Visualización de Datos con Tableau

Juan Gómez Romero
http://decsai.ugr.es/~jgomez

Profesor Titular
Departamento de Ciencias de la Computación e Inteligencia Artificial
Universidad de Granada

UNIVERSIDAD
DE GRANADA

Organización

Sesiones

Jueves 11 de marzo

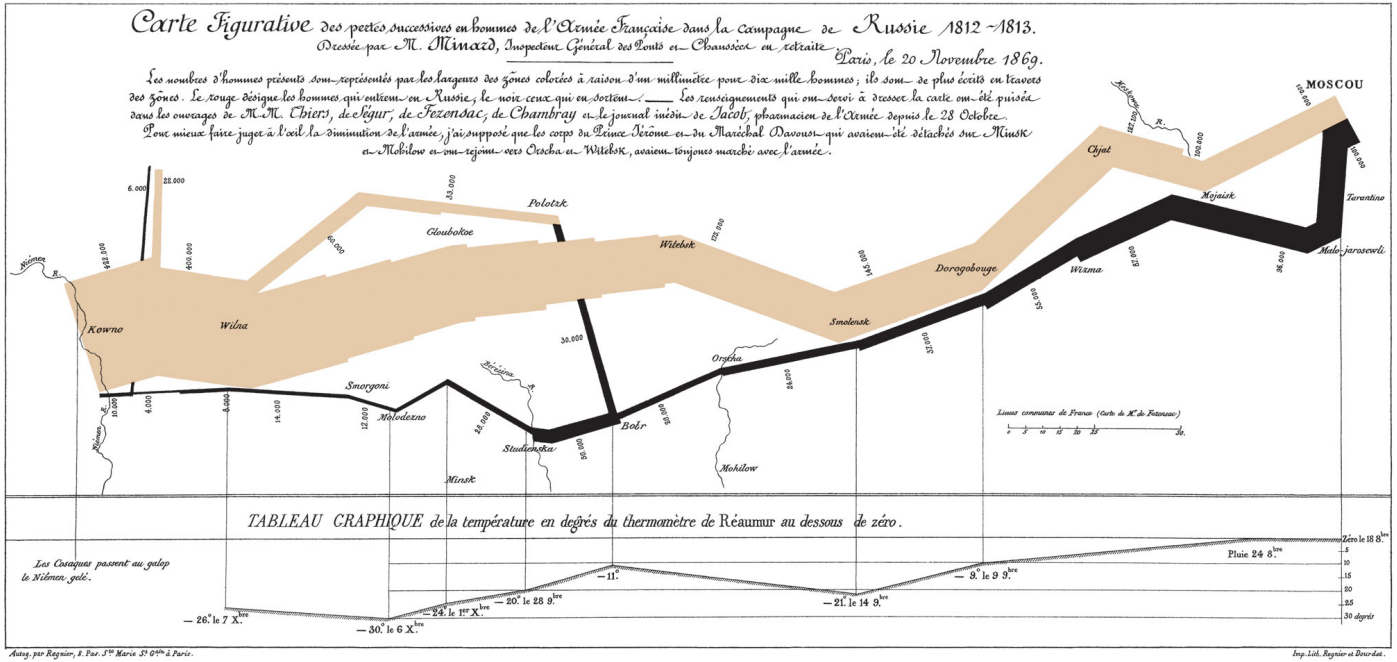
1. Introducción
2. Preparación de datos
3. Creación de gráficos

Viernes 12 de marzo

1. Creación de gráficos
2. Tendencias y predicciones
3. Mapas

Visualización de datos

Motivación



Charles Minard, ***The march on Moscow***. 1869.

https://www.tableau.com/learn/whitepapers/5-most-influential-visualizations

Tableau

Descripción

Tableau /ta-bló/ Herramienta interactiva para visualización de datos

Tableau Desktop Software de escritorio para creación de visualizaciones
https://www.tableau.com/es-es/products/desktop

