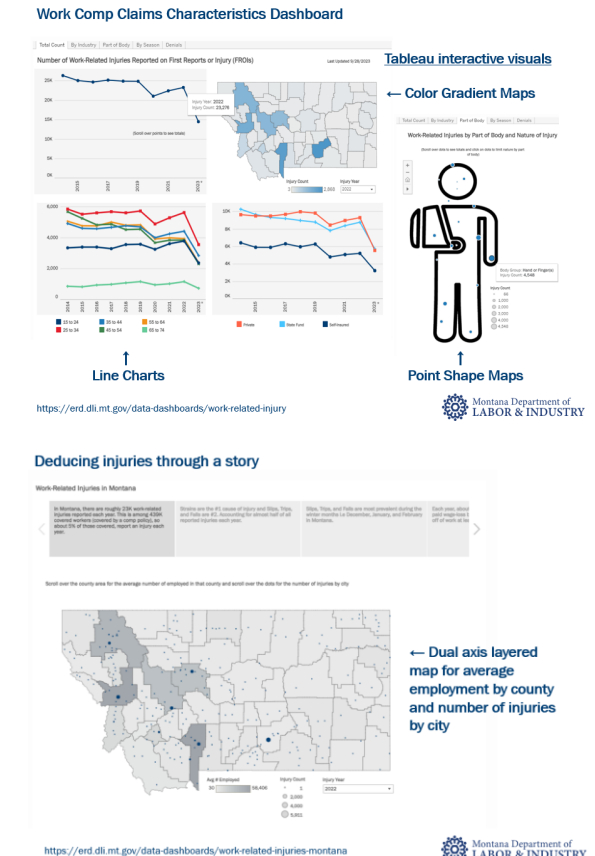
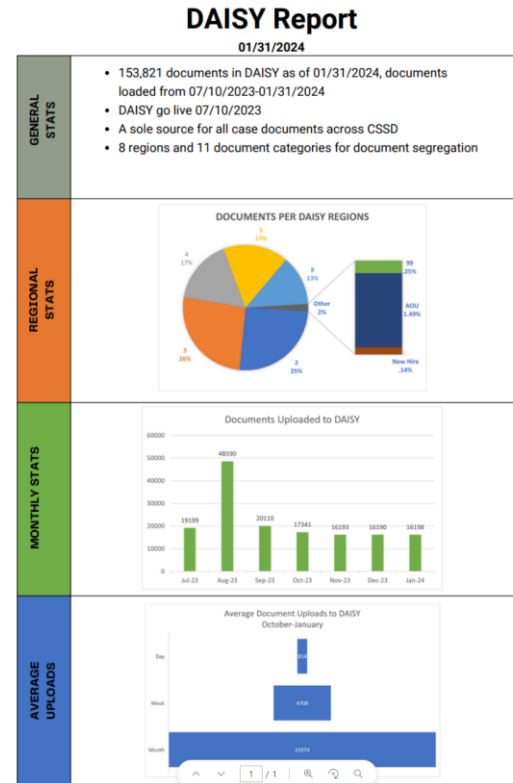




Montana's Data Journey

Adam Carpenter, Chief Data Officer – CDO Team

Our Journey to Outcomes...



Paper-Based Processes

Manual Reporting

Physical Storage

KPIs & Trends Not Possible

Multiple Sources

Ad hoc Reports

Digital Storage

Starting Trends & KPIs

One Integrated Source

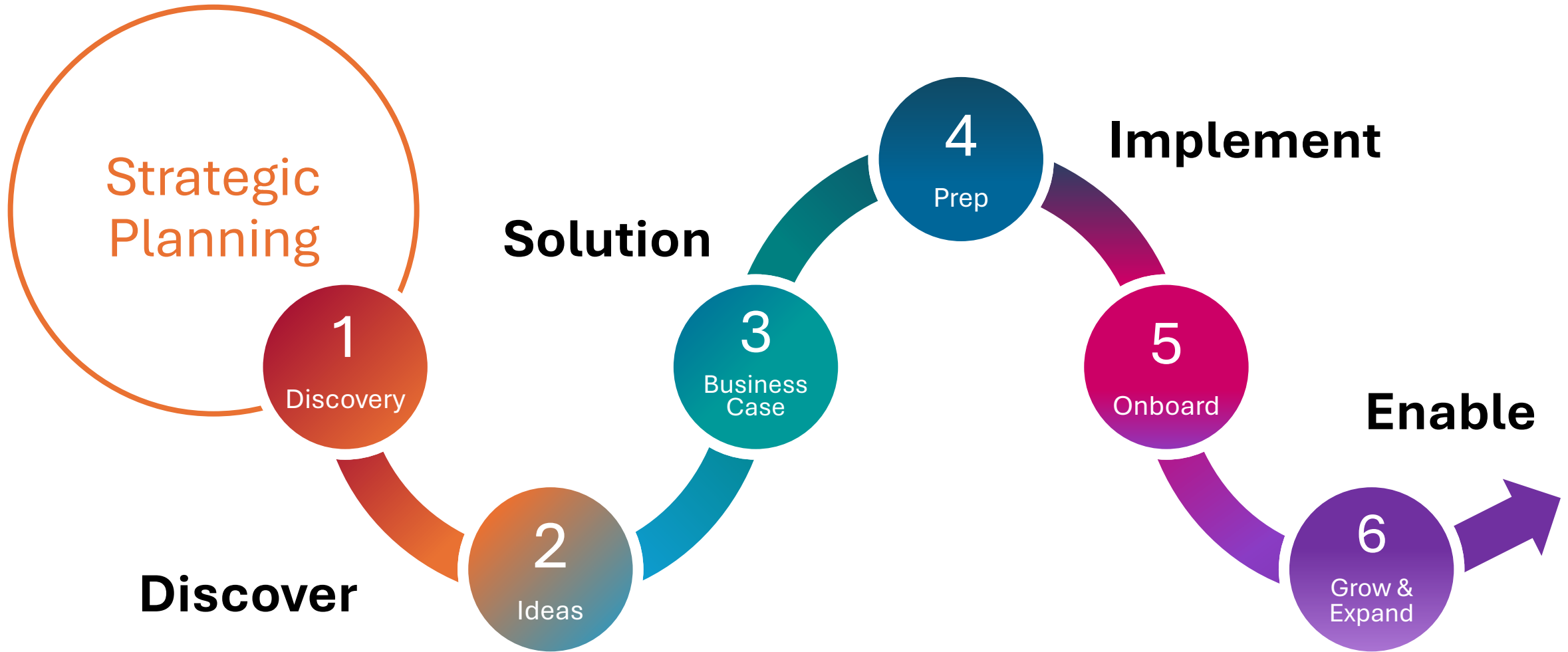
Automated Reporting

Inter-Agency Sharing

Insights and Outcomes



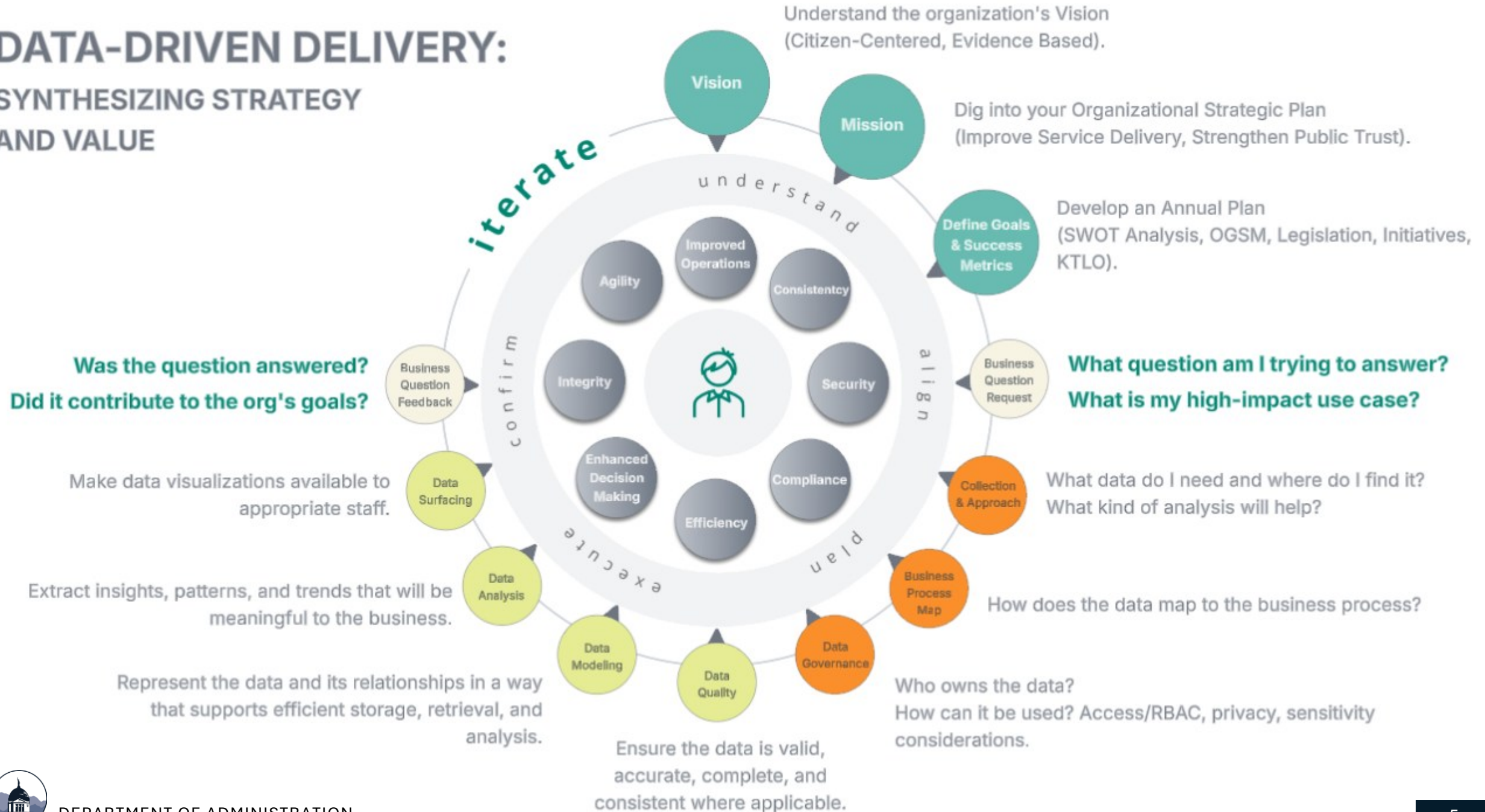
Montana's Data Journey



Montana's Data Journey



DATA-DRIVEN DELIVERY: SYNTHESIZING STRATEGY AND VALUE



Montana Data Center of Excellence

Education & Outreach



Summer 2025 Workshop

August 27, 2025
August 28, 2025
August 29, 2025
8:30am - 4:30pm MT

CONTACT:
Adam Carpenter • adam.carpenter@mt.gov
Sarah Bartow • sarah.bartow@mt.gov
Therese Simpson • therese.simpson2@mt.gov
Brandy Murray • brandy.murray2@mt.gov
Jeremy Henry • jeremy.henry@mt.gov



INTRODUCING...

Montana Data University...a collection of opportunities to explore, learn, share, and collaborate on our data journey!

Join us for a free workshop to explore topics like Strategic Planning, Data Quality and Governance, Behavioral Driven Design, Agile Analytics, Data Modeling and Learning Labs with Snowflake, Alation, and ThoughtSpot.

Each session has been carefully crafted to offer the best practices we all need to know next in an engaging, hands-on experience.

Get ready to roll up your sleeves, play with some data, discover something cool, and geek out with fellow data enthusiasts as we sprinkle in some summer fun while we learn!

WHO SHOULD ATTEND?

All levels of technical skills!
Students can choose to participate in one to all sessions.
Feel free to forward the invitation to members of your organization.

WHERE IS THE EVENT?

Montana WILD
2668 Broadwater Ave.
Helena, MT 59602

In-person participation is strongly encouraged. Contact us for alternate options.

Dress comfortably - summer attire welcome!

Many thanks to our sponsors!



Montana Data Center of Excellence

- Centralized compendium of best practice, tools, processes, and training materials
- Highlight our mission, success stories, and ongoing initiatives

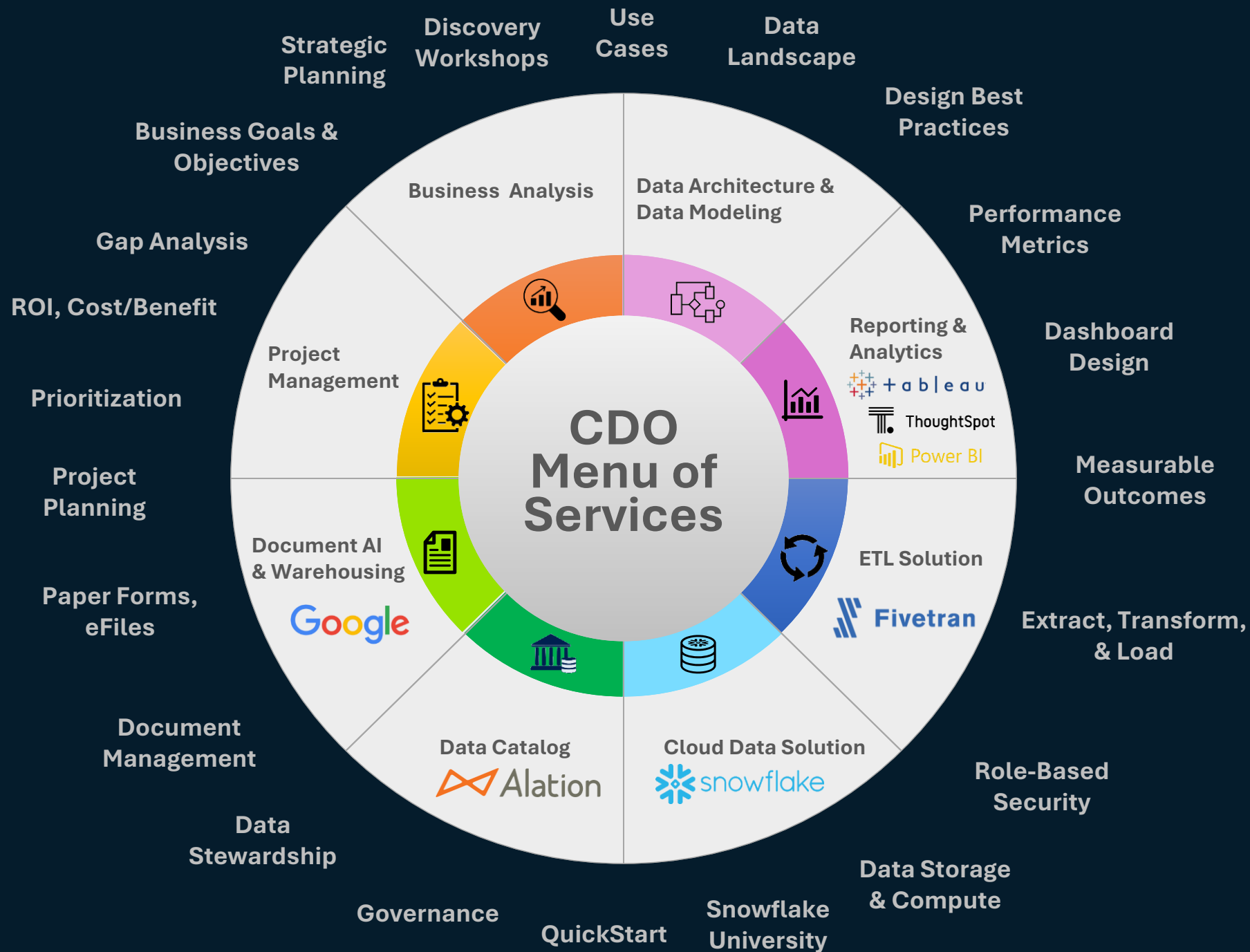
Educate & Collaborate

- Deliver 200+ learning opportunities annually through:
 - Semi-annual Data Summits
 - Hands-on Workshops
 - Interactive Webinars

