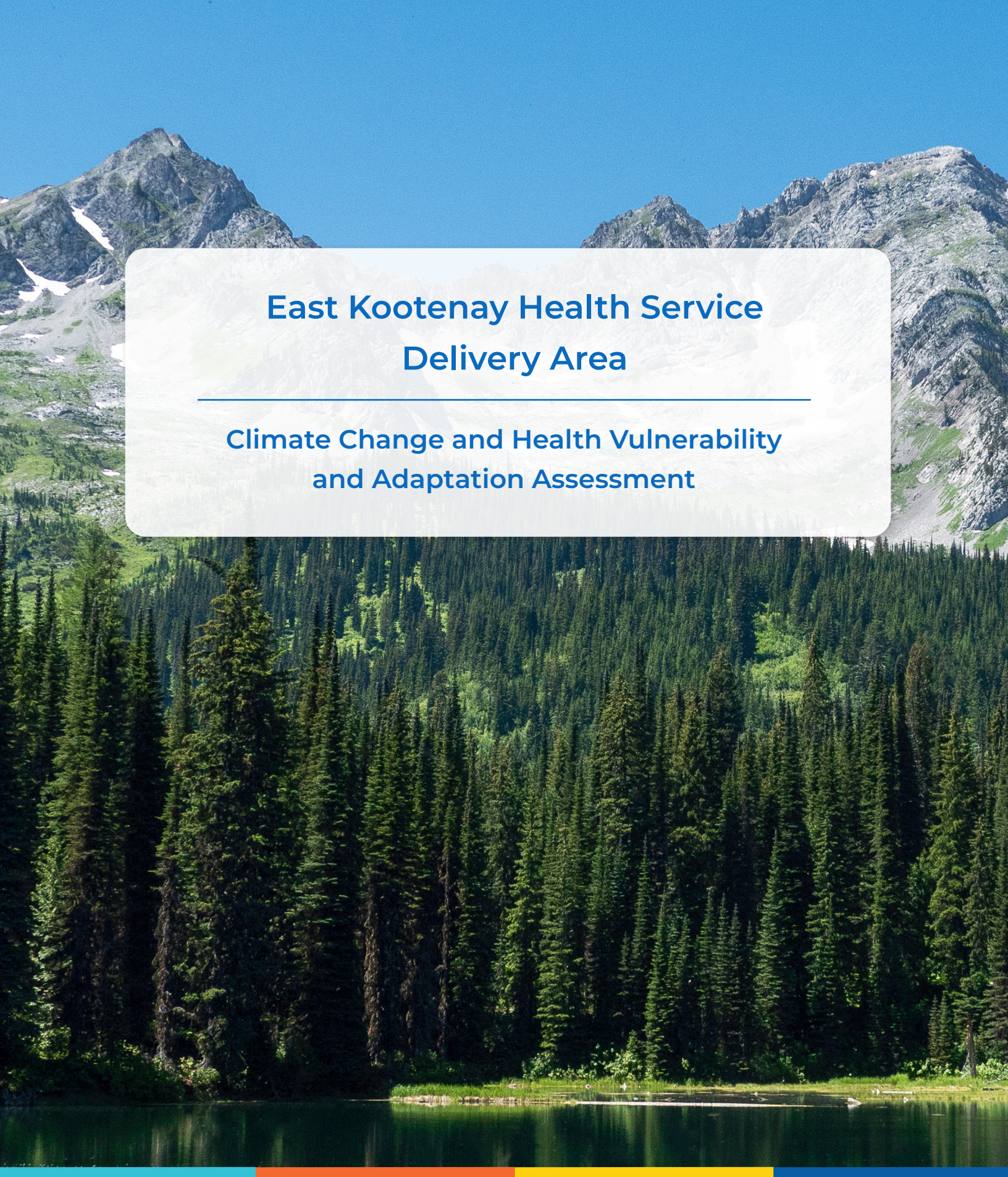


East Kootenay Health Service Delivery Area

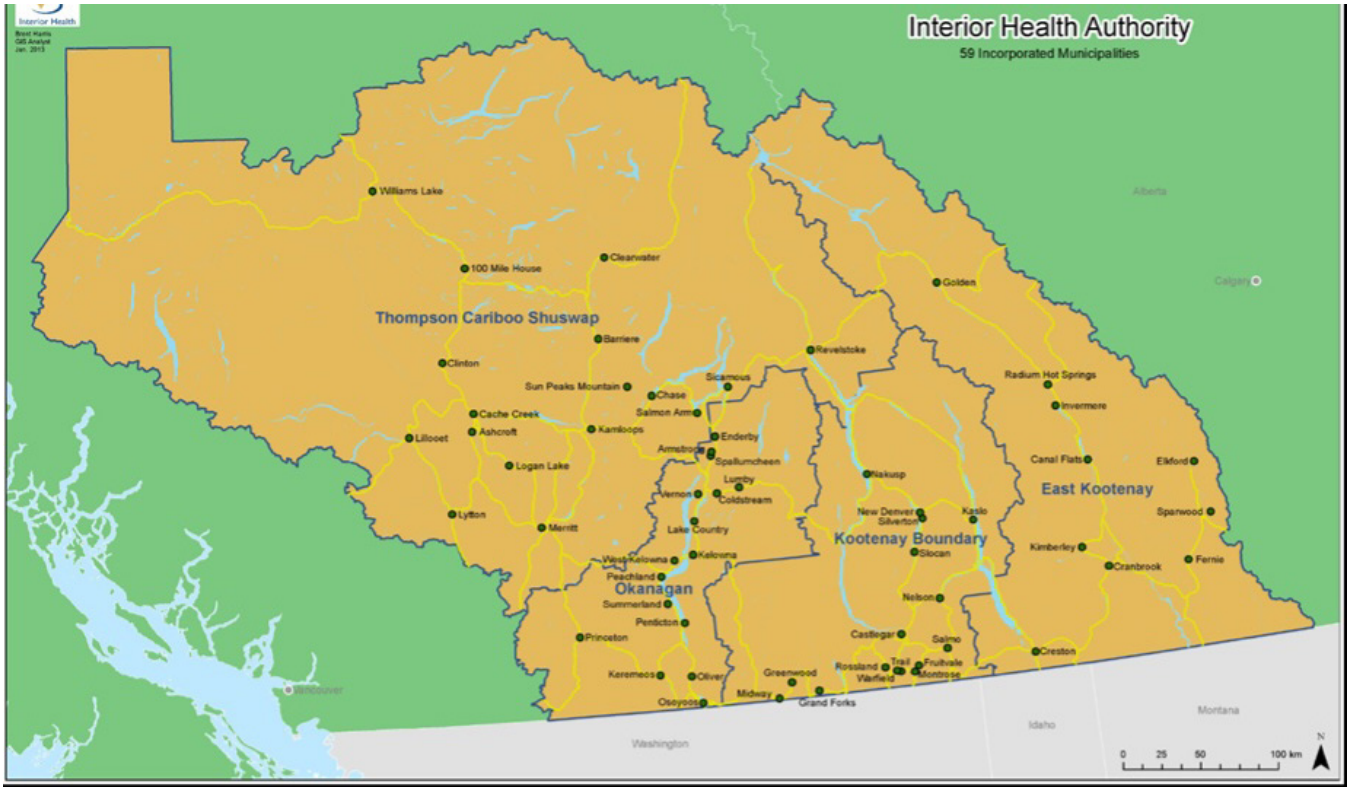
Climate Change and Health Vulnerability and Adaptation Assessment

Interior Health

June 2026

Introduction

This climate change and health vulnerability and adaptation assessment provides insight into exposure to climate-related extreme weather and the characteristics that increase the likelihood of negative health impacts during extreme weather events. It brings together multiple forms of evidence to understand how communities across the East Kootenay (EK) Health Service Delivery Area (HSDA) are experiencing and responding to climate-related risks. It integrates quantitative and qualitative data to provide a comprehensive picture of local sensitivity, exposure, and adaptive capacity. This work builds on key learnings from the pilot assessment in the Kootenay Boundary HSDA. We conducted further engagement with community partners in the EK HSDA to ensure that our findings reflect regional realities.



Interior Health HSDA map

The assessment draws on a wide range of indicators, such as demographic and health statistics, socio-economic conditions, infrastructure quality, and environmental characteristics, to describe the underlying factors that shape vulnerability. These data are presented alongside climate projections that highlight expected trends in temperature, precipitation, wildfire, and flood risk, as well as historical records of previous climate exposures and documented health impacts linked to extreme events. This assessment also includes insights gathered through engagement with partners in the region. These perspectives reveal how climate impacts intersect with local lived experiences. Together,

[i] The geographical designations of health service delivery area (HSDA) and community health service area (CHSA) refer to our health administrative boundaries. As such, our data is also presented that way. The term region in this report refers to HSDA, except otherwise specified. Please refer to the links below for more specific details on what geographic areas are captured in each administrative boundary. Health Boundary Maps - Province of British Columbiainterior-health-map.pdf

these inputs form a multidimensional view of vulnerability and adaptive capacity in the East Kootenay HSDA, one that recognizes both measurable indicators and the social, institutional, and relational dynamics that influence how communities anticipate, experience, and recover from climate-related hazards.

It is important to note that the streamlined nature of this assessment places important boundaries on what it can capture. Engagement focused largely on government and service providers, this approach can miss the experiences of people who are less connected to services, as well as the broader social, economic, and political factors that shape the experience of risk. Climate projection data strengthens the assessment by showing how hazards like heat, wildfire, or flooding may change over time, but these projections are uncertain. They cannot show how future risks will interact with housing, income, infrastructure, governance, or community relationships, all of which strongly shape health outcomes. Given the reality of these constraints, this assessment cannot fully explain why some groups are more vulnerable than others, how vulnerability is changing, whether proposed actions are sustainable across all communities in the region, etc. For these reasons, this assessment is best used to guide priorities and prompt further questions, rather than a complete picture of climate-related health risks or a final plan for action.

Defining dimensions of vulnerability

For this assessment, we are defining vulnerability to the health impacts of climate change as the interactions between climate exposure, sensitivity and adaptive capacity. In this report we cover:

Sensitivity: How physiological, socioeconomic, and geographic factors shape the experience of impacts from climate hazards. This section covers:

- Physiological sensitivity: The role of the health status of individuals in the experience of risks
- Socioeconomic sensitivity: The role of factors like income, occupation and access to health care in influencing climate vulnerability
- Geographic sensitivity: The role of location (i.e., living in wildfire-prone regions, flood plains, etc.) in determining exposure to climate hazards

Exposure: The extreme weather events that affect public health and the health system. As described, the extreme weather events discussed include:

- Extreme heat
- Wildfires and smoke
- Flooding
- Cold and winter storms
- Drought

Adaptive capacity: The ability of individuals, communities, and institutions to adjust to climate-related health risks. This section explores the strengths and opportunities to build adaptive capacity across the EK HSDA. It also sheds light on existing community assets and ongoing adaptation action.

