One Seattle Data Strategy
2024 - 2026

December 2023

Seattle

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Vision for the Future

My fellow City Employees,

The ***One Seattle Data Strategy*** is an exciting opportunity for Seattle to look forward and create a shared vision for how we can better collect, use, manage, communicate, and lead with data. It is our chance to recognize the many strengths our city has and build upon them and to be honest about where we have opportunities to improve. As a global hub for technology and innovation, Seattle has the potential to lead the nation in upskilling and hiring employees who can design, manage, and analyze data to better develop, operate, and evaluate government programs and services.

The future of work in our economy is data-oriented, transparent, and collaborative. By advancing the way we collect, share, and leverage data, we can better address the multi-dimensional problems facing our city and our nation, from homelessness and housing affordability to public safety, health outcomes, educational attainment, climate justice, economic justice, and youth empowerment. But technology and data alone won't solve them for us.

It's up to us to decide how we meet this moment. How we leverage Seattle's position as a technology center to tackle our greatest challenges and create new opportunities. How we center people in our processes and stories in our statistics. And how we can use data as a tool to provide excellent service to the people of Seattle.

My ***One Seattle*** vision is for data to be easy to find, easy to analyze, and most of all easy to use. We are going to break down silos and staid systems that keep us from sharing data within the City. We are going to create greater partnership and shared ownership with our community members, who are the real owners of our data. We are going to be relentless in using data to iterate and improve our programs and services. We are going to continue to be a national leader in this work.

This strategy showcases the innovation Seattle is known for and the care, compassion, and commitment that City employees have for serving our community.

-Mayor Harrell

**Unlocking the power and value of data
to help every Seattleite be part of the future**

Executive Summary

The City of Seattle is a nationally recognized leader in good data practices, and through this data strategy we will institutionalize and expand this good work by building shared best practices and guidelines across departments, a **One Seattle** approach to data.

In 2022 and in 2023, What Works Cities recognized Seattle with Gold Certification for the City's exceptional use of data to inform policy decisions, allocate funding, improve services, evaluate the effectiveness of programs, and engage residents. The Gold Certification status signifies cities who are "great at understanding data, tracking progress, and using data and evidence to make decisions.

The One Seattle Data Strategy is a three-year vision and action plan to advance our use of data, scale data excellence across the City, and achieve better and more equitable outcomes for residents. This strategy is largely an internally facing strategy, but once implemented will lead to measurable community impacts and government efficiencies. Good ideas and successful pilot projects will be implemented at scale and the use of data will lead to more opportunities for empowerment, improvement, and reflection.

Data Literacy and Culture
Empowering City staff to lead and innovate with data

Data Use, Equity Analysis, and Engagement
Unlocking the power of data to achieve better impact and outcomes

Equity Analysis

One Seattle Data Strategy

Collaboration

Data Quality and Governance
Strengthening data management and quality standards

Why does Seattle need a data strategy?

We define "data" as information that can be analyzed. Data strategy isn't always seen as something that is tangible or valued outside of City Hall and City departments. But with a cohesive plan in place, we will see more information sharing, better decisions, policies that will save taxpayer money, and investments and programs that make sense.
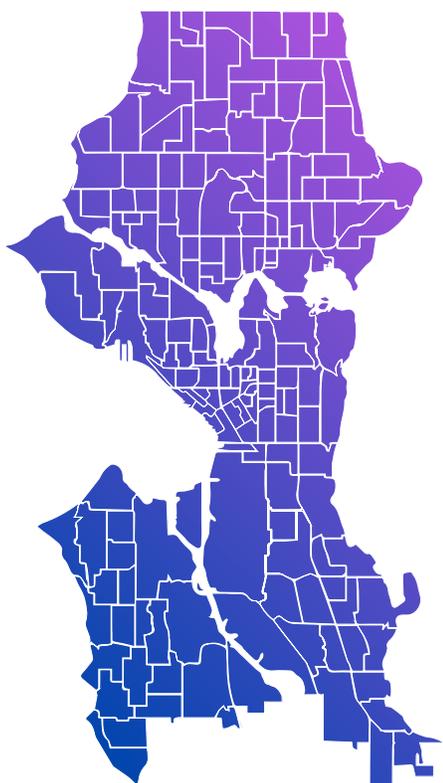
To unlock the power of data
We have more data now than ever, but to take advantage of this asset we must be strategic and responsible, analyzing data to draw insights and using them to make better decisions.

To balance utility and risk
Inaccurate and low-quality data can lead to uninformed decisions, poor service quality, and higher costs down the road. Strong governance and management practices can make collaboration and protection of privacy easier.

To replace silos with collaboration
Much of our data and our data practices exist in siloes that operate independently from one another, making cooperation difficult. Collaboration will enable us to see how information intersects and how we can work better together.

To move from common to best practice
Although Seattle has been recognized for being great at understanding data, tracking progress, and using data and evidence to make decisions, we can get better. Building and institutionalizing best practices will enable effectiveness and efficiencies at scale.

To address complex challenges
The problems we face in our city and our nation are complex, multi-dimensional, and interconnected and cannot be addressed without data-informed approaches. Data is one tool that will help us understand disparities and address root causes to our most pressing challenges.

Data + Values

We can turn our data strategy into action by aligning with shared values, principles, and motivation. These values are reflected in our efforts to advance our use of data, scale data excellence across the City, and address real-world challenges.

Data + Innovation

We use data and technology creatively and responsively to support key action plans, drive innovation, and enable fundamental change. We combine data approaches with systems thinking and design principles to identify root problems, envision and test new solutions, and leverage synergies and cross-sector collaboration.

Data + Evidence

We apply data and evaluation practices to understand the effectiveness of our programs before, during, and after they are in-place; identify who we are reaching; and learn from each other's experiences.

Data + Collaboration

We use standards across disciplines to collaborate and share information. When possible, we use common data standards, common terminology, and common best practices and approaches. Collaboration and synergy are enabled when we connect disconnected data sets. We advance data practices by creating communities around shared interests.

