

Data Analytics Update



City of Dallas

June 27, 2022

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Data Analytics & Business Intelligence
City of Dallas

Presentation Overview



- Background/History
- Purpose
- Our Work
- Impact
- What's Next





On September 23, 2020, the City Council voted to create the Office of Data Analytics and Business Intelligence to:

- Gain analytical access to the city's data.
- Enhance data driven decision making throughout the organization.
- Improve service delivery through understanding our operational data better.
- Use data to support the city's equity efforts.





Key Goals

- Develop and lead a **Data Governance** Initiative that ensures sensitive data is protected and that data that can be shared is easily accessible to the public.
- Enhance **Data Accessibility** so that city staff and the public can have access to the resources they need to gain insight.
- Build and grow a **Team** that can complete complex, high quality, insightful data analytics products.
- Cultivate a **Data Culture** in the city to enable all to speak, understand and access data.
- Research, design, execute and publish high impact **Data Projects**.
- Support **Mission Critical Operations** and Emergency Response.



Purpose



- The purpose of this presentation is to provide an update on what Data Analytics and Business Intelligence has accomplished in the last 18 months, the impact our work has had and what's next.





In the past 18 months:

- Created and built out an entirely new department.
- Built, hired and trained a team of 30 data analysts.
- Rebuilt the open data portal and established new data quality standards.
- Increased our public facing data assets to 1500+.
- Established and implemented Data Governance for the City of Dallas.





In the past 18 months:

- Built a Data Literacy training program which has educated 129 staff members in data analytics.
- Increased the active data analysis software licenses in the city from 300 to over 700.
- Delivered over 50 high impact data projects.
- Our data products have over 58 million views online.
- Realized cost savings of over \$15 -\$20 million.





Develop and lead a **Data Governance** Initiative that ensures sensitive data is protected and that data that can be shared is easily accessible to the public.

- Established and implemented Data Governance for the City of Dallas.
 - Data Governance Committee
 - Data Governance Working Groups





Enhance **Data Accessibility** so that city staff and the public can have access to the resources they need to gain insight.

- Rebuilt the open data portal and established new data quality standards.
- Increased our public facing data assets to 1500+.
- Adopted enterprise Data Visualization software.
 - Stood up two new Tableau servers: Internal and External.
- Data Cataloguing efforts in partnership with ITS





Cultivate a **Data Culture** in the city to enable all to speak, understand and access data.

- Data Academy - Many departments want to be data driven, but do not know how. Over 130 City staff have gained skills in data analysis and storytelling resulting in operational improvements and a more effective use of data at the department level.
 - *Example: PID Dashboard*
- Assist with Hiring and onboarding City wide Data staff
- Support Communities of Practice





Research, design, execute and publish high impact **Data Projects.**

- Over 50 Major Projects
- 96% of Products have Equity Elements





DPD Crime Analytics Dashboard - Provides one place where most crime data, including sensitive data, is displayed in near real time. The dashboard increases transparency, builds community trust, and empowers City leaders to strategically deploy resources.





Response Times and Dispatched Calls for Service

Tiempos de Respuesta y Llamadas para Servicios de Emergencia
Summary of priority 1-4 calls data

Select Year 2021



Select Page

37,510

Total Calls for Service
Total de Llamadas de Servicio

8.3

Average Response Time (Minutes)
Promedio de Tiempos de Respuesta en Minutos

61.7%

% Call Responses Met Goal
% de Llamadas Atendidas que Cumplen el Objetivo

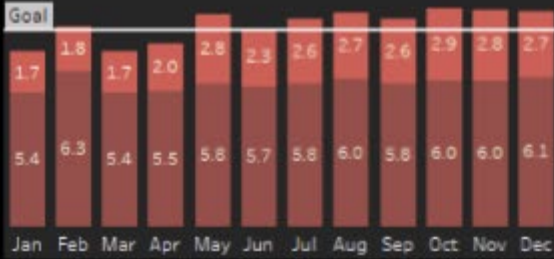
21,784

Call Responses Met Goal
Llamadas Atendidas que Cumplen el Objetivo

Response Times by Month

Tiempos de Respuesta por Mes

Dispatch
Travel

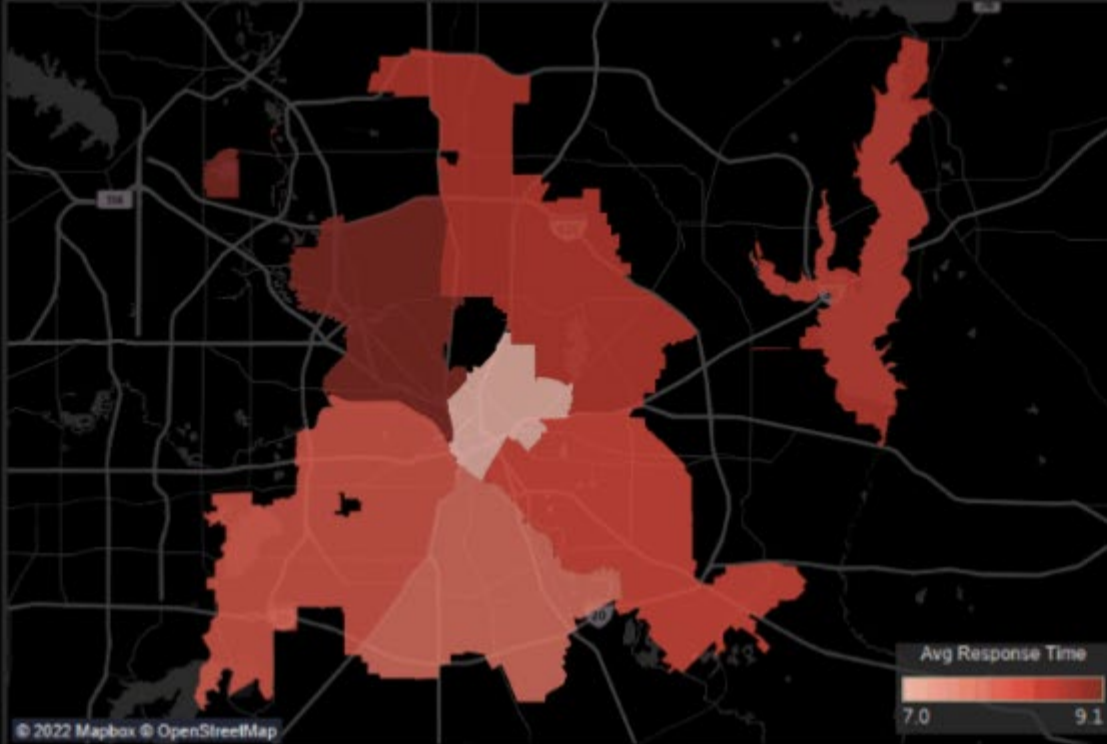


Response Times by Division

Tiempos de Respuesta por Division

Select Priority 1

[Click here to find geography](#)



© 2022 Mapbox © OpenStreetMap

Select or draw a shape on the map to filter the data. After drawing, click to remove.

