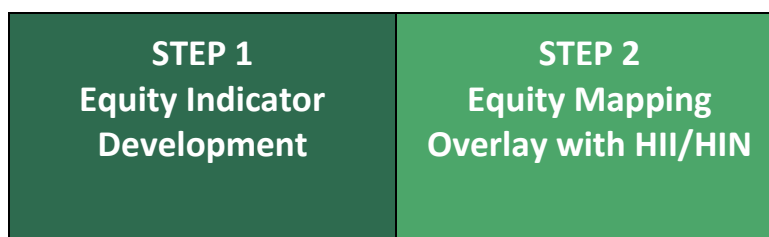


EQUITY ANALYSIS SUMMARY

1. Analytical Framework and Data Sets Used

The equity analysis is structured as two-stage sequential GIS process:

- (1) Equity Indicator Development-Map Development
- (2) Overlay onto the HIN/HII Network,



Stage 1: Equity Indicator Development,

Equity Mapping

This stage represents the analytical heart of the equity analysis and the most significant contribution to understanding *who* is bearing the burden of traffic violence in Humboldt County.

Development of the Composite Equity Indicator

A foundational element of Humboldt County's Vision Zero equity analysis is the construction of a single, unified measure of transportation vulnerability - the Composite Equity Indicator -calculated for every individual census block across the county. The census block was selected as the unit of analysis because it represents the finest level of geographic resolution at which reliable demographic and socioeconomic data is publicly available through the U.S. Census Bureau's American Community Survey (ACS). This granular spatial unit ensures that localized pockets of disadvantage nested within larger, more heterogeneous census tracts are not obscured by aggregation - a particularly important consideration in Humboldt County, where significant variation in community conditions can exist across short geographic distances, from the urban cores of Eureka and Arcata to the rural communities of the Eel River Valley, the Lost Coast, and the county's tribal lands.

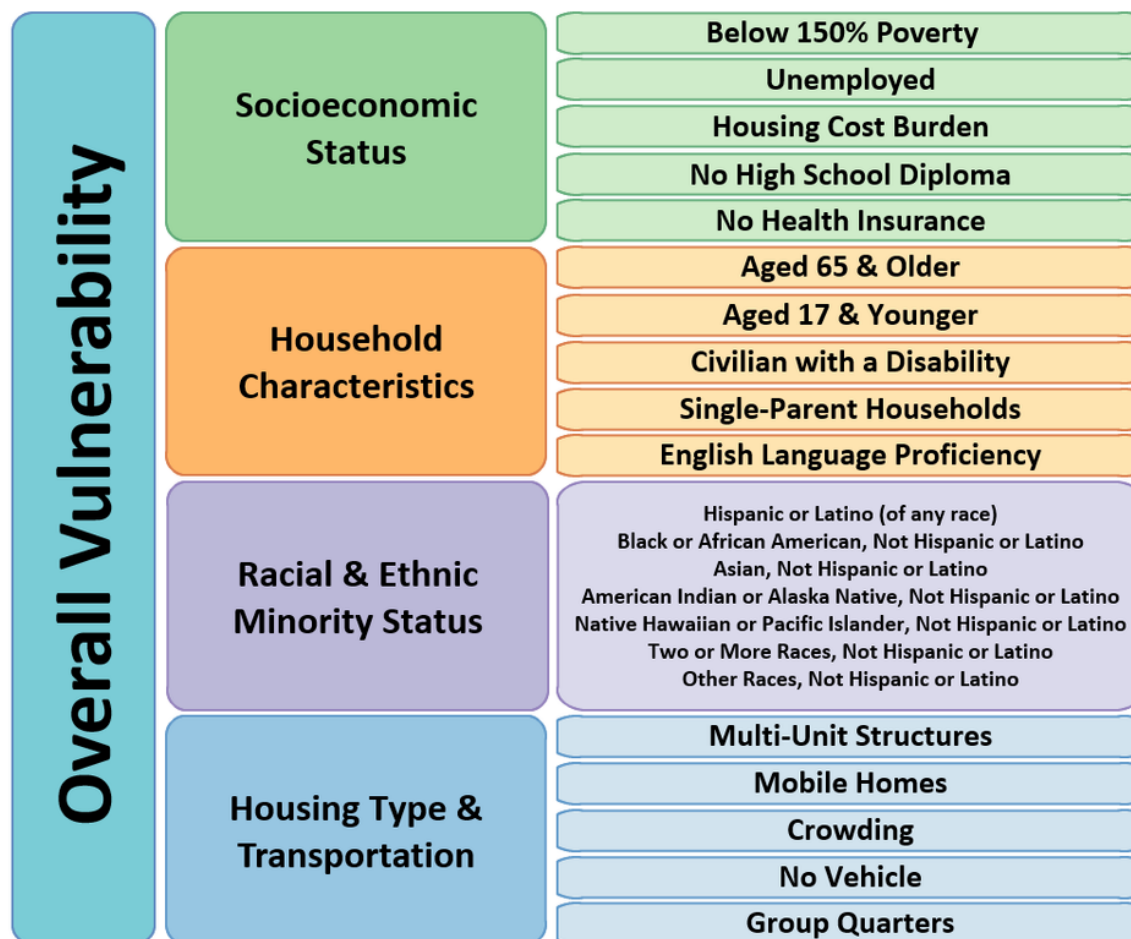
The Composite Equity Indicator is expressed as a continuous normalized score on a scale of 0 to 1, where lower values denote greater transportation disadvantage and equity need, and higher values reflect census blocks where residents are less socially vulnerable and better served by the transportation network. This consistent, county-relative scoring scale ensures that every census block in Humboldt County can be meaningfully ranked, compared, and mapped against all others - producing an immediately interpretable spatial portrait of where transportation vulnerability is most concentrated and where Vision Zero investment will therefore deliver the greatest combined benefit for safety and equity. To support cartographic visualization- where it is conventional for darker or more intense shading to represent greater need - the SVI Score is inverted prior to final composite integration, a step described in detail in the calculation methodology that follows.