Key takeaways

- Hotter summers, longer wildfire seasons, recurring smoke events, ongoing water stress, and other extreme weather events are increasingly shaping daily life and creating cumulative and compounding health impacts.
- Climate pressures disproportionately affect people with existing health challenges, those facing housing or income instability, and communities with limited access to services, amplifying existing inequities.
- At the same time, the assessment highlights that important adaptive efforts are already underway. They include programs supporting seniors, housing stability, energy efficiency, and access to nutritious food, all of which provide a strong foundation for resilience.
- By identifying both strengths and gaps, this work points to clear, actionable pathways for building healthier and more climate-resilient communities through long-term investments in social and natural systems..

Sensitivity

Across the EK HSDA, every community experiences a degree of sensitivity to climate change resulting from economic, social and geographic realities, though the specific reasons for and extent of these challenges can vary from one community to the next.

Key takeaways on sensitivity

- High burden of chronic conditions and age-related challenges increase health risks during climate extremes.
- Socioeconomic inequities, such as lower income, older or poorly insulated housing and energy insecurity, reduce households' ability to prepare for, avoid, or recover from climate hazards, amplifying health impacts.
- The EK's rural geography, low population density (2 persons/km^2), and long distances to health and social care services, creates heightened risks during floods, wildfires, and winter storms, as road closures can isolate entire towns, delay emergency response, and restrict access to health and social care.

Physiological sensitivity

Aging and chronic conditions. Many people in the EK HSDA have underlying health and physiological factors that make them more sensitive to climate impacts. The population is also getting older, with a growing share of adults over age 65 and 75 years. Aging bodies have a harder time coping with temperature changes, smoke, and illness. Older adults sweat less, lose heat more easily in winter, and have weaker lung and heart function, which means heat waves, cold snaps, and smoky periods place more strain on their bodies.[1–3] In First Nations and Métis communities, older adults are deeply respected as carriers of lived experience, wisdom, and cultural memory. When climate events disproportionately harm them, the loss extends beyond individual health, touching the relationships, stories, and knowledge that enrich and connect communities across generations.

Chronic disease prevalence shapes a community's capacity to respond and recover. Conditions such as asthma, chronic obstructive pulmonary disease (COPD), heart failure, diabetes, depression, and dementia reduce the body's ability to respond to and cope with stress. For example, preexisting lung and heart conditions increases the risk of negative health outcomes during wildfire smoke, extreme heat or cold-related events.[4–9] Furthermore, people with chronic illnesses often rely on regular access to medication, medical equipment, and healthcare services, all of which can be compromised during climate-related emergencies.[10,11] The EK HSDA's rates of chronic disease prevalence (2023/24)[ii] including mood/anxiety disorders (31.2%), hypertension (26%) and asthma (10.9%) mean large numbers of people are living on the edge of what their bodies can tolerate when climate extremes hit.[12] Table A in the appendix includes CHSA level prevalence data for the chronic conditions described.

ii Prevalence data refers to crude prevalence data for 2023/24 from the BCCDC Chronic Disease Dashboard

Children and pregnant people. Young children's bodies aren't fully developed to handle extreme temperatures, making them more likely to get dehydrated in the heat, or, in the case of extreme cold, increases the risk of pediatric pneumonia.[13] Children also breathe in more air relative to their body size, so they take in more polluted air.[14] Babies are even more at risk because their airways are smaller, and their immune systems aren't fully developed.[14] In the case of pregnant people, the body changes associated with pregnancy, like increased hormonal sensitivity and changes in circulation and blood volume, can reduce a pregnant person's ability to regulate body temperature, increase their risk of dehydration and intensify stress on the cardiovascular system.[15]

Mental health challenges. Mental health conditions don't just shape emotional wellbeing, it impacts physiological resilience.[16,17] Chronic stress affects immune function, heart health, and sleep, compounding the body's vulnerability to heat and air pollution.[18,19] These conditions can affect a person's ability to prepare for, respond to, or recover from climate events. Prolonged wildfire smoke or evacuation alerts trigger real fear: fear of losing homes, of being displaced, of health deteriorating. It can resurface trauma for those who've lived through past evacuations.

Overall, the combination of an aging population, burden of chronic disease, early-life vulnerabilities, and health behaviours that strain the body means that some people in this region face greater physiological risks during extreme heat, smoke, cold, or other climate-related events.

Table 1: Overview of physiological sensitivity in the EK HSDA

Population group	Risk mechanism	East Kootenay HSDA considerations[iii]
Older adults (65+)	As people age, their bodies become less able to regulate temperature and stay hydrated. Chronic conditions and some medications can also make it harder to cope with heat, cold, or poor air quality, increasing health risks during extreme weather.[2]	Residents aged 65 and older are projected to be over 27% of the population by 2030[iv].
Preexisting cardiovascular conditions	Heat can cause dehydration, which increases the strain on the heart. Some heart medications, like diuretics or beta blockers, also make it harder for the body to stay cool in the heat.[3] Air pollution from wildfire events can disrupt heart rhythm, raise blood pressure, cause inflammation and clotting, and let tiny particles enter the bloodstream, where they damage blood vessels.[20]	The prevalence of hypertension (population age 20+) in the EK HSDA was 26% in 2023/24.
Preexisting respiratory conditions	Fine particulate matter (PM2.5) from wildfire smoke can trigger respiratory complications.[21] While mold growing in the aftermath of flooding can release spores which irritate the lungs when inhaled.[22]	In 2023/24 the prevalence of asthma in the EK HSDA was 10.9%. For COPD (population age 35+), it was 7.6%.
Preexisting neurological conditions	Cognitive impairment reduces the ability to recognize danger or take protective action.[23] In heat waves, challenges with recognizing or responding to thirst or overheating, raises the risk of dehydration, heat exhaustion, and heat stroke. In floods, wildfires, or other evacuations, disruption of routine and access to medical services can pose significant risk.[24] Additionally, inhaling pollutants during wildfire smoke events can result in systemic inflammation and oxidative stress that can damage the nervous system.[24,25]	The prevalence of Alzheimer's disease and other dementias (population age 40+) in the EK HSDA in 2023/24 was 2.2%.
Preexisting mental health challenges	Dealing with chronic anxiety, or other mood disorders, can impact how the body and mind respond to the additional stresses imposed by extreme weather events.[16,17] This mental strain can also increase the challenge with managing other chronic illnesses.	The prevalence of mood/anxiety disorders was 31.2% in 2023/24.
Other preexisting chronic illnesses	For individuals living with diabetes, high temperatures, can disrupt blood glucose control, alter insulin absorption, and increase the risk of dehydration.[26] People living with CKD depend on stable hydration, carefully balanced medications, and consistent access to medical treatment such as dialysis, extreme weather events can disrupt access to care.[27,28] Many people with CKD also take diuretics or blood pressure medications that can impair the body's ability to cope with heat.[29]	In 2023/24 the prevalence of diabetes in the EK HSDA was 8.9%. While the prevalence of chronic kidney disease was 4.3%.

[iii] Prevalence data refers to crude prevalence data from the BCCDC Chronic Disease Dashboard. Data presented is for 2023/24 Fiscal year - The Ministry of Health and all health authorities in BC report for the year starting April 1 and ending March 31.
[iv] SOURCE. BC stats. P.E.O.P.L.E. 2025 Population Estimates and Projections

Socioeconomic and geographic sensitivity

The East Kootenay HSDA is shaped by socio-economic and geographic realities that heighten climate sensitivity. The region includes areas with an aging population, rural and/remote widely dispersed communities, and lower-income populations with limited economic and institutional buffers available to absorb climate stressors. These factors make extreme heat, wildfire smoke, flooding, drought, and winter weather more likely to result in negative and uneven health impacts.

Economic precarity. The regional economy relies on service work, and resource-based industries, which can be seasonal and sensitive to climate disruptions. Income volatility reduces households' ability to invest in protective measures (e.g., cooling, air filters, insurance, vehicle reliability for evacuation) and limits financial resilience during climate-related disruptions. For people already living close to affordability thresholds, climate events can trigger cascading impacts, including housing instability, food insecurity, and deferred healthcare.

Housing quality and energy insecurity. Housing conditions further contribute to socio-economic sensitivity. Older housing is often poorly insulated, and less energy efficient, increasing exposure to both heat and cold extremes. High energy costs, especially for heating in winter and cooling in summer, interact with lower and fixed incomes to create energy insecurity. As a result, households may underuse cooling or air filtration even when conditions are dangerous, increasing cumulative exposure and health risk.

> *"We've got a lot of people I think that are precariously housed, they don't know how to access help." – Nonprofit organization participant*

Community infrastructure. In the EK HSDA, some communities, especially smaller ones have few public buildings that stay cool during heat waves or provide clean, filtered air during wildfire smoke events. Libraries, community centers, and municipal buildings often have limited space, short operating hours, or older ventilation systems that are not designed for smoky summers. This means some residents simply do not have a reliable, climate-protected place to go when conditions become dangerous. For First Nations and Métis communities, the absence of these safe, accessible gathering places limits opportunities to care for community in culturally grounded ways during heat, smoke, or flood events.

> *"We do an emergency winter shelter where we open up during certain climate changes and we open up during that time. But we want to have one that opens up in like October and goes to March that we might operate because people trust and know us, but we can't find a location... that challenge has made it really hard" – Nonprofit organization participant*
>
> *"I'm working quite closely with BC Housing to try to get a winter shelter so that there's a space for these folks that they can come in all day because that's the problem, right? And people shut down at four or 5:00 and there's nowhere for people to go..."– Nonprofit organization participant*

Social connection. Lower population density, and geographic separation increase the risk that individuals, particularly seniors living alone, are socially isolated. Social isolation reduces informal monitoring, delays help-seeking, and limits awareness of protective guidance during climate events, further increasing health risk. For example, during heatwaves isolated individuals may not have neighbors to check on them and alert them to early signs of dehydration or heat exhaustion. Similarly, when wildfire smoke blankets the region for days or weeks, those without close social ties may not have someone to help them access clean indoor environments.

Industry and economy. Forestry, mining, and tourism are important employers in communities in the region. These sectors are directly vulnerable to climate variability: wildfires and drought disrupt forestry and agriculture, while tourism-dependent communities face revenue losses during smoke events, floods, or poor winter snowpack. When these industries struggle, household income instability increases, which can exacerbate health inequities and reduce the resources available for climate adaptation.

Access to care. Rural and remote communities often depend on care and services that travel in visiting clinicians, and supplies like food, and medications as well as residents travelling out to reach hospitals, pharmacies, and social supports. Road closures or evacuations can sever both lifelines. When roads become impassable, scheduled clinic visits may be cancelled or indefinitely delayed, leaving residents without care for extended periods. At the same time, the goods and services that sustain daily health groceries, medications, and mental health or social supports may be significantly limited or cut off entirely. For those who are evacuated, displacement adds another layer of disruption: separated from their regular providers, routines, and community networks, residents may experience heightened anxiety, difficulty managing chronic conditions, and challenges accessing the medications or supports they rely on to stay healthy.

