

Geospatial Mapping of Discarded Needles to Identify Seasonal Trends and Service Gaps in Regina, Saskatchewan

Presented by Nelson Pang



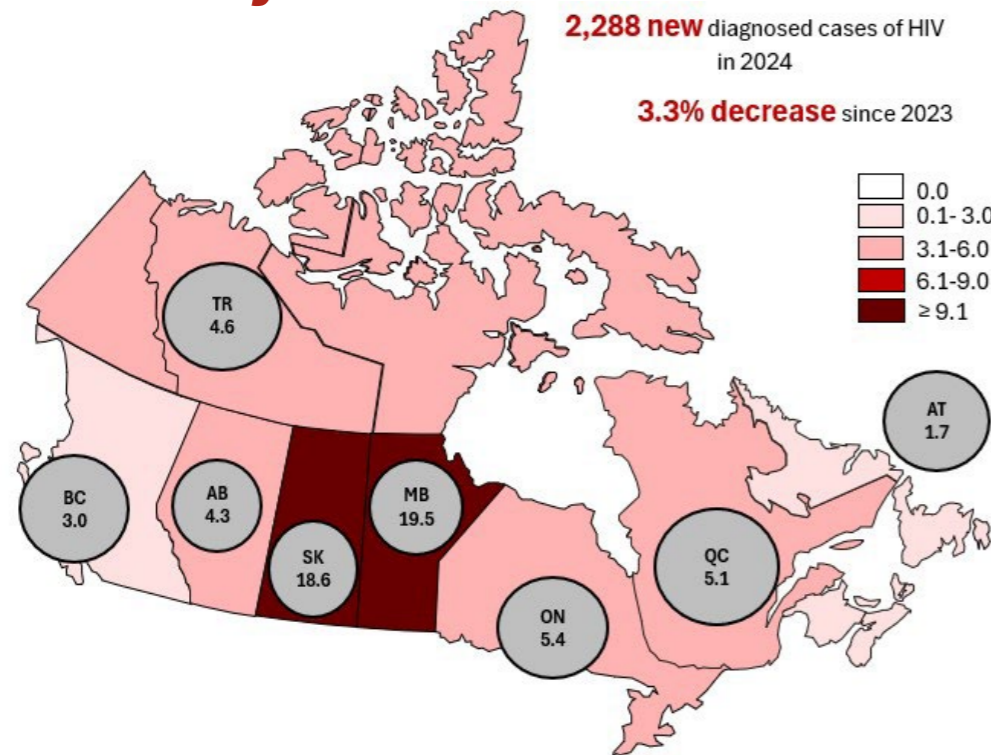
Funders:



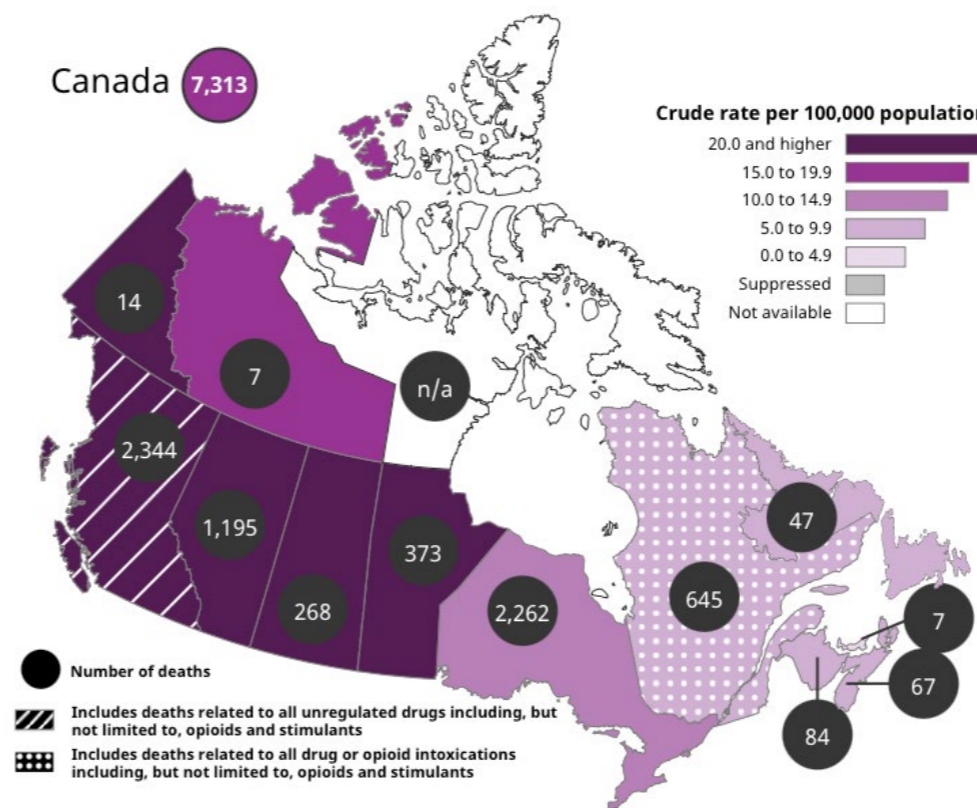
Background

- High HIV incidence in Saskatchewan — more than 4x the national average
- Third-highest drug toxicity overdose deaths in Canada
- Injection drug use accounting for ~65% of new HIV cases (2010 – 2019)

New diagnosis rate per 100,000 population in 2024, by province or territory



Number and crude rate (per 100,000 population of apparent opioid toxicity deaths in 2024, by province or territory






Thank you for your interest in keeping our communities safe! Please fill out the below form and we'll send someone out to collect and safely dispose of the needles.

Please note this service is currently only available in Regina, SK; and Kenora, ON

Don't see your area? Send an email to info@luketowers.ca with contact information for your local agencies.

Drag the map to position the marker as close as possible to the needles
(or use the address form below to find a location)



Enter a location

Start typing to search for an address

Description (required) *

Picture (optional)

You can provide your contact information below to help provide more information if we have questions on the exact location when we get to the specific location.

Contact email (optional)

Cell phone (optional)

Submit

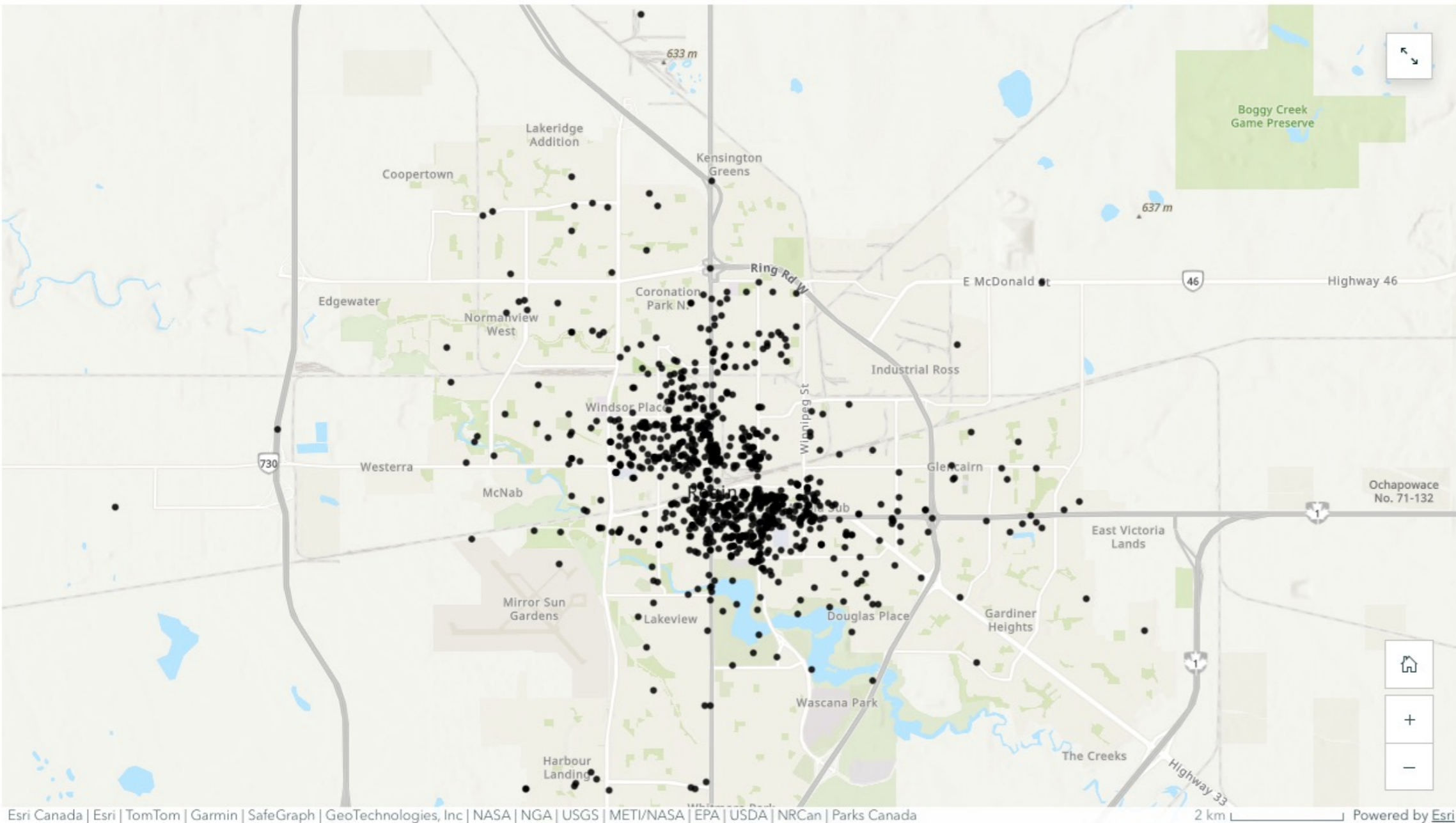
- Geographic service gaps limit equitable access to prevention and care
- Given the decentralized nature of substance use, geospatial tools can identify areas of concentrated need and inform responsive harm-reduction deployment
- This study examines four years of needle-report data to assess evolving hotspot patterns and emerging service gaps relevant to AIDS Programs South Saskatchewan (APSS)
- **ReportNeedles.ca** is a community-driven initiative addressing alarming HIV, syphilis, hepatitis C, and overdose rates in Saskatchewan