The Composite Equity Indicator is built from three equally weighted primary components, each of which captures a distinct and independently important dimension of the transportation disadvantage experienced by Humboldt County residents:

- **Social Vulnerability Index (SVI Score)** - reflecting *who* the community is, through a multi-domain assessment of socioeconomic status, household characteristics, racial and ethnic minority status, and housing type and transportation conditions at the census block level.
- **Access to Services Score** - reflecting *what* residents can reach, through a walkshed-based proximity and connectivity analysis measuring the degree to which census blocks are within safe walking distance of essential services including healthcare and emergency facilities, pharmacy and grocery stores, and schools.
- **Mobility Score** -reflecting *how* residents can move, through a walkshed-based assessment of the quality, safety, and connectivity of active transportation and public transit infrastructure available to residents, including bicycle routes, trail networks, and GTFS-defined transit stops.

Component 1: Social Vulnerability Index (SVI)

The Social Vulnerability Index draws upon a comprehensive suite of demographic and socioeconomic variables sourced primarily from the U.S. Census Bureau's American Community Survey (ACS). For each census block in Humboldt County, the SVI aggregates data across **four major thematic domains**, each capturing a distinct and critical dimension of community vulnerability. Together, these four domains contribute to an **Overall Vulnerability Score** that reflects the compounding nature of disadvantage experienced at the local level.



Component 2: Access to Services

The Access to Services Score quantifies walkable connectivity between residential census blocks and essential service destinations using network-based walkshed analysis in GIS. Rather than straight-line distance, walksheds are calculated along the actual pedestrian network — accounting for the presence of sidewalks, crosswalks, and pedestrian paths — to define the geographic area realistically reachable from each service location within a defined distance threshold. Census blocks falling outside all relevant walksheds are identified as access gaps. The Access to Services Score for each census block is then computed as a composite of its walkshed coverage across the following essential service categories:

Healthcare Facilities

The healthcare walkshed analysis maps service area coverage across hospitals, urgent care centers, primary care and specialty clinics, community health centers, FQHCs, behavioral health facilities, and dental clinics. Census blocks are assessed for proximity to

the nearest facility using context-sensitive distance thresholds that distinguish between urban and rural settings. Blocks falling outside walkshed coverage receive higher priority scores, with additional weight applied where gaps coincide with high SVI scores — particularly on the Socioeconomic Status domain — and HIN/HII designations.

Emergency Services

The emergency services walkshed analysis identifies census blocks and road segments that fall outside standard fire station and EMS response time thresholds. These coverage gaps are overlaid with SVI data and the HIN/HII Network, with higher priority scores assigned to segments where delayed emergency response coincides with existing crash risk and community vulnerability

Schools

The school walkshed analysis generates pedestrian network-based service areas for all K–12 public schools, charter schools, and early childhood education centers to define the geographic area from which students could realistically walk or bike to school. Census blocks falling outside school walksheds receive higher priority scores, with additional weight applied where gaps coincide with high concentrations of school-age children and zero-vehicle households from the SVI Household Characteristics and Housing Type and Transportation domains, and where corridors are confirmed on the HIN/HII Network.

Grocery and Pharmacy Stores

The grocery and pharmacy walkshed analysis maps pedestrian network service areas around supermarkets, independent grocery stores, farmers markets, and pharmacies to identify census blocks lacking walkable access to food and medication. Blocks falling outside walkshed coverage receive higher priority scores, with additional weight applied where gaps coincide with high SVI scores on the Socioeconomic Status domain — particularly high poverty rates and zero-vehicle households — and where the road segments connecting residents to the nearest available services are confirmed on the HIN/HII Network.

Composite Access to Services Score

For each census block, the walkshed coverage results across all four service categories - healthcare, emergency services, schools, and grocery and pharmacy stores - are aggregated into a single **Access to Services Score**. This score reflects the overall degree to which a census block's residents are within safe, walkable reach of the essential services that define daily community life. Census blocks with low Access to Services Scores are those where residents are cut off from multiple service types simultaneously -communities

where the road network, in its current condition, is failing to support the basic mobility needs of Humboldt County's most vulnerable residents.

The Access to Services Score is then combined with the Overall SVI Vulnerability Score to produce the composite **Equity Indicator** for each census block. The combined score ensures that the equity analysis reflects both *who* the community is -captured through the four SVI domains -and *how well* the transportation system serves them - captured through the walkshed-based access analysis. Together, these two dimensions provide the most complete and actionable picture of where Vision Zero investments are most urgently needed.