Call by Problem

Llamadas por Problema

Search for Problem

(All)



Control+click to select multiple problems

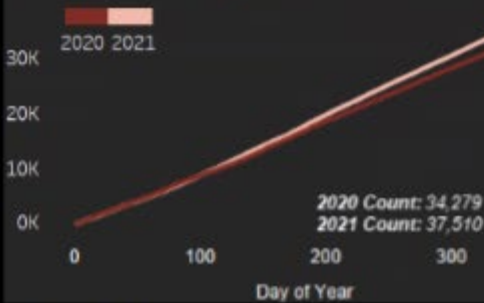
Average Response Time by Priority

Tiempo Medio de Respuesta por Prioridad



Call Count Running Total

Recuento de Llamadas en Total



Calls by Month

Llamadas por Mes



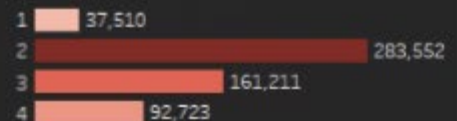
Response Times by Division

Tiempos de Respuesta por Division



Calls by Priority

Llamadas por Prioridad





Employee Diversity Dashboard - The dashboard underscores the City's equity efforts and uses disaggregated data to show its diverse workforce while providing tools to City staff on attracting future employees to work





12,706

Total City of Dallas Employees
Total de empleados de la Ciudad de Dallas

3,186

Managers / Supervisors
Gerentes / Supervisores

63%

Managers / Supervisors of Racial / Ethnic Diversity
Administradores de la Diversidad Racial / Étnica

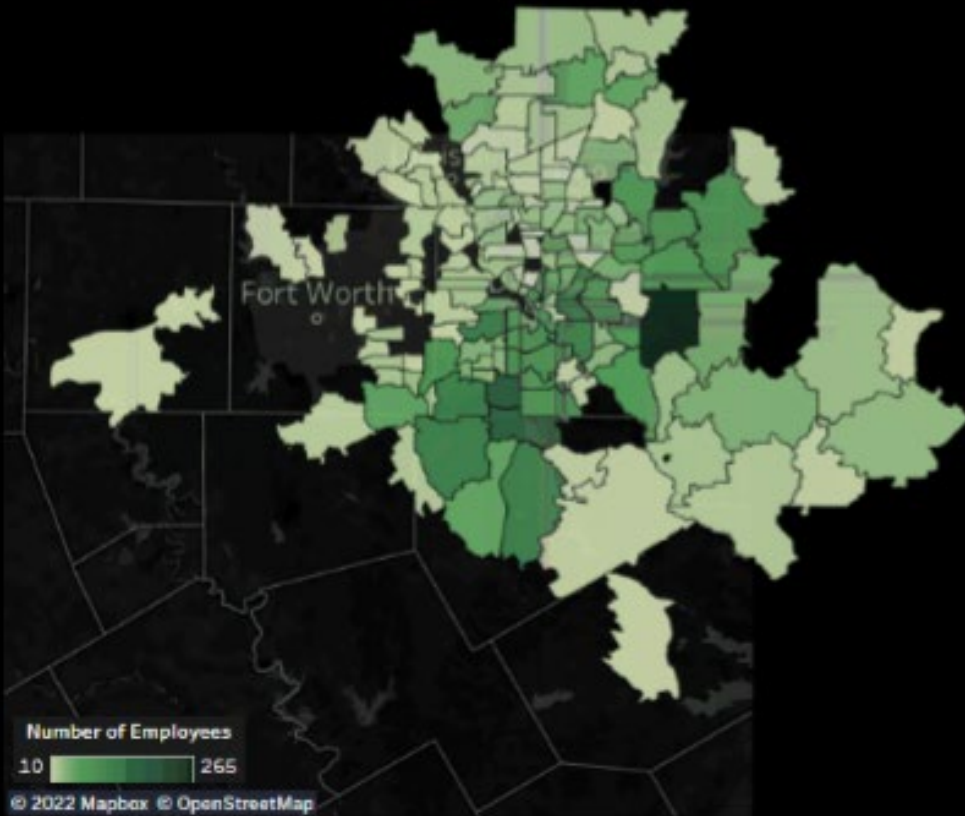
7,575

Non-Uniform Employees
Empleados no Uniformes

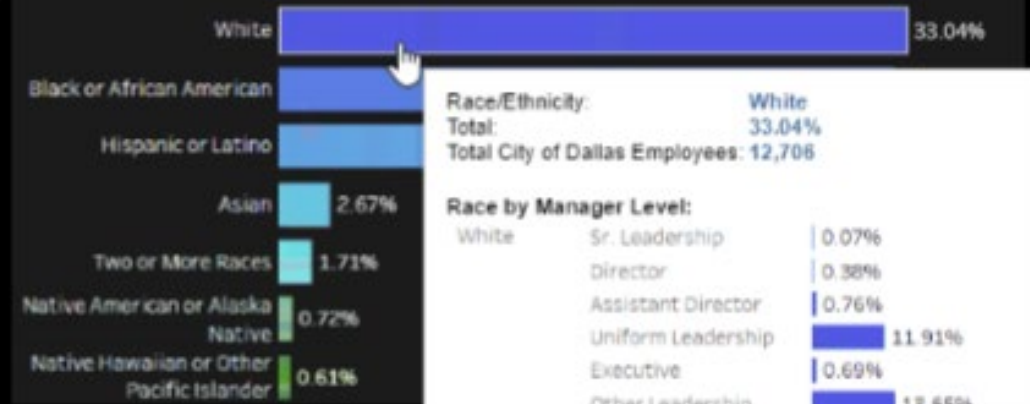
996

Total Veteran Employees
Total de Empleados Veteranos de Guerra

City of Dallas Employees by Residential Zip Code
Empleados de la Ciudad de Dallas por Código Postal Residencial



Employees by Race/Ethnicity
Empleados por Raza/Etnicidad



Race/Ethnicity: White 33.04%

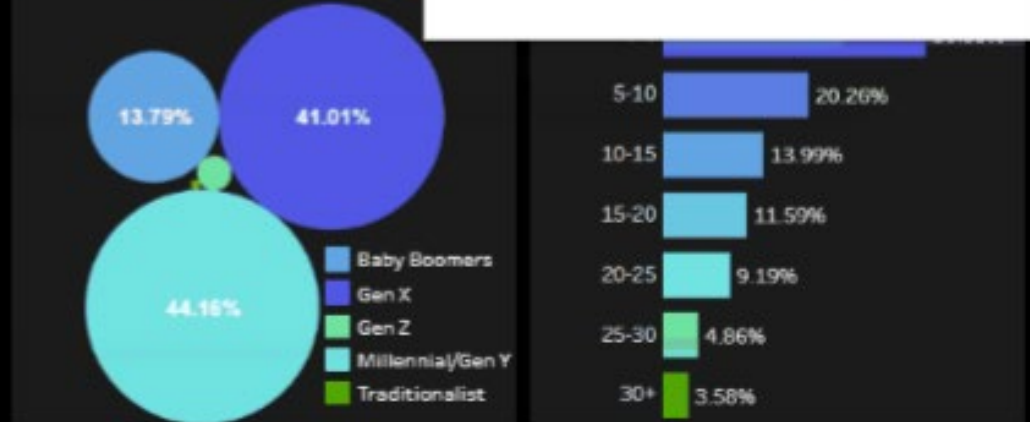
Total: 33.04%

Total City of Dallas Employees: 12,706

Race by Manager Level:

White	Sr. Leadership	0.07%
	Director	0.38%
	Assistant Director	0.76%
	Uniform Leadership	11.91%
	Executive	0.69%
	Other Leadership	13.65%
	Individual Contributor	
	Mayor/City Council	0.19%

Employees by Generations
Empleados Según la Generación





Women Employees at the City of Dallas – During Women’s History Month, published the first dashboard of its kind. City of Dallas women employees come from diverse racial and ethnic background, represent 47 different countries of origin and span over 5 generations. About three-quarters of women employees in the City of Dallas are women of color, both as individual contributors and as managers and leaders. Women employees, with their multifaceted views, support excellence in public service and play a vital role in the operation of the City



Women Employees in the City of Dallas

Mujeres empleadas en la Ciudad de Dallas

12,706
City of Dallas Employees
 Empleados de la Ciudad de Dallas

3,870
Total Women Employed
 Total de mujeres empleadas

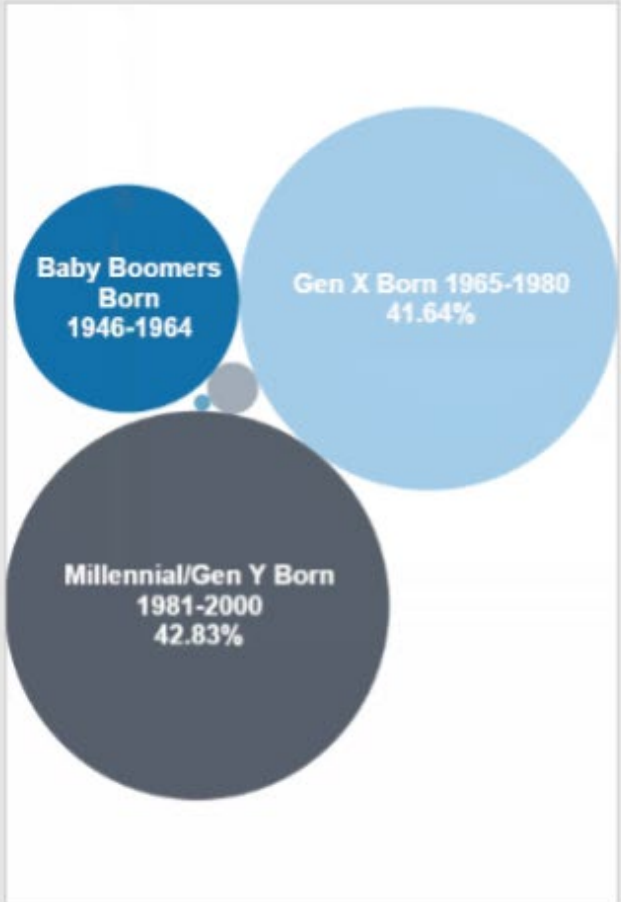
2,984
Employed Women of Color
 Mujeres de color empleadas

981
Women in Leadership
 mujeres en roles de liderazgo

722
Women of Color in Leadership
 Mujeres de color en el liderazgo

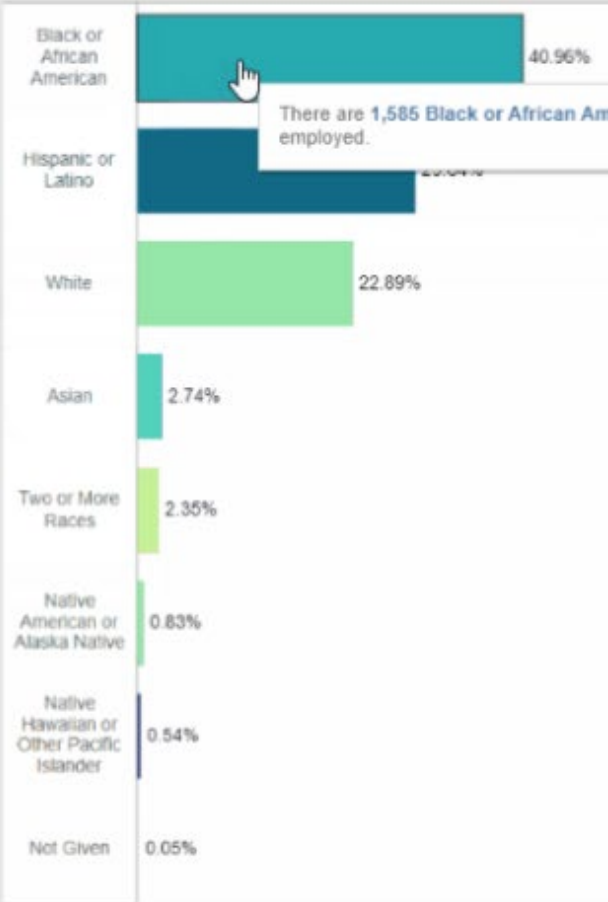
Employed Women by Generation

Empleadas de la Ciudad de Dallas por generación



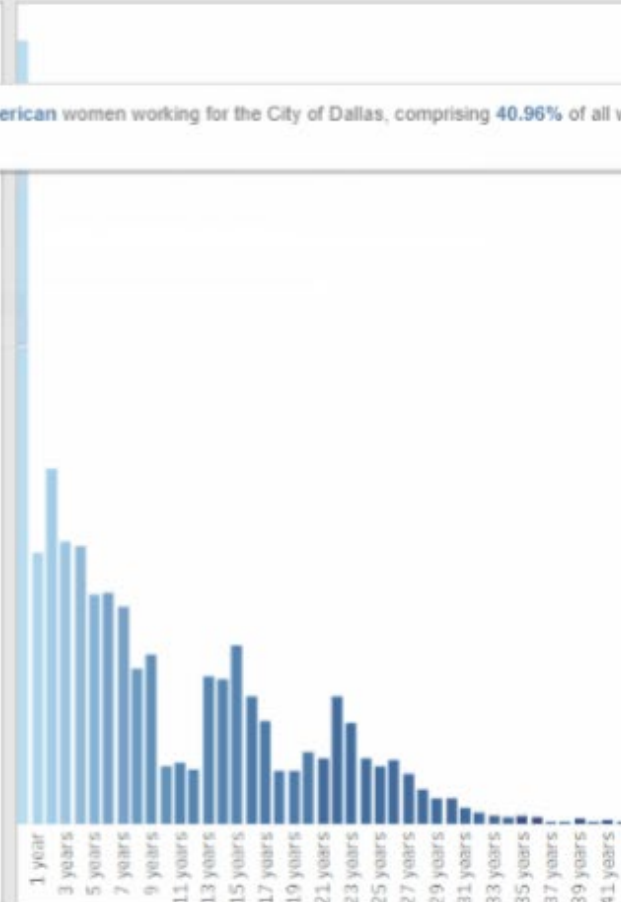
Women by Race and Ethnicity

Mujeres por raza y etnia



Length of Service for Women

Duración del servicio para las mujeres



There are 1,585 Black or African American women working for the City of Dallas, comprising 40.96% of all women employed.



