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CENTER *for* SAFETY EQUITY *in*  
TRANSPORTATION

## CSET Projects for RITI Safety Data Management and Analysis

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## **CSET Background**

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- > Center for Safety Equity in Transportation**
- > Lead University: University of Alaska – Fairbanks**
- > “If you have a right to get there, you have a right to get there safely.”**
- > Focus on Rural Isolated Tribal and Indigenous (RITI) communities**
- > Equitably-augmented safety solutions**



## CSET Background

University  
of Idaho



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# Project Purpose

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- > **Two-fold: Outreach activities and safety database system**
- > **The latter requires the former**
- > **Form strong, lasting relationships with WA tribes**
- > **Project titles**
  1. **Promoting CSET Outreach Activities through Safety Data Management and Analysis in RITI Communities**
  2. **Develop a Regional Multi-Source Database System for Safety Data Management and Analysis in RITI Communities in Washington State**
  3. **Developing a Data-Driven Safety Assessment Framework for RITI Communities in Washington State**



## **Project Purpose: Outreach**

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- > Tribes not required to share data**
- > What data is collected and how it is stored/managed**
- > Seek to understand tribal needs and expectations from their perspective**
- > Collaborate with tribes to find successful solutions**

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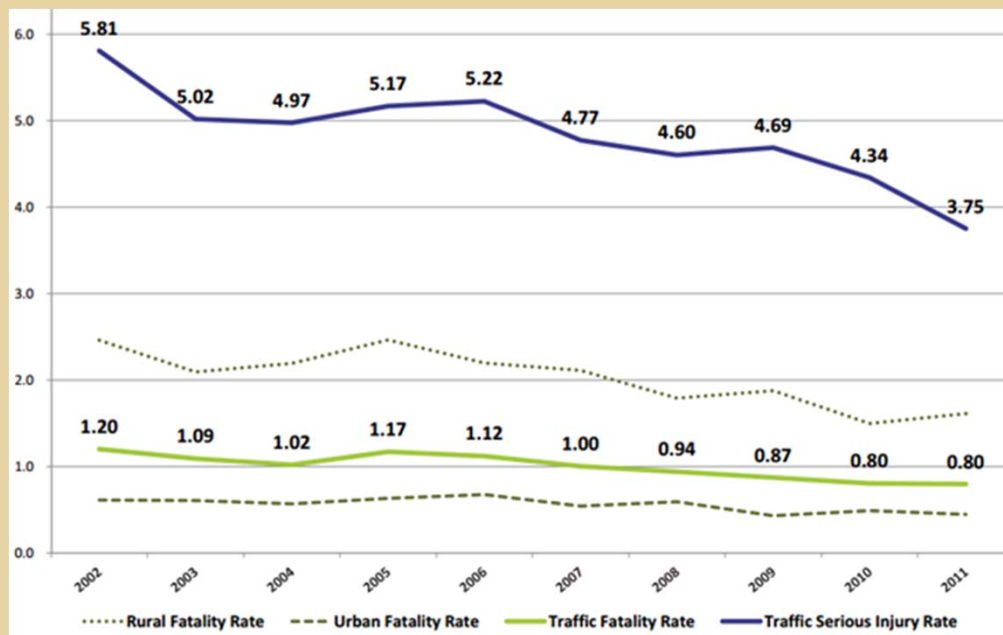
## **Project Purpose: Database System**

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- > Regional, multi-source database**
- > Identify incident hot-spots**
- > Data-driven safety decisions and management**
- > Support later funding opportunities**



# Research Background



Between 2002 and 2011, **61%** of traffic fatalities occurred on **rural roads**, even though many more miles are traveled on urban roads in Washington State.

Unlike on urban roads, there are **few concentrations** of serious crashes, and the locations of crashes are **not consistent** from year to year.