Data + Equity & Inclusion

Equity analysis, which often starts by overlaying demographic information with City data to identify disparities. We teach program staff new data skills, and we train data analysts on equity and how to translate data into meaningful recommendations for better outcomes in the community. We align our work with and in support of the City's Race and Social Justice Initiative.

Data + Community

We strive to proactively publish open data, train our staff how to publish better data, and engage the community with the goal of mutual benefit. We use our open data platform to collaborate internally and across sectors. Engaging community with data means not just effective public-facing dashboards, maps, and web portals, but also giving our residents voice in identifying solutions to issues that impact their communities.

Data + Stewardship

We view data as an asset that has measurable value and must be managed strategically to maximize utility, reduce risk and cost, protect privacy, and unlock potential. Everyone at the City has a role in managing our data.
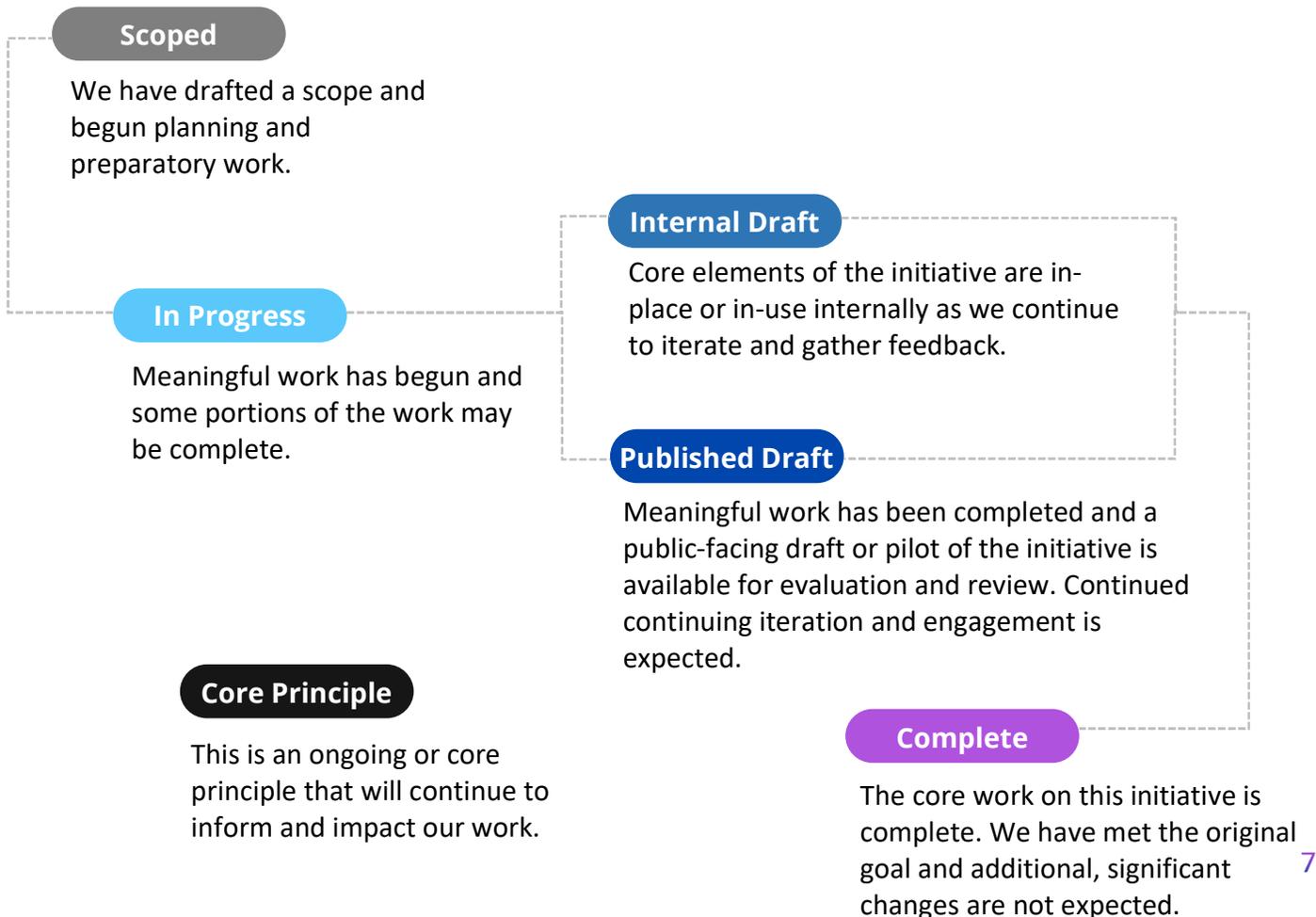
Strategic Rollout

This draft Data Strategy identifies projects, policies, and processes to be developed, iterated, and evaluated from 2024-2026. Timelines vary by project, but the general approach is to draft, socialize, and test ideas in 2024, iterate and improve those ideas in 2025, and formalize and fully implement them in 2026. Many of the key elements are already in-place or planned for completion in 2024. These represent our higher priorities or goals that are easier to achieve, leaving flexibility for emergent ideas and those that require broader effort. The rollout of each element is grouped into one of three time periods:

● ○ ○	**Short-Term:** the work has been started or will be completed in the first year
○ ● ○	**Medium term:** our priorities that are planned within the next three years
○ ○ ●	**Long term:** assessment, planning, and groundwork is being done now for initiatives that are likely to extend past 2027

Tracking Progress

We will track, update status, and share details on work that is planned and underway.

Scoped

We have drafted a scope and begun planning and preparatory work.

In Progress

Meaningful work has begun and some portions of the work may be complete.

Internal Draft

Core elements of the initiative are in-place or in-use internally as we continue to iterate and gather feedback.

Published Draft

Meaningful work has been completed and a public-facing draft or pilot of the initiative is available for evaluation and review. Continued continuing iteration and engagement is expected.

