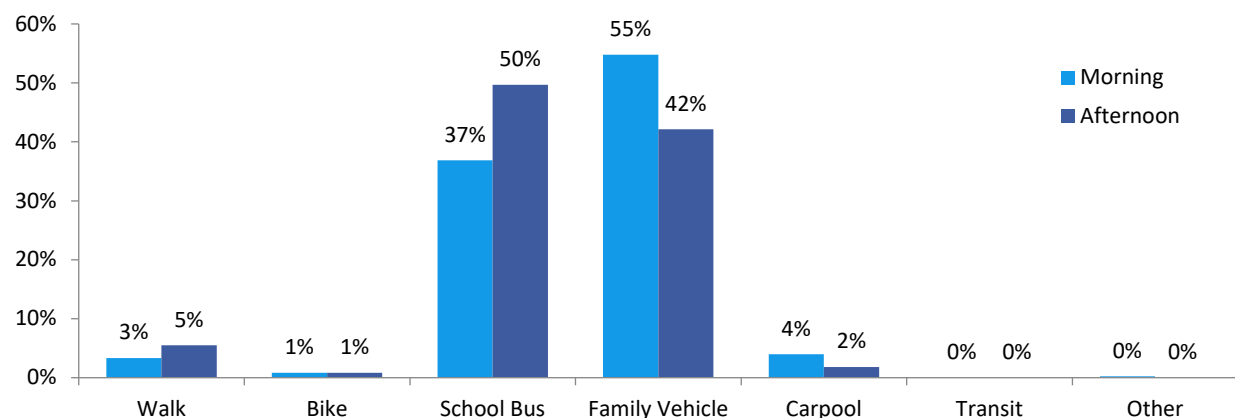
Note: Percentages may not total 100% due to rounding.

Caregiver Surveys

DATE COLLECTED: **May 2022**

| DATA COLLECTION PROCESS:	The Oregon Department of Transportation SRTS caregiver survey was distributed electronically to caregivers at Nixyáawii Community School to assess family perceptions about school travel options and behavior. The survey was available in English and Spanish.
NUMBER OF SURVEYS:	17

SUMMARY OF DATA COLLECTION AND METHODOLOGY

The caregiver survey data included in this report was collected in May of 2022 from 17 participants with students attending Nixyáawii Community School.

SUMMARY OF RESULTS:

Caregiver survey analysis revealed that six respondents live within one mile of Nixyáawii Community School, with an additional four living between one and two miles of the school site (see Figure 3). Another 7 surveyed caregivers live more than two miles from the school.

Figure 3. How Far Does your Family Live from School? 2022 Caregiver Survey
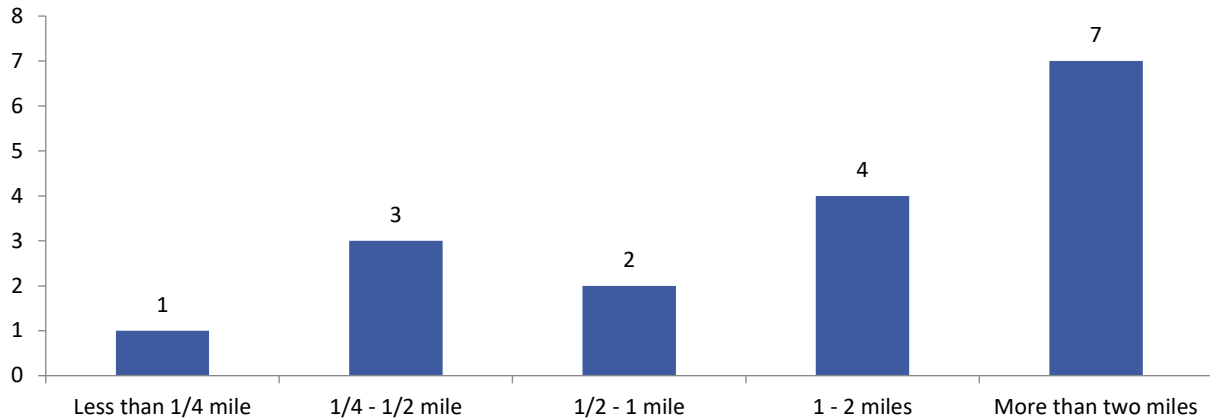
Family vehicles modes was tied with shared modes for the commonly used transportation option for students living less than a quarter mile from the school. Family vehicles was the most common mode for those living between a half mile and one mile away and those who live two miles or farther from school (see Figure 4 and Table 2). For students who live between a quarter-mile and a half-mile from the school, the school bus was the most popular transportation, with 67% using this mode. Additionally, 41% of students who lived between one and two miles from school used shared modes. 30 students (all living between a half-mile and less than a quarter mile) walked to/from school.