Software Solutions

	Onboarded	Evaluating
AI	Google doc.ai perplexity	
Analytics	+ a b l e a u ThoughtSpot Power BI	sigma
Cloud Data Solution	snowflake	
Data Modeling		SqlDBM DbSchema
ETL	Fivetran FME	dbt
Governance	Alation servicenow	Anomalo
Performance Mgmt		achieveit
Tools	GitLab PyCharm JETBRAINS IDE	





Snowflake Data Sharing Enabled by ServiceNow

Montana Data Sharing Ideas

Key

- ❗ Data in Snowflake, Shareable Now
- ❗ Data in Snowflake, Not Yet Shareable
- ❗ Data Requested From Other Agencies

Let's Share!

Collaborate with fellow agencies regarding data sharing requests! Add stickers for datasets that are currently Shareable in Snowflake or coming soon. Identify potential future plans. Request data from other agencies. Feel free to add a row at the bottom of the list for an agency if they are not listed.

Corrections

DEQ

DIU

DNRC

DOA

Request the Data Share

Scope the Data Share

Requesting Agency Approves

Owning Agency Approves

Owning Agency Implements the Data Share

Cultivate a Data Sharing Culture:
Expanding sharing opportunities and improving agency accessibility to public data.

Active Data Shares: 28

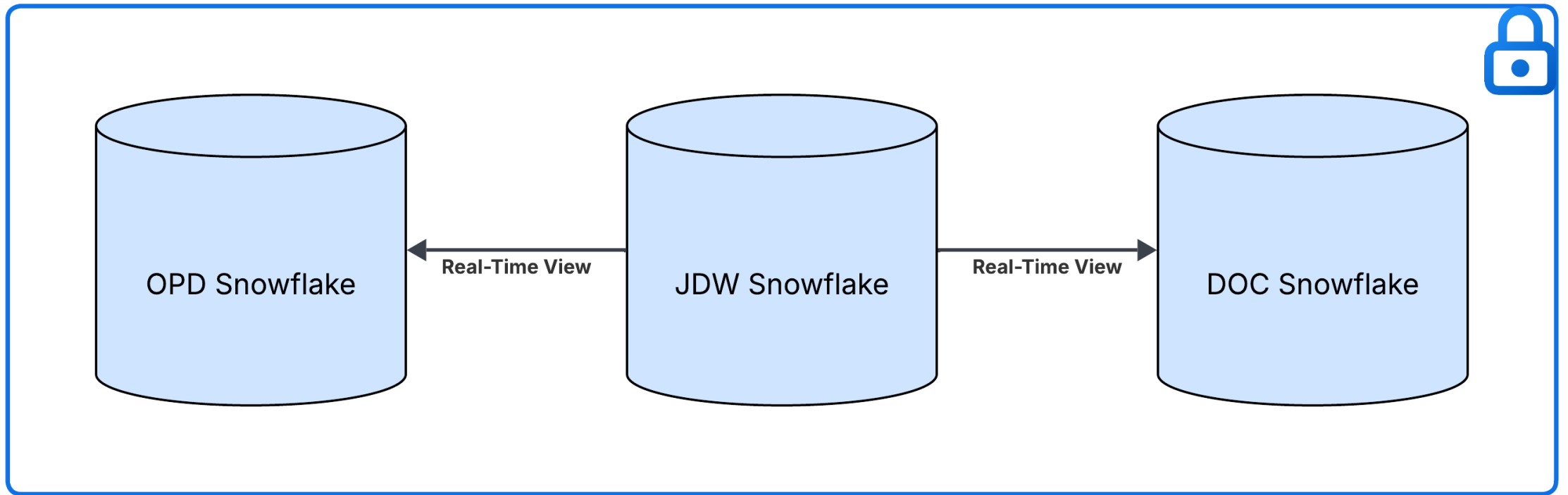
- Approved & Active: 18
- In Process: 10

Coming Soon! 48

This ~170% growth in data sharing requests tells the real story - Cultural change enabled by collaboration & technical architecture.

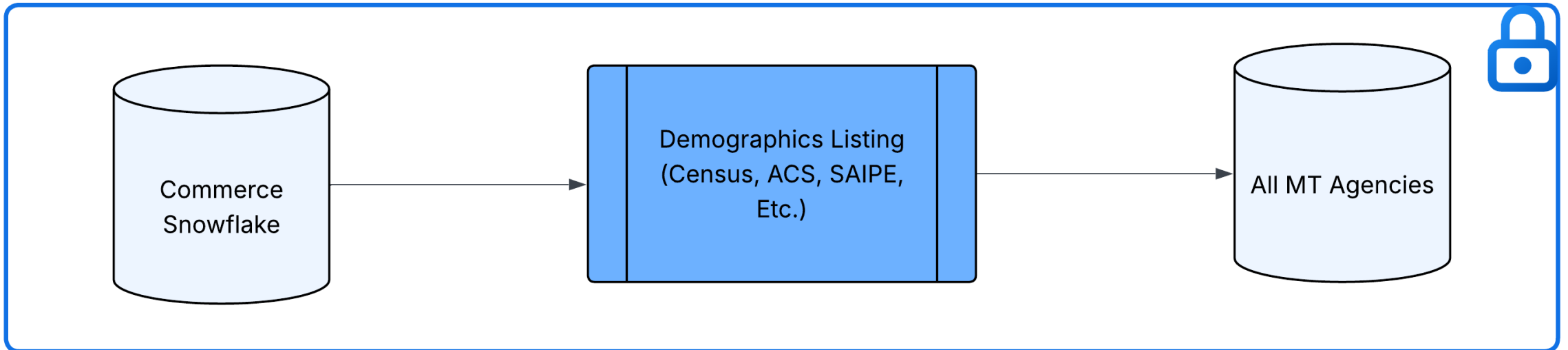
Snowflake Direct Sharing

MT Snowflake

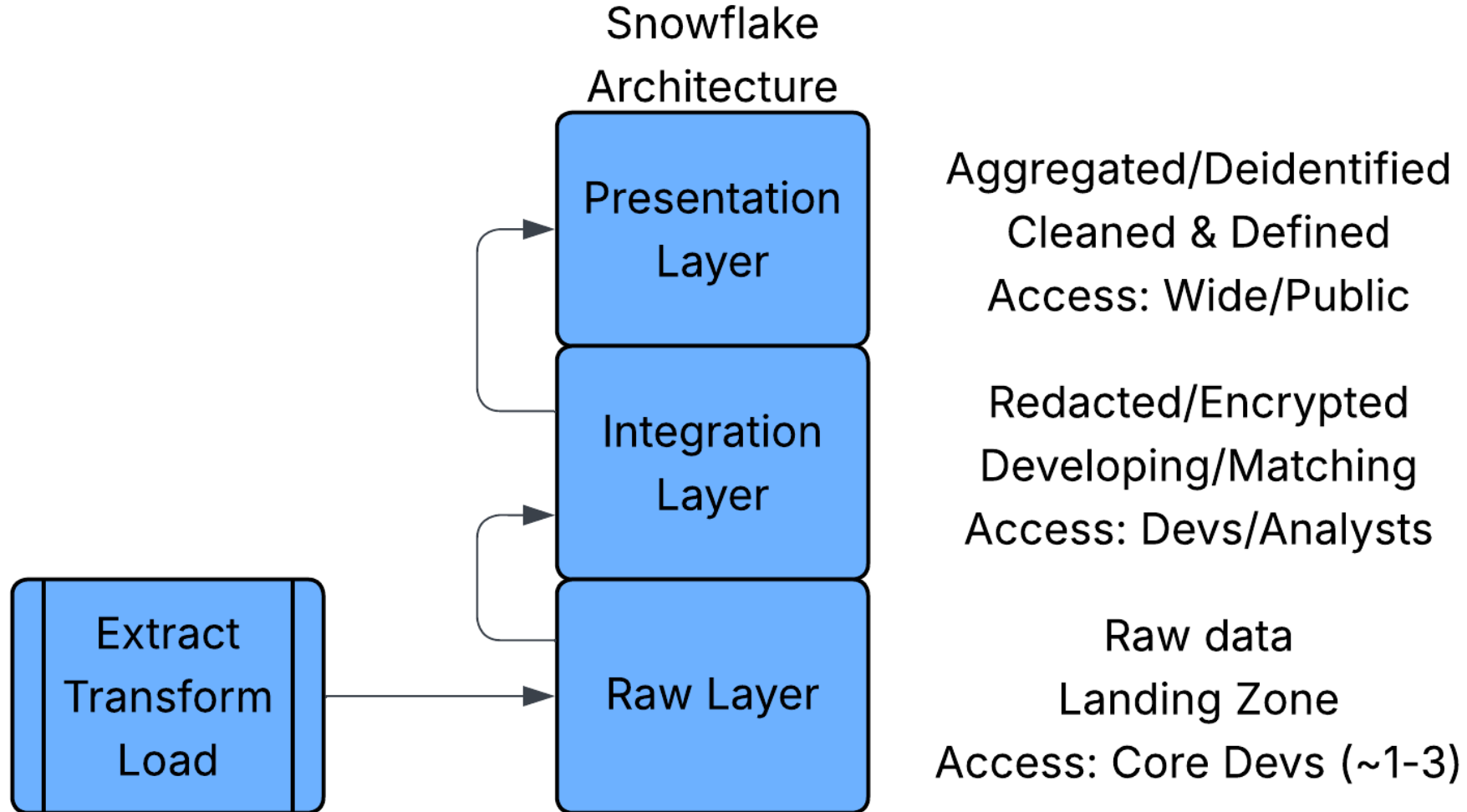


Snowflake 'Listings' Concept

MT Snowflake



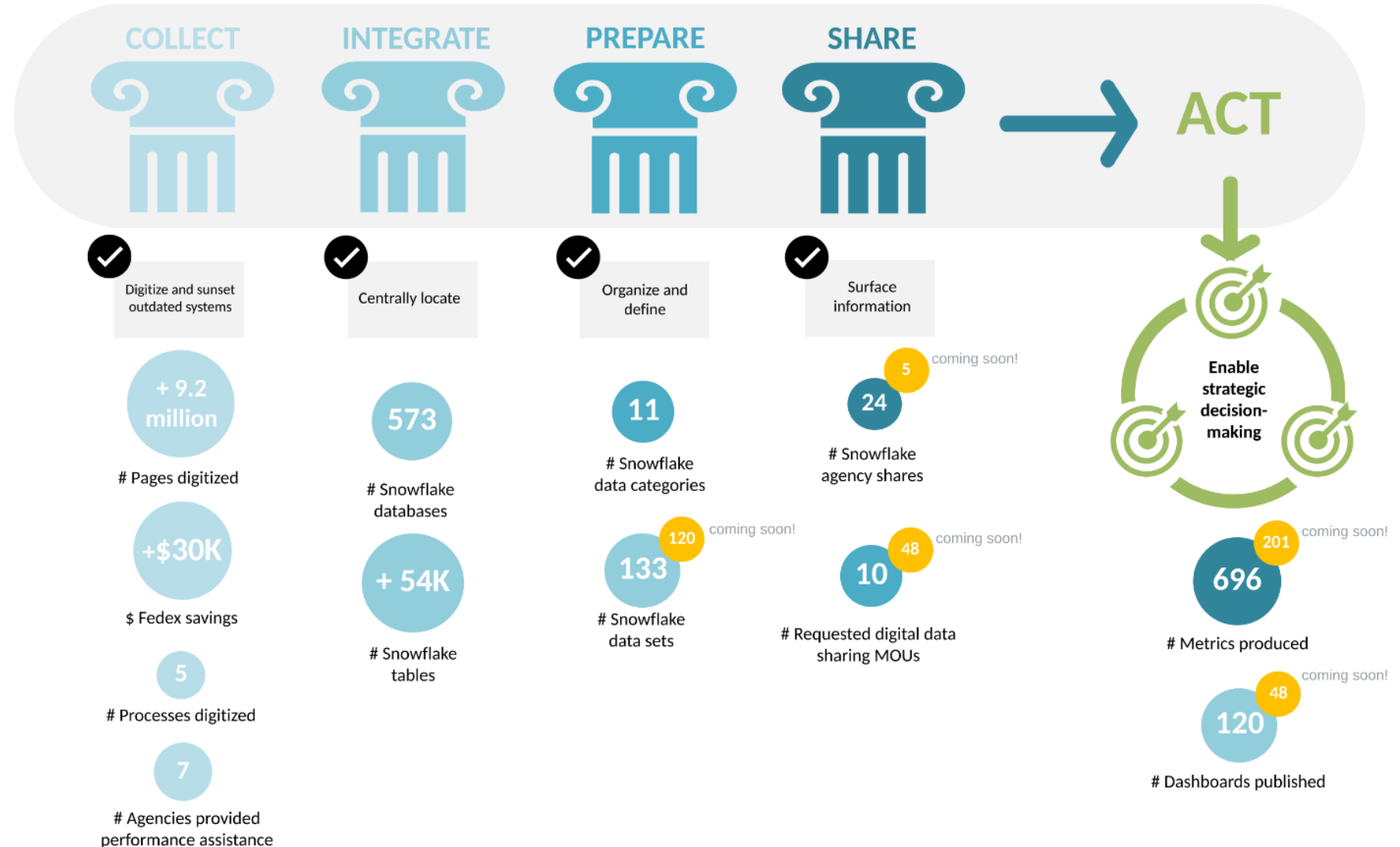
'Medallion' Architecture in MT Snowflake



Success at a Glance

- 9.2 million pages
- 54k+ thousand tables loaded
- 573 databases
- 696 metrics
- 120 dashboards

But none of that is truly the point...