Core Principle

This is an ongoing or core principle that will continue to inform and impact our work.

Complete

The core work on this initiative is complete. We have met the original goal and additional, significant changes are not expected.

1 Data Quality and Governance

We will establish standards and unified processes for data management where data is represented consistently, providing a more complete and collaborative view of the challenges we face and our approaches to solve them.

Why do we need them?
Without data standards, best-practices, and strong governance, the costs and risks from poor data management will grow. Inaccurate and poor data can lead to uninformed decisions, poor service quality, barriers to collaboration, and higher costs down the road.

What difference will they make?
When we invest in data standards and unified governance, the community will see benefits like improved customer experience, better use of taxpayer funds, transparency, accountability, and more efficient and effective public programs and investments.

Transforming data practices for a unified view

Strategic Effort	What it means	Rollout	Status
Data Quality Playbook Guidelines and minimum standards for maintaining and collecting demographic and person-level data and best practices to make disaggregation and equity analysis the norm.	City best practices for consistent data quality result in a **One Seattle**, bird's eye view of the needs on the ground.	● ○ ○	**Published Draft**
Demographic Data Standards As a component of the Data Quality Playbook, specific preliminary standards, and guidance for the collection of race and ethnicity data.	Seattle models best practices for use of demographic information to identify and address disparities in services and investments while protecting privacy.	● ○ ○	**Published Draft**

Creating value and protecting privacy with strong governance

Strategic Effort	What it means	Rollout	Status
Data Governance Framework Our plan to establish the processes and responsibilities that ensure the quality and security of data, including an Executive Board and Department Governance Officers.	A citywide data governance program is established. Clear accountability exists internally, so that the City staff can focus on delivering quality services to residents.	○ ● ○	In Progress
Improved Data Sharing Advance processes to support secure, consistent, and responsible integration of data between departments, with external organizations, and the public.	Employees have access to the data they need. City departments can leverage standard resources such as templates and data catalogs with clear, consistent guidance, resulting in efficiencies, reduced complexity, and improved trust.	○ ● ○	In Progress

Proposed Data Governance Framework
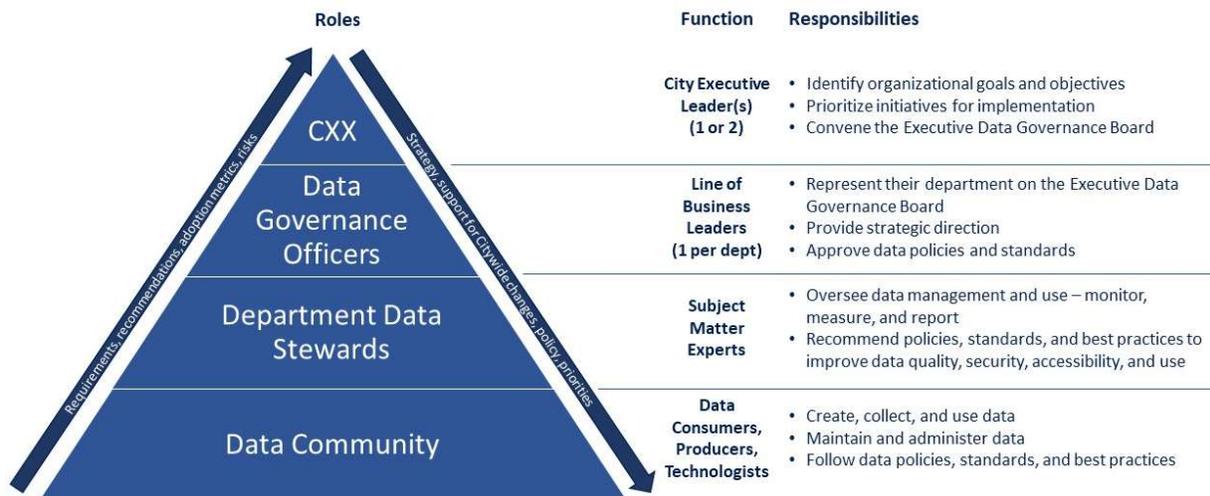
2 Data Literacy and Culture

We will advance data literacy and culture across the City through collaboration and learning so that all City employees know how to use data to achieve better outcomes. We seek to empower not just data experts, but everyone to work with data, regardless of expertise. We will establish data leadership at all levels of the organization and create opportunities for City employees to use data to inform decisions and insights.

Why do we need them?
Our business operations increasingly create, utilize, and rely on data. Now more than ever, we need to modernize our analytical capabilities and increase broad-based data literacy. Our investments in technology and data infrastructure cannot succeed without a data-literate workforce and a shared data culture.

What difference will they make?
City departments and programs will spend more time applying insights at scale and less time trying to figure out how to set up projects and navigate our system. There will be more opportunities for City employees to use data to ask new questions and personally contribute to impactful decisions.

Meeting demand for a skilled data workforce

Strategic Effort	What it means	Rollout	Status
Data Curriculum Plan Structure and resources to guide employees as they seek to improve their data literacy.	City staff have the skills and learning resources necessary to understand and make decisions using data, run programs with efficiency and effectiveness, and engage community partners.	● ○ ○	In Progress
Workforce Development Plan A plan to advance data literacy and upskilling across all departments through workforce development.	The City will develop a plan to build core data skills, retain diverse talent, and sustain a data culture of evidence-based policymaking and service delivery that is equitable, effective and responsive to the people we serve.	○ ● ○	Scoped

Advancing and maintaining a culture of data

Strategic Effort	What it means	Rollout	Status
Central Analytics Leadership A designated City lead will promote a citywide data analytics strategy with a focus on data use and collaboration, this person will also lead and direct data innovation projects.	Central leadership provides support across City departments to collaborate, create and drive insights at scale, and lead with high-impact applied analytics projects.	● ○ ○	Core Principle
Department Analytics Leadership A network of City data leaders will share expertise and tools, collaborate on projects, and identify opportunities.	A structure and support are in place for City employees to collaborate on data with the intent for all City departments use data to drive better outcomes on a daily basis.	● ○ ○	Scoped
Data Collaboration Portal We will create an online place for City staff to learn from our coaches, learn from best practices, learn from each other, and learn from ourselves. We will promote data communities and stimulate demand for using data.	A centralized resource for data collaboration is developed for City employees and similar resources are extended to residents and community partners in the near future.	● ○ ○	Internal Draft

3 Data Use and Equity Analysis

We will leverage resources and knowledge for collaboration, equity analysis, and consumption of data that will lead to responsive data-informed outcomes, improved transparency, governance, and citizen engagement. We will advance and maintain our analytical tools and resources.