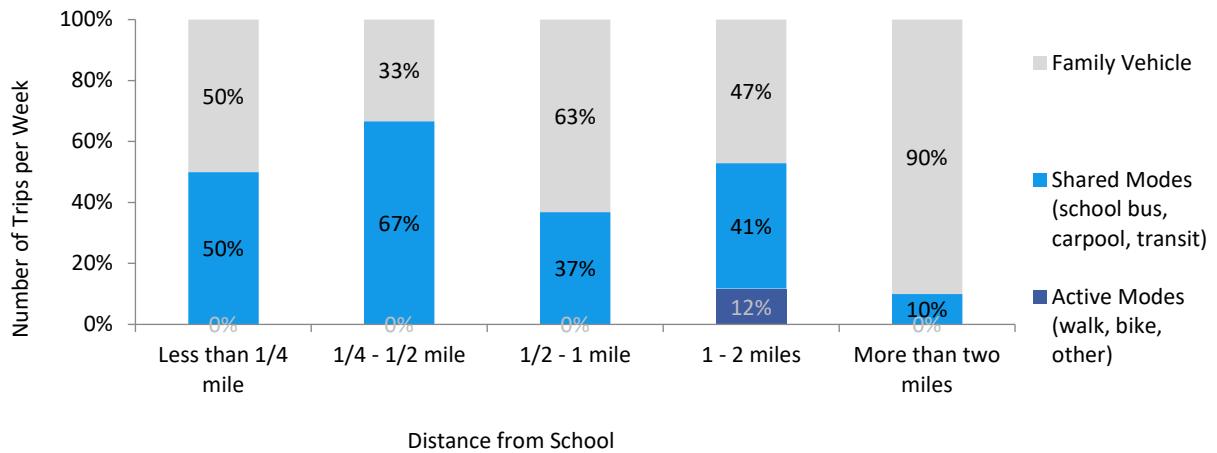Figure 4. Mode Split by Distance from School, 2022 Caregiver Survey

Table 2. Count of Trips by Distance the Family Lives from School, 2022 Caregiver Survey

DISTANCE	WALK	BIKE	SCHOOL BUS	FAMILY VEHICLE	CARPOOL	TRANSIT	OTHER
Less than 1/4 mile	30	2	4	9	0	0	0
1/4 mile up to 1/2 mile	4	0	22	8	0	0	0
1/2 mile up to 1 mile	0	2	4	13	19	0	0
1 mile up to 2 miles	0	0	8	20	0	0	0
More than 2 miles	0	0	10	20	0	0	0

As Figure 5 illustrates, seven caregivers surveyed reported that they would not allow their student to walk to/from school. However, another four would allow them to walk with a friend or sibling. Nine said they would not allow their student to bike, and five would allow them to bike themselves.

Figure 5. Do You Allow this Student to Travel to School in the Following Ways? 2022 Caregiver Survey
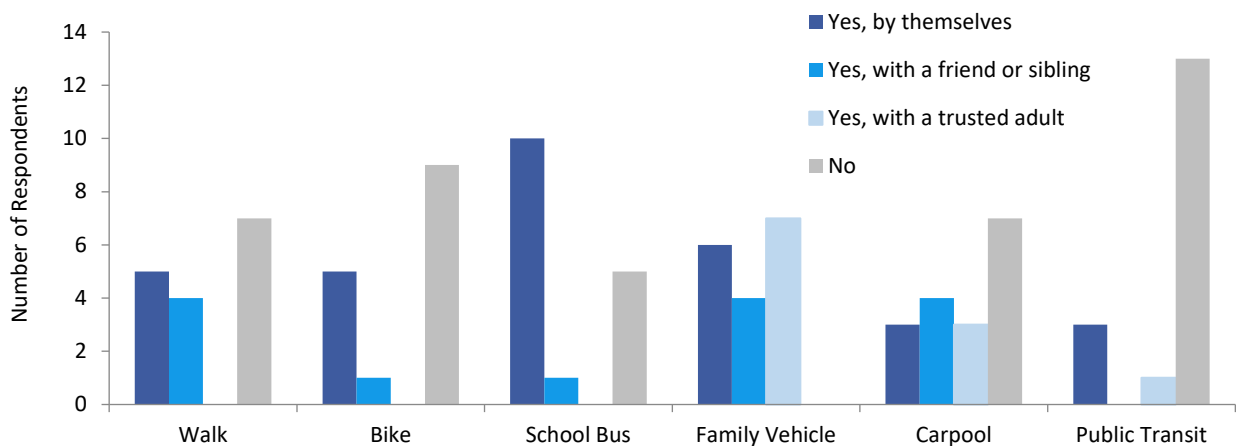
While caregivers reported varying concerns that limit their student's ability to walk or bike to school, some were more commonly expressed than others (see Figure 6). Many surveyed caregivers faced the following barriers:

- The length of time it takes to walk or bike to school
- Convenience of driving
- Concerns about safety, documentation, or criminal activity
- Bad weather

Figure 6. What Concerns Limit Your Student's Ability to Walk or Bike to/from School? 2022 Caregiver Survey
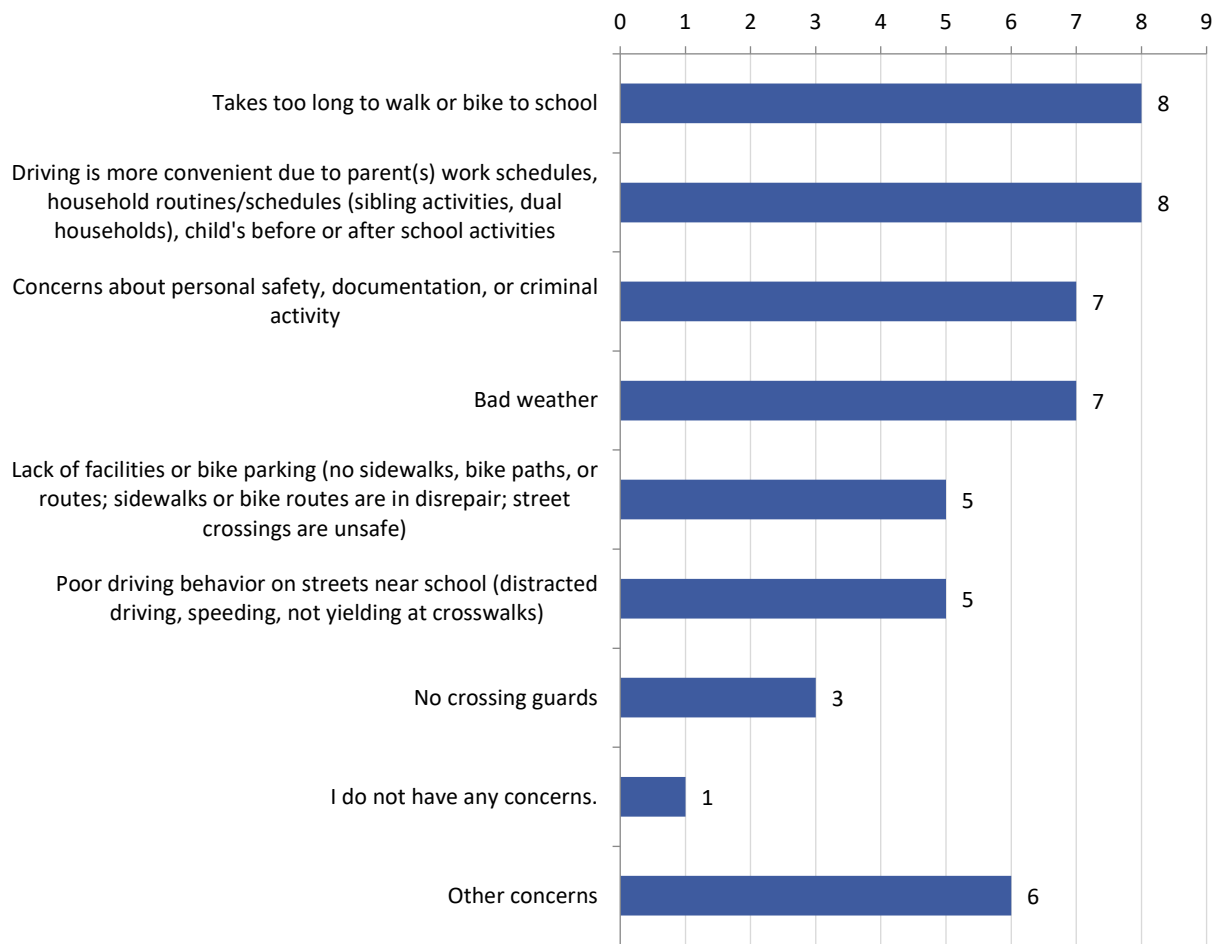