Dallas Census Data Hub Site - The site uses the decennial Census Data Summary Files released by the U.S. Census Bureau to provide residents with simple and usable Dallas-centric Census data, including population and housing unit comparison for the Dallas region.





Translator

Dallas Census Data Hub



Follow

Follow

Follow Dallas Census Hub

Our Work – Data Projects

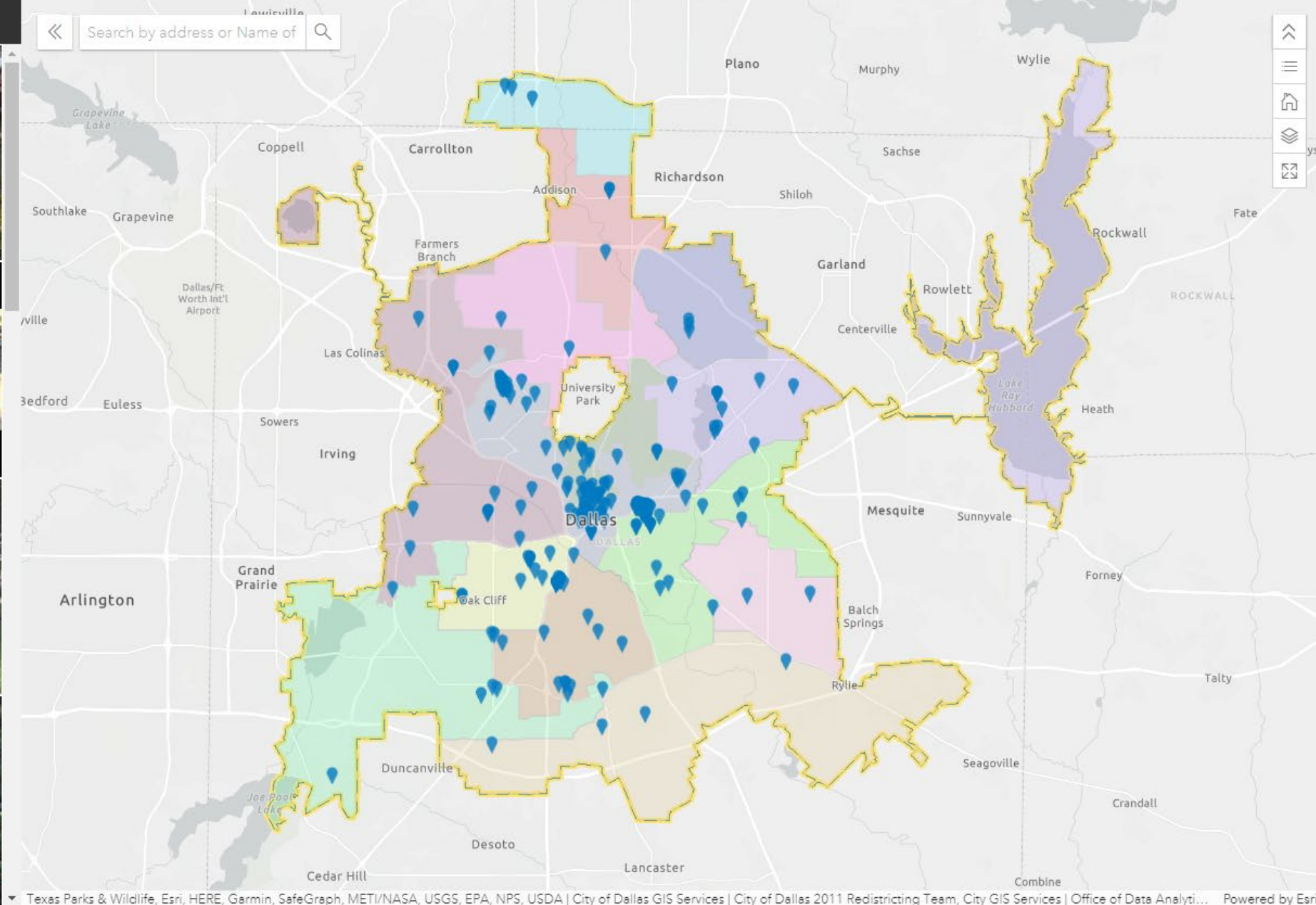
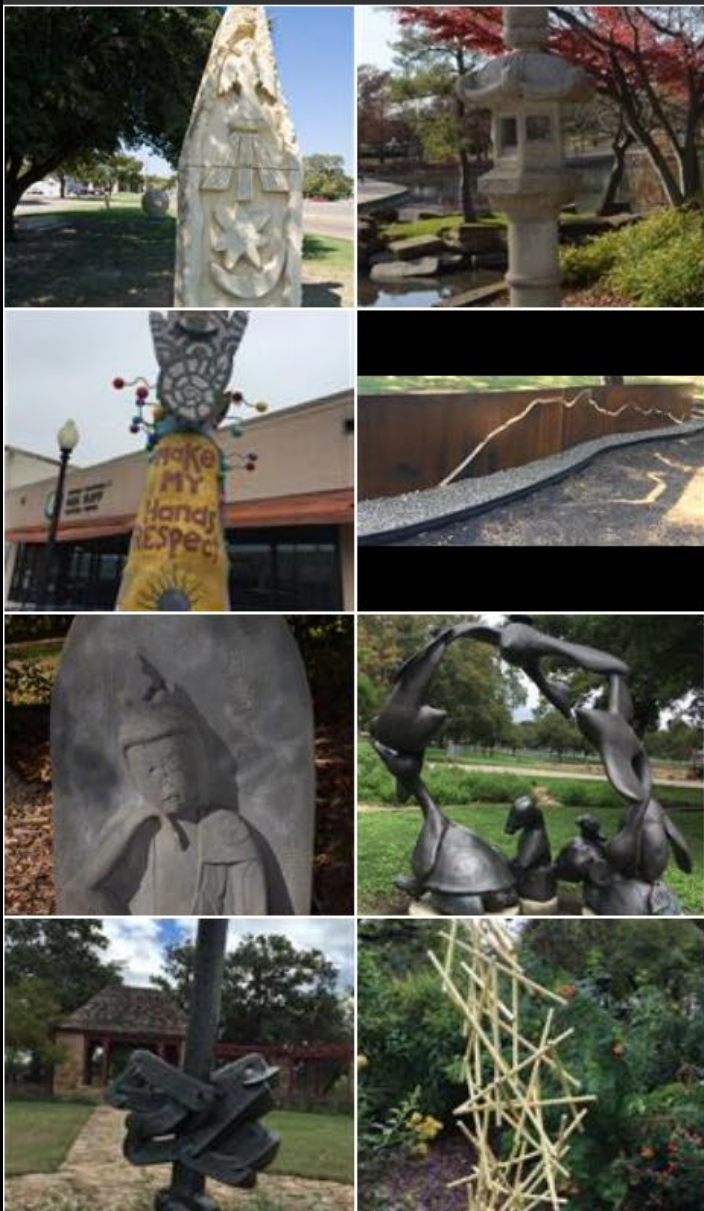


Public Art Map – Created an interactive map to help Dallas residents explore the art and culture on display throughout the City. The map was launched in partnership with the Office of Art and Culture during Arts Month.