Component 3: Mobility Analysis

The Mobility Analysis evaluates the quality and extent of transportation infrastructure available to residents traveling by foot, bicycle, or public transit using the same network-based walkshed methodology applied in the Access to Services analysis. For each census block across Humboldt County, the analysis is structured around two primary layers — the transit network and the bicycle network — each assessed through its own walkshed methodology and cross-referenced with SVI domain data to identify where mobility deficits compound existing social vulnerability.

Transit Stop Accessibility and Walkshed Analysis

The transit walkshed analysis generates pedestrian network-based service areas at quarter mile and half-mile thresholds from every active transit stop across Humboldt County's public transportation network, calculated along the actual pedestrian network rather than straight-line distance to account for the presence of sidewalks, crosswalks, ADA-compliant curb ramps, and pedestrian signalization. Census blocks falling outside these walksheds receive higher priority scores, with additional weight applied where gaps coincide with high SVI scores on zero-vehicle households, poverty, disability, elderly residents, and limited English proficiency. Further weight is applied where the primary pedestrian routes connecting residents to the nearest transit stop are confirmed on the HIN/HII Network.

Bicycle Network Accessibility and Walkshed Analysis

The bicycle network walkshed analysis generates cycling service areas from each census block using the designated bicycle network — including protected bike lanes, separated multi-use paths, shared-use trails, marked bike lanes, and paved shoulders — to identify blocks with and without meaningful access to cycling infrastructure. Connectivity is then assessed between residential census blocks and essential service destinations identified in the Access to Services analysis. Blocks lacking bicycle network access to any essential

service destination receive higher priority scores, with additional weight applied where gaps coincide with high SVI scores and corridors confirmed on the HIN/HII Network.

Composite Mobility Score

Transit walkshed coverage and bicycle network walkshed results are aggregated into a single Mobility Score for each census block, reflecting the overall quality and safety of the transportation network for residents traveling by foot, bike, or transit.

Integration of Access to Services and Mobility into the Composite Equity Indicator

The Access to Services Score and Mobility Score are integrated with the Overall SVI Vulnerability Score — derived from the four SVI domains of Socioeconomic Status, Household Characteristics, Racial and Ethnic Minority Status, and Housing Type and Transportation — into a single Composite Equity Indicator for each census block. The resulting Equity Maps form the basis for the equity overlay onto the High Injury Network, identifying where Humboldt County's most dangerous roads coincide with the highest composite vulnerability scores.

2. Developing the Composite Equity Indicator

Integration of Social Vulnerability, Access to Services, and Mobility Scores

Overview

The Social Vulnerability Index Score, the Access to Services Score, and the Mobility Score each illuminate a distinct and critically important dimension of the disadvantage experienced by Humboldt County residents. Taken individually, each score tells a meaningful but incomplete story. The SVI Score reveals *who* is most vulnerable — the demographic and socioeconomic characteristics of communities that compound their risk of traffic injury and limit their capacity to absorb its consequences. The Access to Services Score reveals *where* the transportation network fails to connect residents to the essential destinations that sustain daily life — identifying communities that are geographically or infrastructurally cut off from healthcare, emergency services, schools, and food and pharmacy resources. The Mobility Score reveals *how* the transportation network performs for those who depend on it most — assessing the quality, safety, and connectivity of the bicycle and transit infrastructure available to residents who cannot or do not travel by private automobile.

No single score, on its own, is sufficient to identify the full depth of transportation vulnerability in Humboldt County. A community may score highly on the SVI — reflecting

significant poverty, racial minority status, or disability — but be reasonably well-served by transit infrastructure and located within walkable access of essential services. Conversely, a community may carry a relatively moderate social vulnerability score but face severe mobility and access deficits due to the rural geography, dispersed settlement patterns, and disconnected road network that characterize much of Humboldt County's unincorporated areas. It is the **convergence and compounding** of vulnerability across all three dimensions — social, access, and mobility — that most reliably and powerfully identifies the communities where Vision Zero investment is most urgently needed and where it will deliver the greatest combined benefit for both traffic safety and transportation equity.

The **Composite Equity Indicator** is therefore constructed by integrating all three scores into a single, unified measure of transportation vulnerability at the census block level — a measure that simultaneously reflects who the community is, how well the transportation network serves their access needs, and how safely and completely they can move through it. The Composite Equity Indicator for all the cities and county wide was constructed by integrating three analytically distinct but spatially interdependent dimensions: **Social Vulnerability (SVI)**, **Access to Amenities/Services**, and **Active Transportation Mobility**. Each dimension was operationalized through normalized sub-component scores derived from disaggregated feature-level data, then synthesized into a unified Equity Score ranging from **0.0 (low equity/high vulnerability)** to **1.0 (high equity/low vulnerability)**, as illustrated in the Eureka HII + HIN + Equity composite map.

Score Structure: A Nested Averaging Methodology

The Composite Equity Indicator is computed through a **nested equal-averaging methodology** that unfolds across five sequential steps. The structure is deliberately designed so that each of the three primary components — social vulnerability, access to services, and mobility — contributes **equally to the final composite score**, and that each primary component is derived from an equal average of its three constituent sub-indicators. This nested equal-weighting architecture ensures that the composite indicator is balanced and transparent at every level of the calculation, and that no single variable, service category, or infrastructure type can unduly dominate the overall equity picture of any individual census block.