A majority of caregiver respondents 11 felt Nixyáawii Community School, neither encouraged or discouraged students from walking and biking to school at the time of the survey. An additional two felt the school encouraged or strongly encouraged active transportation, while four characterized the school as discouraging walking and biking (see Figure 7).

Figure 7. Agree/Disagree: Walking/Biking to/from School Is Encouraged by My Student's School, 2022 Caregiver Survey
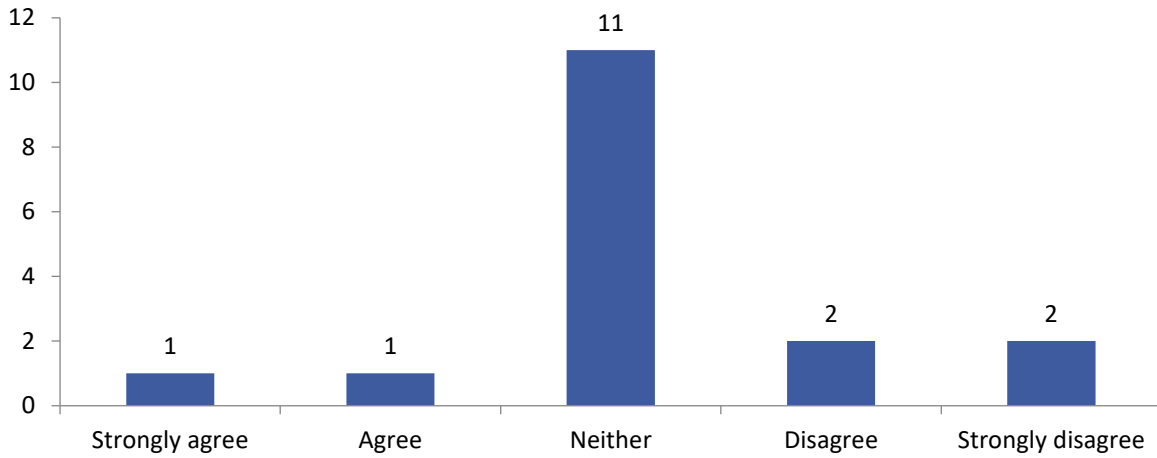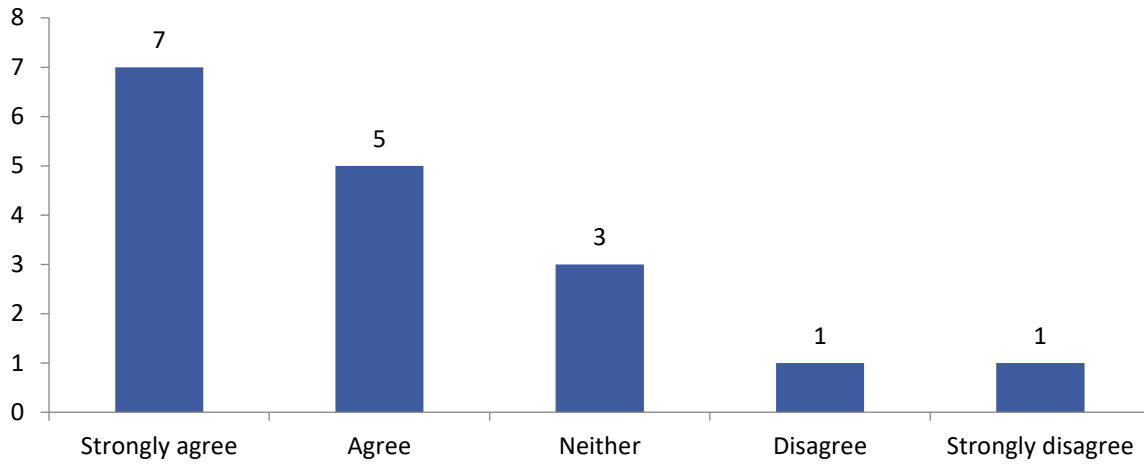

At the time of the survey, seven caregivers agreed that walking or biking to school would be a fun activity for their students, while only three believed the activity would be boring. An additional seven were neutral or unsure on whether their student would enjoy walking and biking to school (Figure 8).