In 2023, Ordinance 126799 established the Race and Social Justice Initiative as City Policy and authorized the Seattle Office for Civil Rights to lead the initiative, in part by developing analytical tools to support the identification of equity impacts of policies. The goal of the RSJI is to end institutional racism within City government, working toward a vision where racial disparities will be eliminated, and racial equity achieved. The City can use data to strengthen and advance the Race and Social Justice Initiative and help tell the story about how our communities are represented and impacted.

Why do we need them?
Many of our data practices exist in siloes that operate independently from one another, making cooperation difficult. We can get better using data and evidence to make decisions, track progress, and collaborate across disciplines. Without data analytics, we may be blind to disparities that exist now, historically, and in the future.

What difference will they make?
Building and institutionalizing best practices will enable the City to tie our work to outcomes with measured effectiveness. We expand on good work by building shared best practices and guidelines across departments to better serve residents, drive innovation, and enable fundamental change.

Using data and evidence to evaluate programs

Strategic Effort	What it means	Rollout	Status
Evaluation Policy and Framework A statement of principles to guide departmental decision-making around doing evaluation.	The City uses program evaluation as a tool to be one of the most well-managed, evidence-based local governments in the nation.	● ○ ○	Internal Draft

Strategic Effort	What it means	Rollout	Status
Evidence Toolkit A set of resources to assist departments to reflect on how programs achieve their goals and articulate the evidence behind proposals.	City departments have a set of resources to include more and better evidence in program development and budget proposals and supporting departments to do program evaluation.	● ○ ○	Internal Draft
Analytics Resources and Tools A suite of curated resources that leverage our existing and new tools for applied data analytics and promote best practices and approaches.	City staff are proficient at using data to address real-world challenges, collaborating across disciplines, and communicating with our communities.	● ○ ○	Internal Draft
Seattle by Design Guidebook A guide to facilitate external collaboration and partnership and leverage City resources with an innovation and civic design lens.	City staff have resources to initiate and design mutually beneficial and collaborative cross-sectional partnerships with clearly defined goals, guiding values, and accountability.	● ○ ○	Scoped

Strengthening practices to identify and understand disparities

Strategic Effort	What it means	Rollout	Status
Community Indicators Catalog A resource to make it easier to find and share community indicators that workgroups across the City are tracking to understand community conditions and advance racial and social equity.	The City will maintain a resource to make it easier to find and share key metrics used to measure community conditions that workgroups across the City are tracking to understand community conditions and advance racial and social equity.	● ○ ○	In Progress
Equity Analysis Guides A suite of curated resources that leverage tools for equity analytics and promote standardized approaches.	City staff are proficient at identifying disparities, collaborating across disciplines, communicating with our communities, and following best practices around equity analytics.	● ○ ○	In Progress

4 Data Community Engagement

Data can help Seattleites understand what their government is doing for them and hold it accountable for its performance. The belief in the power of data to impact the quality of life for our residents, increase transparency, and promote economic development and research led to the passage of Seattle's original Open Data Policy in 2016. In addition to advancing our open data practices, we will launch work to drive better data transparency, communication, and connection with community members.

Why do we need it?
Seattle excels in the quantity of data collected and made publicly available. However, a lack of coordination, collaboration, and consistency in how we engage and communicate with the community harms the quality of data and creates barriers to access. The City has struggled with a siloed approach to how it shares and tells stories with data.

What difference will it make?
By better coordinating Seattle's approach to engaging the community through data, our goal is to increase trust with the public and promote civic engagement. We will improve existing data properties, create new tools and templates, and better engage both internal and external audiences.

Unlocking the power of open data

Strategic Effort	What it means	Rollout	Status
Open Data Policy We evaluate steps needed to shift our open data policy from "open by preference" to "open by default," without compromising security or privacy concerns. We prioritize publishing and maintaining datasets that bring the most value.	More and better data sources are published for researchers to find patterns and generate insights, and residents to learn more about their communities and services available to them.	● ○ ○	Core Principle
Open Data Playbook Guidance on how to maximize potential utility of the information with efficiency while protecting privacy.	The City strengthens use of open data, where City staff efficiently publish their data and use open data to power analytics work and collaboration.	● ○ ○	Internal Draft

Advancing commitments on community engagement

Strategic Effort	What it means	Rollout	Status
Data Dashboards and Portals Redesign Seattle's public-facing data dashboards and Open Data site, with a focus on making Seattle's data easy to find, understand, and use for the public.	City staff and members of the public are able to find and understand public data. Data dashboards are easy for anyone to read and use.	○ ● ○	Scoped
City Data Style Guide Combine resources on City brand standards, best practices for data visualization, and how-to guidance so that staff across the City are empowered to communicate effectively using data.	Data that is presented to the public is consistently accessible, relevant, and usable.	● ○ ○	In Progress
Survey and Engagement Standards Provide guidance on how to effectively survey the community so that data gathered is useful, relevant, and can be analyzed using common metrics across the City.	We standardize and coordinate City departments' collection, use, and sharing of data from community engagement efforts.	● ○ ○	In Progress
Communication Metrics A guide for City communicators to understand the different tools and methods available for reporting on the impact of social media campaigns, data dashboards, newsletters, websites, and other channels.	Seattle's communications professionals measure and report on their products, resulting in more impact and effectiveness.	● ○ ○	In Progress

5 Addressing Real World Challenges

Seattle is an established national leader in many good data practices, and through this data strategy we hope to institutionalize and expand this good work by building shared best practices and guidelines across departments, a ***One Seattle*** approach to data.