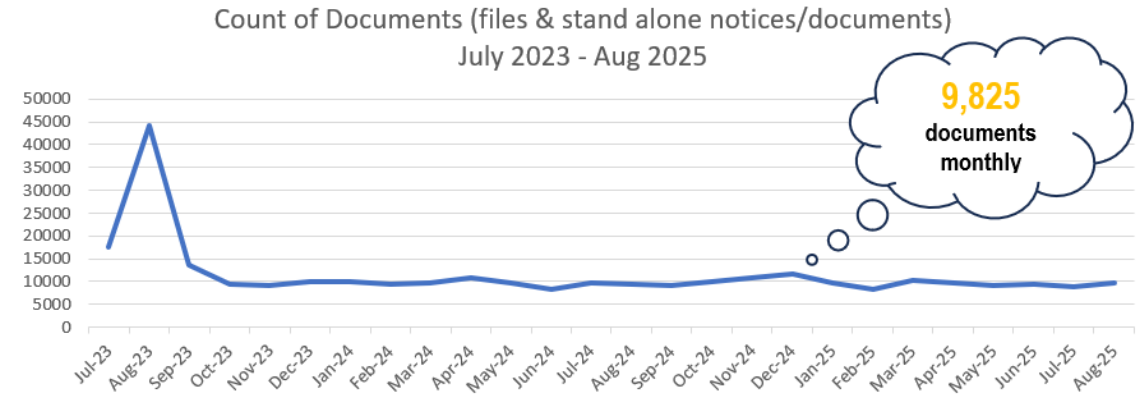
Digitizing Child Support Services Documents

Benefits

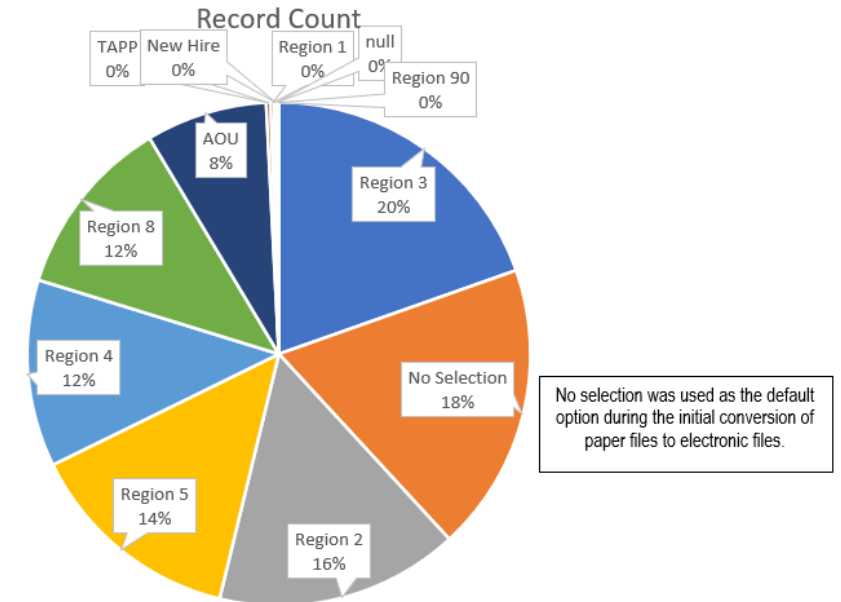
- **Seamless customer experience**
- **Centralized digital records** save each staff member 1 hour per day
- **Enables new dashboards and metrics** across 75,000+ active cases
- **9.2+ million** pages digitized - CSSD digital transformation successful

Impact Statements

- **Staff:** Eliminated wait times for archived files through instant digital access
- **Training Manager:** Enabled virtual document review and remote training capabilities
- **Auditor:** Reduced travel requirements. Majority of audits now completed remotely

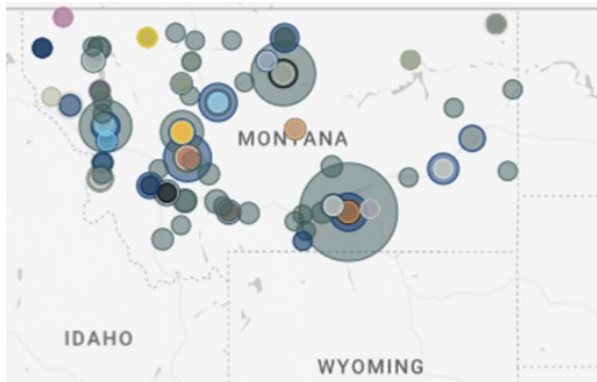


305,151
Current Count of Documents

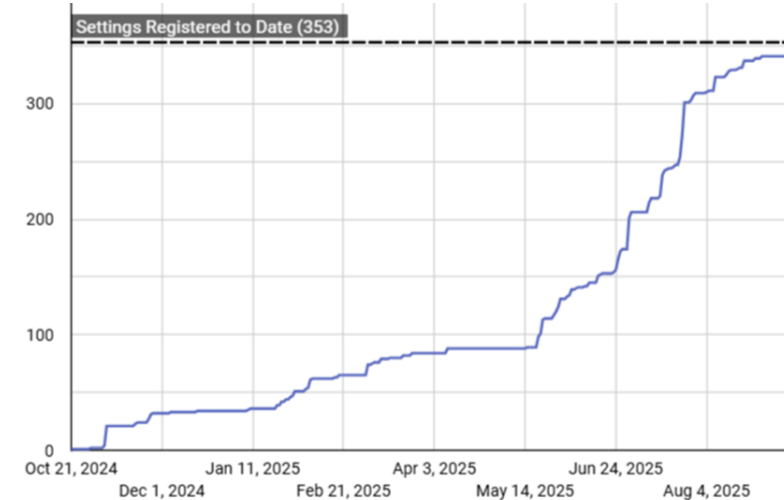


Digitizing Settings Rule Compliance

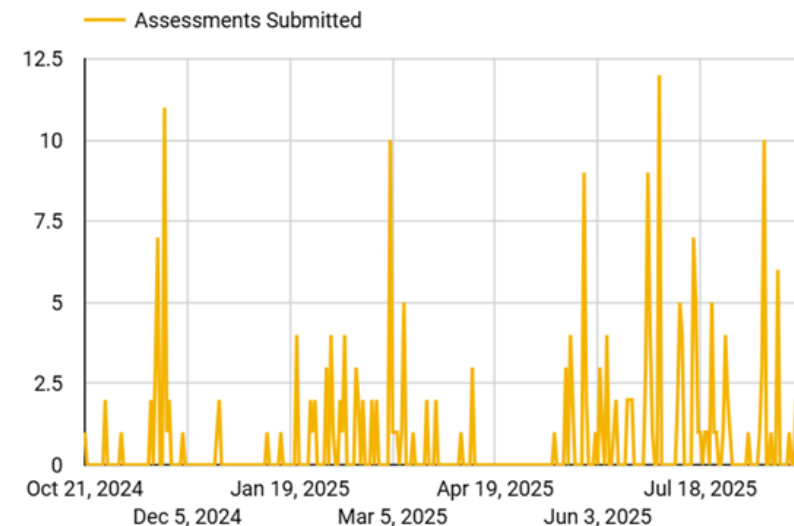
- **Problem:** Three decentralized Medicaid Waiver programs needed a unified approach to manage and consistently assess Provider Settings for compliance.
- **Solution:** Digitized the process with internal app-based Validation Tools and Provider Corrective Action Plans, plus external Provider Self Assessments.
- **Expected Benefits:** Efficient engagement with every Provider for ongoing Settings compliance - faster and more consistent results.
- **Next steps:** Launch Citizen Portal to track feedback and grievances.



353 Settings across Montana
(belonging to **149 Providers**)
currently report to HCBS via
the SETS system.



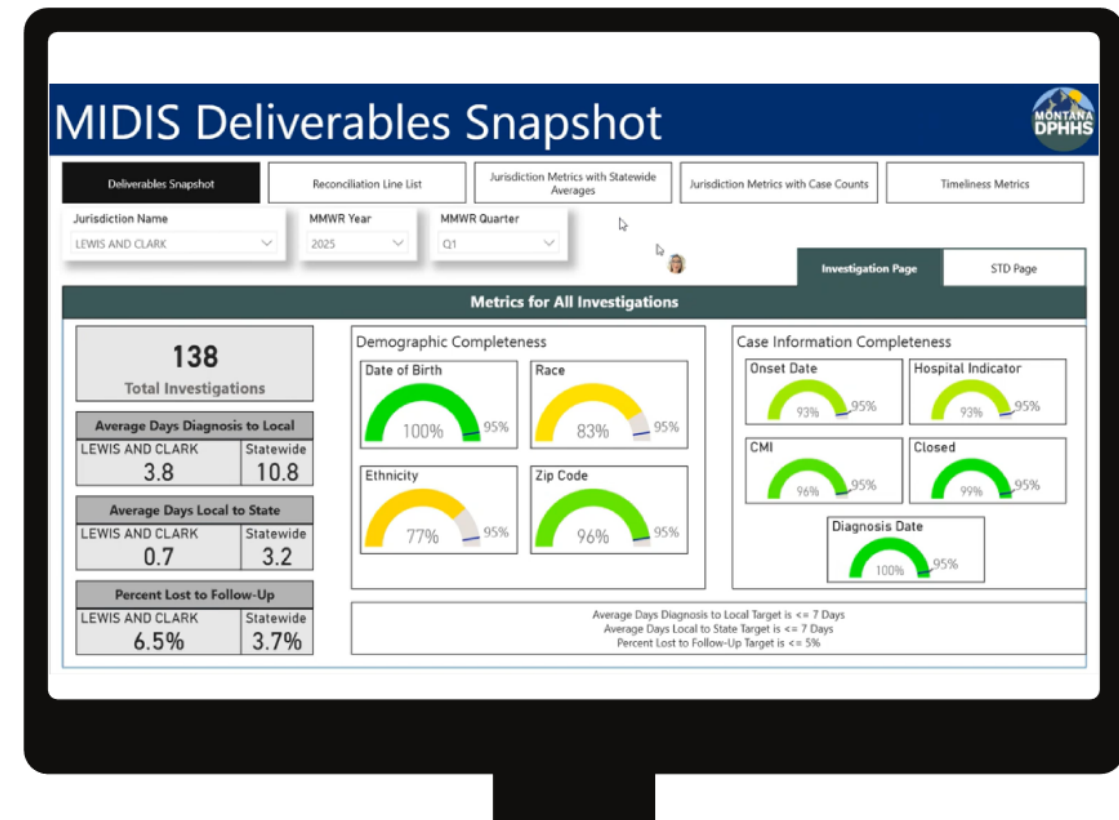
PROVIDER SELF-ASSESSMENTS OVER TIME



Enhanced Infectious Disease Reporting for Local and Tribal Public Health

The MIDIS Dashboard provides MIDIS case investigation quality and completeness insights to Local Health Jurisdictions (County and Tribal)

- **Automates** quarterly data sharing and eliminates manual, secure emailing of Excel files
- **Reduces time** for LHJs to review, identify issues, and improve data quality
- **Streamlines** annual case reconciliation and distributes workload
- **Delivers** on MT Public Health Emergency Preparedness grant requirements for county and tribal health



Commerce Community Planning Platform (CPP)

1. Unique Statewide Solution

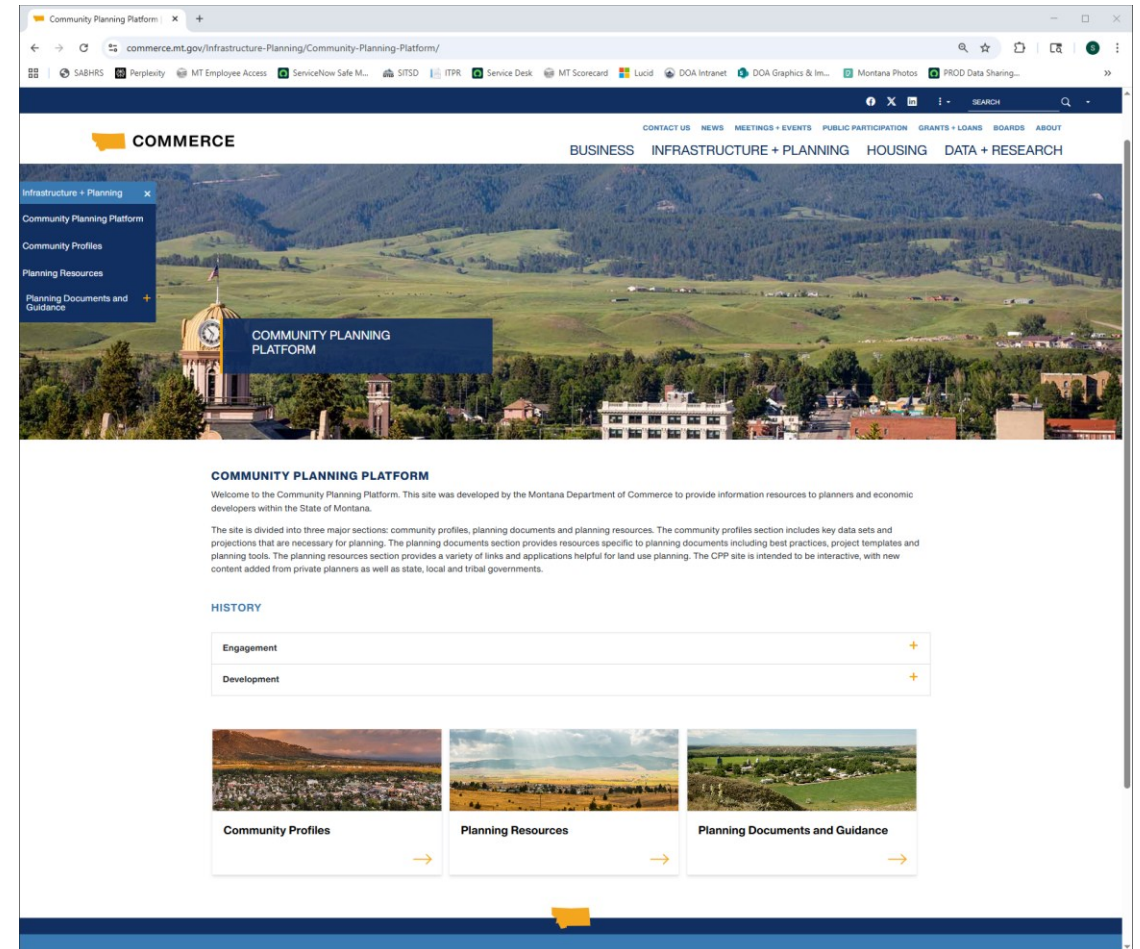
- **Only state in US** to use \$580k EDA grant for centralized platform vs. traditional studies
- **Montana-first innovation** now serving as national model for rural capacity building