Step 1 — Access to Services Score

The first intermediate score to be computed is the **Access to Services Score**, which is derived as the simple equal average of three walk-shed based service access sub-indicators:

Access to Services Score = (Health & Emergency + Pharmacy & Grocery + Schools) ÷ 3

Each of the three sub-indicators is produced through the walkshed proximity and connectivity analysis described in the preceding section — reflecting both the geographic distance from a census block to the nearest facility of each service type and the quality and safety of the pedestrian network connecting residents to it. The three sub-indicators are:

- **Health & Emergency SVI:** Captures proximity and pedestrian network connectivity to hospitals, clinics, urgent care centers, and emergency medical service facilities.
- **Pharmacy & Grocery SVI:** Captures proximity and pedestrian network connectivity to pharmacies, grocery stores, and other food access points — essential daily destinations for residents without vehicle access.
- **Schools SVI:** Captures proximity and pedestrian network connectivity to K–12 schools and early childhood education centers, reflecting the safety of school travel environments for children and youth.

The equal averaging of these three sub-indicators ensures that the Access to Services Score rewards comprehensive walkable connectivity across all essential service types — a census block must demonstrate broad connectivity deficits across healthcare, food access, *and* education to score highly, rather than being penalized for distance from a single service type while being well-connected to others.

Step 2 — Mobility Score

The second intermediate score is the **Mobility Score**, computed as the simple equal average of three walkshed-based mobility infrastructure sub-indicators:

Mobility Score = (Bike Route + GTFS Transit Stops) ÷ 3

The three sub-indicators reflect the availability, connectivity, and network quality of active transportation and public transit infrastructure accessible to residents of each census block:

- **Bike Route SVI:** Measures the extent and connectivity of the bicycle route network accessible within a cycling walkshed from the census block — reflecting the degree to which residents can safely travel by bike to essential destinations.
- **GTFS Transit Stops SVI:** Measures pedestrian network-based walkshed access to public transit stops as defined by the General Transit Feed Specification (GTFS) data for Humboldt County's transit providers — reflecting the realistic walkable catchment area of each stop accounting for the presence or absence of sidewalk and crossing infrastructure.

As with the Access to Services Score, the equal averaging of the three mobility sub-indicators ensures that the Mobility Score reflects a holistic picture of active transportation and transit accessibility rather than being driven by a single infrastructure mode.

Step 3 — Composite Equity Score

With both intermediate scores computed, the **Composite Equity Score** is calculated as the simple equal average of the three primary component scores:

$$\text{Composite Equity Score} = (\text{SVI Score} + \text{Access to Services Score} + \text{Mobility Score}) \div 3$$

This equal one-third weighting is the defining methodological choice of the composite indicator. It reflects a deliberate analytical and equity policy judgment that the three dimensions of transportation vulnerability — *who* the community is, *what* services they can access, and *how* they can move — are of equal and independent importance in characterizing the overall equity priority of a census block. The SVI Score captures the depth of social disadvantage; the Access to Services Score captures the degree to which the transportation network connects residents to essential destinations; and the Mobility Score captures the quality and completeness of the active and transit infrastructure available to those who must rely on it. Each dimension is necessary; none is individually sufficient.

The resulting Composite Equity Score ranges from 0 to 1 across all census blocks in Humboldt County. Higher scores reflect greater overall transportation vulnerability — a convergence of social disadvantage, service access deficits, and mobility infrastructure gaps. Lower scores reflect census blocks where residents are less socially vulnerable and better served by the transportation network across all three dimensions.

Step 4 — SVI Reversed

The Social Vulnerability Index Score, as originally computed from the four SVI domains, is directionally oriented so that **higher values indicate greater social vulnerability** — meaning a census block with a high SVI Score contains a higher concentration of socially disadvantaged residents across dimensions of poverty, race and ethnicity, household characteristics, and housing and transportation conditions. However, for the Composite Equity Indicator to function consistently — where a **higher composite score reflects fewer equity issues and better overall service and amenity conditions** — it is necessary to align the directionality of the SVI component with that of the Access to Services Score and Mobility Score before integration.

To achieve this directional consistency, the SVI Score is inverted to produce an **SVI Reversed** value:

SVI Reversed = 1 – SVI Score

This reversal reorients the SVI so that:

- A **high SVI Reversed value** corresponds to a census block with **lower social vulnerability** — a community that is comparatively less disadvantaged across the four SVI domains, with fewer residents experiencing poverty, disability, racial marginalization, or housing and transportation insecurity.
- A **low SVI Reversed value** corresponds to a census block with **higher social vulnerability** — a community experiencing significant and compounding disadvantage across multiple SVI dimensions, and therefore facing greater equity need.

This inversion ensures that all three components feeding into the Composite Equity Score — the SVI Reversed value, the Access to Services Score, and the Mobility Score — are oriented in the same direction: **higher values consistently reflect better conditions and fewer equity issues, while lower values consistently reflect worse conditions and greater equity need**. Without this reversal, the SVI and the two service and mobility scores would pull in opposite directions within the composite, producing a meaningless and uninterpretable result.

The practical consequence of this directionality is critical for map interpretation: for example—the census blocks shaded in the **deepest and darkest tones** on the Eureka Equity Map — those with the **lowest Composite Equity Scores** — are the communities experiencing the greatest convergence of social vulnerability, service access deficits, and mobility infrastructure gaps. These are the communities that Vision Zero must prioritize. When these low-scoring census blocks are found to coincide spatially with the highest-rated HIN corridors, they identify the most urgent and equity-critical safety intervention locations in Humboldt County — places where the transportation network is simultaneously most dangerous and least adequate for the residents who depend on it most.