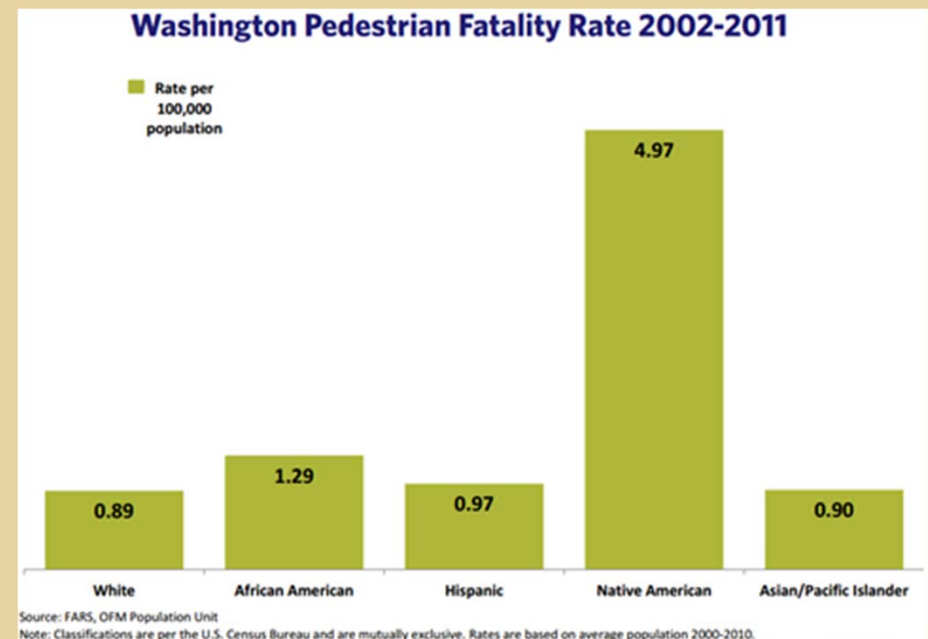
Source: Washington Strategic Highway Safety Plan 2016.

Accessed online at <https://www.wsdot.wa.gov/NR/rdonlyres/5FC5452D-8217-4F20-B2A9-080593625C99/0/TargetZeroPlan.pdf>





# Research Background



Source: Washington Strategic Highway Safety Plan 2013.

Accessed online at <https://www.wsdot.wa.gov/NR/rdonlyres/5FC5452D-8217-4F20-B2A9-080593625C99/0/TargetZeroPlan.pdf>

Comparison results pedestrian and traffic fatality rates between American Indians and non-American Indians in Washington from 2002 through 2011



# Improving AIAN's Safety by Addressing High Risk Factors

American Indian and Alaskan Natives have higher death rates involving high risk factors than other races. For example, the rate of AIAN unrestrained vehicle occupant deaths per 100,000 population are more than seven times higher than other races combined.



Source: Washington Strategic Highway Safety Plan 2016.

Accessed online at <https://www.wsdot.wa.gov/NR/rdonlyres/5FC5452D-8217-4F20-B2A9-080593625C99/0/TargetZeroPlan.pdf>

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# Insights Resulting from Project 1 Progress

- At the moment, no need for implementation of cutting-edge implementation (i.e., AI, sensor installation)
- Focus on a uniform data fusion application
- Focus on easy-to-use crash mapping, analysis, and visualization tools
- Raise the baseline of information available
- Data ownership and privacy is key issue – Working with Colville Confederated Tribes currently
- Much of the localized focus is on behavioral issues and programs