2. Rural Equity Achievement

- **Rural towns = Urban capabilities:** Same professional planning tools for all 369 census designated places and 7 reservations
- **Solves "mayor drives school bus" problem:** Small communities gain expert-level planning capacity

3. Quantified Economic Impact

- **\$238.5M+ annual statewide impact** from \$580k federal grant investment
- **80%-time savings:** 40 hours → 8 hours per planning project
- **\$1.25M additional federal funding** capacity through improved grant competitiveness



Commerce Community Planning Platform (CPP)

4. Legal Compliance Solution

- **Mandatory planning requirements met:** Enables Title 76 compliance for 15+ cities
- **Risk mitigation:** Prevents legal/regulatory violations for under-resourced communities

5. Scalable Infrastructure

- **Living platform:** Designed for continuous expansion across all state agencies
- **Community-driven growth:** Framework for local data sharing and collaboration

6. Immediate Results

- **6-month delivery:** From research to launch with 156 stakeholder engagements
- **Cross-agency success:** 5+ departments collaborating on single platform



Annexation



Buildings for Lease or Rent



Capital Improvement Plans



Comprehensive Economic Development Strategies



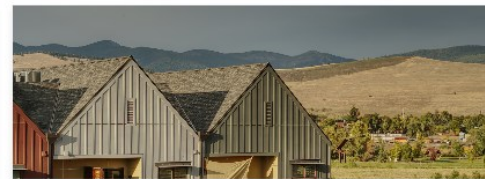
Growth Policies



Montana Land Use Planning Act



Planning Document Inventory



Subdivision Regulations



Technical Document Guidelines



COMMERCE

Commerce Community Planning Platform

Includes In-Depth Analysis and Interactive Mapping

Administrative

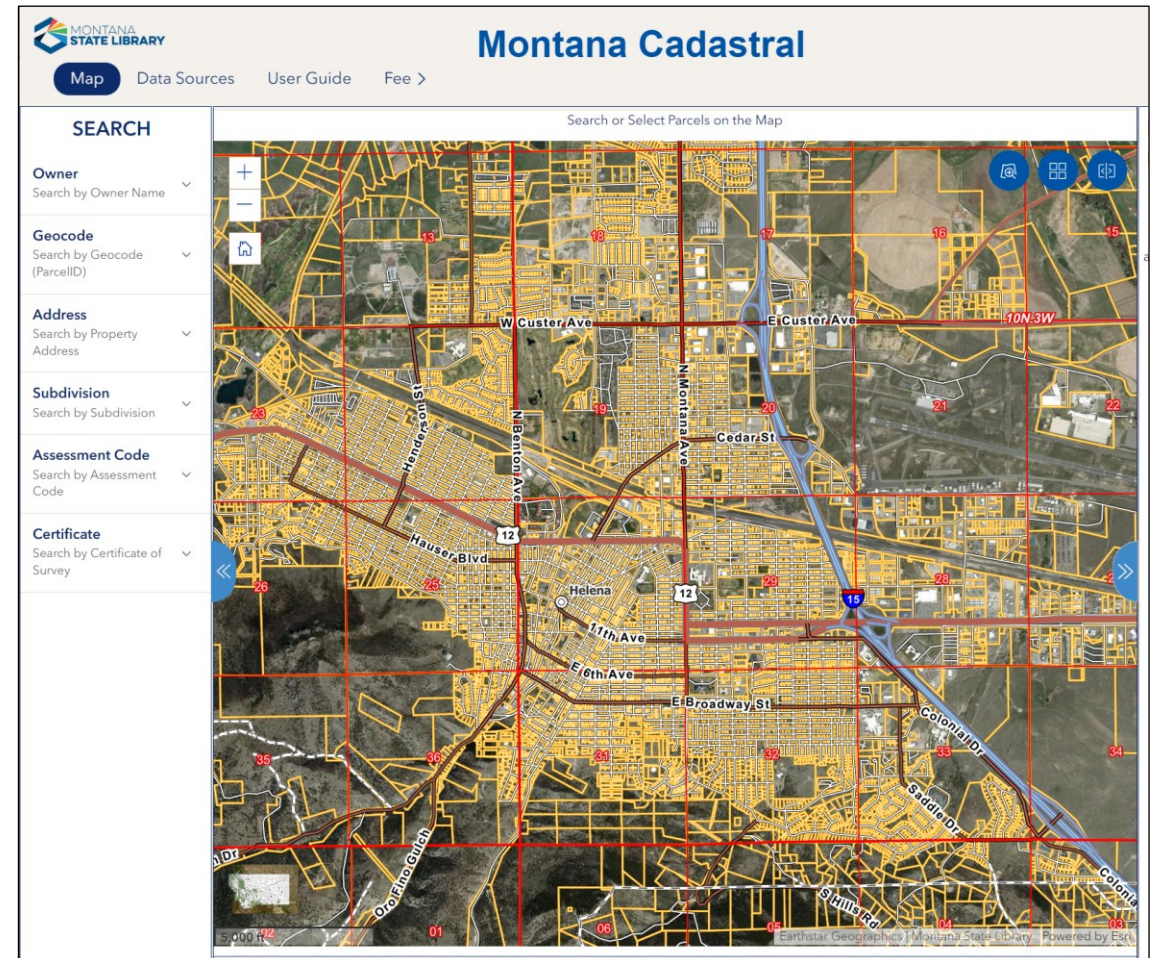
- MSDI – parcels and public lands
- Schools District, Legislative District
- Tax Increment Financing District

Demographic and Economic

- Income & Housing – CEIC, U.S. Census
- Employment & Industry – DLI
- Population Projection – REMI & Carroll College

Natural Resources

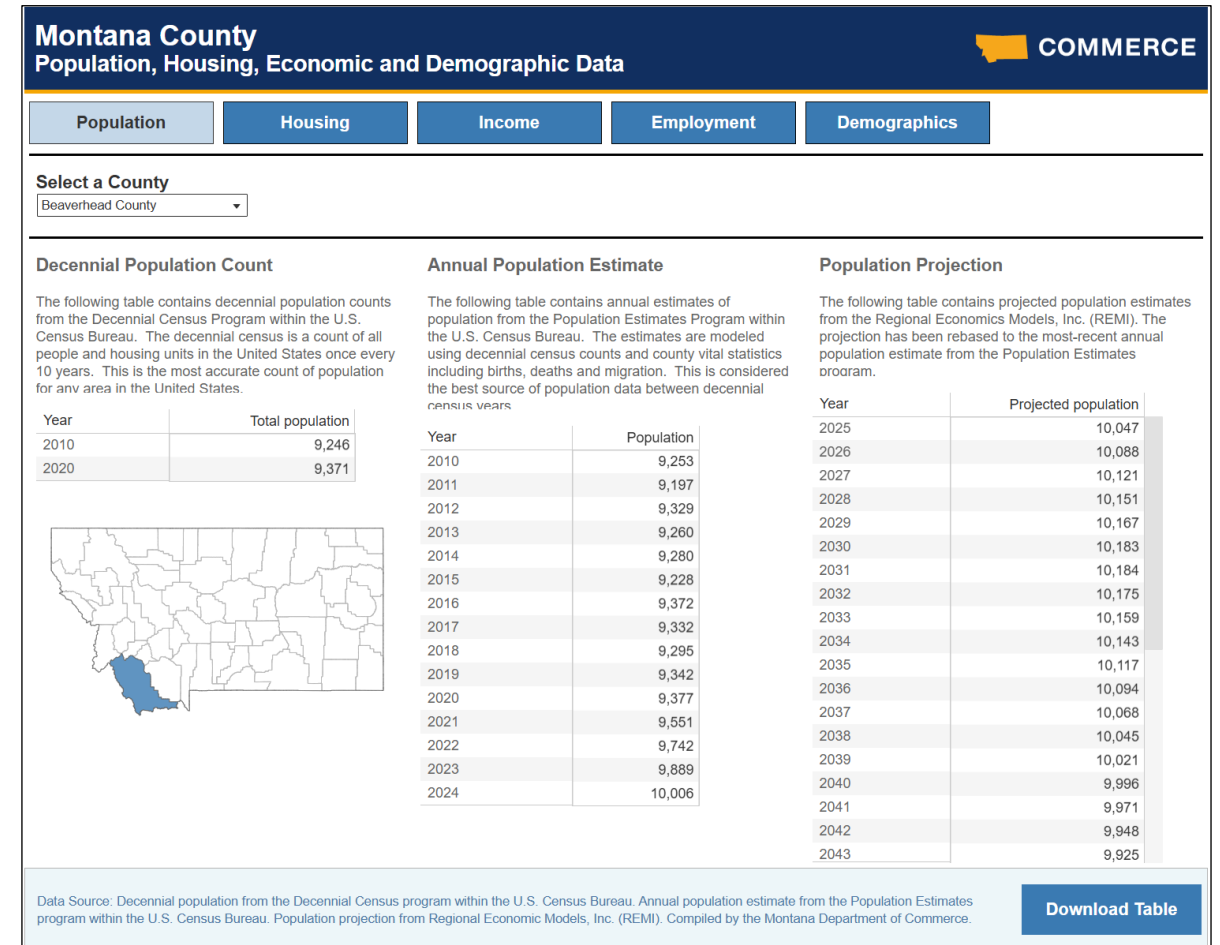
- Land Use and Public Lands - MSL
- Wildlife – Natural Heritage Program
- Disaster – FEMA Floodplain – DNRC – DES
- Imagery – MSL LIDAR and NAIP
- Surface & Ground Water – MBMG, MSL



Commerce Community Planning Platform (CPP)

Community Profiles

- Counties
- Incorporated cities and towns
- Unincorporated – census designated places
- Reservation



Key Achievements:

- **Integrated data** from 6 DLI divisions with streamlined, automated updates
- **Reduced load** on production systems by offloading reporting to Snowflake
- **Enabled divisions** to independently analyze data and create insights
- **Eliminated manual spreadsheet** processes for dashboards

Deducing injuries through a story

Work-Related Injuries in Montana

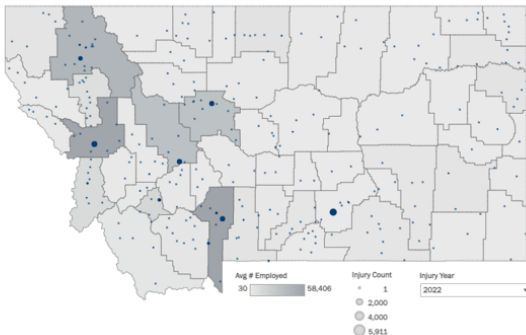
In Montana, there are roughly 23K work-related injuries reported each year. This is among 439K covered workers (covered by a comp policy), so about 5% of those covered, report an injury each year.

Strains are the #1 cause of injury and Slips, Trips, and Falls are #2. Accounting for almost half of all reported injuries each year.

Slips, Trips, and Falls are most prevalent during the winter months (December, January, and February) in Montana.

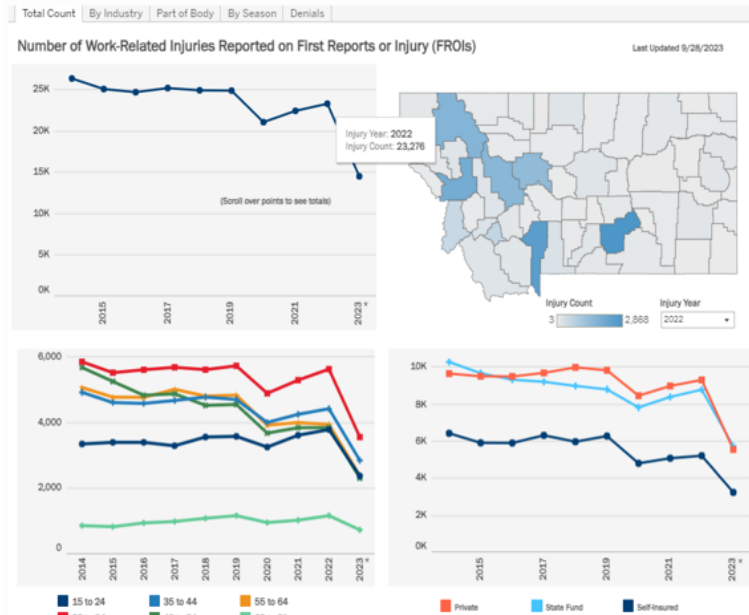
Each year, about paid wage-loss 1 off of work at all the

Scroll over the county area for the average number of employed in that county and scroll over the dots for the number of injuries by city



← Dual axis layered map for average employment by county and number of injuries by city

Work Comp Claims Characteristics Dashboard

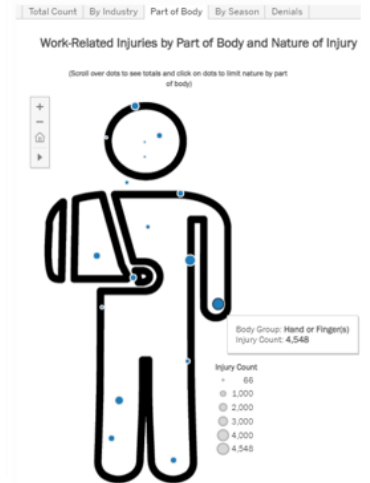


↑
Line Charts

<https://erd.dli.mt.gov/data-dashboards/work-related-injury>

Tableau interactive visuals

← Color Gradient Maps



↑
Point Shape Maps

Staff Impact:

- "Snowflake simplified data connections and eliminated spreadsheets - **a real time saver!**"
- "Automated dashboard updates and shared DOC Census data **improved our analysis capabilities.**"

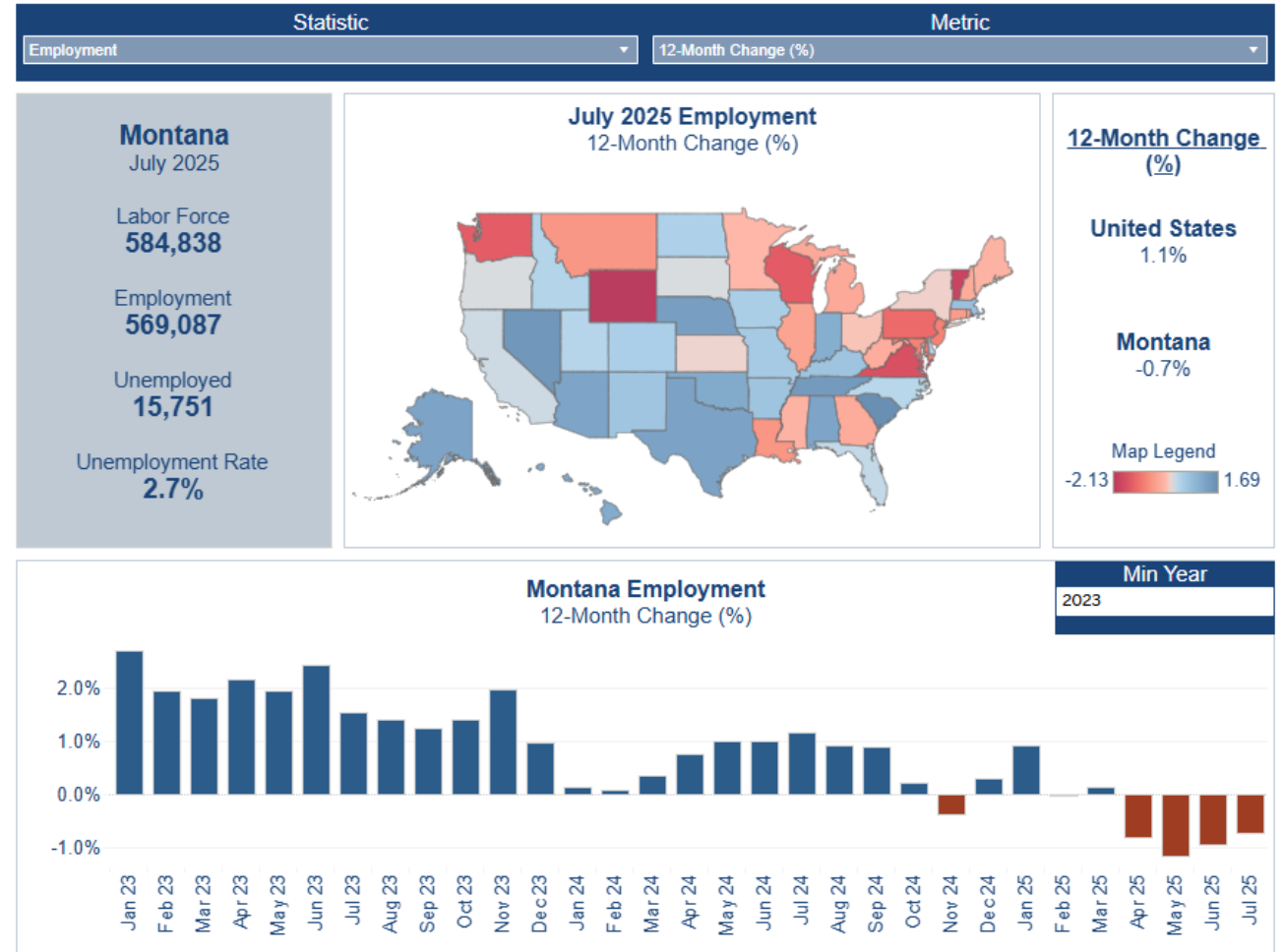
Integrated Labor Market Data

- Consolidates DLI's labor market data from multiple sources into one system
- Simplifies combining data across programs previously stored separately
- Enables easy publication of up-to-date labor market information on DLI's website
- Reduces effort needed for ongoing maintenance

Centralizing Job Service Data

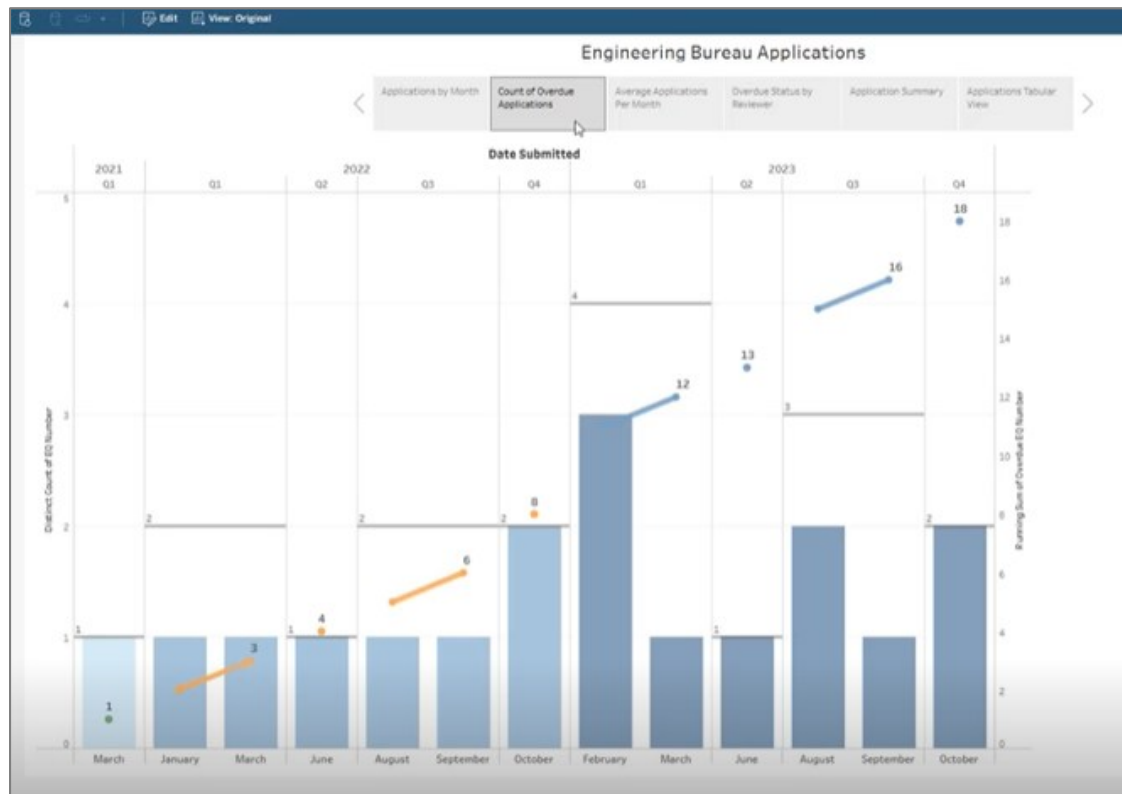
- Transition in 2024 created data split across two systems
- Snowflake provides unified access to both data sources on one platform
- Allows analysis of metrics across multiple years
- Supports internal Tableau dashboards to monitor Job Service performance over time

Employment and Labor Force Tracking - State





*Insight-driven decisions
improve Customer Service
and protect the environment...*



DEQ's Snowflake Vision

Centralized Environmental Data Platform:

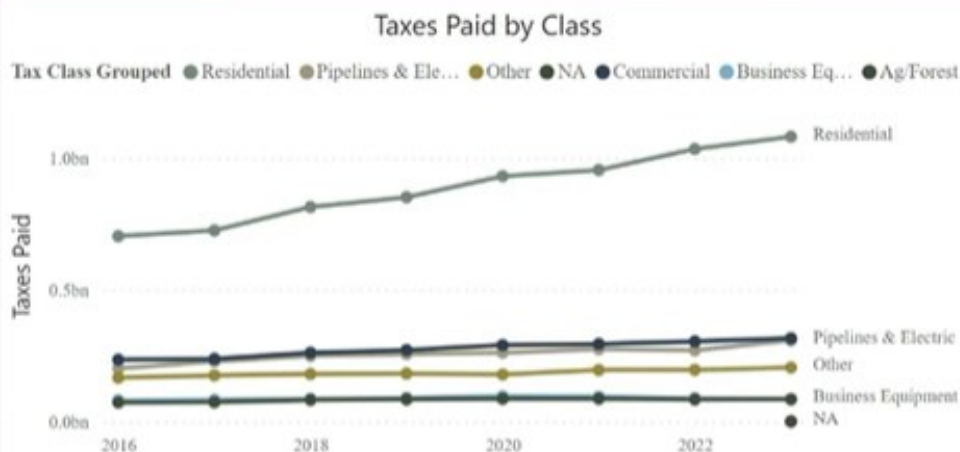
- **Water Data:** Lake, stream, river, drinking water, discharge, and groundwater monitoring
- **Permits:** Surface/groundwater discharge, mining, air quality, hazardous/solid waste permits
- **Remediation:** State Superfund sites and underground storage tank case management
- **Environmental Programs:** Wetlands, nonpoint source, TMDL, and petroleum cleanup data

Impact: Historical data integration with ArcGIS enables on-demand mapping and spatial analysis across DEQ's engineering and permitting systems.



General Property Tax Growth by Class

Data Sources:
 • Montana Department of Revenue
 • Montana Office of Public Instruction
 • Montana Department of Administration



Compound Annual Growth Rate (CAGR) by Grouped Tax Class

Tax Class Grouped	CAGR Taxes Paid (7 year)
Business Equipment	0.50%
Ag/Forest	2.30%
Other	3.01%
Commercial	4.34%
Pipelines & Electric	6.22%
Residential	6.32%
Total	5.17%

Slicer Options

Tax Class (Grouped)

☐ Ag/Forest

☐ Business Equipment

☐ Commercial

☐ NA

☐ Other

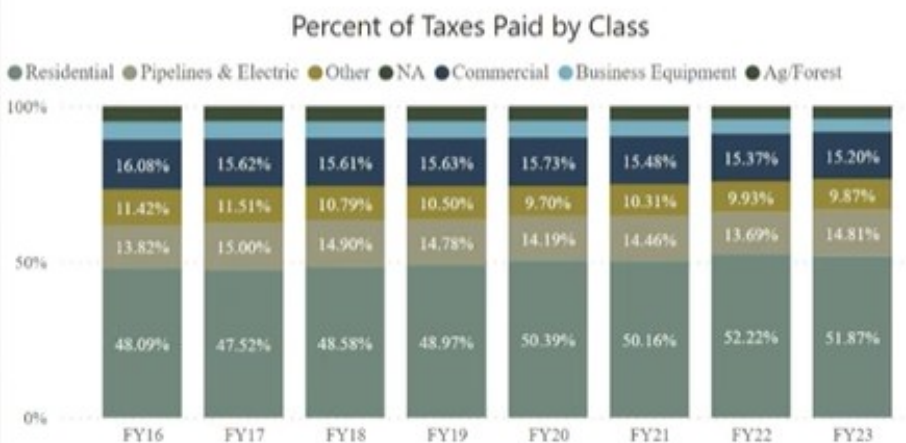
☐ Pipelines & Electric

County Name ▼

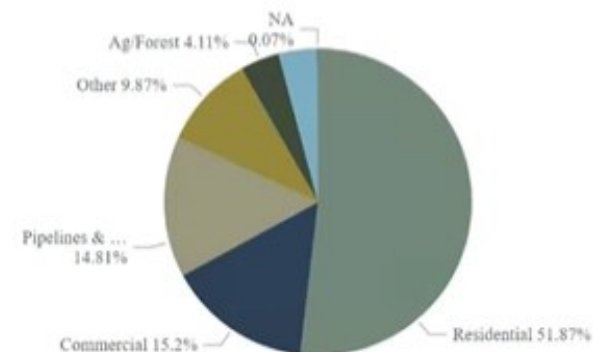
All ▼

Municipality

All ▼



Percent of Taxes Paid by Class for FY 2023



"Other" includes net proceeds of mines, gross proceeds of metal mines, pollution control equipment, noncentrally assessed utilities, airlines and railroads, telecommunications utilities and the electric generation property of electric utilities, renewable energy production and transmission property, carbon dioxide and liquid pipelines, high voltage converters, qualified data centers, and green hydrogen facilities.

NOTE: Due to the nature of these data, there are many calculated fields in this dashboard. If you have questions or concerns, please contact the Legislative Fiscal Division.