Spotlight: Degrees of sensitivity

Every community experiences some degree of sensitivity to climate hazards, shaped by the interaction of physiological, socio-economic, and geographic factors, though the specific reasons and extent of these challenges vary across locales. A community's degree of sensitivity can shift over time as it gains or loses resources, experiences demographic changes, or strengthens its social networks. Understanding sensitivity is a useful starting point for identifying where interventions might generate the greatest positive impact.

High sensitivity communities face compounding challenges across multiple dimensions: economic fragility from reliance on government transfers or low-wage work limits their ability to afford adaptation measures; infrastructural deficits in housing, transportation, and health facilities create cascading risks during extreme weather; weak social fabric with low community belonging undermines informal support networks critical during crises. Additionally, elevated rates of chronic health conditions (e.g., respiratory conditions) mean climate stresses like wildfire smoke cause disproportionate harm.

In contrast, moderate sensitivity communities may face similar economic or infrastructure constraints but are buffered by stronger community belonging that mobilizes collective action and mutual aid, or by better baseline health status that reduces vulnerability to climate-related health impacts. These protective factors can help residents manage stress and maintain well-being during climate disruptions even when other challenges persist.

Table 2. Overview of socioeconomic sensitivity in the EK HSDA

Population group	Risk mechanism	East Kootenay HSDA considerations
Precariously housed & unhoused individuals	Increased exposure to extreme weather events with limited or no capacity to shelter from the elements.	Communities with a higher proportion of dwellings needing major repairs and low-income residents may struggle to afford the housing retrofits needed to improve climate resilience.
Low-income, unemployed and under-employed individuals	Inability to afford retrofits, and other adaptation interventions to protect from exposure to extreme weather events. If displaced during wildfires and floods, they have fewer resources to recover.	Communities with a high proportion of residents living on a fixed income may struggle to raise funds to build resilience and facilitate emergency response when needed.
Outdoor workers	Increased exposure to extreme weather events e.g., extreme temperatures.	Farm workers who are essential to harvesting fruit and maintaining vineyards, often work outdoors in intense heat and smoky conditions which increases their risk of negative health impacts.
Remote and rural populations	Reliance on single-access routes, limited access to public transportation options can result in isolation during extreme events. It also strains emergency response and healthcare access.	The EK HSDA has a low population density (2 person/km^2)[v]. Residents may live miles apart from their neighbors and services, with limited access to community programs or social support.

Geographic sensitivity. The EK HSDA encompasses 86,826 square kilometers in southeastern British Columbia, a region stretching from the Alberta border to the Columbia Valley and Arrow Lakes. With a population of just under 45,000 residents, the area has a population density of two people per square kilometer, far below the provincial average. This low density reflects its rural and mountainous settlement patterns, with communities separated by large expanses of rugged terrain. Low density has important implications for climate-health sensitivity. Residents are often located far from specialized health services, emergency response can be delayed, and single road or highway closures caused by floods, wildfires, or avalanches can isolate entire communities. In the context of climate change, where extreme events are becoming more frequent, this geographic reality intensifies vulnerability by limiting both access to care and the speed of recovery.

You know the challenge for sure is our geographics because we're spread out. So, we're on like a riverbed and we're spread out and it's a big open valley. – Nonprofit organization

[v] Population density represents the number of people living within one square kilometre. Lower densities indicate more rural areas which typically have lesser access to health services, while those living in urbanized areas with higher population densities typically have greater access to health services. SOURCE. Summary Statistics, PEOPLE 2021, BC Stats

Spotlight: Degrees of sensitivity

First Nations Health Authority (FNHA) in their report of regional engagement on climate and health issues highlights climate change is understood as a disruption to the relationships that sustain health—relationships with land, water, animals, medicines, culture, and kinship systems. When these relationships are harmed, so too are identity, belonging, and the cultural practices that keep people and communities well. Health is not only physical; it is emotional, spiritual, mental, and deeply connected to land-based practices that support balance and wellness. Climate impacts such as wildfire, heat, drought, and flooding harm these relationships by damaging traditional food and medicine sources, limiting access to land for ceremony or harvesting, and altering water systems that hold cultural, spiritual, and ecological significance. Climate change also intensifies long-standing colonial harms. Climate-related events, especially evacuations, often deepen trauma, separate families, disrupt cultural supports, and strain mental health. Recurrent climate hazards interact with historical trauma, environmental degradation, and jurisdictional gaps, creating cumulative and compounding health impacts.

Across the EK HSDA, First Nations are building climate resilience by strengthening the land, health systems, and community connections at the same time. Yaq̓it ʔa·knuqɬi’it First Nation is leading a wetland restoration project to help keep ecosystems functioning in ways that protect community health and wellness. At the same time, First Nations are investing in community-based health and social supports. Programs like Operation Street Angel delivered by the Ktunaxa Aboriginal Wellness Center in Cranbrook bring health care, mental health support, nutrition, and outreach directly to people who are unhoused or at risk. The ʔaq̓am community provides ongoing wellness programs, including diabetes care, Elders’ clinics, and community health fairs, to help support the management of chronic conditions strengthening people’s ability to cope. These initiatives support both immediate response and long-term wellness for current and future generations.

Exposure

Climate exposure refers to the degree and frequency with which populations encounter climate-related hazards such as extreme heat, wildfires and smoke, flooding, drought, and cold weather events. The EK HSDA is ecologically and topographically diverse. This variability, while a defining feature of the region, also increases its exposure to multiple and often compounding climate hazards. The increasing frequency and intensity of these hazards presents a direct and growing threat to the physical and mental health of EK residents, as well as to the capacity and reliability of the local health system. The extreme weather events discussed in this report include:

- Extreme heat
- Wildfires and smoke
- Flooding
- Cold and winter storms
- Drought

Key takeaways on exposure

- Communities are already experiencing hotter, longer summers, with projections showing increases in days over 32°C, yet only 57.4% of EK residents report having A/C or a heat pump.
- The EK HSDA regularly experiences the risk of wildfire and wildfire smoke events, with severe PM2.5 spikes in major wildfire years such as 2018, 2021, and 2023. This affects residents in smoke-prone valleys.
- Communities in the Elk Valley are increasingly exposed to flooding, including recent 2025 events that required evacuations and disrupted transportation routes, heightening risks for rural residents and those requiring ongoing medical care.
- Hazardous cold snaps and intense winter storms continue to pose major risks, particularly for people experiencing housing insecurity, with cold-related ED visits rising during periods when minimum temperatures drop toward or below 0°C.
- The EK basin experienced 162 days at drought levels 4 and 5 in 2023, the most severe conditions in the province, affecting drinking water availability, agriculture, wildfire risk, and overall community resilience.

Extreme heat

Extreme heat is a growing concern across the region, in 2025, Cranbrook saw record breaking temperatures in June. Summers are already hot and dry, and climate projections show longer, more intense heat periods in the coming decades. For residents of older single-family homes which lack adequate cooling or insulation, this poses a significant challenge. According to the BC SPEAK survey only 57.4% of residents of the EK surveyed reported that their home has A/C or heat pump, the lowest of all the HSDAs in the interior region. An aging population further increases risk, older adults often have a reduced ability

to regulate temperature, are more likely to take medications that impair heat tolerance, and may live alone without regular check-ins. Living with chronic conditions such as heart disease, diabetes, and respiratory illness, also make heat exposure more dangerous, increasing the likelihood of heat exhaustion, dehydration, and heat-related hospitalization.

Figure 1: The historical and projected number of days with maximum temperature over 32°C in CHSAs across the EK HSDA, indicating a change in the length of hot weather events expected for the region. A longer hot weather period can mean more heat-related morbidity and mortality, especially if they happen consecutively.[vi]