Figure 8. Agree/Disagree: Walking/Biking to/from School Is Fun for My Student, 2022 Caregiver Survey
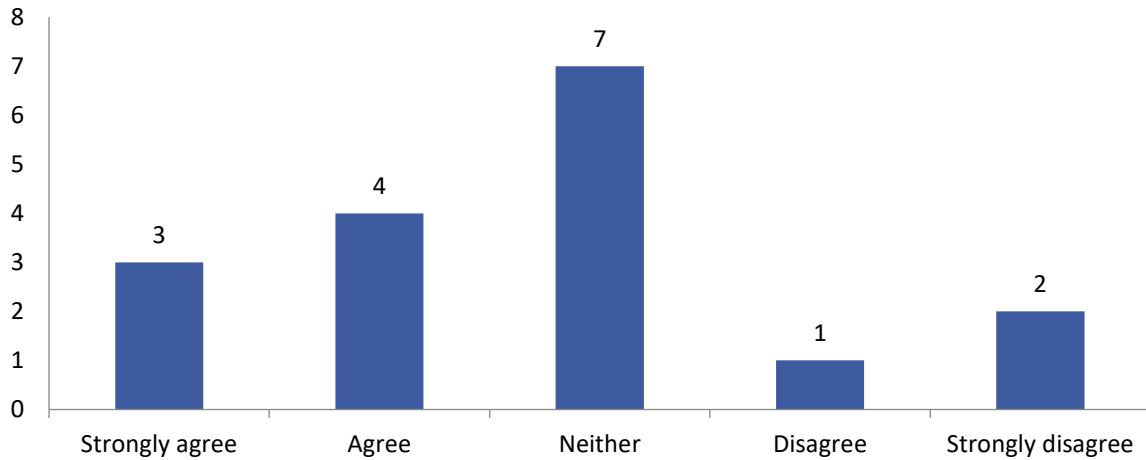
A majority of caregivers recognized the health benefits of active transportation, with 12 agreeing that walking or biking to school would be healthy for their student. An additional 3 were neutral regarding the health benefits of walking and biking, and 2 did not feel that the activities would be healthy for their student (see Figure 9).

Figure 9. Agree/Disagree: Walking/Biking to/from School Is Healthy for My Student, 2022 Caregiver Survey

Crash Data

DATE COLLECTED:	2014-2018
DATA COLLECTION PROCESS:	Crash data included in this report originates from relevant roadway jurisdictions, as well as the ODOT SRTS Web Map Application for the years 2014-2018. This analysis does not determine whether the grant intervention *caused* any change in the occurrence of crashes, due to small sample size. Additionally, due to insufficient mode split data to calculate crash *rates*, this report offers a count and description of reported incidents.
NUMBER OF REPORTED CRASHES INVOLVING BIKES AND PEDESTRIANS WITHIN 1 MILE OF SCHOOL:	Between 2014 and 2018, 0 crashes involving a bicyclist or pedestrian were reported within one mile of the school (as shown in Figure 10). (One fatality occurred, as shown on the map, but it occurred outside the 1-mile school radius).
TIME OF REPORTED CRASHES INVOLVING BIKES AND PEDESTRIANS WITHIN 1 MILE OF SCHOOL*:	N/A
NUMBER OF REPORTED INJURIES BY SEVERITY WITHIN 1 MILE OF THE SCHOOL:	N/A
ADDITIONAL CRASH DATA CONSIDERATIONS:	N/A