Four Active Models:

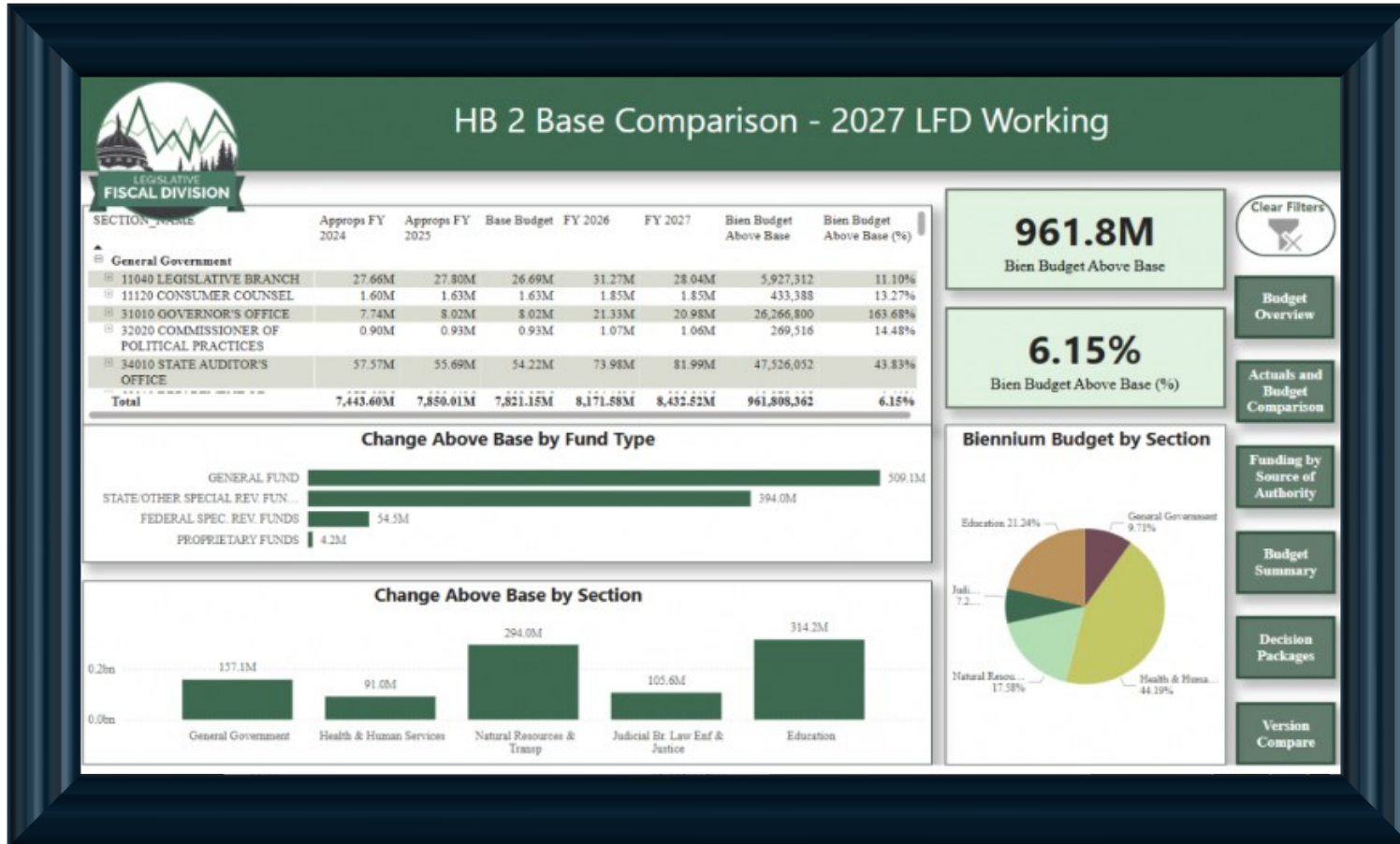
- Property Tax Model
- Schools Model
- Medicaid Model
- Corrections Model

Snowflake Advantages:

- Consolidated disparate data sources into single platform
- Improved model efficiency by moving transformations to warehouse
- Direct integration with Power BI, R, Python, and ArcGIS
- Reduced data sourcing workload - focus on value-added analysis



Modernizing Local Government Financial Data



Challenge:

- Decade - long struggle with inconsistent, hard - to-use local financial data

Solution:

- Built stakeholder coalition (counties, cities, Local Government Bureau, MACo, League)
- Adopted standardized "Trial Balance" reports from local accounting systems
- Created Snowflake-based pipeline and collaborative web dashboard

Results:

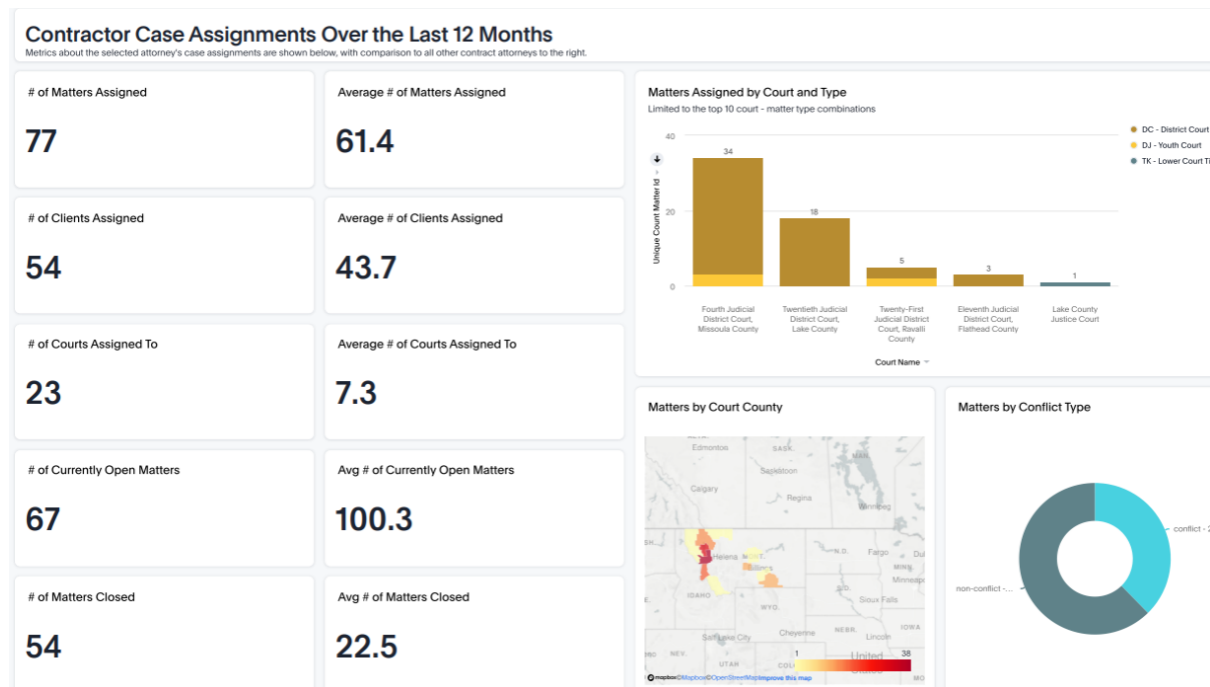
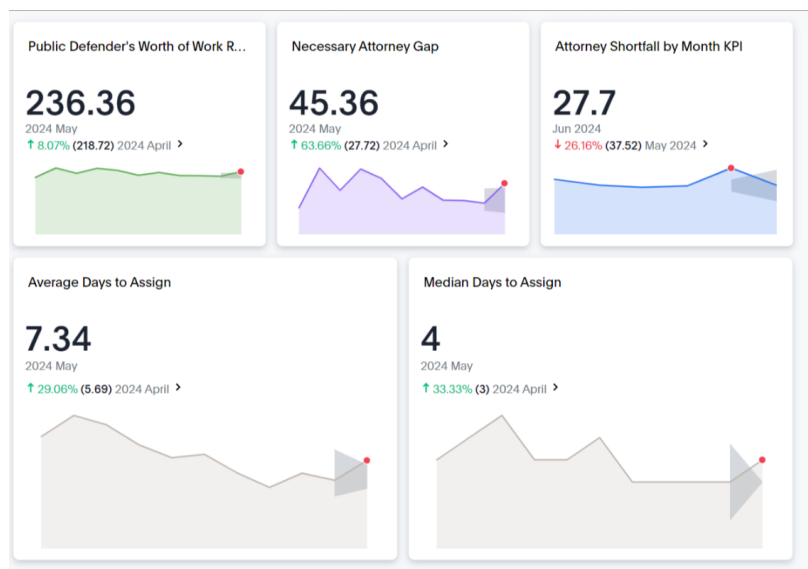
- Data from 100% of counties and 80%+ of cities collected within one year
- Legislature frequently used dashboard during 2025 Session for bill impact analysis
- Strengthened state - local collaboration and data ownership



5 Dashboards Available:

- Contractor Case Assignments
- Contractor Claim
- Client Complaints
- Survey Results
- Agency KPIs

Agency-wide KPI Dashboard gives executives up-to-date KPI insights with flexible drill-downs and filters



Contractor Dashboards deliver OPD real-time attorney-level metrics on workload, time, evaluations, and complaints, supporting evidence-based decisions on workloads and renewals



OGSM 2.0 LiveBoard

New Matters Received

2.85K

2024 June

↓ 5.53% (3.02K) 2024 May >



New Matter Weight Hours Received

27.96K

2024 June

↓ 5.36% (29.55K) 2024 May >



Atty's Worth of Work Received

223.68

2024 June

↓ 5.36% (236.36) 2024 May >



Public Defender Shortfall

28.02

Jun 2024

↓ 25.42% (37.58) May 2024 >



Public Defender Gap

32.68

2024 June

↓ 27.95% (45.36) 2024 May >



% of Matters Assigned to FTEs

66.17%

2024 June

↓ 4.05% (68.97%) 2024 May >



Average Days to Assign

6.41

2024 June

↓ 12.9% (7.36) 2024 May >



Average Days to Assign by FTE/Contractor



Monthly RECEIVED_DATE - Ts fiscal cal ↑

Median Days to Assign

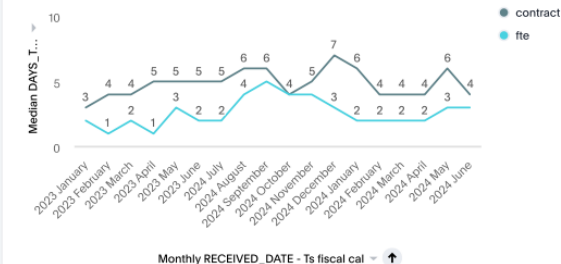
3

2024 June

↓ 25% (4) 2024 May >

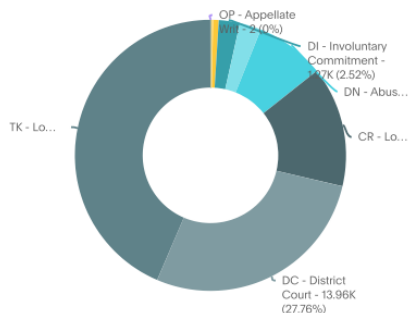


Median Days to Assign by FTE/Contractor

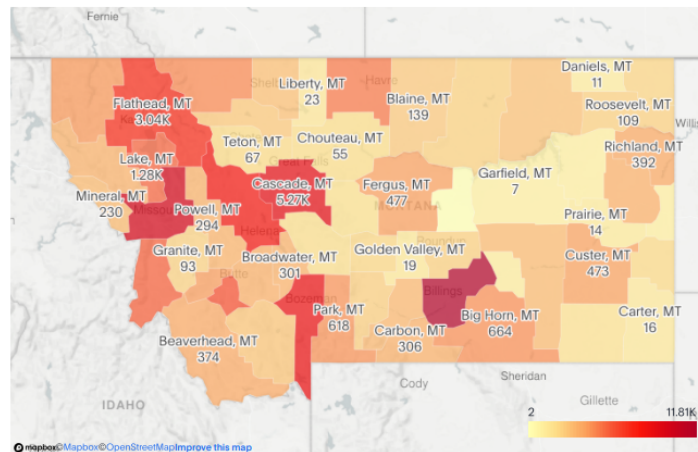


Monthly RECEIVED_DATE - Ts fiscal cal ↑

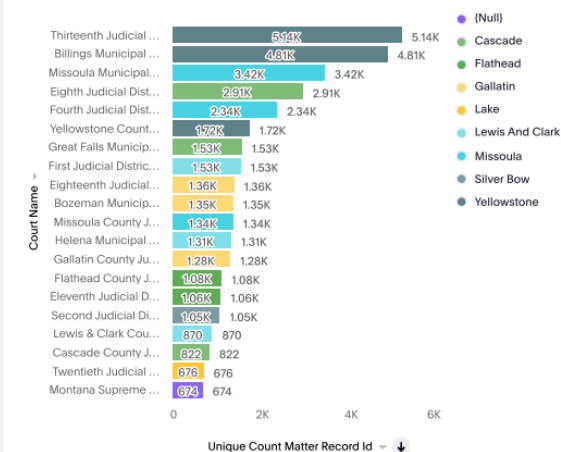
% of New Matters Received by Matter Type

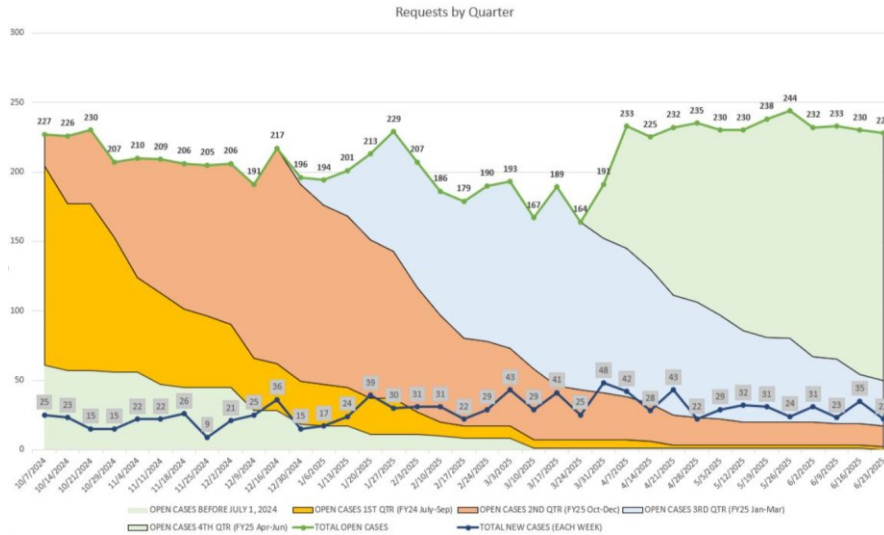


New Matters by County



New Matters Received by Court, Top 20





- Enhanced public access through a digital Reading Room
- Faster response times for public records requests
- Streamlined management of correspondence and notifications
- Integrated redaction and time tracking tools
- Efficient billing and payment processes
- Improved auditing capabilities

ArkCase streamlines the request process for both the public and Montana agency staff fielding PIRs.

Reading Room

How to Search and View Records in the PIR Reading Room

To search using a single descriptive word, use the asterisk (*) before

To search using multiple descriptive words, use the asterisk (*) before

To search for a complete phrase, use double quotes (") to surround

You can type text in upper or lowercase.

