

Business Intelligence (BI): A System to Improve HIV Surveillance and Care



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Background

- More than half of all HIV individuals in Colorado live in Denver.
- 45% of all new HIV cases in 2013 were diagnosed in Denver.
- 90% of all new HIV cases are successfully linked to care, although poorly retained in care.
- Denver Public Health (DPH) recognized a business need for an IT solution that could manage multiple data sources and support comprehensive HIV surveillance and treatment that would start at diagnosis and follow through to receipt of care and the achievement of an undetectable viral load.

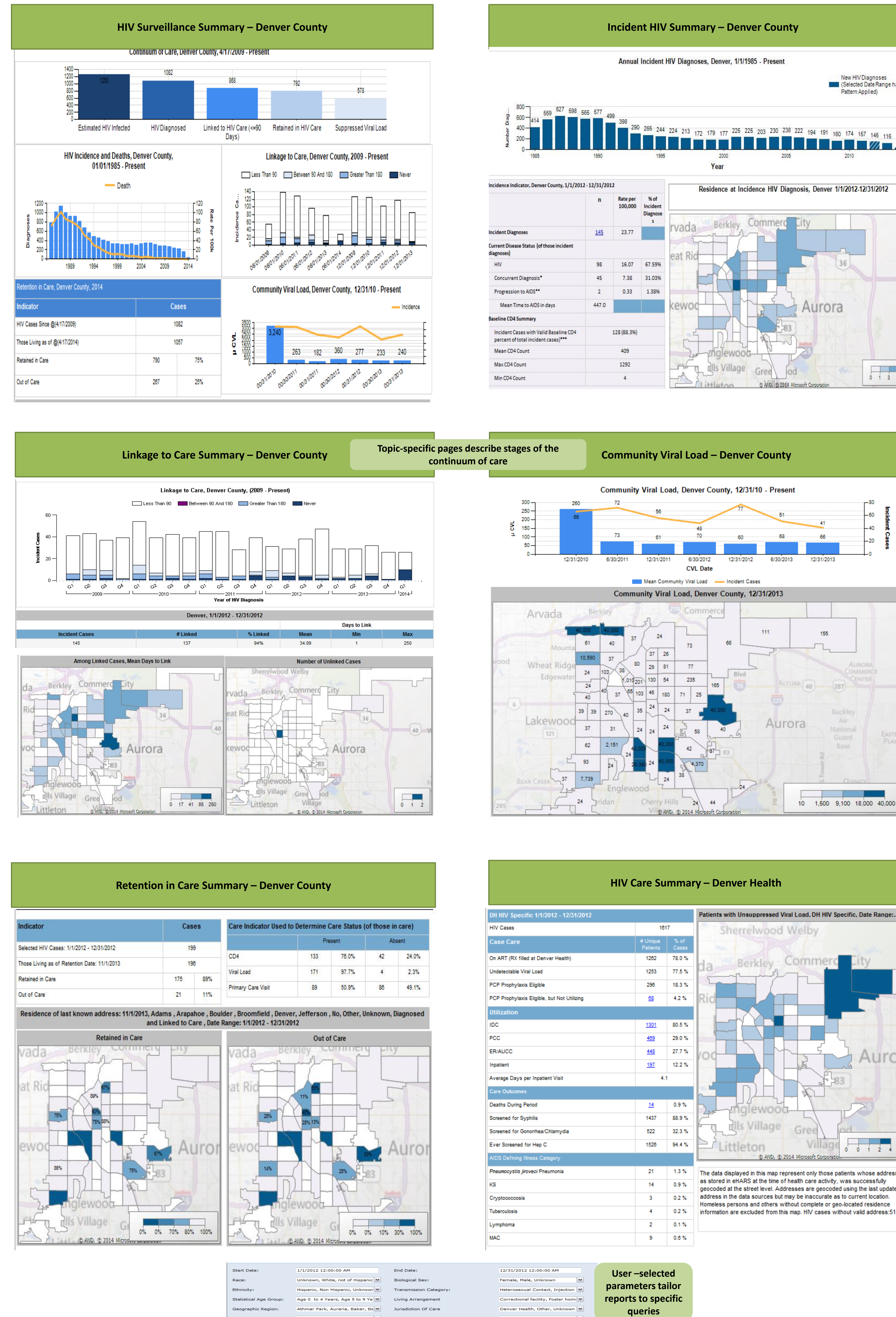
Objectives

- To describe the process for developing a business intelligence tool to monitor real-time HIV.

Methods

- Requirements gathering sessions with stakeholders allowed developers to gain a better understanding of current and future surveillance needs.
- Stakeholders and developers met frequently during the development process to provide input.
- Sufficient planning time was allocated to define requirements, translate those requirements into detailed data documents and wireframe dashboards, perform data quality and validation, gain feedback during the development cycles, and testing and bug fixes prior to final release.
- Demographic, geographic, and HIV specific data were integrated from multiple healthcare sources and included clinical visits, viral load, and CD4 counts.
- Data was assessed for cleanliness, accuracy, and where necessary, surrogates developed before storing in the BI data model.

HIV Dashboard



Results

- The resulting Business Intelligence solution integrated multiple data sources including eHARs, Expanded CD4 and viral load result data, HIV positive registry data, and EMR from one healthcare provider.
- Utilizing an on-line dashboard of charts, graphs, and GIS mapping tools, users have real-time data access to monitor disease burden and linkage and retention in care.
- This user-defined dashboard allows users with appropriate need and security clearance to drill down to patient level data to generate lists for clinical and public health outreach purposes.

Conclusions

- A Successful project requires documenting detailed requirements, performing and addressing data quality issues, end-user testing and feedback, and ongoing communication between developers, stakeholders, and informatics staff.
- The resulting BI tool allows:
 - The assessment and monitoring across the spectrum of HIV disease.
 - Creates opportunities for prevention practitioners and policy makers to better understand current and future data needs to better direct resources.

Implications

- By utilizing a BI technology, health departments and clinicians can:
 - Better target prevention and programming
 - Maintain the capacity to intervene in a more directed manner with the HIV-infected community and care providers along the continuum of care (diagnosis through linkage to care, retention in care, and viral load suppression) helping to evaluate where intervene in a more directed manner with the HIV-infected community