Methods

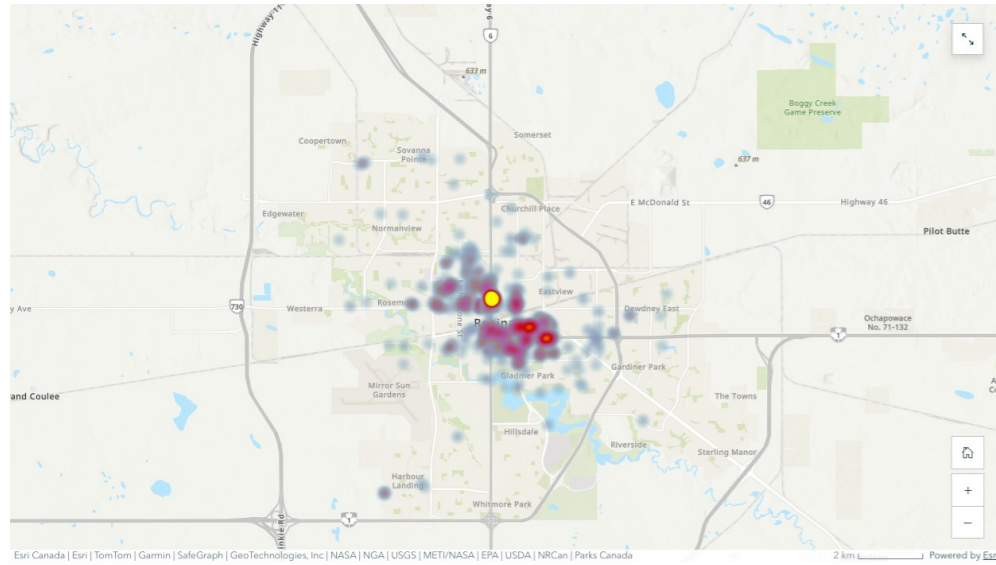
- Geospatial data from all needle reports submitted in Regina between ***April 2021 and September 2025*** were analyzed using ArcGIS
- Reports were mapped to assess spatial clustering and seasonal variation
- Walk-time buffers were applied to evaluate the reach of APSS and HIV services
- Spatiotemporal trends were visualized to identify changes in geographic distribution