Content Search: *

☐	Request Title	Request Num...	Reque
☐	MDT Bundled Bridge Inspections - ...	25-PIR-0160	MDT
☐	MDT 2025-2029 Bridge Load Ratin...	25-PIR-0159	MDT
☐	MDT Bundled Bridge Inspections - ...	25-PIR-0160	MDT - D
☐	MDT 2025-2029 Bridge Load Ratin...	25-PIR-0159	MDT - P
☐	MDT 2025-2029 Bridge Load Ratin...	25-PIR-0159	MDT

Non-complex request
before OPIR: ~23 Days

Non-complex requests
After OPIR: ~12 days





COR Public Data

- 40+ live, interactive dashboards tracking more than 150 metrics places MT COR 2nd in the nation.
- Public uses our dashboards daily for prison population, status, and other data—reducing information requests
- Continuously expanding offerings, with the new Education Services Dashboard on program enrollment and outcomes



[Daily Population Report Dashboard](#)



[Pending Transport to Prison Jail Hold Dashboard](#)



[Jail Holds Dashboard](#)



[Offense and Sentencing Data Dashboard](#)



[Community Distribution by Sentencing Region Dashboard Series](#)



[Adult Population Demographics](#)



[Six Month Adult Population Summary](#)



[Recidivism Dashboard Series](#)



[Corrections Data Download Tool](#)



[Workforce Dashboards](#)



[Mortality in Corrections](#)

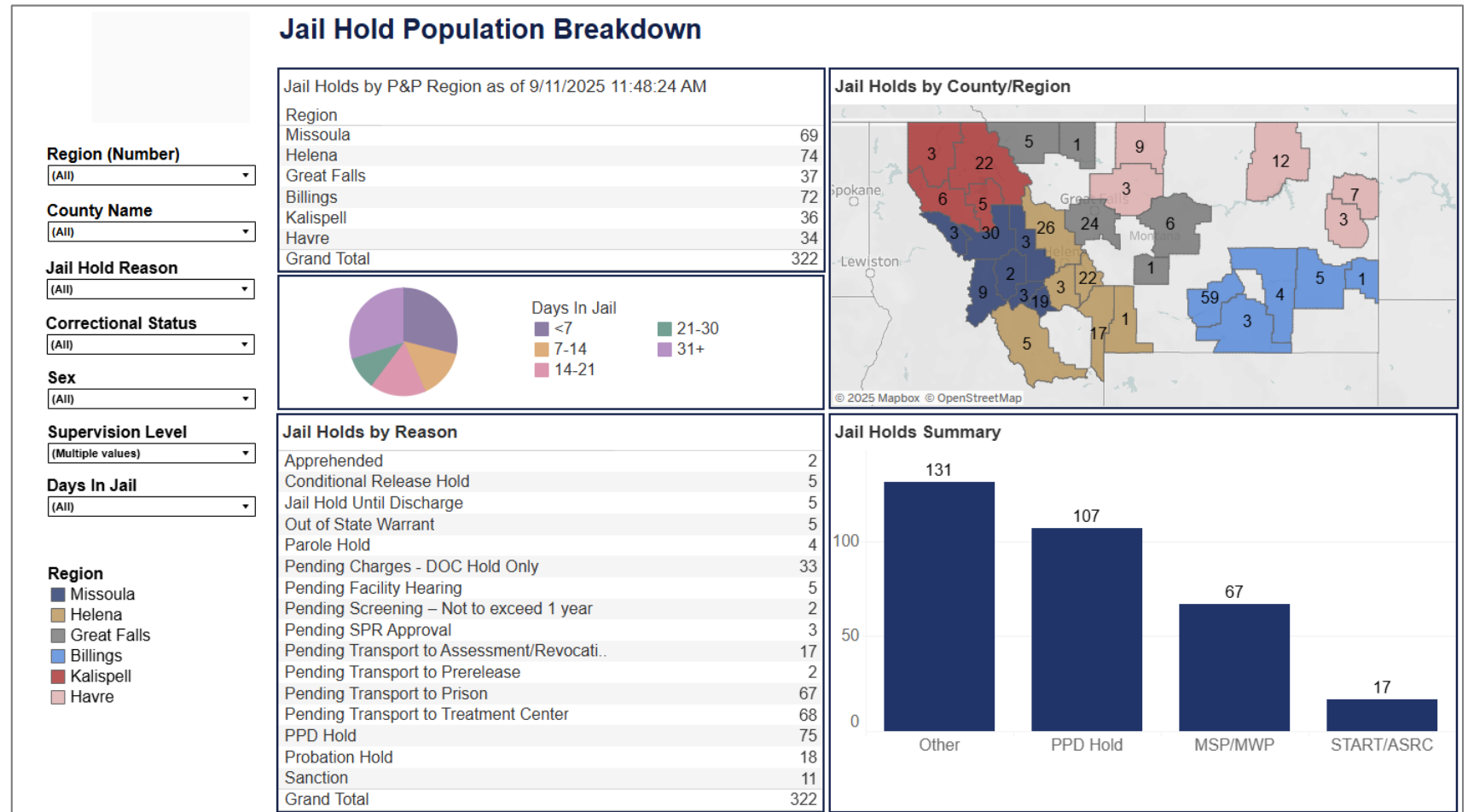


[Education Services Dashboard](#)



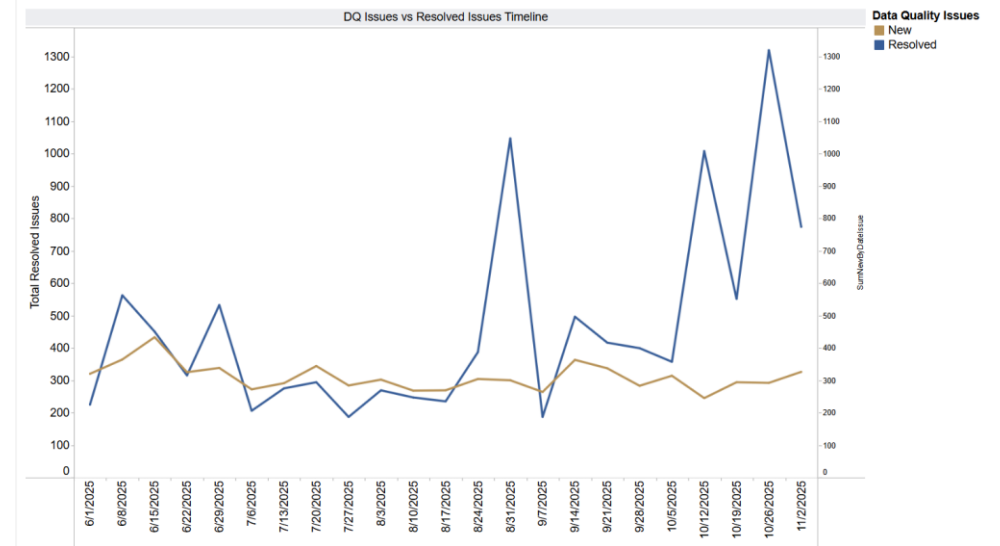
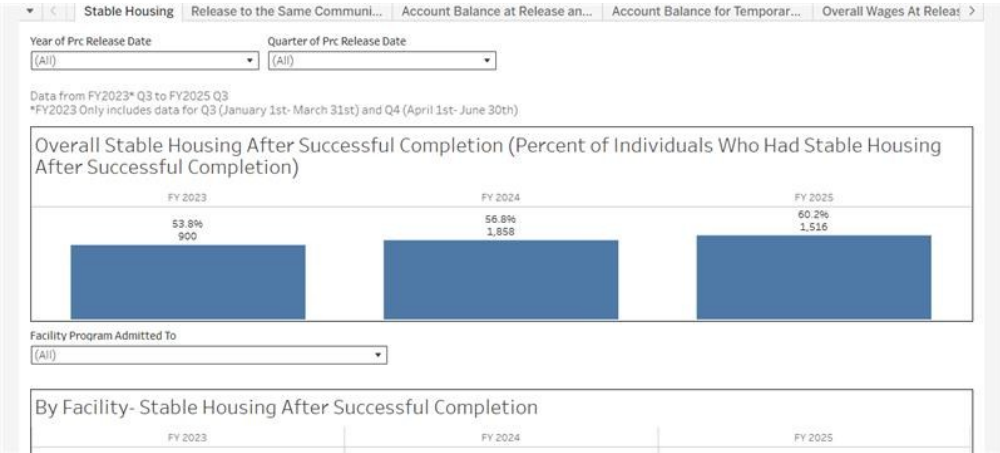
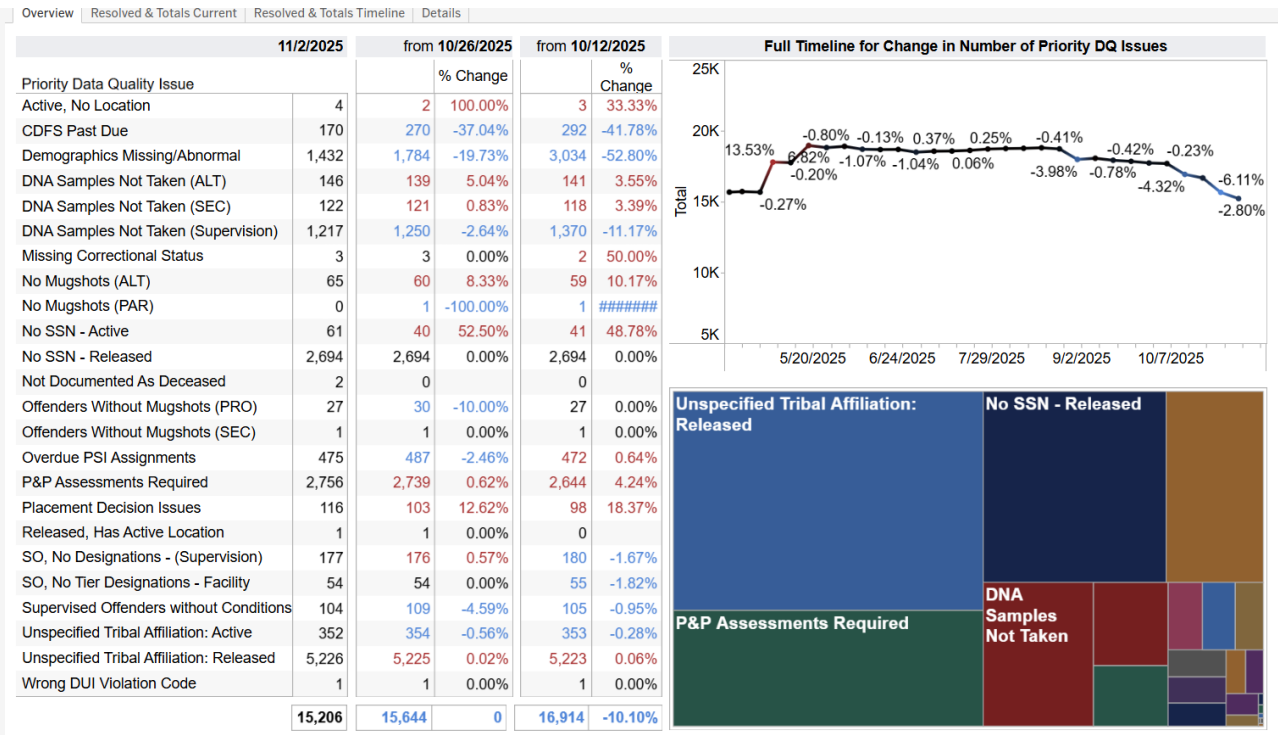
COR Modern Data Architecture

- Adopted best practice architecture for flexible data integration and reporting
- Jail Hold Dashboards drive informed collaboration and have reduced county jail holds and costs
- Ongoing dashboard migrations ensure seamless data access during system upgrades





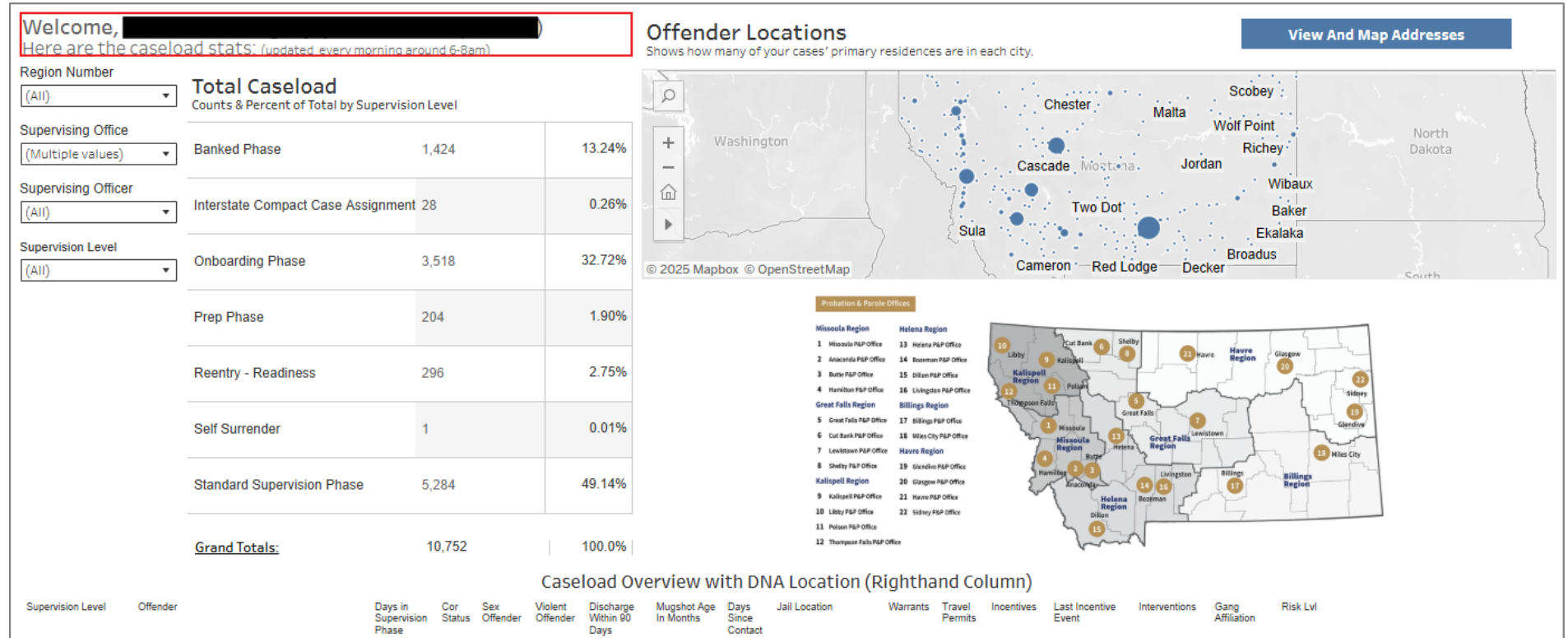
COR Jail Holds Dashboard





COR Supervision Dashboard

- Dashboards support Corrections business processes and offender supervision
- Enable visibility into contacts, testing, assessments, reviews, and data quality
- Critical to implementing and evaluating the new phased supervision process





LIV Google DocAI Brands Inspection Application

Original BE-10 Cattle Inspection

Livestock is using Google AI to digitize the backlog of BE-10 Cattle Inspection Forms.