Step 5 — Composite Equity Score (SVI Reversed)

A parallel composite is computed using the SVI Reversed value in place of the standard SVI Score, for use in mapping and analysis contexts where the inverted SVI orientation is required:

$$\text{Equity Score (SVI Reversed)} = (\text{SVI Reversed} + \text{Access to Services Score} + \text{Mobility Score}) \div 3$$

This parallel score maintains the same equal one-third weighting structure as the primary Composite Equity Score and is used in conjunction with it for specific cartographic and comparative analytical purposes within the Vision Zero GIS platform.

Interpreting the Composite: The Significance of Convergence

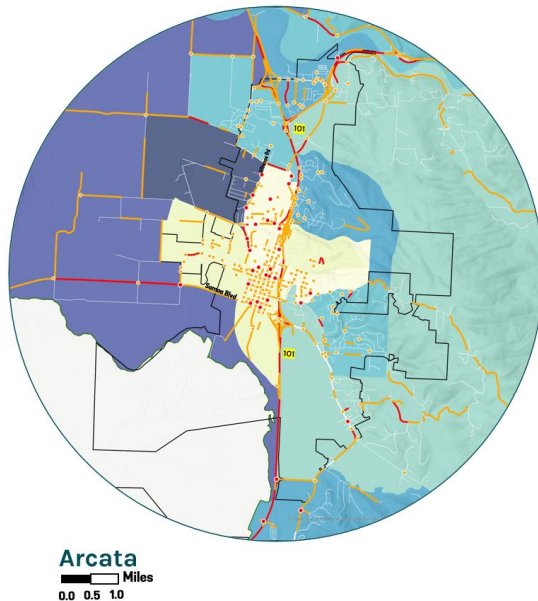
A defining feature of the Composite Equity Indicator — and the central reason for its multi-component, nested-averaging design — is its capacity to surface and communicate the **compounding nature of transportation vulnerability**. The census blocks that score highest on the composite are not simply those that perform poorly on one dimension of disadvantage in isolation; they are the communities where social vulnerability, service access deficits, and mobility infrastructure gaps all converge simultaneously and reinforce one another.

The three worked examples above illustrate this dynamic compounding clearly. FID 2's composite score is driven almost entirely by its high SVI — in the absence of meaningful access and mobility deficits, the composite remains moderate despite significant social vulnerability. FID 5's composite reflects the additive effect of moderate deficits across all three dimensions, which is nonextreme, but collectively meaningful. FID 18's composite reflects the full compounding effect: high scores across every dimension produce a composite that is substantially higher than any single component score alone would be justified, because each dimension of disadvantage amplifies the others.

It is precisely this convergence — visible in the composite but invisible in any single-dimension analysis — that the equity overlay onto the High Injury Network is designed to reveal. When the Composite Equity Indicator is spatially intersected with the HIN/HII Network in GIS, the resulting Equity Priority Corridors represent not merely the overlap of a safety problem and an equity problem, but the identification of a single, integrated systemic failure in which Humboldt County's transportation network is simultaneously most dangerous, least accessible, and most inadequate for the residents who have no choice but to depend on it every day.

3. Community Analysis Findings

Arcata



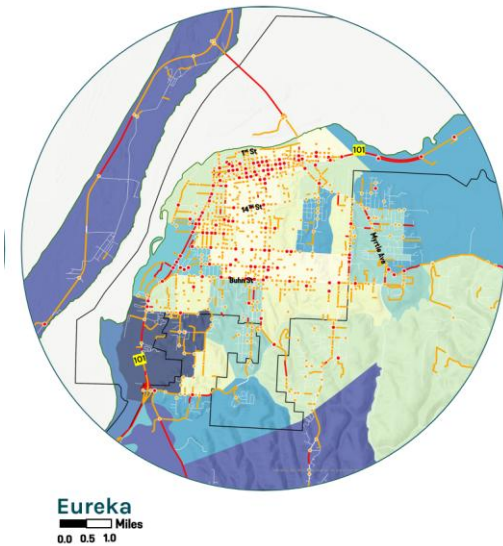
The Arcata map reveals a clear vulnerability divide. The western and northwestern portions of the city appear in the deepest navy tones, while central and eastern Arcata reflect comparatively lower vulnerability.

Downtown and Western Arcata sits at the transition zone between these vulnerability levels, where a notable cluster of red high-injury intersections is concentrated. Residents in the western tracts must travel through this high-injury zone to access downtown jobs, services, and transit, making it a mobility barrier for the city's most vulnerable residents.

Alliance Road shows a red high-injury segment in an area of elevated vulnerability and limited infrastructure. This corridor demands targeted safety investment including traffic calming, crosswalk improvements, and lighting.

US-101 reinforces the equity divide, functioning as both a physical barrier for vulnerable residents and as a high-injury corridor. Safe crossings across the freeway represent an equity priority alongside individual corridor improvements.