Results

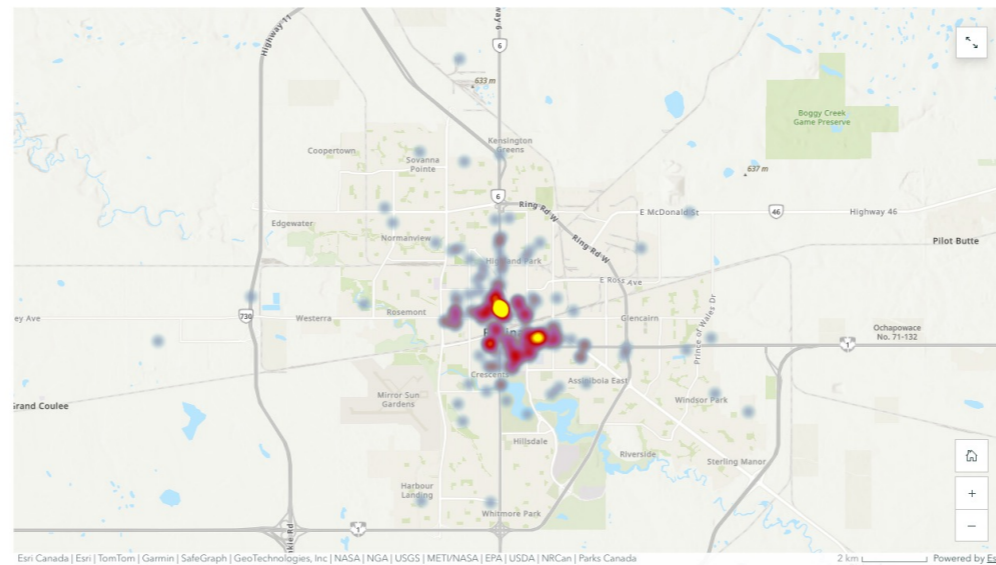


- A total of **1,108** needle reports were submitted resulting in **40,688** discarded needles
- Overall, **95.1%** of submissions resulted in APSS successfully locating and discarding needles, indicating strong responsiveness to community submissions
- Analyses revealed persistent clustering in downtown neighbourhoods with some year-to-year variation