Public Art Installations





Dallas Fire and Rescue Dashboard – Created an interactive dashboard to provide insight into DFR’s day-to-day operations. Fire incidents can also be viewed by City Council Districts and ZIP codes. The dashboard provides an interactive, mobile-friendly way to access and review key DFR metrics including incident, inspections, response times, and budget & staffing.





911 DALLAS FIRE-RESCUE INCIDENTS & RESPONSE TIMES

INCIDENTES DEL 911 DALLAS FIRE-RESCUE Y TIEMPOS DE RESPUESTA

237,310

Total 911 DFR Incidents
Incidentes totales de 911 DFR

84%

Medical Responses within 9 minutes
Respuestas médicas en 9 minutos o menos

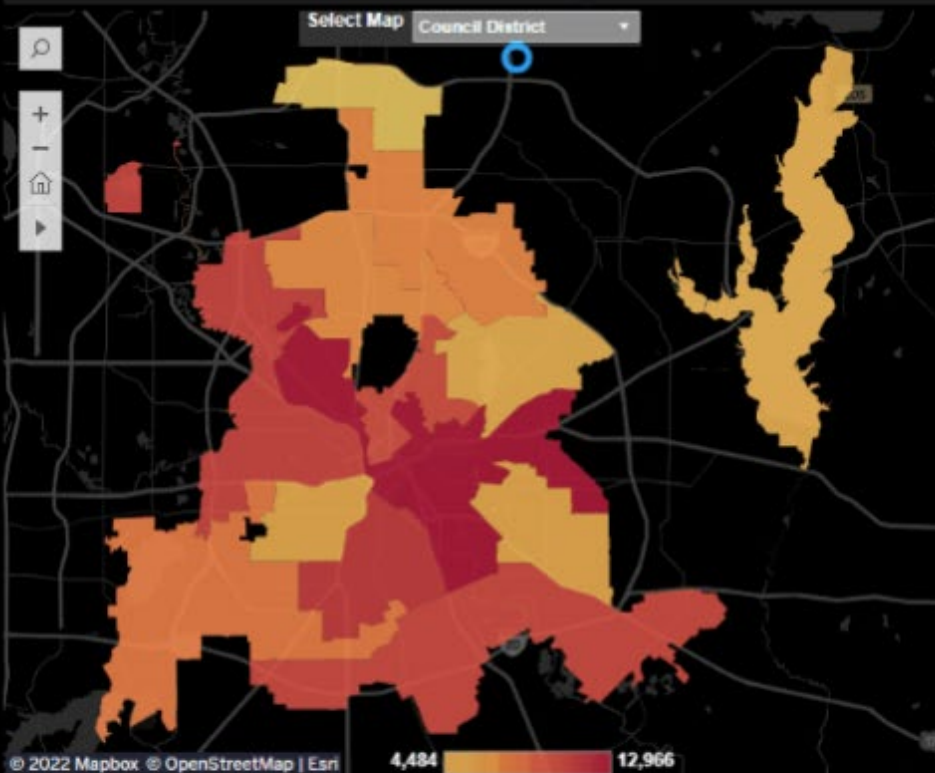
87%

Structure Fire Responses within 5 minutes, 20 seconds
Respuestas a incendios estructurales en 5 minutos, 20 segundos o menos

Incident Heatmap

Mapa de calor de incidentes

Click on the map to filter data by ZIP Code or Council District



Incidents by Month

Incidentes por mes

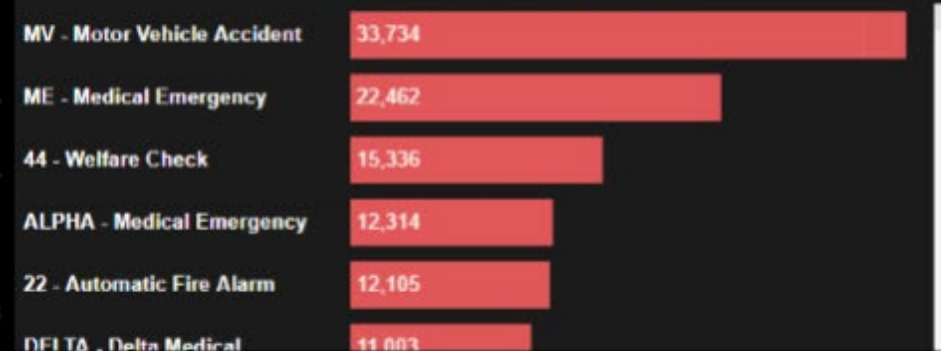
Click on the chart to filter data by month



Incidents by Type

Incidentes por tipo

Click on the chart to filter data by incident type





Former Blue Star Recycling Cleanup – This story map provided transparency and daily measures of air quality on the cleanup of an environmental hazard in an underserved neighborhood.





Former Blue Star Recycling Cleanup

Our Work – White Papers



DBI also produces white papers, which explore the data aspect of a policy issue and utilize statistical models to help produce findings which can guide policy decisions for City leaders.

Short-Term Rental Data Analysis:
An Analysis of the Impact of Short-Term Rental Properties in the City of Dallas
The following document is a data analysis white paper prepared by the Office of Data Analytics and Business Intelligence at the City of Dallas published May 3, 2021.



Abstract

The purpose of this white paper is to provide a detailed walk-through of the analyses and findings undertaken to explore what, if any, relationship exists between Short-Term Rentals (STRs) and impacts on the community. Using data from the City's 311 and 911 systems, as well as data from Dallas, Collin, and Denton Counties' Central Appraisal Districts, we conducted both spatial analyses and comparisons between the levels of 311 and 911 calls to see if STRs differed from non-STRs. Our findings indicate that Short-Term Rentals have limited measurable impact on the surrounding neighborhoods.

Executive Summary

The analysis below illustrates that Short-Term Rentals have a limited measurable impact on neighboring communities. Short-Term Rentals constitute less than half of one percent (0.42%) of the total housing stock in the City of Dallas, and there is no evidence in the data that STRs have a city-wide impact. This is not to take away from the experience of neighbors who live next to a problematic STR. However, the analysis shows that those experiences are outliers and not generalizable to STRs throughout the city.

- Over 90 percent of STRs have zero 311 or 911 calls associated with their address.
- STRs have more 311 and 911 calls associated with their addresses than non-STRs. However, it is difficult to argue that this difference is meaningful. The observed difference constitutes about one more call per year.¹
- On average, properties in Dallas are showing strong growth in taxable values. Property values have increased by at least 30 percent between 2016 and 2020. STR's themselves are appreciating in taxable value, with an average increase in property value of 40 percent between 2016 and 2020. This is more than the average for the city of Dallas.
- 50 percent of the ownership of STRs appear to be corporate entities. Only 5.9 percent of owners appear to own more than one STR and 35 percent of STR properties have a homestead exemption claimed on the property.
- Less than one percent (0.42%) of the City's total residences are STRs.