Below are a few examples and stories of how our teams have advanced the use of data, scaled data excellence, or achieved better and more equitable outcomes for residents using data. These examples showcase the impact our unified approach could have when scaled up and put into practice across the City.

P-Patch Equity Analysis
Department of Neighborhoods
Data + Plot Assignment
A 2018 Racial Equity Toolkit analysis revealed that many gardeners relied on their P-Patch to reduce food costs and grow organic food that is otherwise not affordable. At the same time, we knew that the program could better serve populations who have been chronically underrepresented in the gardens.

Approach: All that data led to a procedural shift that resulted in new Plot Assignment Guidelines prioritizing underrepresented populations. When potential gardeners sign up for the interest list, they are now asked to identify if they are part of one of these underrepresented groups: Black or African American, Indigenous/Native, and Latinx or Hispanic, households making 30% or below Seattle area median income, immigrants and refugees, people who need to garden in an accessible raised bed, and groups that serve seniors, children, and youth (up to age 24). If they are in one of those groups, they move up the interest list more rapidly than other potential gardeners.

Impact: In 2020, the first year this policy was in place, 45% of new gardeners placed in gardens were from priority groups. In 2022, that number rose to 65%.

Performance-Based On-Street Paid Parking Rates
Seattle Department of Transportation
Data + Performance Metrics
The Seattle Department of Transportation (SDOT) sets and maintains the street parking rates throughout the city, directed by the Seattle Municipal Code that states rates should be set so the performance metric of 1 - 2 parking spaces are open and available throughout the day. Typically parking rates are a controversial topic in cities, which prevents rates from being levied at appropriate amounts to meet city goals. For the first 9 years, to set rates SDOT conducted very large manual on-street parking studies to collect usage data in all business areas with paid parking. This was limiting due to budget - we could only collect 1 day in each paid area.

Approach: Starting in 2020, we developed an occupancy model using parking transaction payment data validated with years of manual studies to determine occupancy in each paid area. Limited manual data collection happens on a monthly basis now in small areas to update the rate model calculations.

Impact: SDOT is able to make more frequent parking rate adjustments - three times a year - that better reflect the seasonal differences in demand for on-street spaces around the city. This practice enables rate setting that meets curb management goals without requiring fees that are higher than necessary.

2022 Transportation Network Company Fair Compensation
Office of Labor Standards
Data + Policy
Drivers for rideshare companies like Lyft and Uber have the potential to receive less-than minimum wage compensation for their services. In response, the City proactively enforced labor standards to ensure minimum compensation for drivers operating in Seattle.

Approach: Data analysis led to and supported the City's Transportation Network Company (TNC) Minimum Compensation Ordinance. The ordinance required that TNCs provide a minimum guaranteed per-trip payment that is at least the equivalent of Seattle's large employer minimum wage plus compensation for reasonable expenses. We operationalized policy into data collection to support compliance.

Impact: Data analysis supporting the requirements led to over 5,500 drivers to recoup $750K while the ordinance was in effect between October 2021 - December 2022.

Illegal Dumping

Increased demand from **5,000 to 27,000** annual complaints

Response time reduced from **30 to 5** days

2,000 work order backlog squashed

Graffiti

Addressed over **20,000** annual complaints, **99% within 6 days**

Closing the Loop Customer Service Requests
Seattle Public Utilities
Data + Illegal Dumping + Trash + Graffiti

The information system used for customer service request and dispatch work orders was outdated and lacked critical features needed for effective customer service and data analysis. Some of the key problems included slow request processing, delays in addressing customer issues, inadequate communication with customers about request progress, and the absence of data and predictive analytics capabilities, which limited insights from customer feedback. Additionally, the dispatch of work orders to front-line crews was inefficient and we needed better integration with Customer Relationship Management (CRM) systems, mobile access for front-line crews, scalability to accommodate increasing service requests, and comprehensive user training.

Approach: By harnessing the power of the Motorola CSR platform, integrating the Find it Fix It customer-facing application, and crafting a dedicated work management app for deployment and tracking, we forged a more customer-centric, data-driven system capable of continual service improvement. This approach was built with adaptability and scalability in mind, ensuring our system's alignment with evolving business needs.

Impact: Developing an integrated system has had a profound impact by vastly improving our data analytics capabilities and enhancing communication with our customers. We now have streamlined work order dispatch, improved real-time updates, personalized customer response, and efficient issue resolution. Response times have been reduced and can be scaled up, and there is a robust feedback loop with both customers and front-line crews is built into the process. system ensured we could meet the increasing demand for our services. As a result of these multifaceted improvements, SPU now excels in responding to illegal dumping, trash, and graffiti challenges.

This innovative approach has enabled us to maintain a high level of service despite a 300% increase in demand over the past 7 years. Our strategic approach has not only addressed the shortcomings of our previous system but has also transformed SPU into a more customer-centric, data-driven, and efficient organization.

**Improved Access to City Benefit and Discount programs**
Affordable Seattle and CiviForm
Data + Affordability + Process Improvements

Affordability is a significant challenge in Seattle--in the past 6 years, the cost of living increased 53% and family of four with two children can expect to pay $115,000 to cover basic living expenses. The City has over 30 programs that can help low-income families but many of these programs are severely under-utilized, with some estimated at only 40% of eligible enrollment. Residents have needed to apply each benefit program in a different platform, sometimes through paper forms.

Approach: We used human-centered design approaches to developing technology (CiviForm) and program solutions (Affordable Seattle) to address barriers to accessing City benefits and discounts. We maintain and are continually improving an online platform where residents can see and apply to multiple programs by entering personal information just once. We measure success with performance data such as the average time to complete a program application, the total applications a program received, and the specific demographics to be sure our programs are serving those it was intended to serve, based on race, ethnicity, zip code, and income.