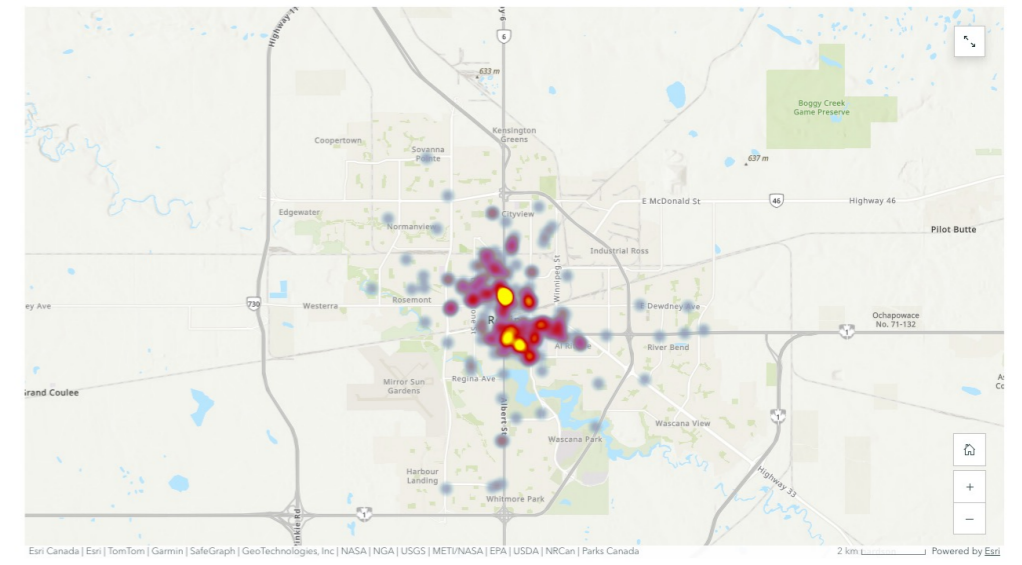
Results



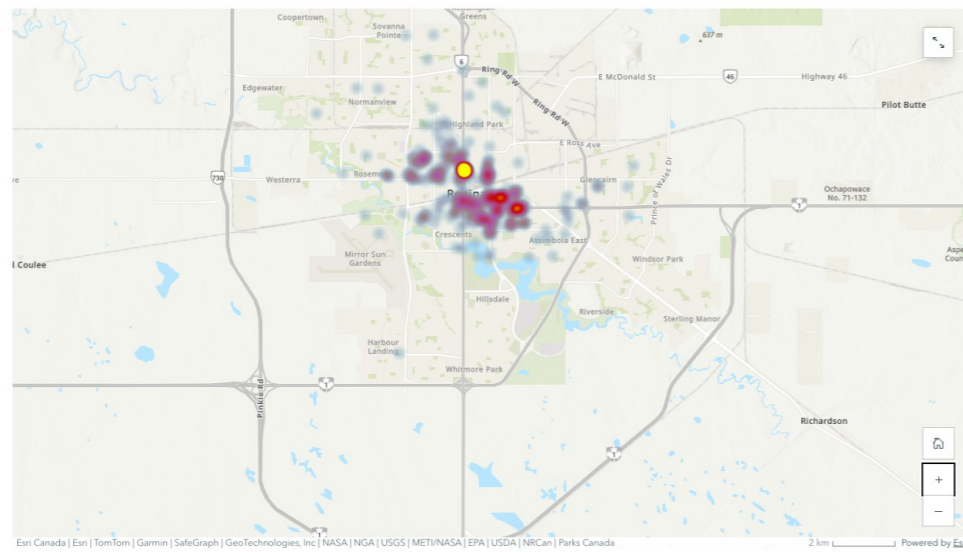
2021