PROBAR AHORA

https://www.tableau.com/es-es/academic/students

Tableau Reader Lector de visualizaciones realizadas con Tableau Desktop

Tableau Prep Software de escritorio para preprocesamiento de datos

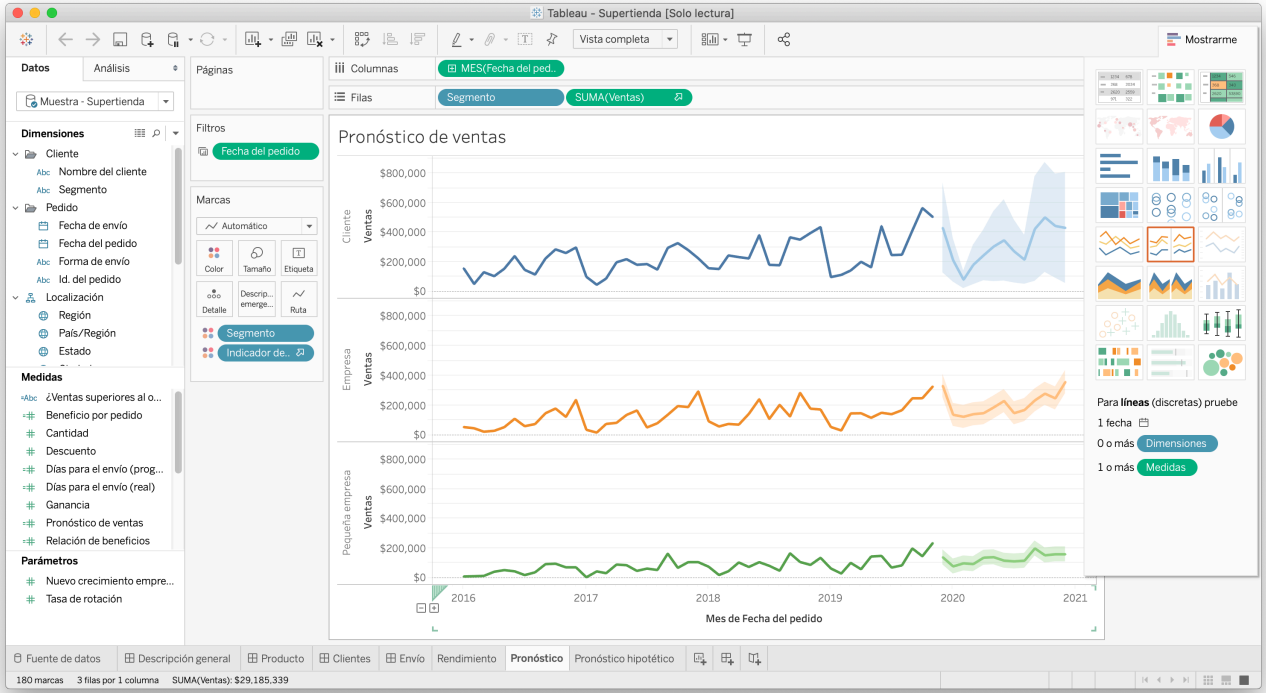
Tableau Online Versión web de Tableau

Tableau Server Servidor de visualizaciones para compartir visualizaciones y tableros de mando