Impact: The average time to complete applications has been reduced from 30 minutes on a paper form to 5 minutes on CiviForm. Parks program applications increased 200% and Human Services increased by 300%. 19 percent of residents have applied to multiple programs. We are now scaling integration with additional programs across the City.
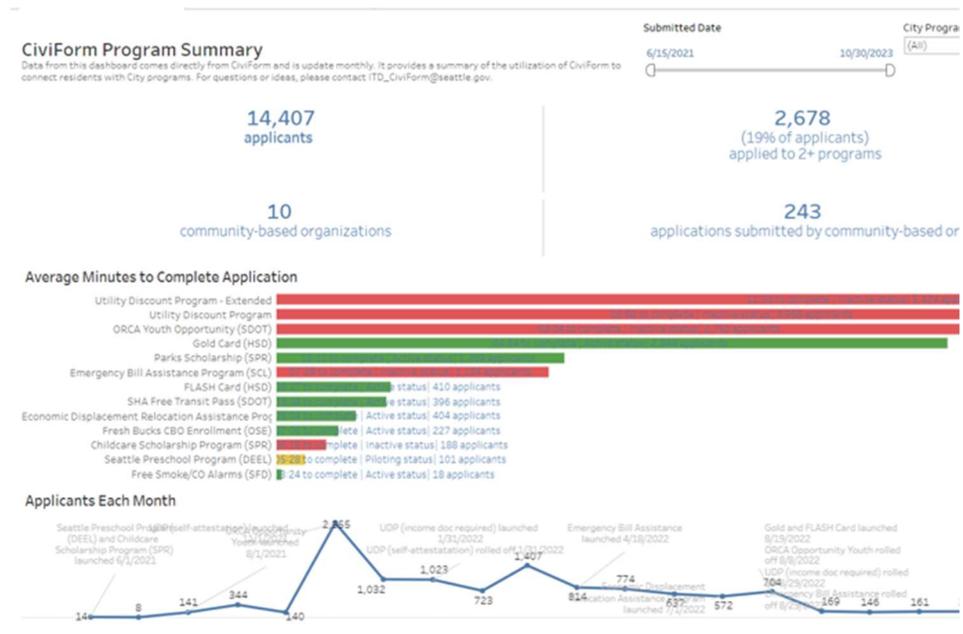
GIS Open Data Modernization
Information and Technology Department
Spatial Data + GIS + Cloud
The GIS team set out to improve our open data presence to make it more robust, full featured, and accessible.

Approach: The team moved our open data presence from on-premise infrastructure to our vendor's cloud platform (ArcGIS Online). This ensures that the City of Seattle will always have the resources to meet any demand. We also implemented a "common data layer" approach and introduced automation to manage how data is refreshed.

Impact: Anyone in the world can now access Seattle GIS data, which ensures a consist experience and improved our operational efficiency in how data is curated. We anticipate major success in connecting with the public and improved operational efficiency once we complete our open data modernization effort.

High Quality Mountain Fresh Drinking Water Supply Information
Seattle Public Communities
Data + Governance and Management
Data governance and management process are needed to protect the high-quality Mountain Fresh Drinking Water Supply for over 1.5 million residents.

Approach: Seattle Public Utilities (SPU) is collaborating with the Information Technology Department (ITD) and community partners to create software applications that empower SPU employees to govern and manage mission critical data for over 1.5 million drinking water customers. SPU employees make data-driven decisions to plan, collect, assure, describe, preserve, discover, analyze, and integrate information required to protect and control access to the City of Seattle source drinking water supply. We practice best known methods in data life-cycle governance and management to ensure our drinking water remains protected from unauthorized access and other threats.

Impact: SPU business capabilities enable oversight and control of all people, processes, technologies, and data mission critical to watershed protection success. Automated work and information flows are in production and dashboard reports present business intelligence and analysis. All to ensure the employee's day to day work is easier, better, faster, cheaper and delivers value to our customer.

Data Dashboard Portal
Unified Care Team
Data + Analytics + Focused Collaboration

The Unified Care Team (UCT) brings together every City department working on homelessness for a coordinated One Seattle approach. The UCT focuses on the delivery of core municipal functions across departments, such as public safety, hygiene, trash removal, open parks, accessible rights of way. This work requires a new standard for collaboration and data-informed action.

Approach: We developed an integrated information ecosystem to respond to customer requests and prioritize work. The information system allows previously siloed data sources and platforms to be integrated into a single source of truth to support analytics, reporting, and operational planning. Because there are multiple dashboard tools, an internal data portal was developed to maintain consistent access.

Impact: Teams use the dashboards and tools every day to coordinate focused efforts, track progress, and build relationships with the community.

Emergency Response Dashboards
Seattle Fire Department
Data + Dashboards

The City seeks to provide Seattle Fire Department (SFD) company-level officers with timely, accurate, and relevant data regarding relevant metrics of unit performance.

Approach: SFD and ITD staff collaborated to design a dashboard connecting multiple data sources to give company officers a way to look both at their units and comparable ones. This dashboard shows data related to turnout and response time, incomplete fire and EMS records, building inspection, fire hydrant inspection, and more. It allows captains to monitor performance of their lieutenants without having to seek external assistance measuring these items.

Impact: This dashboard contributed to improved performance in several areas, notably outstanding incomplete NFIRS (fire incident) and ESO (EMS incident) records. Anecdotally, it has allowed officers to assess their outstanding building and hydrant inspections, to calibrate needed work in these areas, and to weigh them against other operational priorities such as training.

Response Unit Simulation and Scenario Models
Seattle Fire Department and Innovation & Performance
Big Data + Simulation + Spatial Processing
When the City needs to evaluate deployment scenarios for Fire and Emergency Response units, traditional travel time models are generated to determine how changes could impact meet performance metrics and minimum response times. These models are typically run a handful at a time.