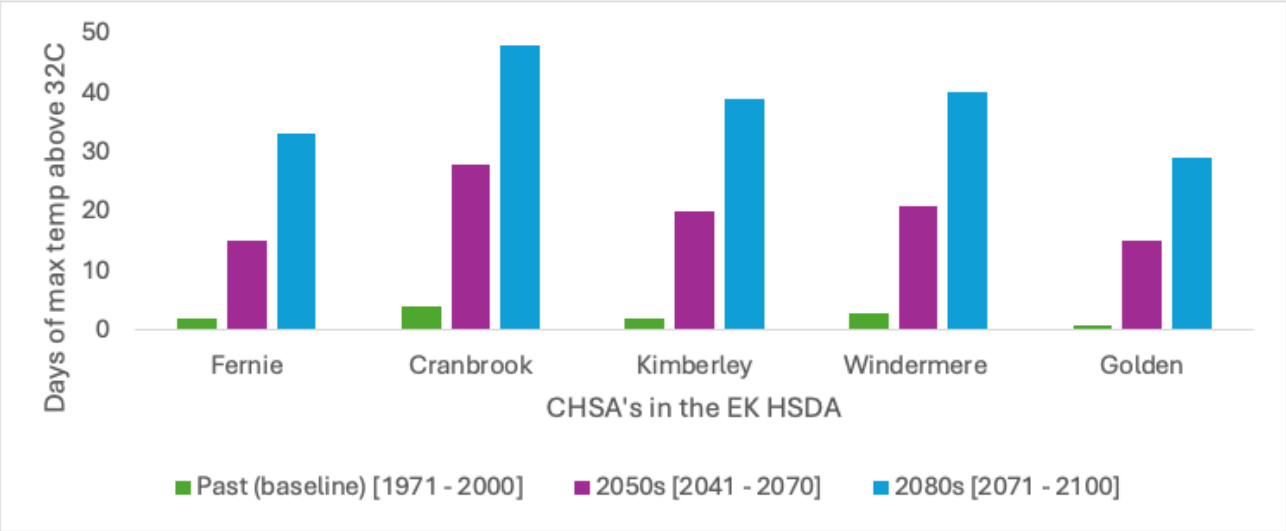
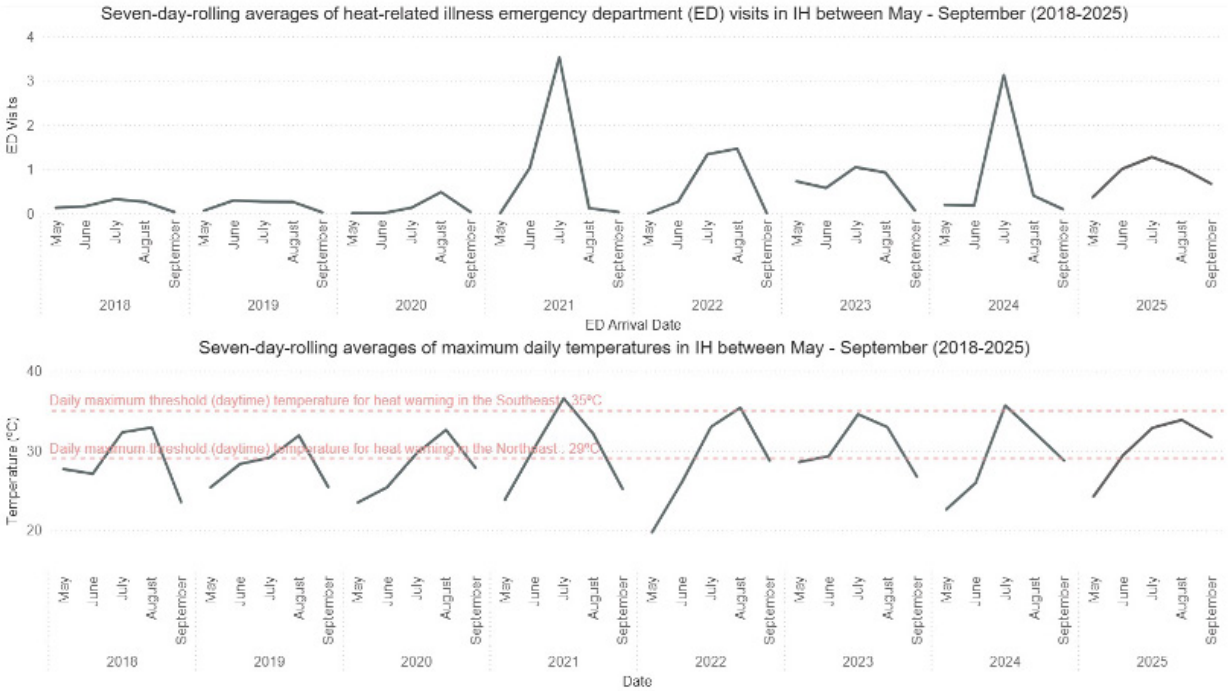
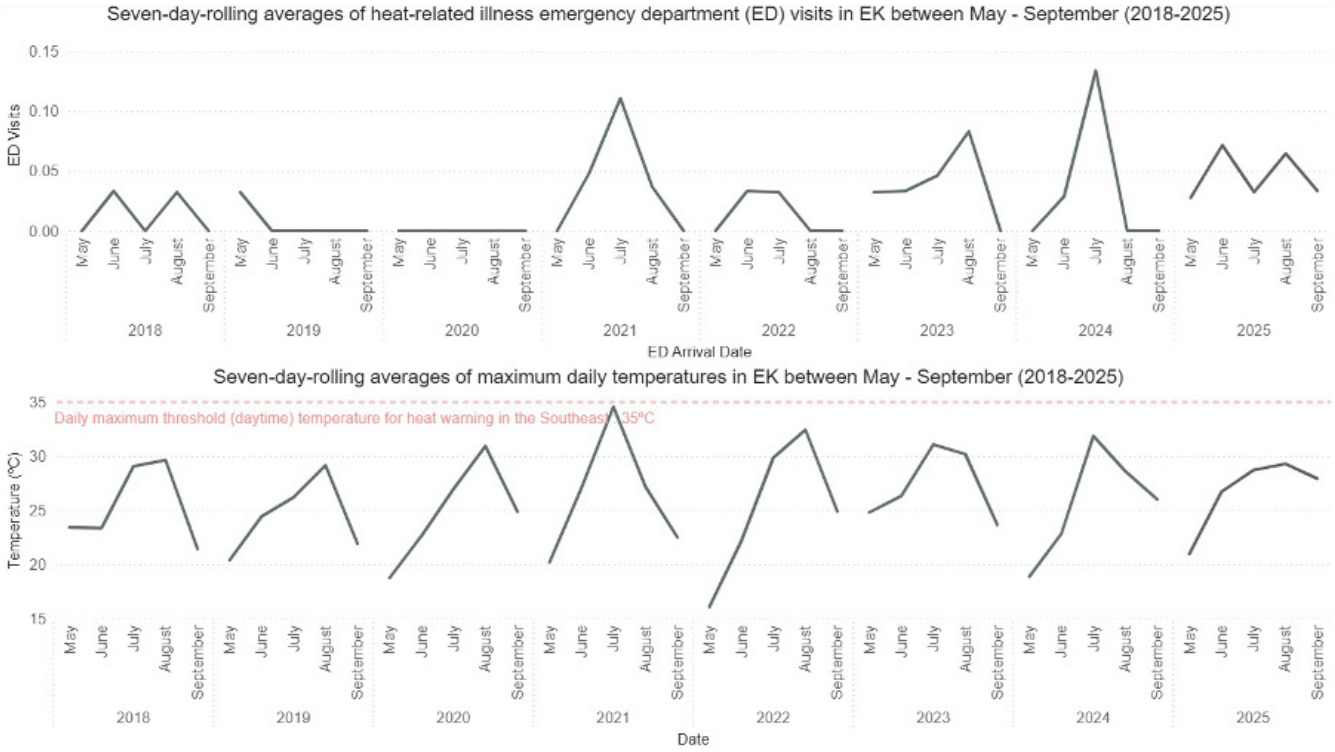


Figure 2. Heat-related illness emergency department (ED) visits presented with daily maximum temperature data in IH



[vi] Climate projection data are from the Power Analytics and Visualization for Climate Science (PAVICS) data catalog. Specifically, the data was generated from the Coupled Model Intercomparison Project Phase 6 (CMIP6) version. They are presented under three Shared Socio-economic Pathway (SSP) scenarios. The SSP scenarios are used to characterize possible future development pathways for human societies. The scenario used here is high emission, corresponds to the climate scenario SSP5-8.5

Figure 3. Seven-day rolling averages of heat-related illness emergency department (ED) visits presented with daily maximum temperature data in EK HSDA



Data notes: ED visits related to heat-related illnesses were based on a presenting complaint with a Canadian Emergency Department Information System (CEDIS) code of 207-heat-related issue, extracted from the IH Admissions universe.

From 2018 to 2025, the trend in heat-related illness (HRI) ED visits in IH followed the same trajectory of daily maximum temperature for the corresponding time period (Figure 2). Note that HRI is a newer Canadian Emergency Department Information System code that was introduced in late 2016.[vii,viii] While there were no recorded instances of HRI ED visits in 2017, it was a newly introduced code that takes time to work into practice.[ix]

As seen in Figure 2 (IH), as daily maximum temperatures spiked above 29°C and 35°C, HRI ED visits in IH also spiked proportionally for the same time period. For the EK HSDA, for most years where the daily maximum temperatures spiked above 30C, there were also corresponding spikes in HRI ED visits (Figure 3 EK). Note that the absolute numbers of HRI ED visits for the EK (29 across 2018 to 2025) relative to IH was the lowest of all of the HSDAs, so it is harder to infer trends from small numbers (data not shown).

Notable HRI ED Demographic Trends from 2018-2025. Among patients who presented to the ED with HRI from 2018-2025, most were males in their 20s and 30s, did not arrive by ambulance, and were not admitted to hospital. Further geographic breakdown is not provided due to small numbers and to protect patient privacy.

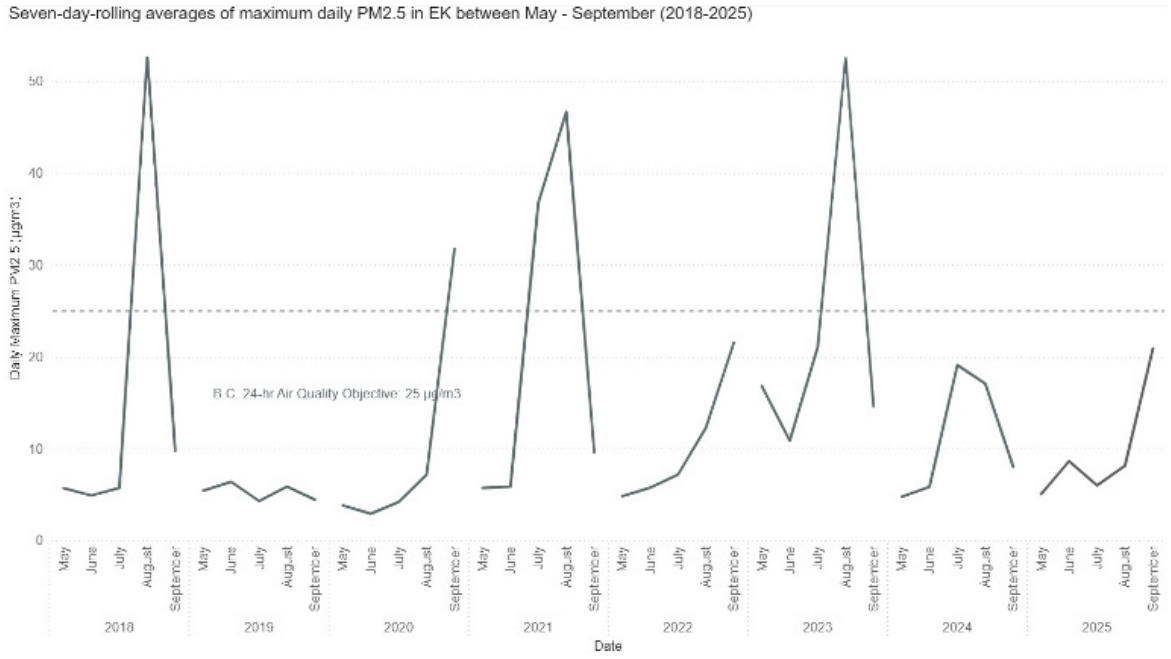
[vii] Bullard, M. J. et al. Revisions to the Canadian Emergency Department Triage and Acuity Scale (CTAS) Guidelines 2016. CJEM 19, S18–S27 (2017).
[viii] NACRS Pick-Lists Presenting Complaint List v.5.0
[ix] Environment and Climate Change Canada's heat warning system covers the northeast and southeast regions of the Interior. Heat warnings are triggered when the daytime maximum temperatures are 29°C and 35° C, respectively (see Table 1 BC Provincial Heat Alert and Response System (BC HARS). (2024). *P.S. Temperature threshold have been revised in the 2026 BC Provincial Heat Alert and Response System.*

Important note: Emergency department (ED) visit data provides a useful but limited indication of the health impacts of cold exposure. ED visits reflect only those individuals who sought and were able to access medical care and are therefore shaped by factors such as healthcare-seeking behavior (which can be impacted by stigma), geographic proximity to services, language barriers, and other cultural considerations. The cold-related ED visit data presented here are drawn from a specific date range (November to March by fiscal year) and include only presentations within that window. Health impacts that occurred outside this period and were managed outside the emergency department setting or resulted in delayed complications requiring care beyond the defined window would not be reflected in these figures. This means the full burden of cold-related illness in the community is not captured. As such, this data should be interpreted as one lens among many when assessing the scope of cold-related health needs in the population.