After scanning each form, data is confirmed by the Brand Team added to the ServiceNow Brands database for easy access by field staff.

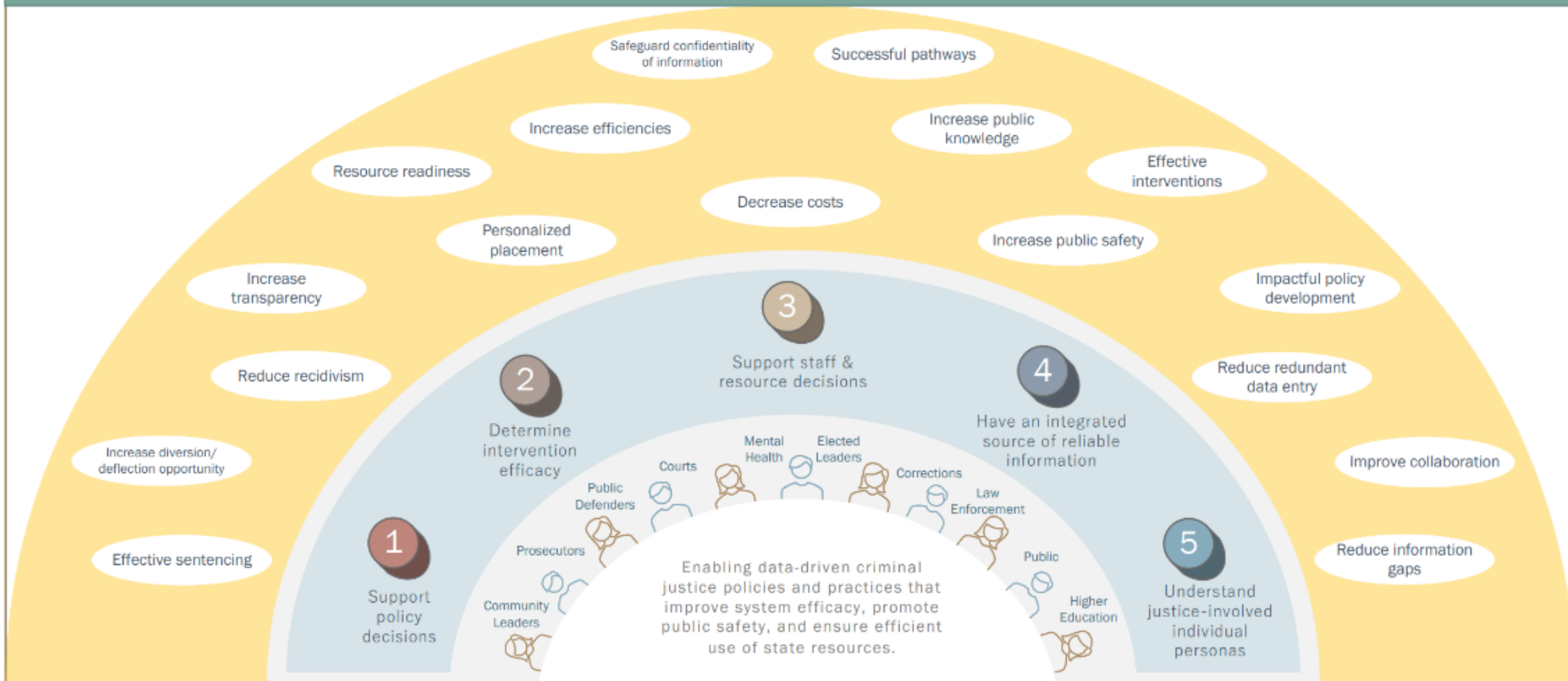
Successes:

- BE-10 Cattle Inspection forms 100% digitized with Google AI since Feb 2025!
- 5 staff processed 41,544 inspections using the new system
- Achieved 85% data capture accuracy on handwritten forms
- Original forms now linked as PDFs in ServiceNow

Finished product - Data migrated to ServiceNow, BE-10 Inspection level, auto-populating inspection fields

MONTANA INTEGRATED JUSTICE DATA WAREHOUSE

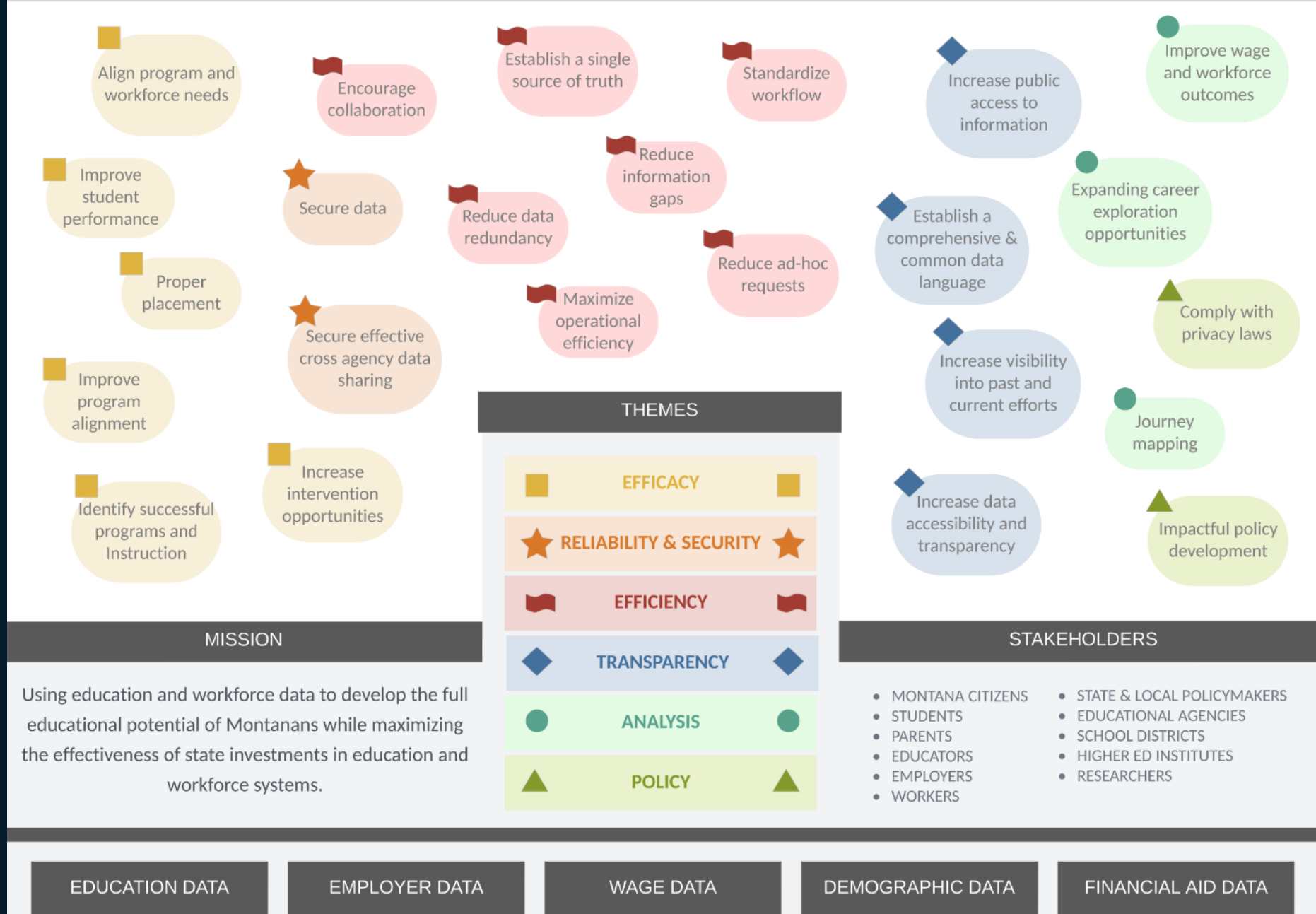
BETTER INFORMATION for SUCCESSFUL OUTCOMES



A collaborative project led by the Board of Crime Control

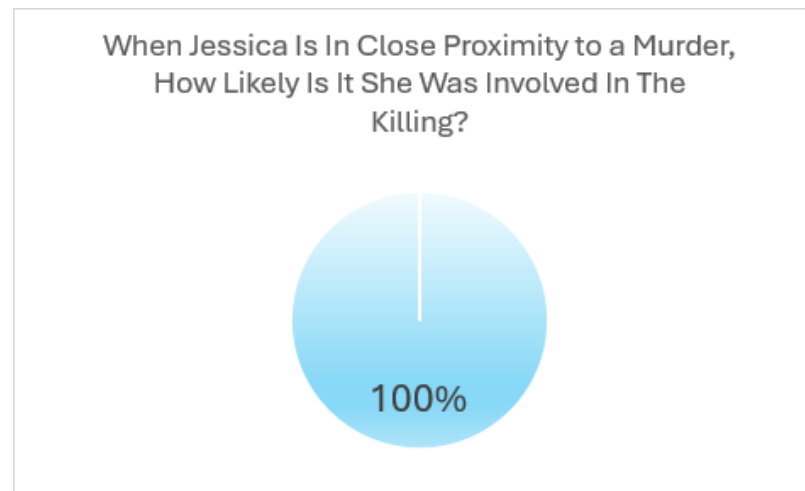
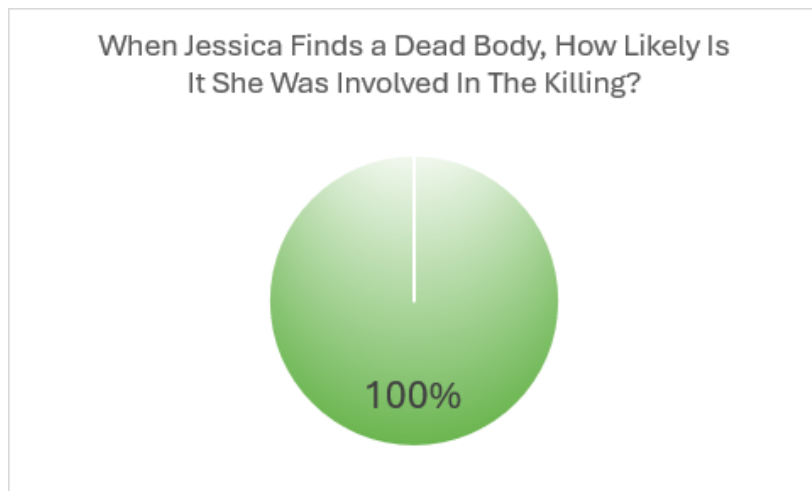
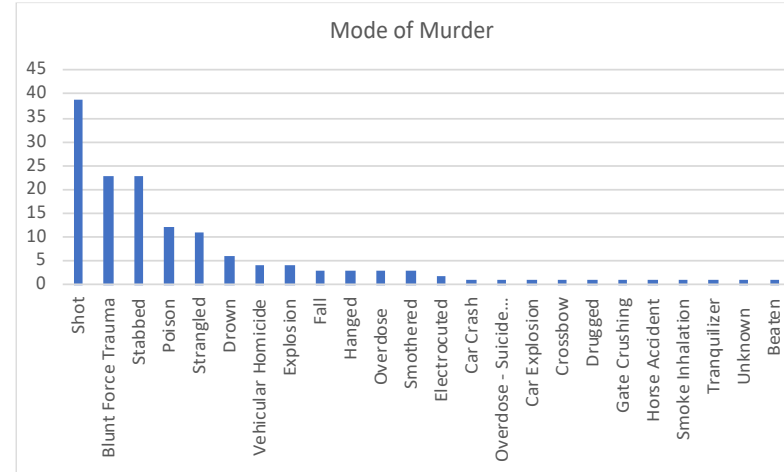
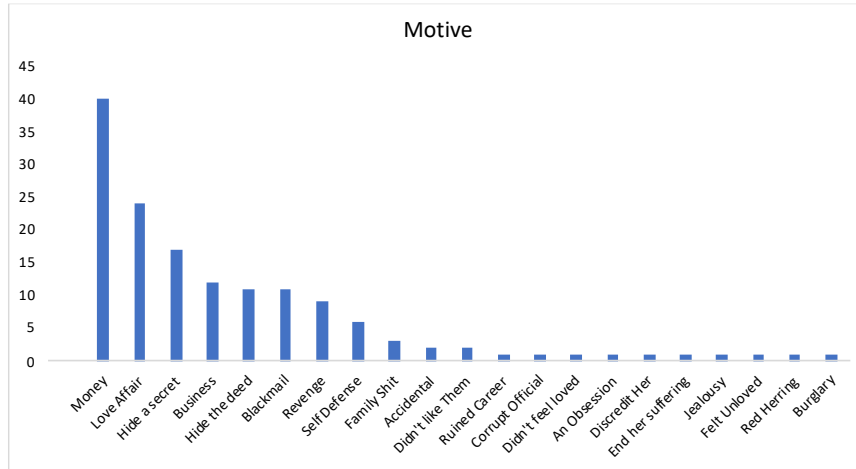


EDUCATION & WORKFORCE DATA ECOSYSTEM



The Greatest Mystery of All Time...

On the 1984 murder mystery television show Murder, She Wrote, “Was Jessica Fletcher somehow responsible for the murders she ‘solved’?”



The Real Impact of Data Governance

- Estimated Value of CDO team contribution Projects: **\$18-32.2 Million Annually**
- Projected economic impact: **\$238.5 Million Annually** (CPP Only)
- Projected revenue impact: **\$9+ Million Annually** (CPP Only)
- Staff time saved: **~35,000 Hours/Yr**
- Citizen & private industry: **~188,840 Hours/Yr**

*All metrics are **estimates**. Estimates are based off our own data, comparable projects in other states and private industry, and adjusted for Montana's size and relative impact*



The Chief Data Office

Sarah Bartow
Therese Simpson
Brandy Murray
Jeremy Henry
Adam Carpenter





QUESTIONS?