Tableau

Descripción

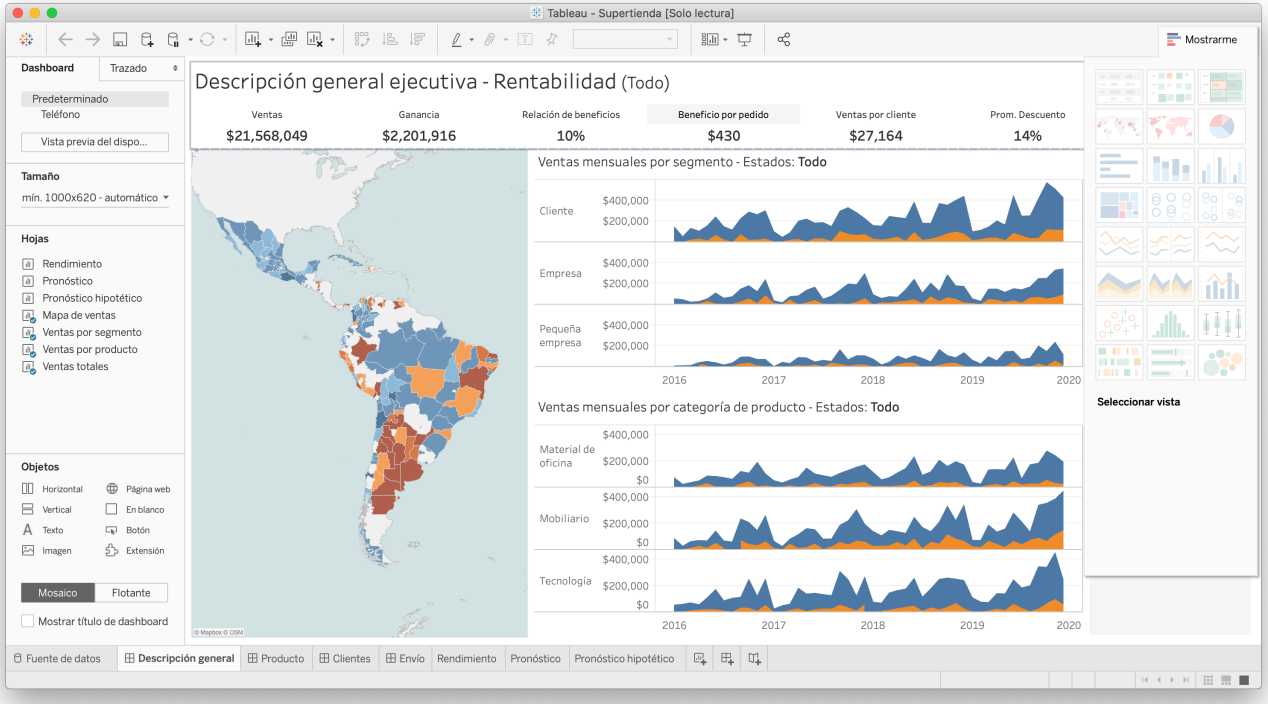
Tableau 2020.4



Tableau

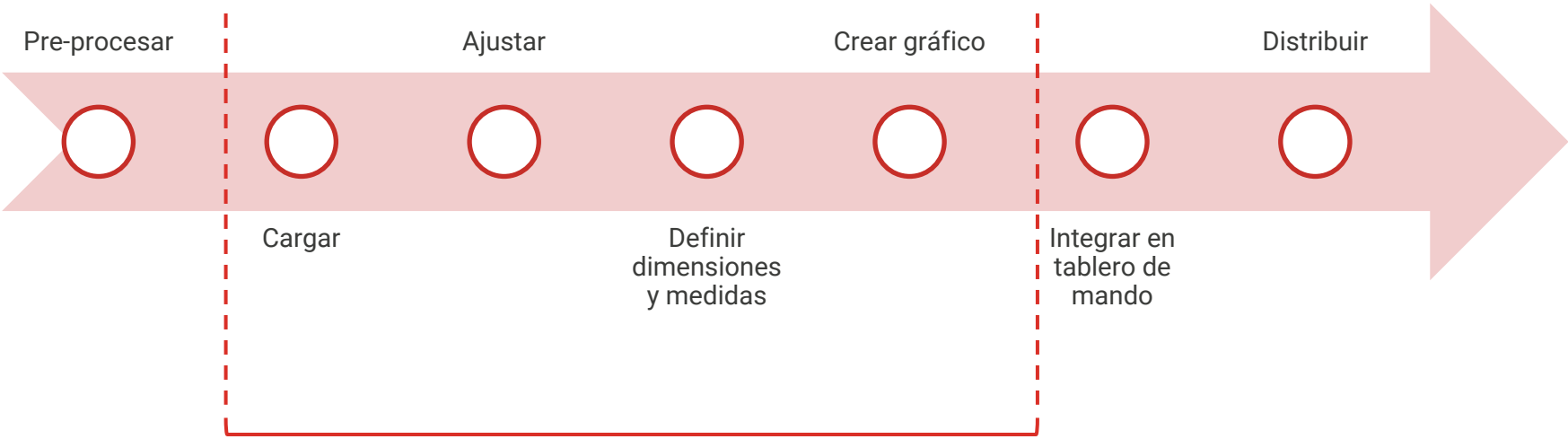
Descripción

Tableau 2020.4



Tableau

Flujo de trabajo



Tableau

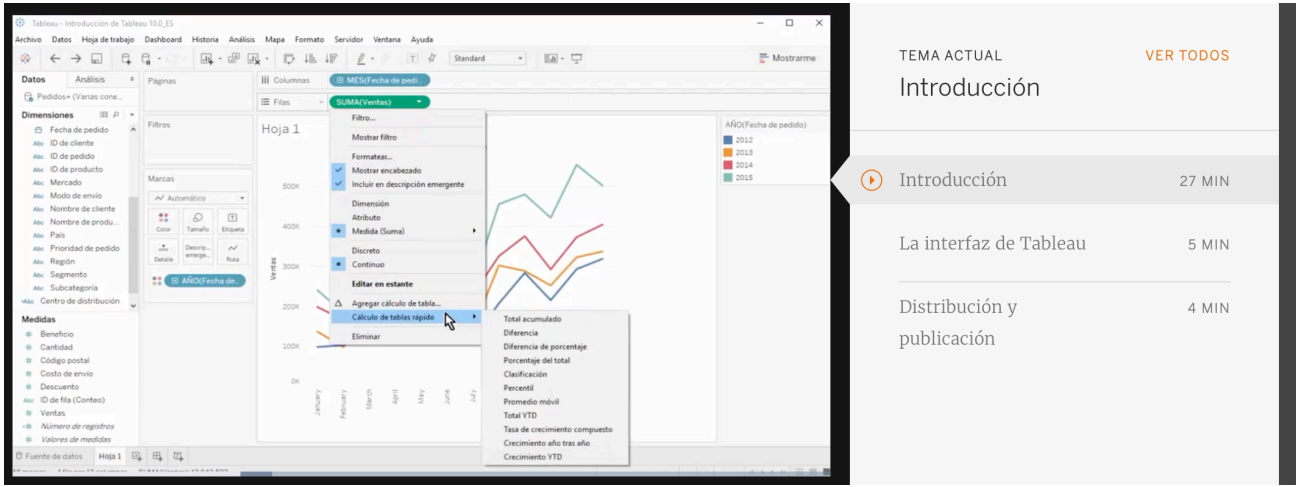
Bibliografía

Kits de inicio de Tableau

https://www.tableau.com/es-es/learn/starter-kits

Recursos de aprendizaje de Tableau

https://www.tableau.com/es-es/learn/training



Tableau

Bibliografía

Alexander Loth. **Visual Analytics with Tableau.** Wiley, 2019
https://learning.oreilly.com/library/view/visual-analytics-with/9781119560203/

Ryan Sleeper**. Innovative Tableau**. O'Reilly 2020.
https://learning.oreilly.com/library/view/innovative-tableau/9781492075646/

Lorna Brown**. Tableau Desktop 2020 Cookbook**. O'Reilly 2021.
https://learning.oreilly.com/library/view/tableau-desktop-2020/9781492090106/

Suk S. Brar. Visual Analytics with Tableau. Coursera 2021.
https://www.coursera.org/learn/dataviz-visual-analytics

Linda Ryan**. Visual Data Storytelling with Tableau**. Addison-Wesley Professional 2018.
https://learning.oreilly.com/library/view/visual-data-storytelling/9780134712963/

Nathan Yau**. Visualize this**. O'Reilly 2018.
https://learning.oreilly.com/library/view/visualize-this-the/9781118140260/

Cole Nussbaumer Knaflic**. Storytelling with Data: A Data Visualization Guide for Business Professionals**. Wiley 2019.
https://learning.oreilly.com/library/view/storytelling-with-data/9781119621492/