Figure 10: Nixyáawii Community School Bicycle & Pedestrian Collisions (2014-2018)
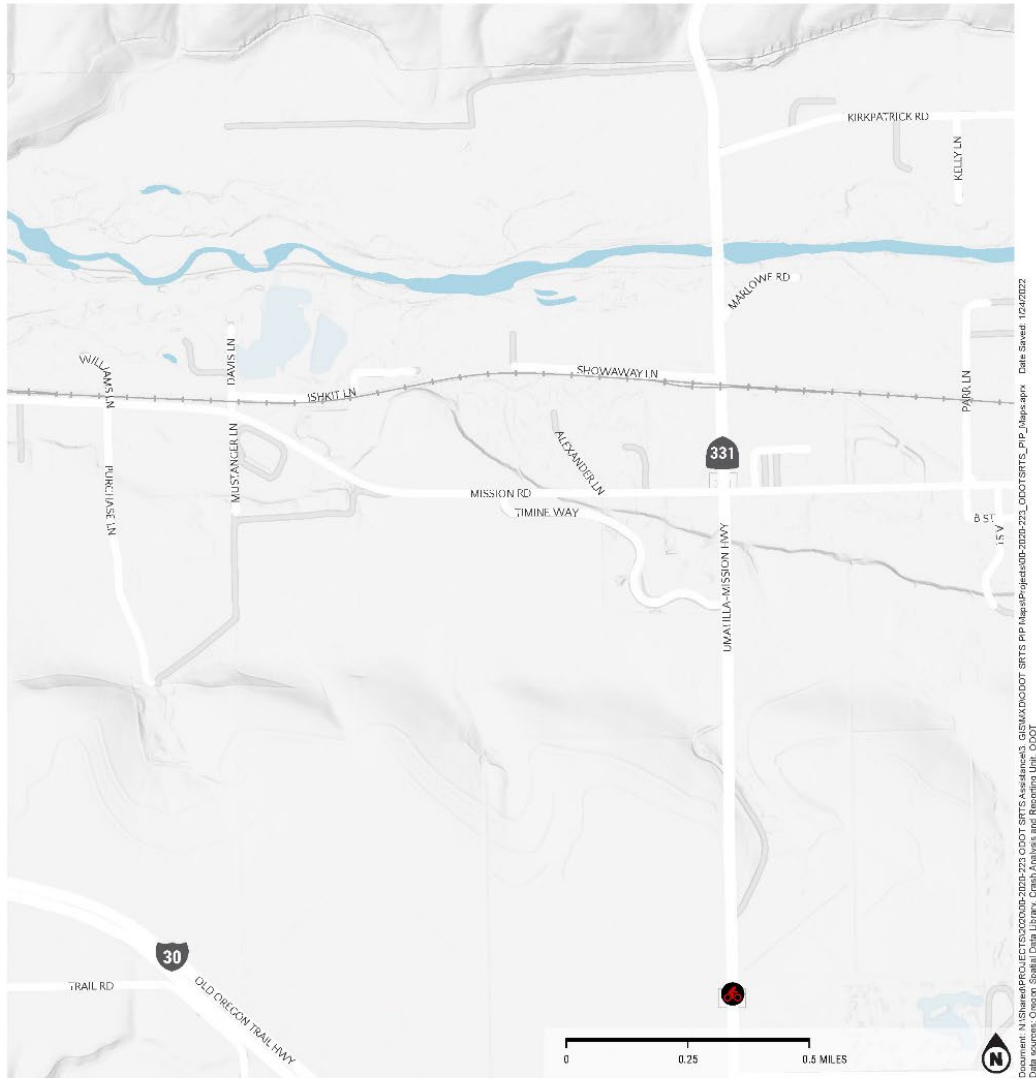
COLLISIONS WITH PEOPLE WALKING AND BIKING 2014-18

Pedestrian Collisions
- Pedestrian Injury
- 2 or more Pedestrian Injuries
- Pedestrian Fatality

Bicyclist Collisions
- Bicyclist Injury
- 2 or more Bicyclist Injuries
- Bicyclist Fatality

- Railroad
- School Property
- Parks
- Water
- City Boundary

Follow-Up Data Collection Plan

Timeline

Post-grant field visits to collect follow-up data will be scheduled to take place the spring following the completion of each grant intervention. Umatilla Reservation estimates the project will be completed by March 2022.

Follow-up Data Collection Process

METHOD	PLANNED AT THIS SITE?	TARGET SAMPLE SIZE	TARGET FIELD WORK DATE
STUDENT HAND TALLIES:	Yes	At least 2 classrooms per grade per school	Late fall 2024(assuming project completion)
CAREGIVER SURVEYS:	Yes	At least 30 caregivers per school	Late fall 2024(assuming project completion)
CAREGIVER FOCUS GROUPS:	Yes	4-10 caregivers	Late fall 2024(assuming project completion)
STAFF SURVEYS:	Yes	1-3 school staff and administration	Late fall 2024(assuming project completion)
CRASH DATA:	Yes	N/A	N/A
OTHER:	None	N/A	N/A

Appendix A. Final Report DRAFT Outline

Note: The following Final Report outline is subject to change.