¹ The above result is predicated on the assumption that every call to that address is in response to a problem at that address. It further assumes that the property in question was being rented out as an STR at the time of the call. The data does not allow us to verify this. Our analysis is conservative, in that we have assumed maximum impact. We know we are providing an overestimate and urge caution with any interpretation.

Property Tax Data Analysis:
A Comparative Analysis of the Effective Tax Rates in Cities in Texas
The following document is a data analysis white paper prepared by the Office of Data Analytics and Business Intelligence at the City of Dallas published on August 10, 2021.



Abstract

The purpose of this white paper is to explore how Dallas property tax rates compare to other cities in Texas. Using publicly available data from the state of Texas, municipal budget documents, and property tax appraisal districts, we conducted comparative analyses of property taxes among Dallas and eight major Texas cities. The first analysis shows hypothetical tax bill scenarios based on home value and exemptions; the second analysis uses a multivariable model to compare Dallas' property tax revenues to those of other peer cities, after adjusting for demographic and municipal differences. Our findings show that even though Dallas homeowners have one of the higher tax rates compared to the study cities, they also receive some of the largest exemption allowances. This results in Dallas homeowners' tax bills being close to the median (middle) value of the other study cities. Our results also indicate that for its size, Dallas would be expected to charge a higher property tax rate.

Executive Summary

This paper addresses property taxes from the perspective of the homeowner and the general fund revenue point of view. Using each of these lenses, we compare Dallas to eight major Texas cities to see how it performs relative to its peers. The homeowner perspective is analyzed using the tax rates and exemptions for each city to build hypothetical municipal tax bills at multiple price points to see how a Dallas homeowner's tax obligation compares to the same price point in the other cities.

In the context of budget revenue, a statistical analysis is performed to show how closely the amount of property tax revenue collected in Dallas fits the overall trend of the study cities. In both cases, Dallas stays near the middle for homeowner tax bills and collects less than the expected amount of property tax revenue according to the trend established by its peer cities.

The findings:

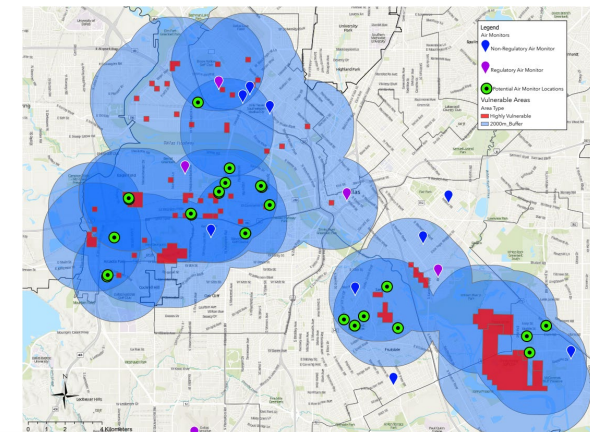
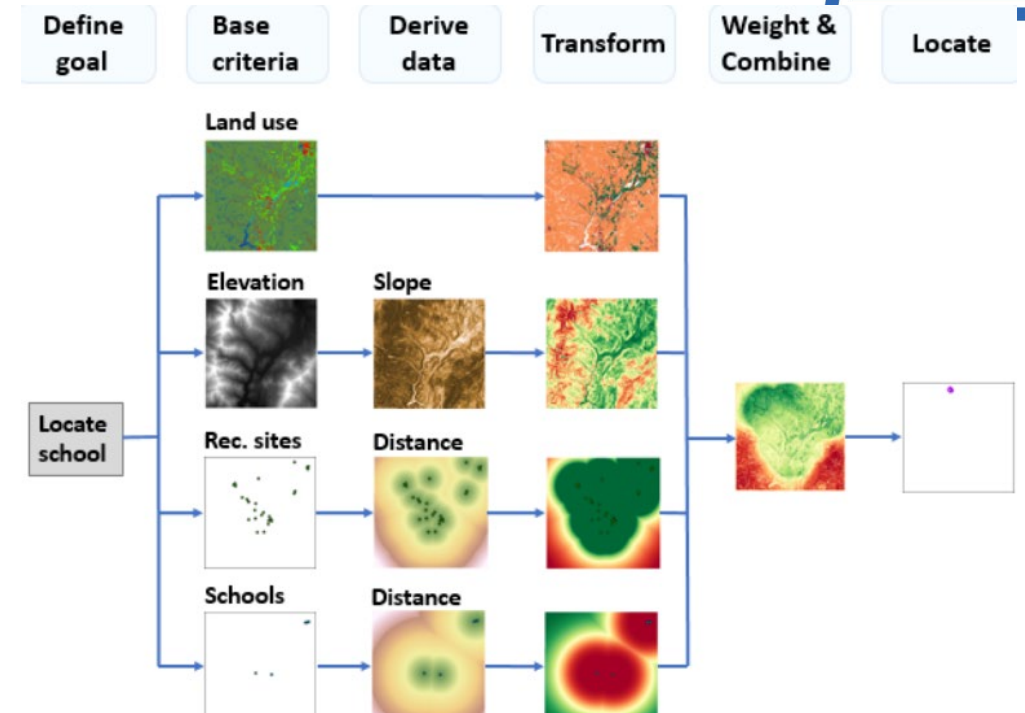
- Statistical analysis of peer city tax and demographic data indicates that Dallas collects less property tax revenue than would be expected, based on the overall trend for the cities examined.
- The median Dallas home value is \$244,740, meaning that the typical Dallas homeowner with a homestead exemption pays a municipal tax bill of \$1,519.93.
- Dallas Homestead and Over 65 or Disabled exemptions mitigate the high tax rate, resulting in Dallas homeowners paying close to median tax bills for the comparison cities.
- Over 80% of Over 65 or Disabled homeowners - almost 33% of all homeowners - in Dallas would pay at or below the median municipal tax bill.
- Hypothetical Dallas tax bills differ from the median at most by \$500.





Breathe Easy Air Monitor Site Suitability Analysis -

This analysis was a location based, weighted analysis that ranked and scored air monitor locations based on the impact of criteria like air pollution, proximity to landfills, brownfields, land, air and water toxic releases. To ensure equitable placement of these monitors we also included socio- economic and demographic data overlays.





Support **Mission Critical Operations** and Emergency Response.

- DBI provides mission critical support to 311 and 911 –
 - The Fire and Police Computer Aided Dispatch (CAD) relies upon GIS Data for address validation and emergency service dispatching. Supported approximately 569,836 911 calls since January 2022.
- 4 million requests made to the GIS address locator a month.



Our Work – Support Mission Critical Operations



The **Department of Transportation** has applied for **\$23.5M in HSIP grants** because of collaborative work between DBI and the Transportation Department. DBI's data analysis showed where most fatal and severe injuries occur so Dallas can improve the street infrastructure.





DBI built the operational dashboard which monitored the City's vaccine distribution in near-real time - Without this dashboard, DFR would not be able to ensure that they used the whole allotment of vaccines and ensured those vaccines went to residents identified as most in need by the PCCI Vulnerability index by underserved zip codes.