Approach: We develop spatial-computational models to evaluate potential response times from millions of deployment scenarios with innovative use of data and mapping services. We run the best ones through a data simulation that accounts for the stream of incidents along an actual timeline of events. We then present results and information in dashboards so that the most optimal scenarios can be evaluated in real time.

Impact: Department leadership and planning teams can use these analytical tools to evaluate and optimize deployment locations and schedules without waiting for new scenarios to run. The dashboards also support equity analytics using the City's location-based demographic tools.

Construction Permitting Status
Innovation & Performance
Data + Process Improvements
The City needs Integrated data analytics with new systems thinking to reduce construction permitting delays and improve processes with the intent to impact affordable housing.

Approach: We can use construction permitting data to develop descriptive computations to estimate expected permit completion time integrated with reporting views, aka a "Permit-o-Meter," and internal dashboards that supports ongoing analysis, management tracking, and early warning accountability and personalized alerts.

Impact: These tools will be tested and evaluated for impact and usefulness.

Climate Portal
Office of Sustainability & Environment
Data + Emissions + Neighborhoods

Seattle typically measures its climate progress through a greenhouse gas (GHG) emissions inventory report for the whole city. We measure or estimate emissions in our buildings, transportation, and waste sectors using a pre-defined methodology that is used by cities worldwide. While helpful with tracking progress towards long-term emissions reduction targets, the data and process is constrained in many ways. The reports are compiled biennially (every two years), and the data often lags behind by about 18 months, making it less relevant for emergent challenges. Additionally, the data has traditionally not been granular enough - i.e. it is primarily citywide vs. by neighborhood - to be useful for developing more nuanced and equitable programs and policies.

Approach: To address this challenge the Office of Sustainability and Environment (OSE) led the development of a Climate Portal with the primary goal of housing emissions data that is quarterly (where available) and spatially granular to the census tract level (where available). OSE ran a series of internal and community-led listening sessions to understand current gaps in the accessibility and effectiveness of data in the GHG emissions inventory report. OSE then worked closely with staff at ITD and the Mayor's Office to build out the Climate Portal in ArcGIS Experience Builder while staying consistent with the One Seattle branding. The Climate Portal is slated for additional future expansion, with community needs such as air quality data, climate investment tracking, and community stories to be added in the future as distinct page additions.

Impact: Our project forced us to think differently about how we report climate data. We were able to return to our original data partners and push the boundaries to develop outputs that better aligned with our needs. The increased frequency and granularity of data has also necessitated an actual data collection process that we are working on and improving for future iterations. And most importantly we have more engagement from our community partners, who are interacting with the data and requesting improvements for future iterations.

Racial and Social Equity (RSE) Index
Office of Policy and Community Development
Data + Demographics

City departments were seeking a resource combining population-based data and neighborhood-level mapping that they could use in analyses to advance equity and the City's Race and Social Justice Initiative. The City demographer in the Office of Planning and Community Development (OPCD) designed the Racial and Social Equity (RSE) Index in 2017 in collaboration with colleagues in several City departments.

Approach: The RSE index addresses this need by providing a common foundation of mapped data to help identify where RSJI priority populations make up a relatively large proportions of neighborhood residents. This is a shared resource that departments can use to inform the design, prioritization, and evaluation of programs, planning initiatives, and investments. The index is best used as a starting point to be considered along with community input and key data relevant to the specific purpose at hand.

Impact: Having the RSE Index as a common base for analysis keeps departments from having to reinvent the wheel and makes it easier to collaborate and align work. The index is being used by many departments for a variety of purposes. This has included helping to identify where new programs, outreach efforts, investments, or planning initiatives should focus. Other common uses include overlaying the index on a map along with locations of capital facilities, community amenities, or program services to identify gaps that need to be filled to ensure equity priority areas are well-served. Some uses have involved mapping the index along with geospatial data on things that can put populations at risk (e.g., pollution) in order to better understand and reduce disparate impacts.

The Winter Weather Response Map
Seattle Department of Transportation & Internet Technology Dept.
Data + Snow

When winter storms are in the forecast, SDOT mobilizes its crews to pre-treat roads in preparation for icy conditions. As snowfall begins to accumulate, SDOT's fleet of trucks systematically plows snowy roads, keeping arterials and priority routes clear for transit and essential travel. But how can the status be communicated to the public, since a steady snowfall can soon cover a previously cleared roadway?

Approach: A map-based web-app using AVL (Automated Vehicle Location) data shows in near real-time how recently SDOT trucks have serviced road segments. The map uses color intensity to distinguish roads serviced in the last 1 hour, 1-3 hours, and more than 3 hours. In earlier years, the sudden surge in website visits would often bring the dedicated map servers to a crawl. The web map was a victim of its own success. In recent years, the live, public-facing web map has been moved to a cloud-hosted environment, so that performance of the application isn't affected by demand during winter storm events. An ADA compliant text version offers road temperatures and locations of road plowing designed for screen readers.

Impact: The Winter Weather Response Map lies dormant most of the year, but when icy, snowy weather arrives, the live, interactive web map responds to over a quarter of a million requests from the public, per snow event.

Curb Data Specification Project
Seattle Department of Transportation
Data + Curbside Management

The Seattle Department of Transportation's (SDOT) Curbside Management team needed to modernize how we record and digitally communicate curbside regulations, policy, and geographic locations. This need has become especially important due to heavy curb users such as for-hire vehicles, urban goods deliveries, and other on-demand delivery services using digital tools to maximize the number of deliveries and services they can provide. All of which puts tremendous pressure on our limited curb space.

Approach: This project, in partnership with the transportation technology firm Populus, was designed to pilot a new digital curb regulations inventory that would allow SDOT to communicate the city's parking rules to curb users in real-time and in a nationally recognized standard format, Curb Data Specification (CDS).

Impact: The project highlighted the inefficiencies in how SDOT currently stores and communicates its curbside regulation data within our asset management system. It showed we can take hundreds of duplicated curb regulation policies and store them as only a few uniquely defined data objects – easily translated into a CDS format. SDOT plans to use the lessons learned from this pilot project to develop a larger and regularly updated digital curb effort as part of an upcoming federally funded project. This upcoming project is part of SDOT's goal of developing new tools to better understand and manage curbside activity.