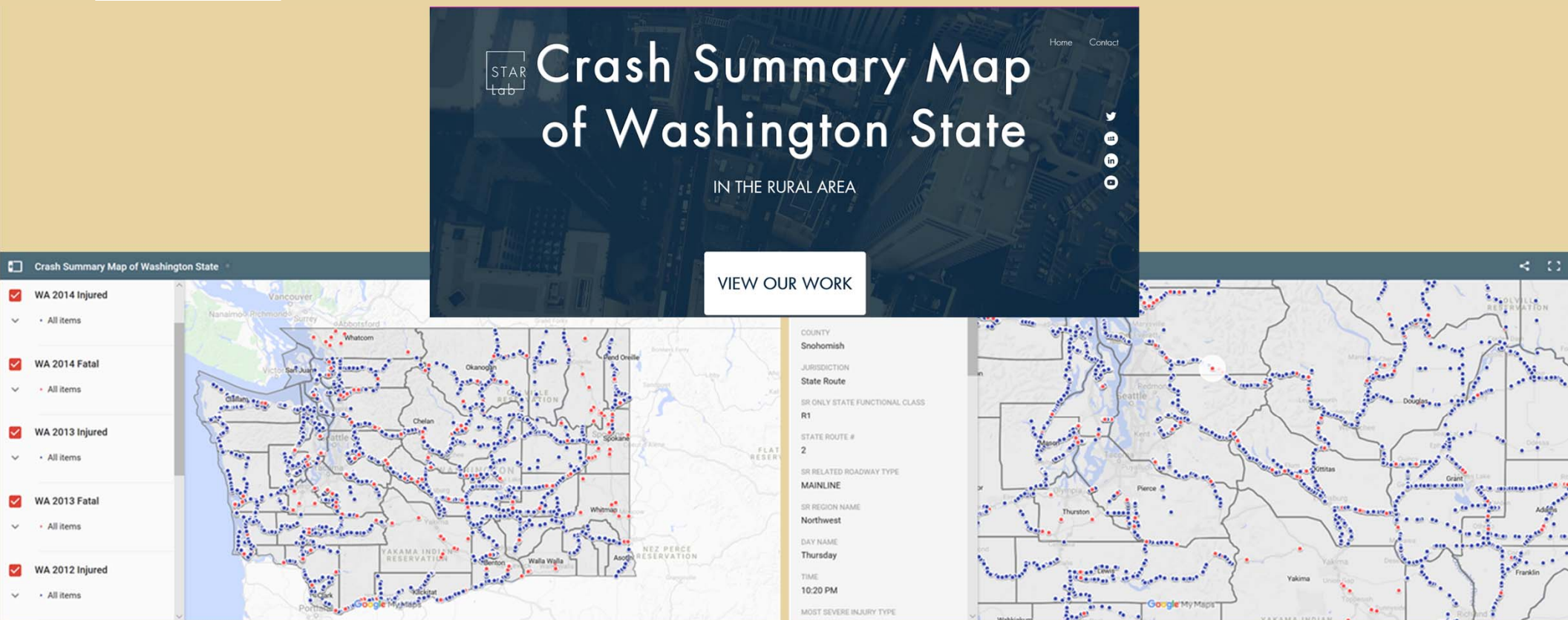


- > Designed the database and fused multi-source datasets for safety performance evaluation in RITI communities

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Local State	Not Involved	Not Involved	Not Involved	Not Involved	None Indicated	None Indicated	Not Involved	Not Involved	NULL	Disabling	U	Interstate Route	Urban Fwy	Urban
Databases	Local State	Not Involved	Not Involved	Not Involved	Corrt Factors	None Indicated	Not Involved	Not Involved	C	Disabling	U	NULL	Rural Local	Rural N
System Databases	Local State	Not Involved	Not Involved	Not Involved	None Indicated	None Indicated	Not Involved	Not Involved	C	Disabling	S	Interstate Route	Rural Local	Rural In
CashData2012	Local State	Not Involved	Not Involved	Not Involved	None Indicated	None Indicated	Not Involved	Not Involved	NULL	Other Veh	U	Fed. Aid Seco...	Urban No Conn...	Urban
map_demo	Local State	Not Involved	Not Involved	Not Involved	None Indicated	None Indicated	Not Involved	Not Involved	NULL	Disabling	U	No Status	Urban Local	Urban
Database Diagrams	Local State	Not Involved	Not Involved	Not Involved	None Indicated	None Indicated	Not Involved	Not Involved	NULL	Disabling	U	Interstate Route	Urban Fwy	Urban
Tables	Local State	Not Involved	Not Involved	Not Involved	None Indicated	None Indicated	Not Involved	Not Involved	NULL	Disabling	U	No Status	Urban Local	Urban
System Tables	Local State	Not Involved	Not Involved	Not Involved	None Indicated	None Indicated	Not Involved	Not Involved	NULL	Disabling	U	Interstate Route	Urban Fwy	Urban
FileTables	Local State	Not Involved	Not Involved	Not Involved	Corrt Factors	None Indicated	Not Involved	Not Involved	C	Disabling	S	Interstate Front	Urban Fwy	Urban
Views	Local State	Not Involved	Not Involved	Not Involved	None Indicated	None Indicated	Not Involved	Not Involved	NULL	Disabling	N	NULL	Rural Local	Urban
Synonyms	Local State	Not Involved	Not Involved	Not Involved	None Indicated	None Indicated	Not Involved	Not Involved	NULL	Disabling	N	NULL	Rural Local	Urban
Programmability	Local State	Not Involved	Not Involved	Not Involved	None Indicated	None Indicated	Not Involved	Not Involved	NULL	Disabling	N	NULL	Rural Local	Urban
Service Broker	Local State	Not Involved	Not Involved	Not Involved	None Indicated	None Indicated	Not Involved	Not Involved	C	Functional	W	Fed. Aid Urban	Urban No Conn...	Urban
Storage	Local State	Not Involved	Not Involved	Not Involved	None Indicated	None Indicated	Not Involved	Not Involved	NULL	Functional	U	No Status	Urban Collector	Urban
Security	Local State	Not Involved	Not Involved	Not Involved	None Indicated	None Indicated	Not Involved	Not Involved	C	Disabling	NULL	Fed. Aid Urban	Urban No Conn...	Urban
Server Objects	Local State	Not Involved	Not Involved	Not Involved	None Indicated	None Indicated	Not Involved	Not Involved	NULL	Disabling	U	Interstate Route	Urban Fwy	Urban
Replication	Local State	Not Involved	Not Involved	Not Involved	None Indicated	None Indicated	Not Involved	Not Involved	NULL	Disabling	U	Fed. Aid Seco...	Urban No Conn...	Urban
Management	Local State	Not Involved	Not Involved	Not Involved	None Indicated	None Indicated	Not Involved	Not Involved	NULL	Disabling	W	Fed. Aid Urban	Urban No Conn...	Urban
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	Local State	Not Involved	Not Involved	Not Involved										