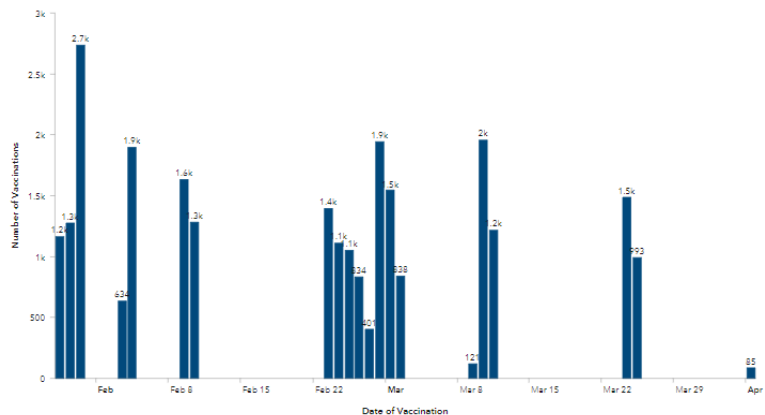
Total Vaccinated

25,600

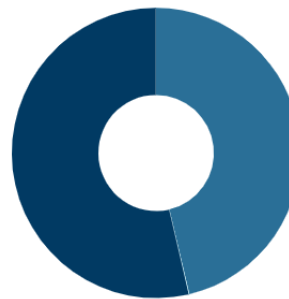
Second Doses Administered

11,352

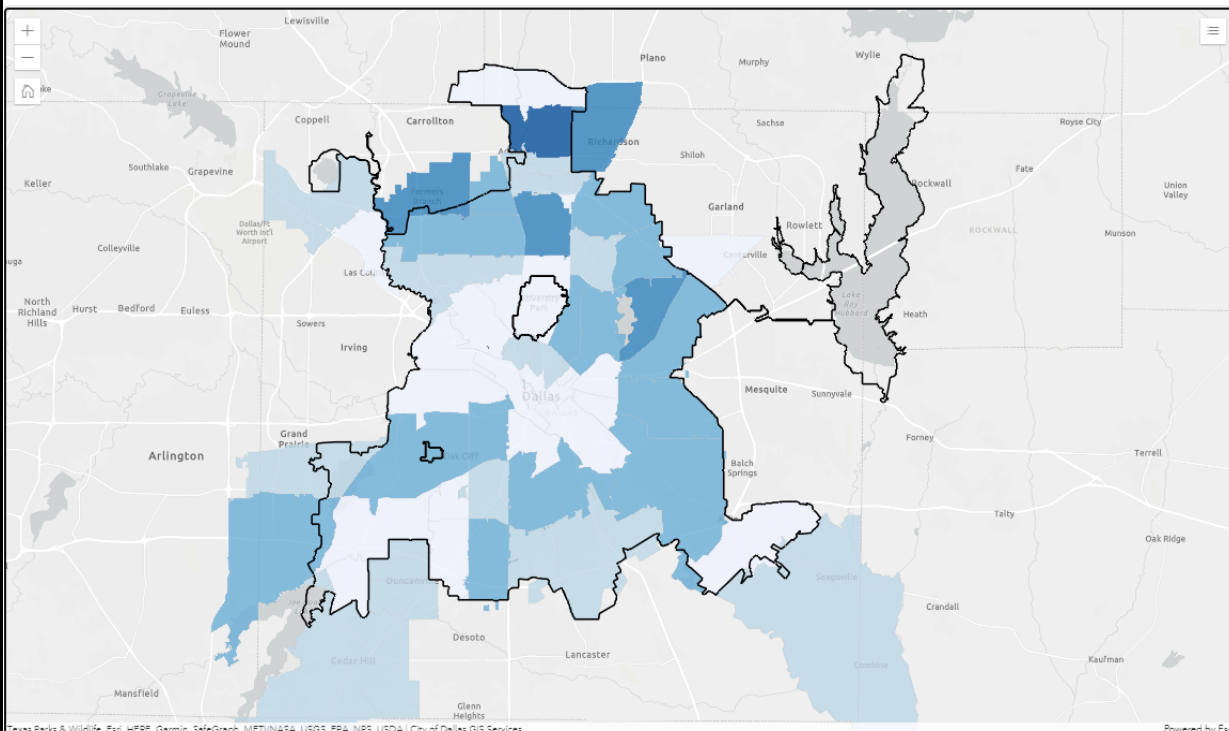
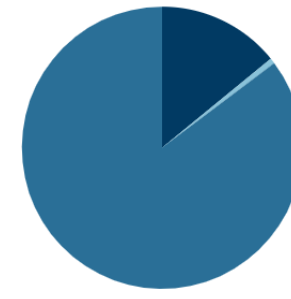
Vaccinations by Date



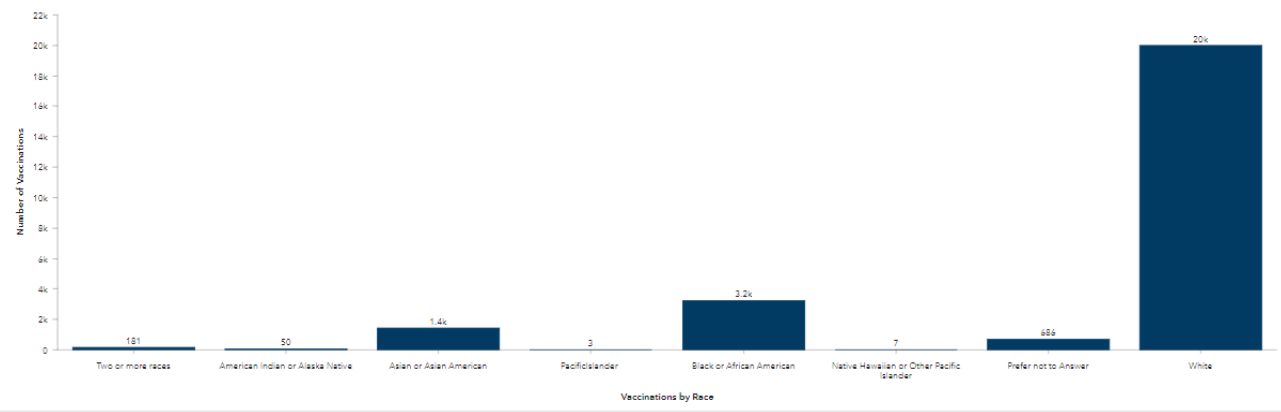
Gender



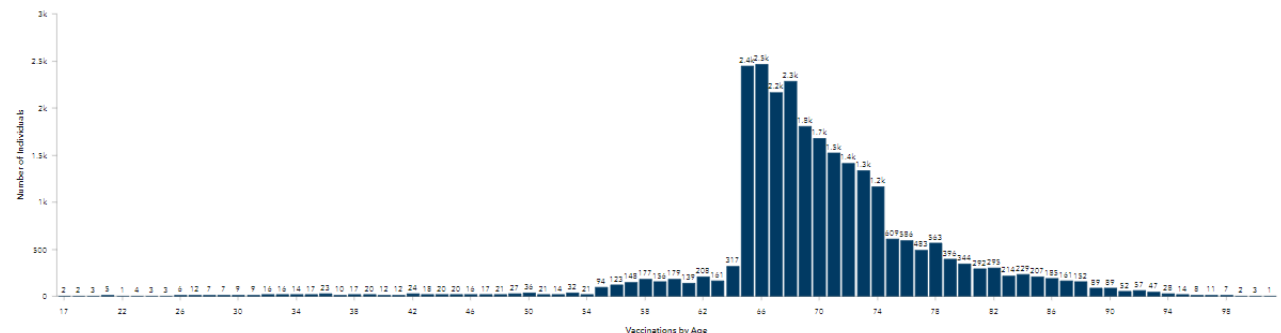
Ethnicity



**The ZipCode boundaries do not match the City Limits.
 **Any Texan is eligible for a vaccine from the City of Dallas and the ZipCodes outside the City of Dallas will not appear on the map.