Wildfires and smoke

Wildfire and smoke present a significant climate risk in the EK HSDA. The region's dry summers, lightning-prone mountains, and dense forests create conditions where fires can ignite and spread rapidly. Wildfire driven evacuations disrupt access to care which is particularly challenging for individuals requiring medications or ongoing treatment, and separate families from support networks.[33,34] Sediment from wildfires can also wash into streams, making it harder to provide safe drinking water, a challenge Cranbrook is currently working to avert.[35] Wildfire smoke can also linger for days or weeks (see Figure 5; additionally, Figure A in the appendix provides CHSA level data on exposure to poor air quality). This creates substantial health concerns because many residents live with asthma, COPD, or cardiovascular disease—conditions that make breathing smoke far more dangerous.[20,36,37] Children breathe more air per kilogram of body weight and are highly sensitive to fine particles, while older adults have reduced lung and immune function, making extended smoke seasons particularly harmful.[14,38] Outdoor workers in forestry, mining, agriculture, construction, and wildfire response occupations face repeated exposure during peak smoke periods, which can affect both immediate and long-term health.[39]

Figure 5. Seven-day-rolling average of daily maximum PM2.5 in the OK between May to September (2018–2025)



Data notes: (1) BCCDC provided the air quality monitoring station data from B.C. Air Quality. (2) Air quality data is only representative of the communities where monitoring stations are located (there are two in Cranbrook and one in Creston).

Figure 5 shows that the EK experienced large spikes in poor air quality due to PM2.5 that far exceeded the B.C. 24-hour air quality objective of 25 µg/m3 during the wildfire seasons of 2018, 2021 and 2023.[x] These particular years did correspond with impactful wildfire seasons in B.C. The Province declared a state of provincial emergency arising directly from wildfires during the 2018, 2021 and 2023 seasons, lasting 23, 56 and 28 days, respectively. To-date, the B.C. Wildfire Service has underscored the 2023 wildfire season as the worst in recorded history.

It is worth noting that occurrence and impacts of wildfires can be hard to constrain to a specific geographical area, given that wildfire smoke (and components such as PM2.5) may not originate from a local source. While the 2020 wildfire season in B.C. was not as active as anticipated, Figure 5 shows that the EK HSDA experienced a sharp PM2.5 spike in September. For context, the B.C. Wildfire Service deployed firefighting resources to support the western United States' extreme wildfire season in California and Oregon in the fall of 2020. The proximity of the U.S. wildfires may help explain this spike in the EK, despite B.C. not having as impactful of a wildfire season.

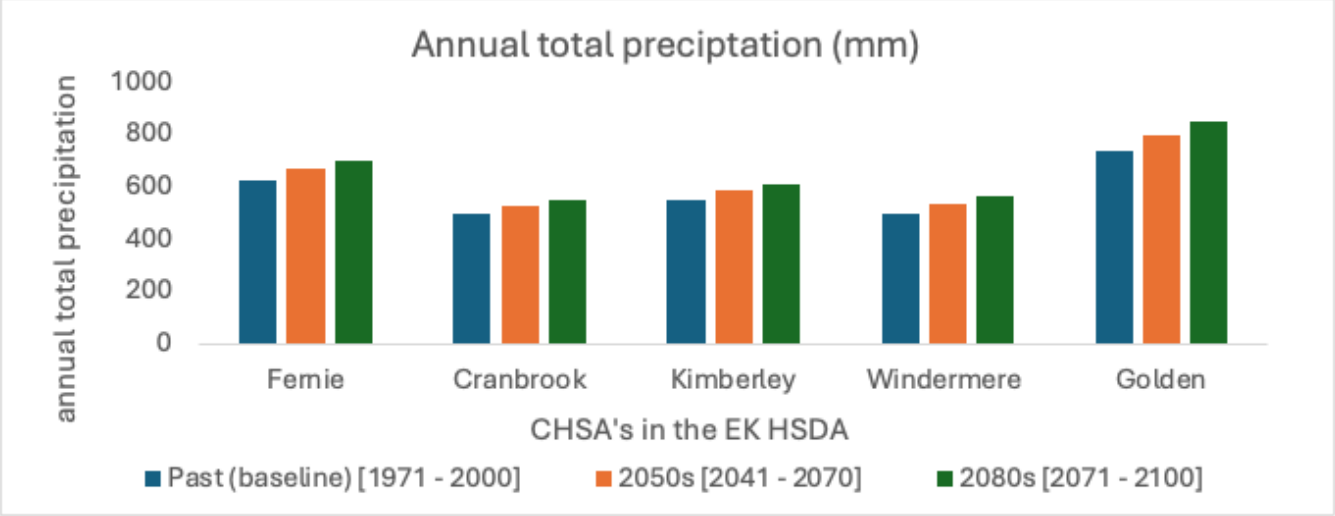
[x] BC Wildfire Service. Wildfire Season Summary - Province of British Columbia. Government of British Columbia https://www2.gov.bc.ca/gov/content/safety/wildfire-status/about-bcws/wildfire-history/wildfire-season-summary (2025).

Flooding

Communities across the EK HSDA, such as Fernie and others along the Elk Valley, are increasingly vulnerable, with flooding events occurring in 2025.[40,41] Flooding can damage homes, disrupt transportation routes, wash out rural roads, and limit access to health and emergency services, particularly for residents in remote areas or smaller communities. Additionally, it can reduce access to recreation, as was the case in 2025 when Bugaboo Provincial Park had to be evacuated and partially closed. Floodwater contamination can affect drinking water supplies, while dampness and mould that follow floods can worsen asthma and other respiratory conditions.[42–44] Residents with mobility challenges, cognitive impairment, or limited social support may struggle with evacuation, cleanup, or extended displacement.

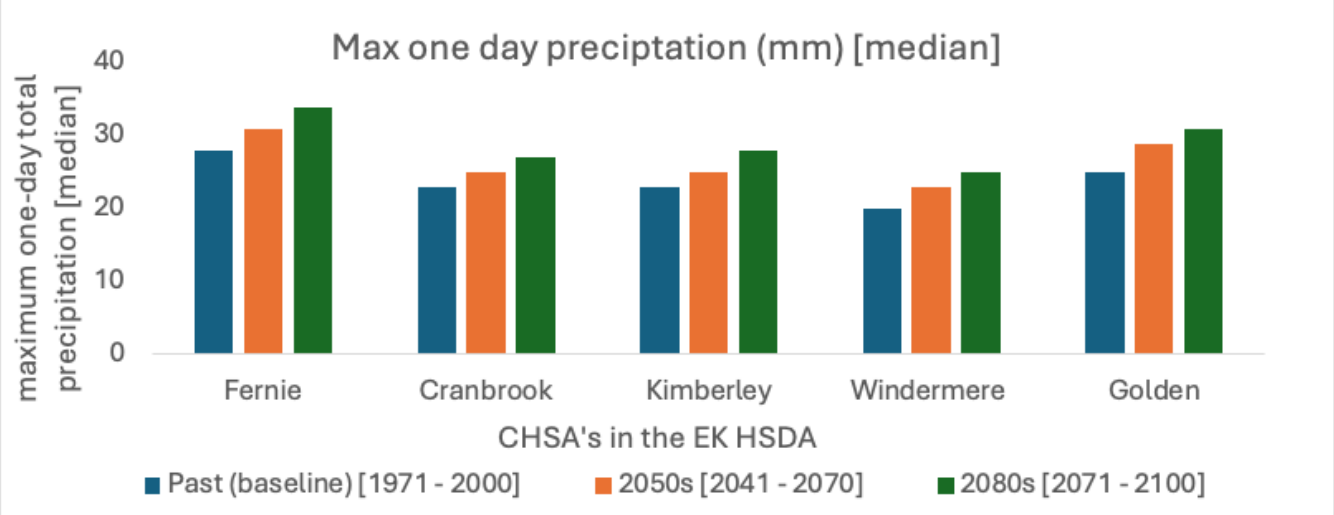
Climate models project that communities across the EK HSDA will experience increases in annual total precipitation and maximum one-day precipitation which is sometimes called the "wettest day of the year" (Figures 6 and 7). The interplay between greater year-round precipitation and increasingly heavy single-day storms can compound negative effects. Floodwater may pick up sediment, rock and vegetation, intensifying the destructive force of debris flows. Tourism and recreation may also be interrupted, as trails, campsites and ski hills contend with unstable ground conditions and altered snow accumulation patterns.

Figure 6. Historical and projected annual total precipitation for all CHSAs in the EK HSDA, described as the largest amount of precipitation (rain and snow combined)[xi]



[xi] Climate projection data are from the Power Analytics and Visualization for Climate Science (PAVICS) data catalog. Specifically, the data was generated from the Coupled Model Intercomparison Project Phase 6 (CMIP6) version. They are presented under three Shared Socio-economic Pathway (SSP) scenarios. The SSP scenarios are used to characterize possible future development pathways for human societies. The scenario used here is high emission, corresponds to the climate scenario SSP5-8.5

Figure 7. Historical and projected maximum one-day total precipitation for all CHSAs in the EK HSDA, described as the largest amount of precipitation (rain and snow combined) that falls within a single 24-hour day in a year



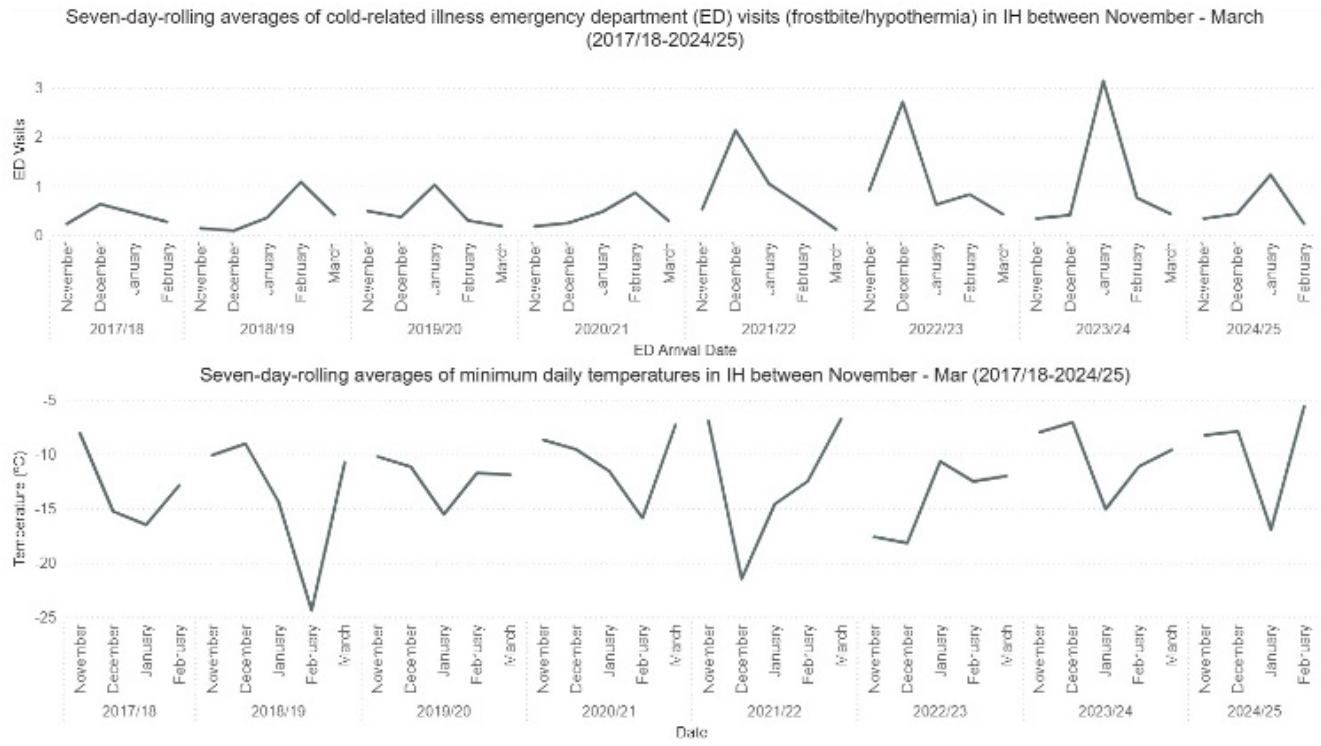
Cold, Winter Storm, and Cold Snap

The EK HSDA is susceptible to hazardous, unpredictable winter weather events, particularly cold snaps and intense winter storms. Cold-related illnesses such as hypothermia and frostbite are significant concerns, especially for individuals experiencing housing insecurity.[45–49]