# Regional database system to analyze and visualize multi-source safety data in RITI communities

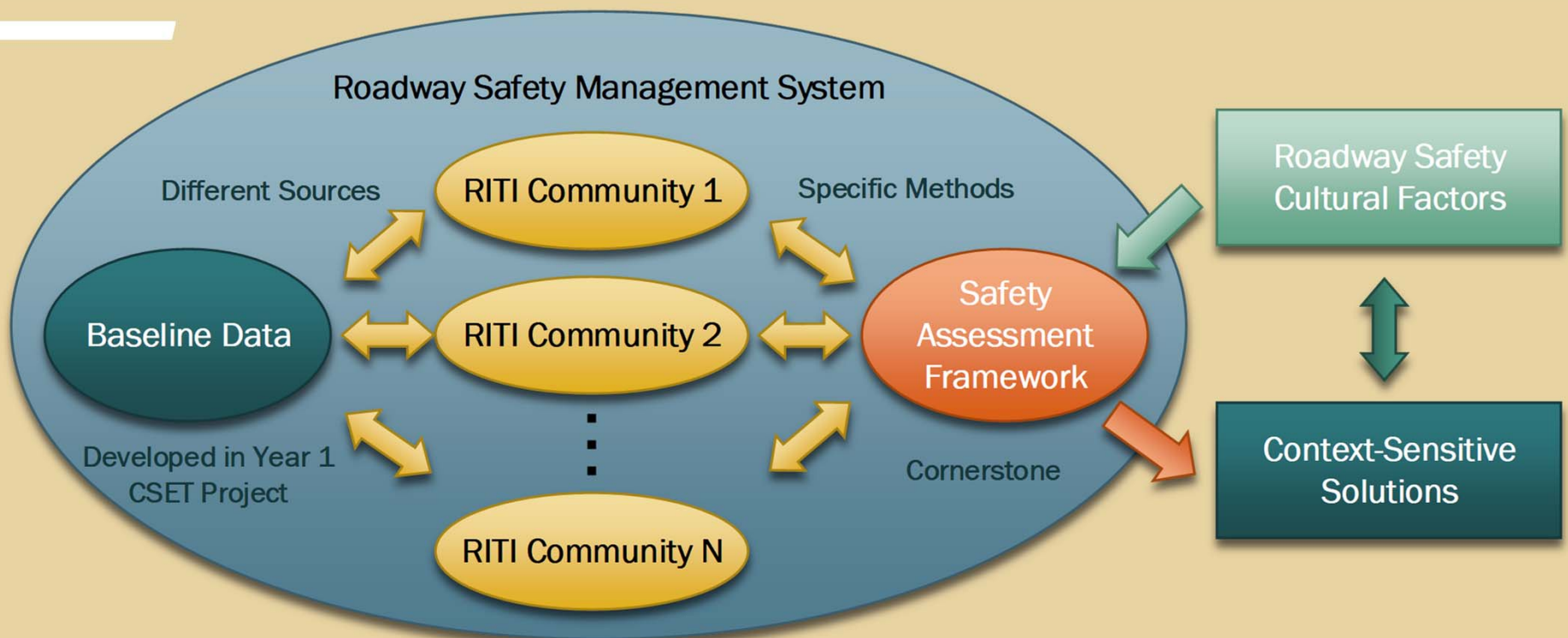


## Project 3: Developing a Data-Driven Safety Assessment Framework for RITI Communities in Washington State

- **Two-phase project:**
- **Phase I:** Build up an effective safety database platform to facilitate data partitioning and visualization for each RITI community in the first year;
- **Phase II:** Develop a data-driven safety assessment framework based on the safety database platform to enable effective roadway safety management for RITI communities in Washington State in the second year.