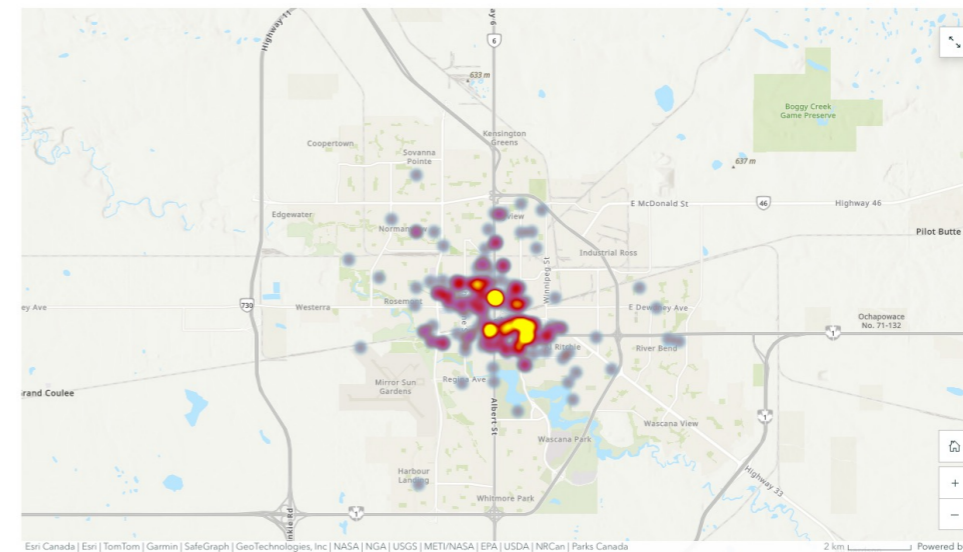
2022



2023



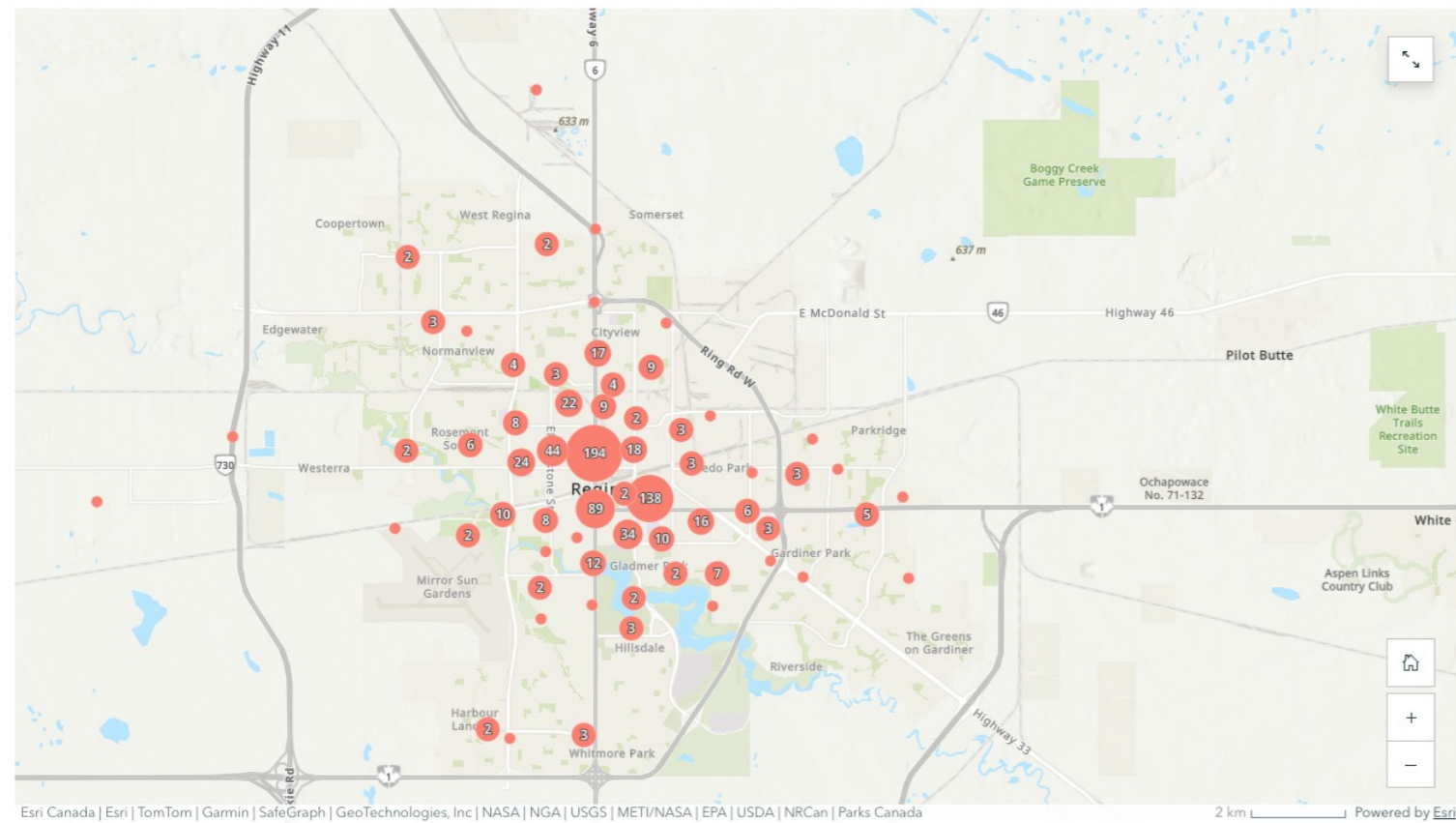
2024