> *"People are still now struggling with frostbite that they had from three years ago, impacting them now in the winter and having poor health outcomes as a result..."– Nonprofit organization participant*

Winter storms also bring risks of heavy snowfall and freezing temperatures that create difficult and unsafe travel conditions, leading to road closures and disruptions to supply chains. The physical infrastructure of communities is also at risk from ice and wind damage (e.g., down power lines, and subsequent power outages).

Figure 8. Seven-day rolling averages of cold-related illness emergency department (ED) visits presented with daily minimum temperature data in IH



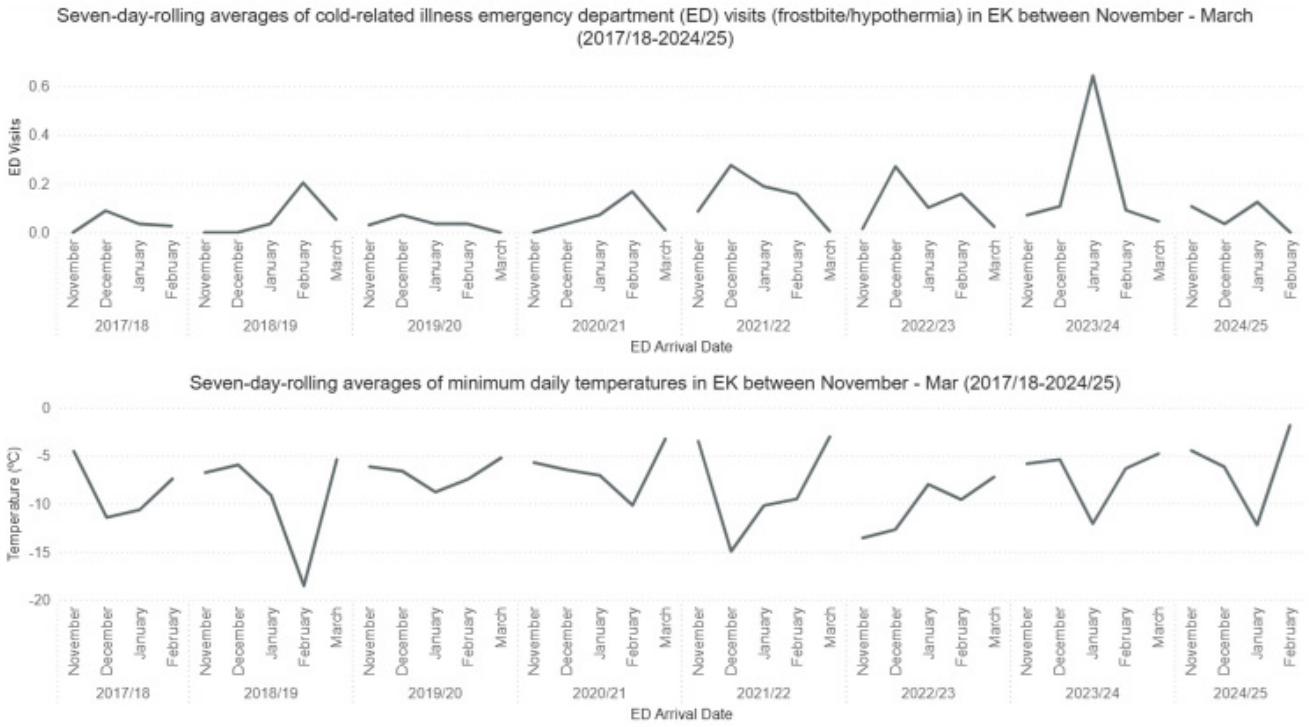
From 2017/18 to 2024/25, the trend in cold-related illness (CRI) ED visits (from frostbite/hypothermia) in IH generally followed the inverse relationship with daily minimum temperatures for the corresponding time period (Figure 8). While official heat warning criteria exist, an analogous system for cold warnings is not currently or formally established yet. In their public health guidance, the B.C. Health Effects of Anomalous Temperatures (HEAT) Coordinating Committee has highlighted the increasing trend of these types of cold-related injuries in the unhoused population during the last decade, across all regional health authorities[xii]. While citing ED data from IH and Northern Health that demonstrated that most hypothermia cases happened at 0°C or below, BC HEAT recommended that cold weather response plans should be initiated at 0°C or at warmer temperatures if wet, snowy or windy conditions are forecast.

For CRI in the EK HSDA, the trends were very similar to that found in IH (Figure 9). The main differences in the EK were that the magnitude of impact was smaller, and the temperature minimums were generally higher, compared with IH overall.

Among patients who presented to the ED with CRI from 2017/18 to 2024/25, most were males, were in the 20-49 age range, did not arrive by ambulance, and were not admitted to hospital. Further geographic breakdowns are not provided due to small numbers and to protect patient privacy.

[xii] BCCDC. Public Health Recommendations to Reduce the Impacts of Exposure to Winter Weather on People Experiencing Homelessness in British Columbia (2023).

Figure 9. Seven-day rolling averages of cold-related illness emergency department (ED) visits presented with daily minimum temperature data in EK HSDA



Data notes: (1) Cold-related visits were based on CEDIS codes 201 – frostbite/cold injury and 205 – hypothermia, extracted from the IH admissions universe. (2) Cold-related ED data and the associated daily minimum temperature data are displayed by fiscal year to group together the data from one winter season from November to March, for continuity in viewing trends.

Important note: Emergency department (ED) visit data provides a useful but limited indication of the health impacts of cold exposure. ED visits reflect only those individuals who sought and were able to access medical care and are therefore shaped by factors such as healthcare-seeking behavior (which can be impacted by stigma), geographic proximity to services, language barriers, and other cultural considerations. The cold-related ED visit data presented here are drawn from a specific date range (November to March by fiscal year) and include only presentations within that window. Health impacts that occurred outside this period and were managed outside the emergency department setting or resulted in delayed complications requiring care beyond the defined window would not be reflected in these figures. This means the full burden of cold-related illness in the community is not captured. As such, this data should be interpreted as one lens among many when assessing the scope of cold-related health needs in the population.

Drought

Drought is a critical threat in the region. In 2023, the East Kootenay basin experienced significant drought conditions, with 162 days at drought levels 4 and 5, requiring residents to comply with water restrictions and take significant water conservation measures.[50] This is driven by hot, dry summers alongside insufficient snow accumulation.[50] Water scarcity

impacts everything from drinking water supplies to water needed for agriculture, wildfire suppression, and other essential services communities depend on. Dry conditions are highly susceptible fuel for fires. Furthermore, the agricultural sector faces risks to crop quality and harvests due to a lack of water for irrigation. Drought also contributes indirectly to health risks by reducing air and water quality and worsening mental stress among those whose livelihoods depend on land and water resources.[51–53]

Compounding hazards and cumulative exposure

One of the defining features of climate exposure in the EK HSDA is not just the presence of individual hazards but the increasing likelihood of their co-occurrence or sequential impacts. In a single year, residents may be exposed to wildfire smoke during a week of extreme heat, followed by drought-induced water restrictions. Each hazard erodes community resilience and strains the health and social care systems further. The compounding effect of multiple exposures, particularly on vulnerable groups such as older adults, children, and those with chronic illnesses, intensifies the health consequences far beyond what each hazard might cause in isolation.

For many Indigenous communities, climate hazards occur on top of historical and ongoing stressors like inadequate infrastructure, limited access to services, and the lasting impacts of colonial policies. These cumulative exposures have specific effects on Indigenous wellbeing. Elders, who hold central roles in cultural continuity, may face repeated respiratory stress from smoke and repeated heat stress during hotter summers. This makes them more vulnerable over time and places additional demands on caregivers. Climate events can also repeatedly disrupt land-based practices, fishing, hunting, gathering, and medicines, which are essential for cultural identity, food security, and mental and spiritual health. Over time, these repeated hits can limit economic stability, increase mental health strain, and erode the protective cultural practices that strengthen resilience.

Health system impacts of climate-driven extreme weather events

The health system is also exposed to all the extreme weather events described. These events disrupt health-care operations, strain workforce capacity, and make it difficult for medical facilities to provide timely and effective care. These events also put pressure on health system infrastructure, particularly facilities that are already aging. Older hospitals, clinics, and long-term care homes often have aging electrical, heating, ventilation and air conditioning systems, making them more at risk of equipment failure during climate extremes. The storm water systems in some facilities are also at risk of being overwhelmed. Flooding can damage foundations, disrupt water and sanitation systems, and destroy medical supplies. On the other hand, wildfires and smoke can compromise indoor air quality and force evacuations. Healthcare workers are also personally affected by all these exposures to extreme weather events and the various disruptions that accompany them. This can reduce workforce availability when demand is highest. These exposures and their impacts on health care facilities and the workforce amplify risks to both patient safety and workforce health.

SPOTLIGHT: Unique challenges and resiliency of rural communities

In rural areas, climate-sensitivity is shaped by geography, limited infrastructure, and sparse services. These factors mean that extreme weather events can have more immediate and severe impacts on health and wellbeing than in urbanized areas, and recovery often takes longer, placing sustained pressure on households and local systems. On the other hand, adaptive capacity is also present, built on a combination of strong social ties, local expertise, volunteer networks, and regional coordination. These strengths form a solid foundation for resilience and play a critical role in reducing harm during increasingly frequent climate events.