Chapter 1. Introduction

- Description of SRTS Construction Grant Program
- Description of Final Report purpose and contents

SUMMARY OF FUNDED INFRASTRUCTURE IMPROVEMENTS

- Project description
- Map of improvements
- Project timeline

BACKGROUND

- School demographics
- Summary of Non-Infrastructure SRTS Work
- Place Type

Chapter 2. Data Collection and Results

STAFF TRAVEL TALLY DATA

- Data Collection Methods
- Change in walking and biking rates

CAREGIVER SURVEY DATA

- Data Collection Methods
- Change in mode split by distance from school
- Change in barriers to walking and biking
- Change in perceptions of walking and biking
- Other observations

FOCUS GROUPS

- Data Collection Methods
- Change in barriers to walking and biking
- Change in perceptions of walking and biking

CRASH DATA

- Data included in analysis
- Change in crash data (*If available, otherwise this will provide updated baseline crash data from ODOT*)

Chapter 3. Findings

- Impact of Infrastructure improvements on mode split
- Impact of Infrastructure Improvements on Access to Safe Infrastructure

- Impact of improvements on safety/perception of safety
- Impact of infrastructure improvements on Program lifespan/partnerships
- Impact of infrastructure improvements on equity
- Other Findings
- Next Steps and Recommendations

Appendix B. Competitive SRTS Infrastructure Grant-Funded Project Map

Figure 11. Nixyáawii Community School Elementary Competitive Infrastructure Grant-Funded SRTS Projects Proposed

Map of Projects Proposed in the Nixyáawii Community School Safe Routes to School Plan
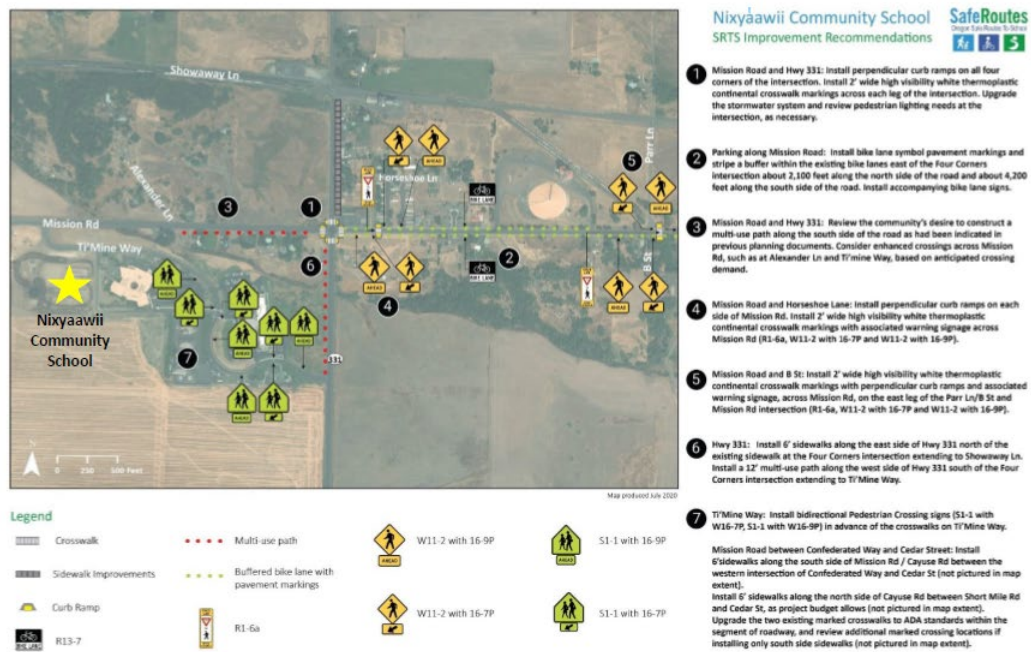
These projects have been identified as priorities for near- and medium-term improvements as part of the Safe Routes to School Plan development process. **Projects 1 (Mission Road and Highway 331), 6 (Highway 331), and 7 (Timíne Way)** have been selected under the current grant request scope, in order to create the first complete, safe bicycle/pedestrian path from residences to the school. This map was developed for CTUIR by Alta Planning.