Eureka



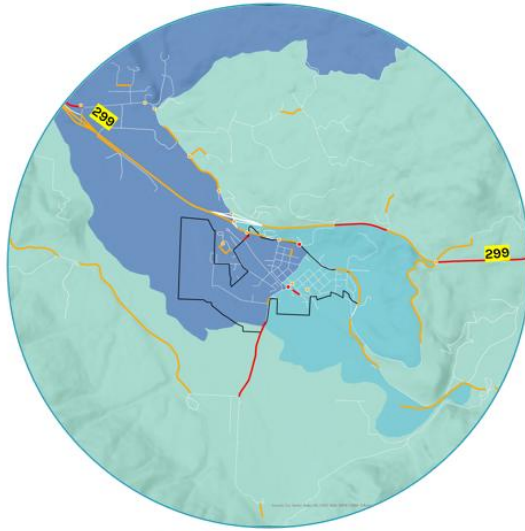
Eureka presents the most concentrated and severe equity overlap in the county.

Deep navy tones cover western Eureka, the downtown area, and the Samoa Boulevard/Manila corridor, while the map simultaneously displays the densest field of red high-injury intersections in the entire county.

In Downtown and Western Eureka the dual burden can be seen most clearly. Dozens of high-injury intersections fall directly within the darkest SVI census tracts, in a community with concentrated poverty, disability, limited English proficiency, and low vehicle access. Residents here are among the most transit- and walking-dependent in the county, but they navigate streets that have produced the highest injury outcomes in Humboldt County.

Samoa Boulevard and Manila have equally urgent concerns. Manila is a physically isolated peninsula community accessible primarily through Samoa Boulevard, with a red high-injury segment through census tracts shaded among the deepest navy tones in the region. Residents without vehicle access who walk or bike this corridor face the compounding risks of high crash rates, limited route alternatives, and extended emergency response times. Direct community engagement with Manila residents is essential alongside infrastructure investment.

Blue Lake



Blue Lake

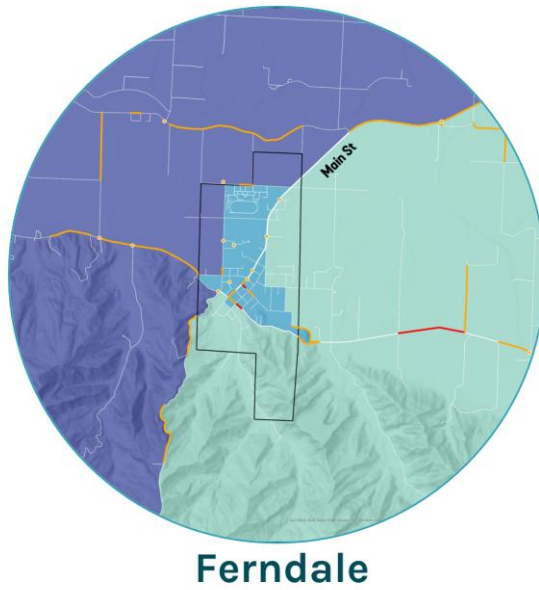
Equity Concern: Small Tribal Community with High-Injury State Highway Exposure

The census tracts to the west and northwest of the town center appear in the deepest navy tones on the map, indicating elevated social vulnerability in the area surrounding this small, geographically isolated community.

A red high-injury segment runs through and south of the Blue Lake town center on SR-299, the community's primary connection to Arcata and the broader county. A secondary red segment extends southward from the town, and orange lower-injury segments are present along SR-299.

Blue Lake's faces the outsized safety burden of a high-injury state highway as the primary entry and exit point, combined with the deep vulnerability of surrounding census tracts. Residents, including members of the Blue Lake Rancheria, who walk or cycle along or across SR-299 do so in conditions that have already produced serious crash outcomes, with limited infrastructure alternatives. Planning interventions should prioritize safe crossings of SR-299, pedestrian and cyclist connectivity within the town grid, and coordination with Caltrans District 1 and the Blue Lake Rancheria to address the state highway corridor through a tribal and community equity lens.

Ferndale



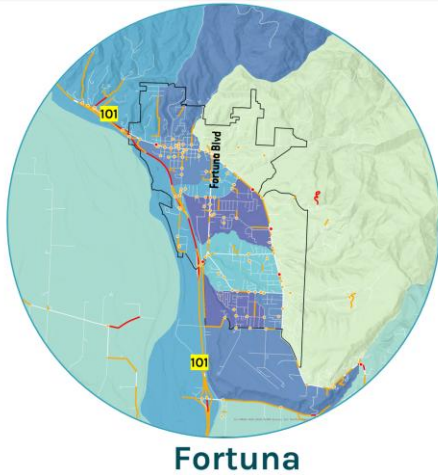
Equity Concern: Small Agricultural Community Surrounded by Deep Vulnerability

The rural census tracts surrounding the town to the north, west, and northwest appear in deep navy tones, indicating high social vulnerability in the broader agricultural and rural community that depends on Ferndale as its primary service center.

Within the town, a cluster of red high-injury intersections is concentrated in the southern portion of the downtown grid. A red high-injury segment is also visible to the east of the town boundary, along a rural connector road in the surrounding network that residents rely on to reach Ferndale's services.

Rural agricultural workers and low-income residents from surrounding areas who travel into Ferndale by foot, bicycle, or vehicle are navigating an entry corridor and intersection cluster that has produced documented injury outcomes, with few alternative routes available.