Socioeconomic factors increase sensitivity. Rural communities face heightened climate sensitivity due to lower and less stable incomes, limited employment options, and reduced access to services. Many households rely on climate-exposed industries, such as forestry, ranching, tourism, where wildfire, smoke, drought, and severe winter conditions can disrupt income quickly and unpredictably. With fewer alternative job opportunities and longer travel distances to access stable employment, it is harder for residents to recover economically after climate shocks. Lower average incomes also reduce people's ability to prepare for or respond to the unexpected costs associated with extreme weather events, e.g., evacuation and home repairs.

Public infrastructure and services are sparse, making recovery slower. Rural communities often lack designated resilience hubs, cooling centres, clean-air shelters, or community gathering spaces with backup power. Where these spaces exist, there is often limited public transit to reach them. Additionally, rural infrastructure, like roads and drainage systems, is often maintained by local governments with limited budgets, small administrative staff and limited emergency management capacity. Heavy rainfall or rapid snowmelt can overwhelm this infrastructure, causing localized flooding, road washouts, property damage, well contamination, and disruptions to essential services. When transportation routes close, communities may become isolated, making it harder to reach medical care, pharmacies, evacuation centres, or essential supplies. Additionally, some homes are older or located on large rural properties that are difficult to defend during fast-moving fires. Volunteer fire departments, community groups, and informal networks play essential roles, but they are increasingly strained by escalating climate hazards.

Community cohesion, local knowledge and a culture of self-reliance are sources of adaptive capacity. Many rural communities have deep social networks built through long-term residency, cultural ties, ranching and forestry traditions, volunteerism, and community organizations. During emergencies, neighbours check on each other, share resources, and support informal evacuation and sheltering. Long-time residents also carry practical, place-based knowledge about weather patterns, land conditions, fire behaviour, and safe routes, knowledge that strengthens preparedness and response. This social fabric helps fill gaps when formal services are far away or temporarily overwhelmed. Some rural households are accustomed to managing power outages, maintaining emergency supplies, and operating independently for long periods. Residents often have

access to generators, or all-terrain vehicles, which can be crucial during storms, floods, or fire threats. Local food networks, also provide a measure of food security during supply-chain interruptions.

Local governments and regional districts are building capacity through planning and coordination. While many rural areas have limited staff, they increasingly participate in regional emergency programs, mutual-aid agreements, flood-mapping initiatives, and wildfire resilience planning. These efforts help smaller communities access technical expertise and provincial resources they could not secure alone. Some rural communities have improved FireSmart practices, fuel management, and evacuation readiness through persistent local leadership. Indigenous Nations are also vital partners, bringing long-standing stewardship knowledge, and land-based practices that help inform local understanding of ecological changes.

Adaptive capacity

The following section outlines the strategic framework for strengthening adaptive capacity in the EK region against escalating climate hazards, such as drought, extreme cold snaps, and severe winter storms.

Key takeaways on adaptive capacity

- EK HSDA communities are building a foundation for climate planning (e.g., RDEK Climate Action Plan).
- Despite capacity constraints, nonprofits and community partners are increasingly filling response gaps through direct outreach, wellness checks, and resource distribution during extreme events.
- Investments in affordable housing, food networks, and senior supports help buffer climate stress, but community organizations require sustained resources to meet rising needs.
- Communities are advancing ecosystem restoration and water stewardship, yet significant infrastructure upgrades are still needed to protect residents from worsening climate hazards.

The framework was developed directly from comprehensive engagement with community partners; this framework moves beyond traditional emergency planning to focus on holistic resilience. It is structured around five interconnected pathways—Planning, Response, Communication, Social Support, and Environmental Management—that collectively address the root causes of community vulnerability. The framework was derived from community engagement, directly addressing both the current risks (like drought, wildfire, and cold snaps) and the social barriers to resilience. For each pathway, this work highlights the ongoing actions that serve as the foundation of local resilience (e.g., not-for-profit leadership, infrastructure investment) and articulates the ideas for the future that will guide strategic growth and investment toward a more secure and adaptive region. Table B in the appendix presents additional examples of partners in the Okanagan HSDA who can support strengthening adaptive capacity.

Climate Adaptation and Resilience Planning. This pathway is crucial for providing a clear, unified framework for action in the region. Strategic efforts in communities can be hampered by a fragmented system characterized by unclear roles and responsibilities among response actors and inconsistencies in extreme weather policy and funding. While the foundation is being laid by existing dedicated plans and staff focused on climate and social development, the future requires a commitment to using this planning capacity to drive stronger collaboration between governments and communities. The planning process must prioritize the strategic goal of developing robust, integrated plans for extreme weather events, thereby informing the implementation of climate resilient services and infrastructure.

Climate Emergency Preparedness and Response. This pillar focuses on operational readiness and the community's ability to face and recover quickly from high-impact events. Preparedness is often limited by acute capacity challenges, including financial, infrastructural, and labor shortages. Despite this, communities are currently demonstrating resilience through active strengthening of their response systems, including establishing dedicated emergency communication and resource sharing systems, and through investments in growing infrastructure and support services. Non-profits have emerged as leaders in community mobilization and response. Adaptive capacity can be strengthened by facilitating integrated community response that fully incorporates local businesses and non-for-profits, allowing for the rapid and scalable deployment of programs when an emergency strikes.

> *We were talking yesterday about like maybe doing outreach in reach, which is like going out to people's houses that we know are housed that we feel that we can go safely and knock on their door and give them cold water and give them a freezy like you know, because it's hot out right now. And just doing in reach to them and doing it really quietly. They don't have to necessarily come to us and that's like we're trying to adapt...*
> *– Nonprofit organization participant*

Communication, Knowledge Translation and Education. This pathway aims to bridge the gap between risk data and community action, ensuring an informed and engaged public. The efficiency of emergency response can be negatively affected by public communications gaps, and broader adaptation efforts can be undermined by limited public awareness and engagement. While current actions have seen some collaboration among response actors resulting in community education opportunities, there is a need for more education and public engagement on the impacts of extreme weather and specific adaptation strategies. This ensures that the collective knowledge required for resilience is widely translated and accessible, empowering individuals to take informed, evidence-based action.

> *We really try, really try hard now to get information out on the heat and the cold, the extreme cold especially and extreme heat. And I think that's critical because when people do have their phones on them or powered up, they do look at our social media.*
> *– Nonprofit organization participant*

Supporting Determinants of Health. This essential pathway recognizes that climate change is a threat multiplier for social inequities and focuses on building the supports necessary for community wellbeing. Services for seniors, people experiencing homelessness, and those struggling with food or housing insecurity help reduce the stress of daily life and facilitate ongoing access to care during disruptions. Non-profits are often leading in community mobilization and providing support across the region, municipalities are also investing in social development at the community level. However, the future requires a dedicated focus on capacity building and resources for community organizations and formalizing multi-sector collaboration to address systemic vulnerabilities. These initiatives build adaptive capacity by ensuring that residents have the stability, networks, and confidence needed to recover from and adapt to environmental change.

So, I think what the city did right, which some cities aren't doing, is they hired a social development coordinator... the social development has been able to reach those spaces that vulnerable people go and I think they're good at that. – Nonprofit organization participant

Supporting the Built and Natural Environments. This pathway is focused on the physical and eco-system interventions necessary to reduce vulnerability to extreme weather events. Communities across the region could benefit from significant infrastructure upgrades to improve climate resilience, though this is often restricted by financial barriers. However, communities are responding with crucial investment into conservation of wetlands and sustainable water management. Building adaptive capacity requires an ongoing prioritization of a climate-informed approach to land-use decision-making and ecosystem management. For example, protecting water systems against drought, stabilizing slopes against winter-induced debris flows, etc. with the aim of ensuring continued safety and function of the region's physical infrastructure and natural resources.

Together, these pathways create a dynamic system of adaptation that balances social care with environmental stewardship. This approach demonstrates how adaptive capacity emerges not just from technological or infrastructural solutions but from relationships between governance, community, and ecology, each reinforcing the others to create a more resilient and health-promoting regional system.

Table 3. Examples of existing initiatives in the EK HSDA that can support strengthening adaptive capacity

Pathways	Examples of existing initiatives
Climate Adaptation and Resiliency Planning	• Regional District of East Kootenay (RDEK) Climate Action Plan. The RDEK's Climate Action Plan provides a strategic framework for reducing emissions and building regional resilience. It identifies priority actions across transportation, land use, and energy to guide local government and partner decision-making. • Climate Preparedness & Adaptation - Kootenay Rockies Tourism. This initiative helps tourism operators in the Kootenay Rockies understand and respond to climate risks affecting outdoor recreation and visitor experiences. It offers strategies to adapt businesses and protect the natural assets central to the region's economy. • Building wildfire resilience: Columbia Basin Trust has supported community-led wildfire resilience projects including the Shuswap Band's preparedness work, FireSmart treatment near Wasa, and the Yaq̓it ʔa·knuq̓ti ʻit wildfire brigade. These initiatives draw on Indigenous knowledge and local expertise to reduce wildfire risk.
Climate Emergency Preparedness and Response	• Neighbourhood Emergency Preparedness Program | Regional District of Central Kootenay. The RDCK's Neighbourhood Emergency Preparedness Program builds local capacity to respond to disasters by empowering residents to take an active role in their own safety. The program fosters the social cohesion and shared responsibility that underpin genuine community resilience. • Personal Preparedness | RDEK. The RDEK's Personal Preparedness resources help East Kootenay households get ready for emergencies ranging from wildfires to floods and extreme weather. Practical guides and planning tools support families in building emergency kits, developing communication plans, and knowing how to respond when disaster strikes.

Communication, Knowledge Translation and Education	• Columbia Basin Environmental Education Network (CBEEN) - Climate Change Education Resources. CBEEN connects educators and environmental organizations across the Columbia Basin to share knowledge, tools, and best practices for climate and sustainability education. A key priority is equipping teachers with resources that are accurate, age-appropriate, empowering, and locally grounded.
Supporting Determinants of Health	• New affordable homes open for families, individuals in Fernie - Columbia Basin Trust. Columbia Basin Trust's investment in affordable housing in Fernie addresses a pressing barrier to health and stability. New units offer safe, accessible homes for low- and moderate-income families and individuals who might otherwise be displaced. • East Kootenay Food Hub to Strengthen Local Food Security. The East Kootenay Food Hub strengthens the region's local food system by increasing access to locally grown food which supports both individual nutrition and the health of rural communities facing economic and climate pressures. It also creates opportunities for regional farmers and food businesses to thrive in a more resilient local economy. • Home | Cranbrook Food Recovery. Cranbrook Food Recovery rescues surplus food from local businesses and redistributes it to people in need, reducing both food waste and food insecurity in the community. • Better at Home | Community Connections Society of Southeast BC. Better at Home supports older adults in Southeast BC to live independently by providing practical, non-medical assistance such as housekeeping and transportation. The program reduces social isolation and helps seniors maintain their dignity, routines, and community connections as they age. • Step Beyond Shelter | Community Connections Society of Southeast BC. Step Beyond Shelter provides wraparound support to individuals and families experiencing or at risk of homelessness in Southeast BC, helping them move toward stability and independence. The program goes beyond emergency housing to address underlying factors such as mental health, substance use, and employment. • Supportive Housing @ Cozy Bear | Community Connections Society of Southeast BC. Cozy Bear offers supportive housing, providing a stable home alongside personalized support services. Residents have access to assistance with daily living, mental health resources, and pathways toward greater independence and community integration.
Supporting the Built Environment and Natural Environment	• East Kootenay Invasive Species Council. The Council coordinates regional efforts to detect, manage, and prevent the spread of invasive plants and animals threatening the region's biodiversity, agriculture, and natural landscapes. Through education, outreach, and on-the-ground management, they work with landowners, governments, and Indigenous communities to protect local ecosystems. • Conservation Action Forums - Kootenay Conservation Program. The Kootenay Forums bring together landowners, local governments, First Nations, and conservation organizations to collaboratively prioritize actions that protect the region's biodiversity. These forums translate science and community knowledge into concrete, on-the-ground conservation that benefit both nature and the people who depend on it. • Yaq̓it ʔa·knuq̓ti'it First Nation helps heal the land: A project located in the southern East Kootenay, the aim is to restore a healthy, functional wetland that supports native wildlife and increases open water habitat for species like ungulates and the at-risk western painted turtle. • Upper Columbia Basin Groundwater Monitoring Program: This project aims to increase knowledge about groundwater resources to effectively inform sustainable water management and meet the needs of people and nature.