Citywide Fiscal Monitoring and Reporting
Office of City Finance
Data + Fiscal Monitoring

City leadership expects access to timely and accurate financial data, but department fiscal monitoring and reporting processes are inconsistent. The Citywide Financial Data Warehouse contains a trove of financial data but was designed to be a flexible reporting tool and had few standard reports available. Office of City Finance, Seattle IT, and the City Budget Office partnered to develop a quarterly fiscal monitoring program where the financial data of all departments is reviewed in a consistent manner and any issues can be raised and addressed.

Approach: Building off the Citywide Financial Data Warehouse, Citywide Accounting and the City Budget Office developed a standard set of reports and metrics to assess the fiscal health of all departments. A quarterly fiscal monitoring report is shared with departments. After reviewing the reports, key stakeholders meet to discuss trends and areas for improvement. A summary of the outcomes of each department's fiscal monitoring meetings is shared with the City Finance Director.

Impact: Successful fiscal monitoring is defined as departments having fewer items to be addressed from quarter to quarter. Knowing that there are fewer areas of concern within department-level financial data ensures that the City's financial leadership has access to timely and accurate reports to inform their decision making. It also means that non-financial users of financial data, both within individual departments and across departments, can rely on the data in the Citywide Financial Data Warehouse.

Automating Traffic Data Collection with Machine Learning
Seattle Department of Transportation
Crowdsourced Data + Traffic Analysis

SDOT performs hundreds of traffic studies every year to aid our planners and engineers in improving our transportation network. SDOT also has legislative obligations to collect and report traffic volume data on an annual basis. Traditionally, these traffic data collection efforts were highly manual and dependent on crews placing pneumatic hoses across the road. This method is prone to issues with data quality, vandalism, theft, hazards during installation, and interruption from street sweeping.

Approach: We've started automating our traffic studies by using video-based machine learning solutions. These systems can use our existing network of traffic cameras from our Transportation Operations Center, reducing the cost of implementation. This is an emerging field, and we are working closely with vendors to pilot and provide feedback on their systems.

Impact: We've found that when a video-based traffic study is properly configured it's the most accurate method we have for describing usage of our roadways. This method is also safer for our crews to implement and is faster to process the data into useful reports than our other options. These systems provided timely and accurate traffic data when we reopened the West Seattle Bridge. We are embracing automated traffic studies on our high-volume roadways and continuous count locations.

AI Powered Safety Analytics
Seattle Department of Transportation
Data + Safety Analytics

SDOT is committed to reaching our Vision Zero goal of eliminating serious injury and fatal collisions by the year 2030. We've traditionally designated intersections for safety investigations based on historical collision data. Historical collision data, however, does not provide a complete picture of the traffic safety conditions, as not all collisions are reported to the police. Additionally, collision reports do not always sufficiently describe the incident for us to identify effective mitigation measures.

Approach: We're using a federal SMART grant to gather advanced safety analytics at the intersection by pairing AI models with video from traffic cameras. This allows us to review near miss metrics between vulnerable road users and vehicles, time to collision, near miss hotspots, and more. This approach allows us to gather a more complete picture of intersection conflict zones than relying on police collision reports.

Impact: This approach helps us better understand conflict zones (and consider mitigation) before collisions occur. Research shows that the conditions that lead to collisions can be spotted before collisions occur by reviewing near misses. Near miss analysis is a cutting-edge field and we are actively working with our Engineers to take advantage of this method in our efforts to make our roadways safer for all users.

Urban Forest Analytics
Seattle Department of Transportation
Data + Trees

We are trying to manage our Urban Forest (tree resources) in a manner that allows us to address emergent issues such as climate change, species diversity and invasive pests, as well as making routine maintenance more efficient.

Approach: With the help of Seattle IT, Urban Forestry was able to develop an app in ArcGIS Field Maps that allows us to make edits to our tree inventory in the field. We have hired teams of student interns who are working towards degrees in Urban Forestry or related fields to collect data as part of our Move Seattle levy efforts. The collected data is analyzed on several levels to guide our current and future management practices.

Impact: We take the collected data and analyze species diversity and performance on a city wide and a designated management unit level. This analysis has demonstrated that the impacts of invasive diseases and pests like Dutch Elm Disease and Emerald Ash Borer will have significantly greater impacts in some areas of the city, due to past planting practices. We track trees on a species/variety level and can monitor response to drought/climate change and adjust our species selections for planting to include trees that are better suited to our future needs.

Related and Future Work

Many City departments and programs have been advancing data practices, data governance structures, and other best practices. This plan complements other planning and strategy work that has been started or has already been done, such as privacy principles that were adopted in 2015, the Demographic Data Task Force that was created in 2015, the open data policy that was enacted in 2016, and ongoing communities of practice. Other strategic work underway around the City includes:

- **5-year enterprise strategic information technology roadmap.** Seattle IT is developing a strategic roadmap to outline a 5-year vision (2024-2028) and define the pathways needed for fulfilling its purpose to be a trusted partner that provides secure, reliable, and compliant technologies enabling the City to deliver equitable and responsive services to the public. The roadmap will focus on 9 technology areas that align to Seattle IT priorities and represent opportunities to demonstrate leadership and accountability.

- **Data 2025.** Data 2025 is about advancing the Seattle Department of Transportation's data capabilities and enabling a more collaborative and inclusive data environment. It includes development and implementation of new processes, policies, and tools to support stewardship and strategic management of the department's data assets.

- **Seattle Public Utilities Digital Workplace Governance Program.** This program offers thriving circles of support to employees and oversight of the digital employee experience by building a digital relational culture and business capabilities in information lifecycle governance and management enabled by group technologies.

When new data use and governance issues emerge, our values and this data strategy can serve as a launching point for productive discussion.

Acknowledgements