Fortuna



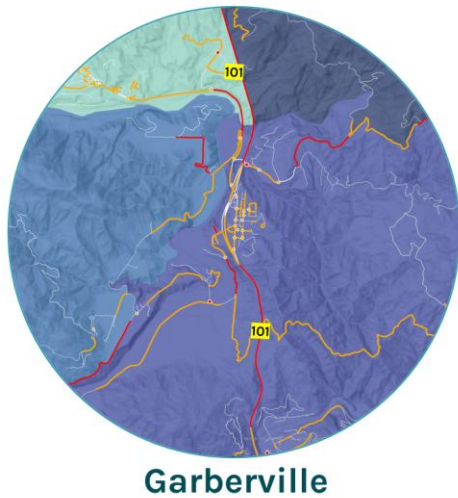
Equity Concern: Primary Commercial Corridor Cutting Through the City's Most Vulnerable Tracts

The highest social vulnerability is concentrated along Fortuna Boulevard, the city's primary commercial and mobility spine. Against this backdrop, a red high-injury segment runs the length of Fortuna Boulevard, accompanied by a cluster of red high-injury intersections distributed along the corridor. This alignment between the high-injury corridor and the darkest census tracts suggests that Fortuna's most socially vulnerable residents are living alongside and navigating the city's most dangerous roadway daily.

US-101 to the west also shows a red high-injury segment, and a cluster of intersections is visible at the southern US-101 interchange. A smaller red segment is also visible to the east within the city boundary.

Fortuna Boulevard's role as both the primary commercial corridor and the county's clearest example of a high-injury arterial running directly through a high-SVI community makes it a countywide equity priority. Residents with limited vehicle access are most dependent on this corridor for daily mobility and most exposed to its documented crash risk.

Garberville



Equity Concern: Rural Southern County Community Bearing Disproportionate Highway Crash Risk

Garberville has one of the most challenging equity patterns in the county. The vast majority of the map is covered in deep navy and medium-blue tones, indicating that the entire surrounding rural area reflects high social vulnerability. Garberville sits at the center of one of the county's deepest and broadly vulnerable rural communities.

Against this backdrop, red high-injury segments run prominently along US-101 both north and south of the town center, confirming that the primary corridor connecting Garberville to the rest of the county is also a sustained high-injury corridor. A notable red high-injury segment is also visible on a local road to the west of the town. Orange low-injury segments extend outward along US-101 and connecting rural roads in multiple directions, reinforcing that crash activity is widespread across the corridor network and not confined to isolated locations.

Within the town center, a small cluster of red high-injury intersections and orange low-injury intersections is visible, reflecting the concentration of crash activity where local circulation meets the US-101 corridor. For a community of this size and isolation, even a small number of high-injury intersections represents a significant burden. Residents have no meaningful alternative routes and emergency medical response times in this southern, mountainous portion of the county are among the longest in Humboldt. Garberville's risk is dispersed across a long corridor serving a deeply vulnerable population with no alternatives.

McKinleyville



McKinleyville

Equity Concern: Unincorporated Suburban Community with Crash Risk Concentrated Near Its Most Vulnerable Tracts

McKinleyville presents a nuanced equity pattern across a relatively large unincorporated suburban footprint. Darker navy and medium-blue tones are concentrated in the southern and southeastern portions of the community, as well as along the western coastal edge, indicating that social vulnerability is highest at the periphery of the community rather than in its core. The central and northern areas display medium teal tones reflecting moderate vulnerability, while the overall picture confirms that a meaningful share of McKinleyville's population faces compounding social disadvantage.

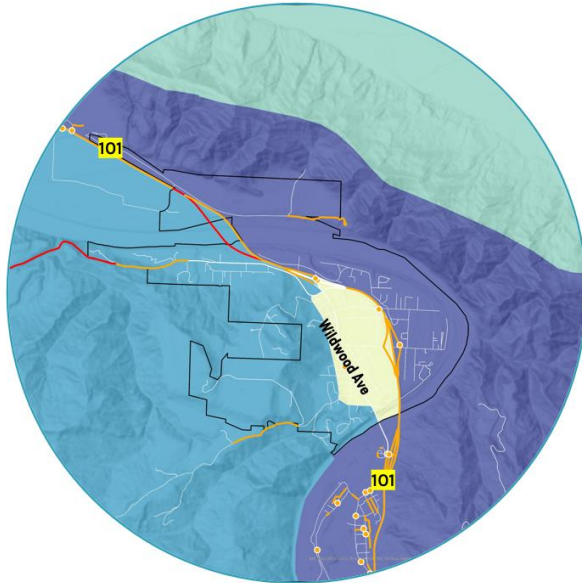
Against this backdrop, red high-injury segments are distributed across several key corridors. A red segment is visible along Central Avenue, McKinleyville's primary commercial spine, through the transition zone between moderate and higher vulnerability tracts. A red high-injury segment also appears near US-101 at the northern entry point, where freeway access intersects with the broader community street network. Additional shorter red segments are scattered through the southern grid, closer to the darker-toned tracts, confirming that crash risk is not isolated to a single corridor but reflects a distributed pattern across the network.

Red high-injury intersections are spread broadly throughout the McKinleyville grid, indicating that the community's primary north-south and east-west connectors are generating serious crash outcomes at multiple locations.