Conclusion

This Climate and Health Vulnerability Assessment highlights that the EK region is already experiencing climate-related health risks driven by increasing wildfire and smoke, extreme heat, flooding, and winter storms. These risks are not evenly distributed: people with chronic health conditions, older adults, low-income households, and those living in rural and remote areas face heightened exposure and fewer options to avoid or recover from climate-related harms. As climate hazards become more frequent and overlapping, they place growing pressure on communities, ecosystems, and the regional health system.

At the same time, the assessment identifies strong foundations for adaptive capacity across the region. Regional climate and adaptation planning, wildfire resilience initiatives supported by local governments, Indigenous Nations, and the Columbia Basin Trust, and community-based emergency preparedness programs are helping reduce risk and improve readiness. Investments that strengthen the social determinants of health including affordable and supportive housing, food hubs and recovery programs, and services that support seniors and people facing housing instability, are already reducing vulnerability and supporting recovery during climate disruptions. Education and knowledge-sharing initiatives are also building awareness and practical skills, while conservation and restoration efforts are protecting natural systems that buffer floods, support water security, and sustain long-term wellbeing.

Together, these initiatives demonstrate that building climate resilience in the EK is both possible and already underway. The challenge ahead is to deepen coordination across sectors, scale successful programs, and ensure that adaptation efforts continue to center health, equity, and Indigenous leadership. By building on existing strengths and aligning future investments with the needs identified in this assessment, the region can reduce climate-related health risks and support healthier, more resilient communities in the years to come.

Acknowledgements

This CCHVAA was guided by Health Canada's Climate Change and Health Vulnerability and Adaptation Assessment: Workbook for the Canadian Health Sectors as well as CCHVAAs completed by other jurisdictions such as Vancouver Coastal Health and Fraser Health, Simcoe-Muskoka District Health Unit and Waterloo Region, Wellington County, Dufferin County and the City of Guelph.

The assessment was completed by the CCHVAA Working Group, a cross-disciplinary group with representation from Population and Public Health programs and the Epidemiology and Surveillance Unit. This included:

- Dr. Sue Pollock, Chief Medical Health Officer
- Julian Mallinson, Director, Strategic Initiatives
- Kady Hunter, Lead, Climate Change and Health
- Glory Apantaku, Climate and Health Scientist
- Carolina Arana, Lead, Climate Change and Health (interim)
- Jenny Green, Team Lead, Healthy Community Development Team
- Chanelle Giroux, Administrative Assistant
- Vi Nguyen, Public Health Epidemiologist

The working group was responsible for scoping the assessment, establishing an assessment framework, collecting and analyzing quantitative and qualitative data, and synthesizing the information into this report and future knowledge translation materials.

In addition, the CCHVAA was reviewed by IH staff external to the working group including staff from Population and Public Health, Communications and Engagement, and Indigenous Partnerships.

Additional Tables

Table A. shows the prevalence of selected chronic conditions in Community Health Service Areas (CHSA) across the East Kootenay region

	Fernie	Cranbrook	Kimberley	Windermere	Golden
Chronic disease prevalence (Age standardized prevalence, ASPR[xiii])					
Hypertension (2020 ASPR/1000 pop 20+)	221.82	240.92	199.4	192.95	191.6
Ischemic Heart Disease (2020 ASPR/1000 pop)	67.48	67.4	63.04	55.56	57.66
Mood/Anxiety Disorders (2020 ASPR/1000 pop)	250.82	347.66	292.78	257.59	236.25
Asthma (2020 ASPR/1000 pop)	117.63	109	102.4	96.94	91.49
COPD (2020 ASPR/1000 pop 35+)	63.38	72.83	72.70	62.09	80.53
Chronic Kidney Disease. (2020 ASPR/1000 pop)	28.14	33.95	31.05	24.05	24.71
Diabetes. (2020 ASPR/1000 pop)	75.89	76.87	58.13	63.22	60.08
Alzheimer's/Dementia. (2020 ASPR/1000 pop 40+)	19.13	21.58	19.62	17.84	20.25
BC Index of Multiple Deprivation*					
Situational vulnerability (quintile) 2022	2	3	2	2	3
Residential instability (quintile) 2022	2	2	3	1	2
Economic dependency (quintile) 2022	1	3	4	3	2

*Note: The indicators included in these descriptions are based on the 2016 census data and the dimensions are described as follows. **Economic dependency:** Proportion of population participating in labor force (aged 15 and older), the proportion of population aged 65 and older, the ratio of employment to population, and the dependency ratio (population aged 0–14 and aged 65 and older divided by population aged 15–64).[54] **Residential instability:** Proportion of dwellings that are apartment buildings, the proportion of persons living alone, the proportion of dwellings that are owned, and the proportion of the population who moved within the past five years.[54] **Situational vulnerability:** Proportion of population that identifies as Indigenous, the proportion of population aged 25–64 without a high school diploma, the proportion of dwellings needing major repairs, the proportion of population that is low income, and the proportion of single-parent families.[54]**While the situational vulnerability dimension includes a proportion of Indigenous residents, it is important to note that Indigenous identity in itself does not translate into deprivation: rather, the historical, intergenerational and ongoing impacts of colonization and systemic racism play a pivotal role in driving deprivation in Indigenous communities.

[xiii] Age-standardized prevalence rates account for differences in the age structure of different geographical regions; rates are calculated as if all regions shared the same age structure. Age-standardized rates are appropriate for comparing regions or trends over time.

Figure A. Number of days with population-weighted average PM2.5 > 15µg/m3 during wildfire season (2016-2022)[xiv]

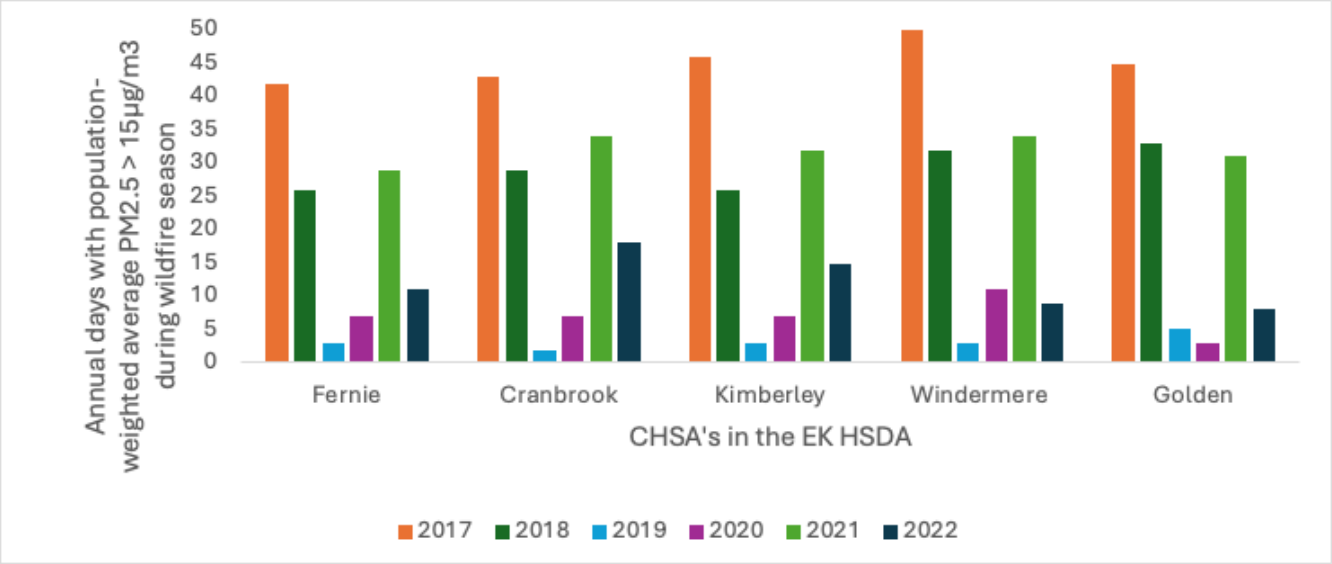


Table B. Examples of partners in the EK HSDA who can support strengthening adaptive capacity

Categories	Examples of community-level organizations
Local Government and Libraries	· Municipal and Regional Governments · Libraries
Indigenous Partners	· First Nation partners (Ktunaxa Nation) · MNBC
Funding Agencies	· Columbia Basin Trust
Food System Organizations	· Kimberley Cranbrook Food Network
Education Institutions	· Thompson Rivers University · Columbia Basin Environmental Education Network (CBEEN) - Climate Change Education Resources
Healthcare Partners	· IH programs and staff · Health Emergency Management BC
Agencies that Support Local Governments	· BC Housing
Environment Stewardship Organizations	· East Kootenay Invasive Species Council · Kootenay Conservation Program
Organizations Serving Vulnerable Populations	· Community Connections Society of Southeast BC (CCSSEBC)
Climate Change Advocacy Organizations	· East Kootenay Climate Hub
Private Sector	· Drinking water system operators
Economic Development Organizations	· Community Futures East Kootenay (CFEK)

[xiv] Estimates of PM2.5 related to wildfire smoke are from the Canadian Optimized Statistical Smoke Exposure Model (CanOSSEM), a large-scale machine-learning model that estimates PM2.5 at a 5 km × 5 km spatial resolution with multiple data input, including satellite images, meteorological modeling and measurements from air quality monitors. Daily population-weighted averaged PM2.5 exposure were calculated for each wildfire season (May and September) from 2016 to 2022. Note: the publication indicates that they included wildfire and residential wood heating smoke.

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