Appendix C. Access to SRTS Detailed Methodology

Purpose

The analysis establishes two geographical areas in which census block population data are apportioned to: 1) the school area and 2) the access area. The school area is defined as the area that is within a 1-mile radius of the applicant school or within the enrollment boundary, whichever is closer. This area covers residents within reasonable walking or biking distance of the school. The access area is the area that covers all residents who would experience new or significantly improved access to school upon the implementation of the proposed walking or biking facility.

Once both of these areas were established, the consultant team identified the census blocks that intersect each. We then apportioned the population data from the census blocks to the school area and the access area, based on the relative coverage of each census block. To account for varying residential densities in each census block, we used residential zoning data to determine the proportion of the population that should be attributed to the school area and access area.

After the estimated populations of both the school area and the access area are calculated, the local jurisdiction's youth rate is applied to each to get the number of people ages 5-17 in those areas, which we refer to as the "school age population." Finally, the school age populations of the access area and the school area are compared. The percentage of school age students with new or improved access to school represents the proportion of students impacted by the project out of all the students in the school area who could reasonably walk or bike to school.

Defining the Access Area

The boundary of the school area is readily calculable using GIS and the rules described above. By contrast, the access area boundary was determined manually based on the project description and professional judgement of impact. While this method inherently includes subjective judgement, the high variability and nuance in the transportation context surrounding the proposed project makes this method more suitable for determining the residential areas apportioned that would benefit from its implementation than a purely GIS-based workflow. The following assumptions and rules of thumb were adopted in order to make the assessment of the access areas as uniform as possible:

1. The analysis assumes people are willing to "walk around the block" half the distance of their street in the opposite direction of school in order to utilize a safe path to school.
2. The analysis assumes that Google Earth Street view imagery is up to date, as this was used to determine sidewalk connectivity and condition, which informed the access areas.
3. Places without sidewalks, particularly in small towns, are considered walkable if the street is narrow, residential, and designed for a low volume of traffic (i.e., lacks a centerline)
4. The access areas consider ADA accessibility and account for those in wheelchairs or other mobility devices.
5. The access areas may include residents who have to walk more than one mile to school, based on the available street network.
6. Even if some residents may have already had access to school, they might be included in the access area if the proposed project would significantly improve their access to school.

Apportioning Census Population Data

As described above, census population data was apportioned to both the school area and the access area based on how much a census block covered them. However, to account for varying population densities across census blocks, residential zones in the census blocks were identified.

The statewide zoning data provided by the Oregon Department of Land Conservation and Development groups residential zones across all jurisdictions in the state into 13 categories of increasing density. Our team further consolidated these categories into just 4: Low Density, Medium-Low Density, Medium-High Density, and High Density. We then weighted these categories by their relative density compared to Low Density:

Residential Zone Group	Population Density Factor
Low Density	1
Medium-Low Density	2
Medium-High Density	5
High Density	15

These factors serve to more accurately distribute the population data across the residential zones within the census block. In other words, if the census block contained only Low-Density residential zones, then the population of any given area within that census block is equal to the proportion of the census block that that area covers. By contrast, if a census block contains Low Density residential zones and High-Density zones, we attribute 15 times the population of the census block to the High-Density zones than the Low-Density zones. The density factors were determined using the typical number of dwellings per acre in in each zone.

The analysis uses these four zoning categories to identify the spatial distribution of the population of the census block and apportion it to the overlaying school area and access areas based on how much those areas cover the residential zones of the census block.

General Assumptions

- This analysis assumes that the Oregon Statewide Zoning code reflects the actual residential densities of the current built environment.
- Areas that were zoned for housing that had no development on them according to the latest satellite imagery (and therefore significantly impacted the output) were removed from the analysis in order to improve the accuracy of the estimates. This was only utilized in a few low-population jurisdictions.
- For rural schools with no local residential zoning reported, the population of the appropriate block group is assumed to be evenly distributed across the school zone and the percentage of people served is equal to the percentage of the school zone covered by the new access area.

- This analysis assumes that families are evenly distributed between each of the four residential zone groups.
- The reported number of school-age students includes all students ages 5-17, not just elementary or middle school students. Thus, the number of students who actually attend the applicant school is likely much lower than the reported figure.