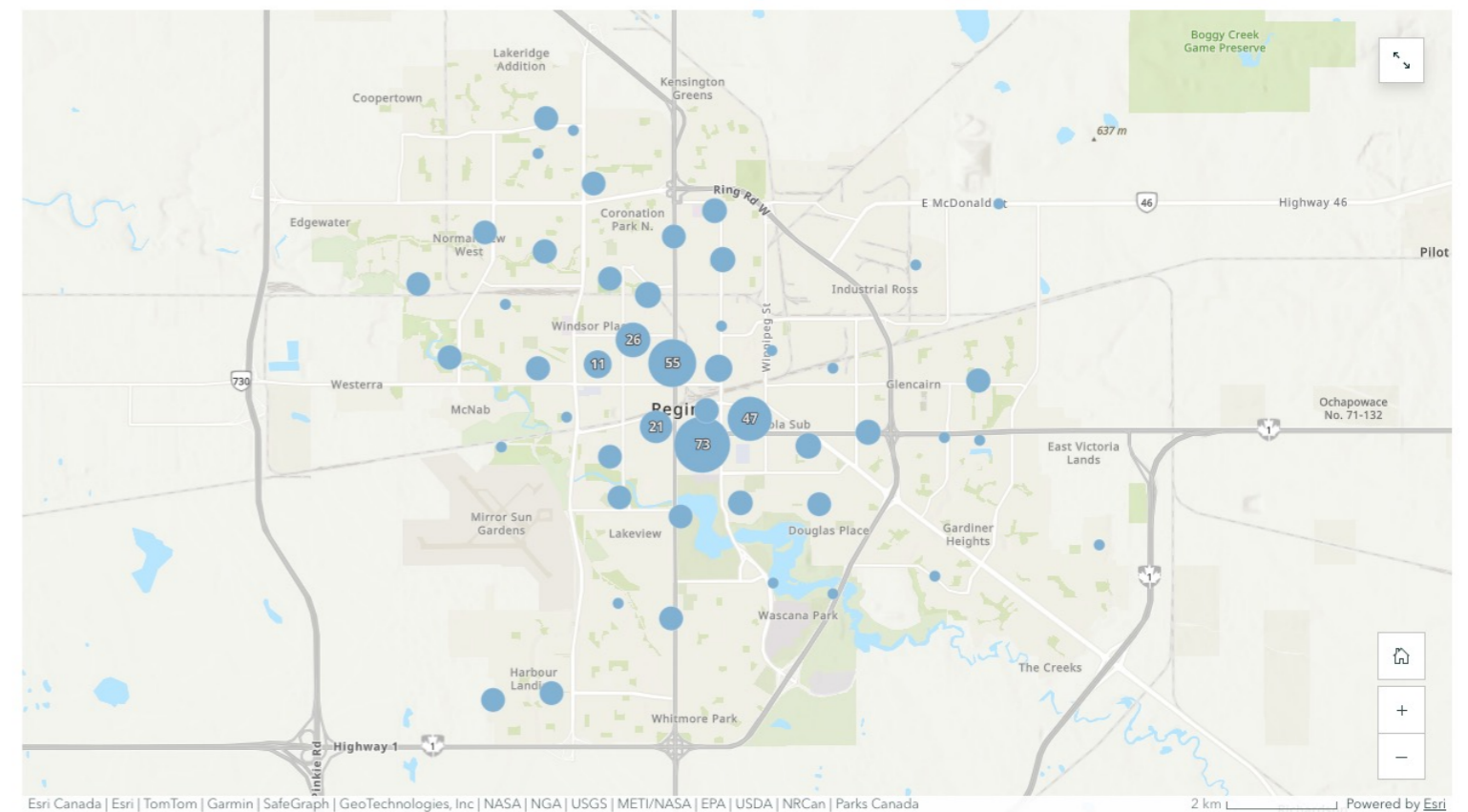
2025

Results

We also found some seasonal variation:



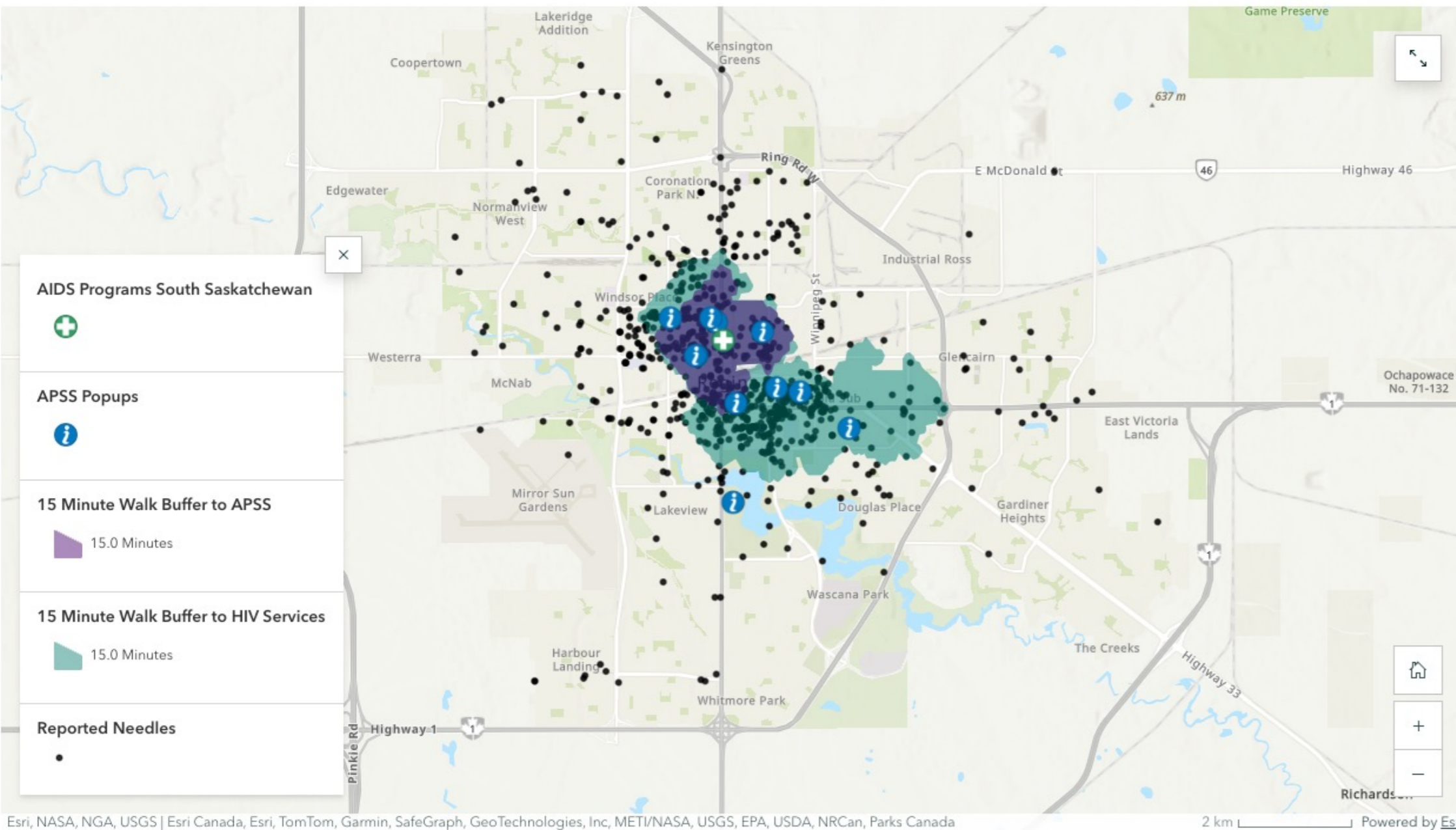
Summer (May – Oct)



Winter (Nov – Apr)

- Needle reports were consistently concentrated in the city center
- Greater geographic spread of reports on summer months
- Increased report in suburban areas during summer months

Results



- Several high-activity areas fell outside a 15-minute walking radius of existing services indicating geographic misalignment between need and service location
- While APSS deployed pop-up services in high-need clusters, capacity to reach more dispersed areas was limited
- These findings informed expanded mobile outreach and re-evaluate placement of pop-up services

Conclusion

- Discarded needles were spatially clustered indicating localized harm-reduction needs
- Several high-activity areas fell outside accessible walking distances to existing services demonstrating geographic misalignment between need and service location
- These findings suggest that fixed-site services alone are insufficient, particularly in the context of dispersed patterns of use
- Results support the expansion of mobile and flexible responsive harm-reduction services
- Community-generated geospatial data provide a valuable, real-time tool for identifying emerging hotspots and informing targeted interventions
- While an imperfect proxy, needle-report data offer important insight into community-level needs and service gaps
- This approach strengthens APSS's ability to identify emerging hotspots, address service gaps, and optimize outreach in Regina

Three infections, one fight: An implementation study to map needle prevalence and evaluate HIV, syphilis, and hepatitis C prevention interventions in Regina, Saskatchewan – a protocol

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