# Implementation

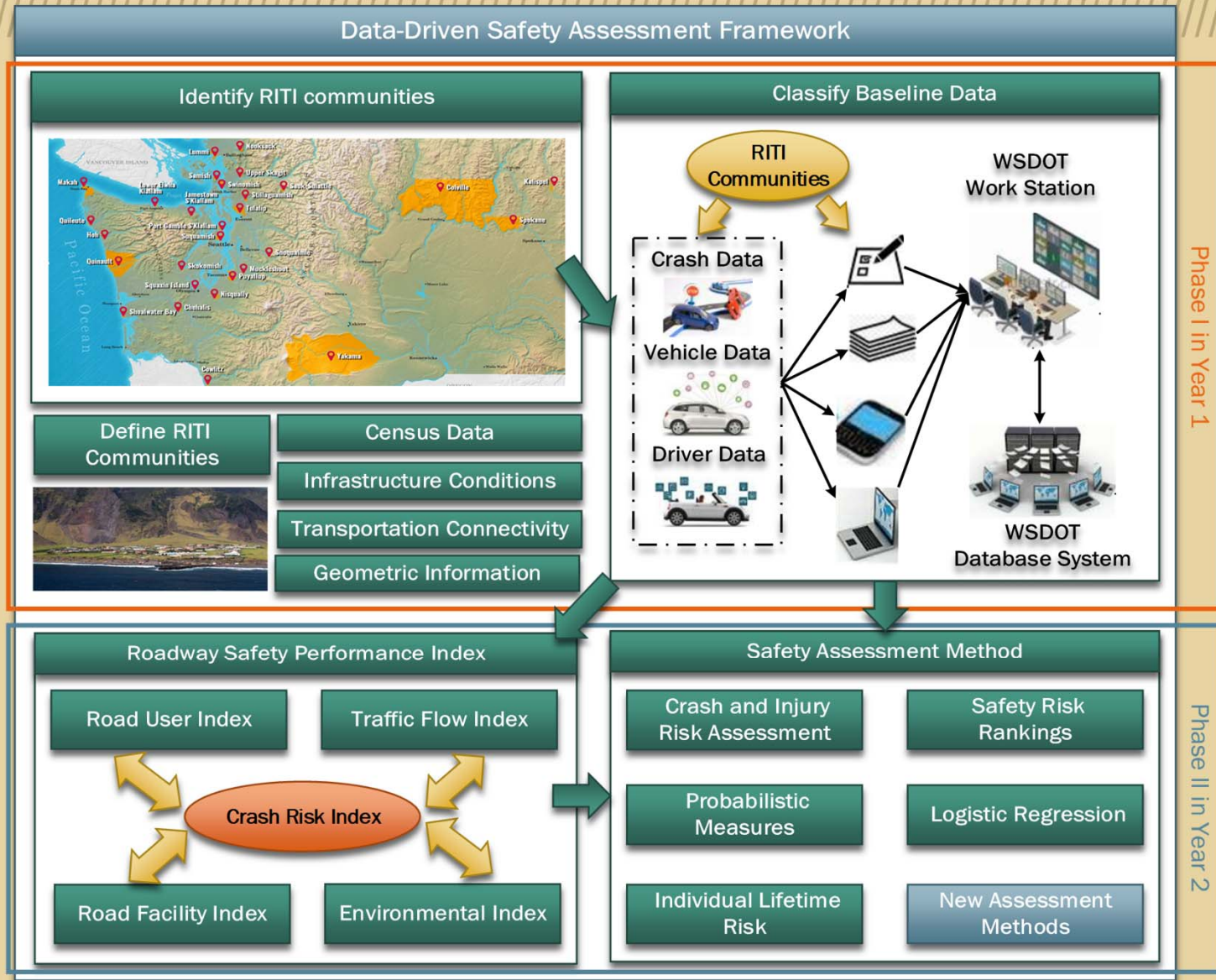


**Structure of the Roadway Safety Management System for RITI Communities**



# Proposed Approach

## Structure of the Safety Assessment Framework





## Project 3 – Research Tasks

### Phase I: July 1, 2018- June 30, 2019

**Task 1:** Review the existing definition of “isolated communities”, and define the criteria of RITI communities based on the census data, infrastructure conditions, transportation connectivity, geometric information, and so on;

**Task 2:** Identify and characterize all the RITI communities in Washington State;

**Task 3:** Classify baseline data collected from Year 1 CSET project into different groups

for each identified RITI community;

**Task 4:** Draft and finalize Phase I project report.



## Project 3 – Research Tasks

**Phase II: July 1, 2019- June 30, 2020**

**Task 1:** Develop roadway safety performance indices for each RITI community;

**Task 2:** Develop new safety assessment methods if necessary regarding to specific RITI community data sources;

**Task 3:** Build safety assessment framework for RITI communities based on the developed roadway safety performance indices and safety assessment methods;

**Task 4:** Draft and finalize Phase II project report.



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**Thanks for your attention!**

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rural · isolated · tribal · indigenous

Center for Safety Equity in Transportation

If you have a right to get there, you have a right to get there safely.

**W**