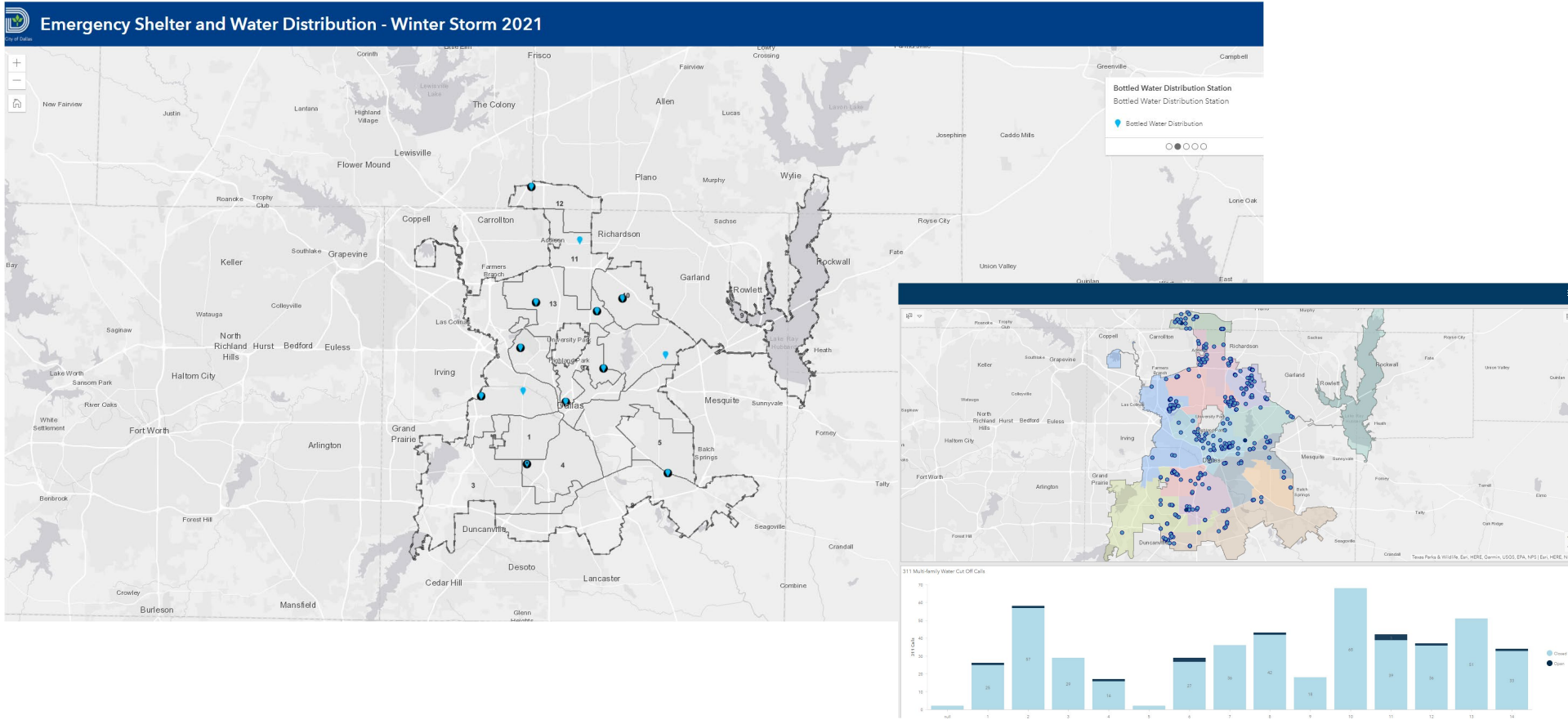
Age



Our Work – Emergency Response



February 2021- Freeze, water distribution dashboard





More Data is available than ever before.

- Rebuilt the open data portal and established new data quality standards.
- Increased our public facing data assets from 800 to 1500+.





More people are using data and using data properly.

- Built a Data Literacy training program which has educated over 120 staff members in data analytics.
- Increased the active data analysis software licenses in the city from 300 to over 700.





People are engaging with our work

- Over 58 million views online.



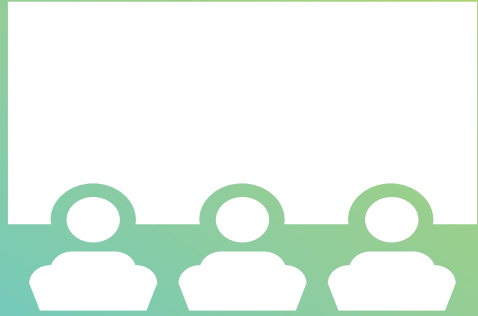


Our work is saving taxpayer dollars.

- Realized cost savings of over \$15 - \$20 million.



18 Months of DBI Impact Snapshot



58+ Million Views



96% Projects
Contain Equity Element



\$15 - \$20
Million Saved

Founded in October
2020



1500 Published Assets
(600+ in last 18 months)



500K+ Users
(Including 100K+ New Users)

Served 32 Departments

52 Major Projects

129 Data Academy
Graduates



Data Strategy

- Access to critical data source systems
 - Public Safety
 - Workday, Neo Gov
 - 311 Salesforce
 - AMS

Data Governance

- The process of securing, organizing and managing data so that it is an asset.





Projects Underway

- Anomalous Transactions
- Domestic Violence
- Racial Equity Plan
- Next Gen 911
- Site Suitability Analyses



Thank you



Thank you to the incredible DBI Team for their work to make all of this happen.

Jacob Allen
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Marissa Garza
Heather Murphy
Jennifer Reed
Miguel Velez

Zemenu Ambelu
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Timothy Jeffcoat
Turquoise McCain
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Michael Saverine
Charles Vuchiteh

Anamika Anand
Alejandro Calderon
Mussie Ghebreselassie
Joseph Kheir
Tomeka Morrison
Marqel Perez
Nicola Talley
Maya Williams

Thank you to our leaders for their support.

T.C. Broadnax

Elizabeth Reich



Data Analytics Update



City of Dallas

June 27, 2022

Dr. Brita Andercheck, Chief Data Officer
Data Analytics & Business Intelligence
City of Dallas