The unincorporated status of McKinleyville adds an important structural dimension to this equity concern. Without a city government to advocate for and deliver safety

improvements, residents with fewer resources face an additional institutional barrier to receiving the infrastructure investment that documented crash patterns demand.

Rio Dell



Rio Dell

Equity Concern: Small City with High-Injury Highway Entry Points Surrounded by Deep Vulnerability

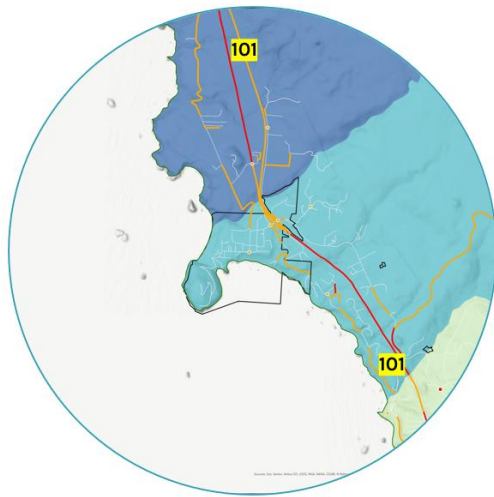
The northern and eastern census tracts in Rio Dell appear in deep navy tones, reflecting high social vulnerability in the surrounding rural areas that depend on it as a local service center. The town itself sits within medium blue tones indicating moderate vulnerability, while the Wildwood Avenue corridor stands out in a notably light cream tone, reflecting comparatively low vulnerability within the heart of the local street network.

Red high-injury segments are concentrated at and near the northern US-101 entry point into Rio Dell, where residents from the surrounding deep-navy rural tracts enter the community -confirming that the most vulnerable populations are navigating the highest-risk infrastructure at the point of entry. A red segment also extends westward from this interchange, indicating localized crash risk penetrating beyond the highway itself.

The presence of crash activity at both the northern and southern interchange areas suggests that Rio Dell's connections to US-101, its only meaningful regional access points, are systemically underperforming on safety, effectively bookending the community with crash risk at both entry and exit.

For a small, geographically constrained city like Rio Dell, the concentration of high-injury conditions at highway access points carries outsized equity significance. Residents without vehicle access have extremely limited alternatives, and the surrounding deep-navy rural tracts reflect a population that is already among the county's most socially vulnerable.

Trinidad



Trinidad

Equity Concern: Small Coastal Community with a High-Injury Highway Corridor Traversing Moderately Vulnerable Tracts

Trinidad presents a relatively contained but meaningful equity pattern for one of the county's smallest incorporated cities. The census tracts to the north and northeast of the town center appear in medium-to-deep blue tones, indicating moderate-to-elevated social vulnerability in the area approaching Trinidad along US-101 from the north. The town boundary itself sits within a medium teal tract, while the coastal and western areas transition to lighter tones reflecting lower vulnerability. The southeastern tracts along the lower US-101 corridor shift toward light teal and cream, indicating comparatively lower vulnerability in that direction.

The dominant equity finding in Trinidad is the prominent red high-injury segment running the full length of US-101 through the map frame, entering from the north through the moderately vulnerable, blue-toned tracts, passing directly through the town center, and continuing southward through the lighter southeastern tracts. This extended high-injury corridor confirms that US-101, Trinidad's only meaningful

connection to the broader county in either direction, is generating serious crash outcomes across the full length of its passage through and near the community. Orange low-injury segments parallel and extend beyond the red segment along US-101, reinforcing that crash activity along this corridor is both severe and widespread in distribution.

Within the town center, a small cluster of orange low-injury intersections and segments is visible at the point where local streets intersect with the US-101 corridor, indicating that the interface between the highway and Trinidad's local circulation network is also generating crash activity, even if at lower severity levels than the highway itself. A single red high-injury intersection dot is visible to the southeast, along the lower US-101 alignment near the southern town boundary.

For a community as small and geographically isolated as Trinidad, the presence of an extended high-injury segment along that single corridor carries equity significance beyond what crash counts alone suggest. Residents, visitors accessing the town on foot or bicycle, and individuals from the moderately vulnerable northern tracts traveling through this corridor have no meaningful alternative routing, making safety conditions on US-101 a major equity concern.

4. Summary and Significance

Humboldt County's GIS-based Equity Analysis represents a rigorous, multi-dimensional, and community-informed approach to ensuring that Vision Zero is more than a technical traffic safety program — it is a commitment to transportation justice. By building the equity analysis around a census-block-level Equity Indicator that combines Social Vulnerability Index and Access to Services scores; by enriching that indicator with demographic, access, and mobility analysis layers informed by community input; and by directly overlaying the resulting Equity Maps onto the High Injury Network to identify where traffic danger and community vulnerability converge most acutely, the analysis provides a powerful spatial framework for directing Vision Zero investments where they are most needed and where they will do the most good.

The equity overlay of the HIN/HII Network is the analytical centerpiece of this process — the moment where the geography of traffic violence and the geography of social disadvantage are brought together into a single, integrated picture of inequity that demands an equitable response. The subsequent Impact Assessment ensures that this picture translates into action: that proposed improvements are evaluated not only for their collision reduction effectiveness, but for their capacity to reduce disparities, advance

inclusion, and deliver the promise of safe mobility to every resident of Humboldt County — regardless of where they live, how they travel, or who they are.