Tableau

Conjuntos de datos

FIFA 2020

Características de jugadores de fútbol en el videojuego FIFA 2020

https://www.kaggle.com/stefanoleone992/fifa-20-complete-player-dataset

Estudio de poblaciones de individuos

Portland

Registros de delitos en la ciudad de Portland en 1972-2018

https://www.portlandoregon.gov/police/71978

Estudio de eventos geolocalizados

Descargar https://github.com/jgromero/dataviz21

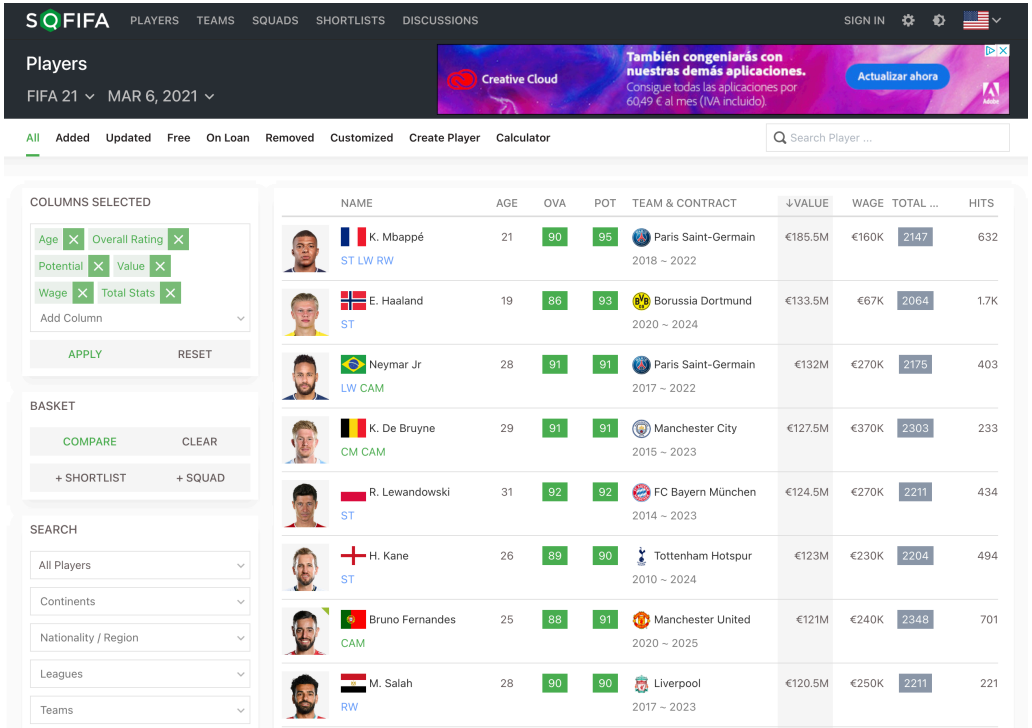
FIFA 2020

EJERCICIO

Tableau

Carga de datos

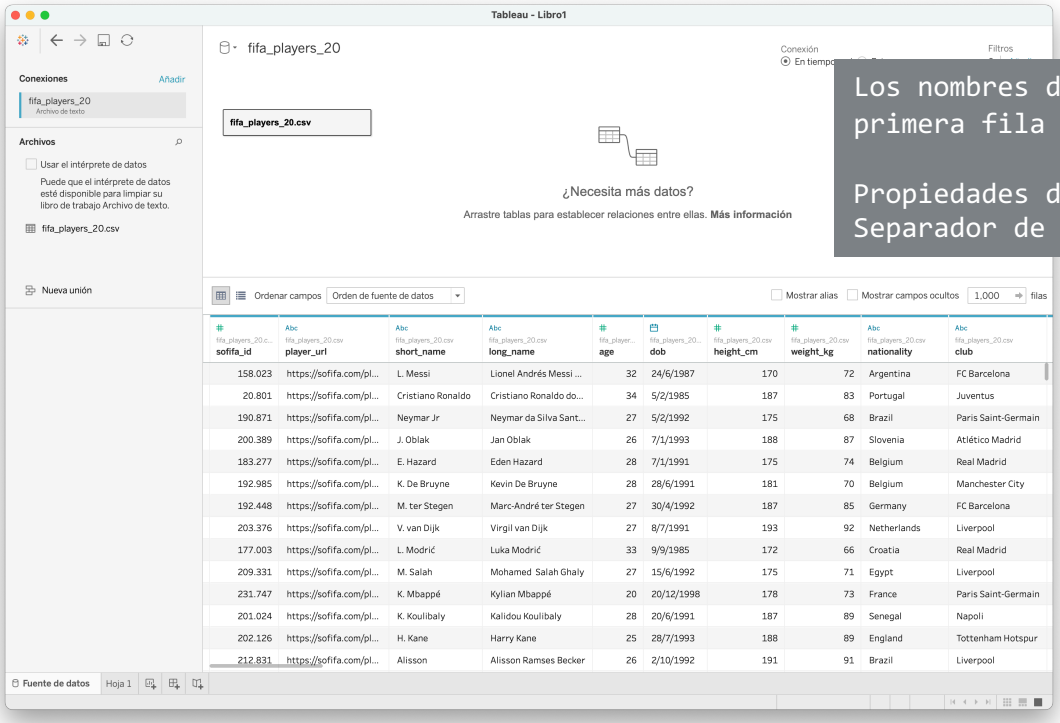
https://www.kaggle.com/stefanoleone992/fifa-20-complete-player-dataset



Tableau

Ajustar

Descargar: https://github.com/jgromero/dataviz21

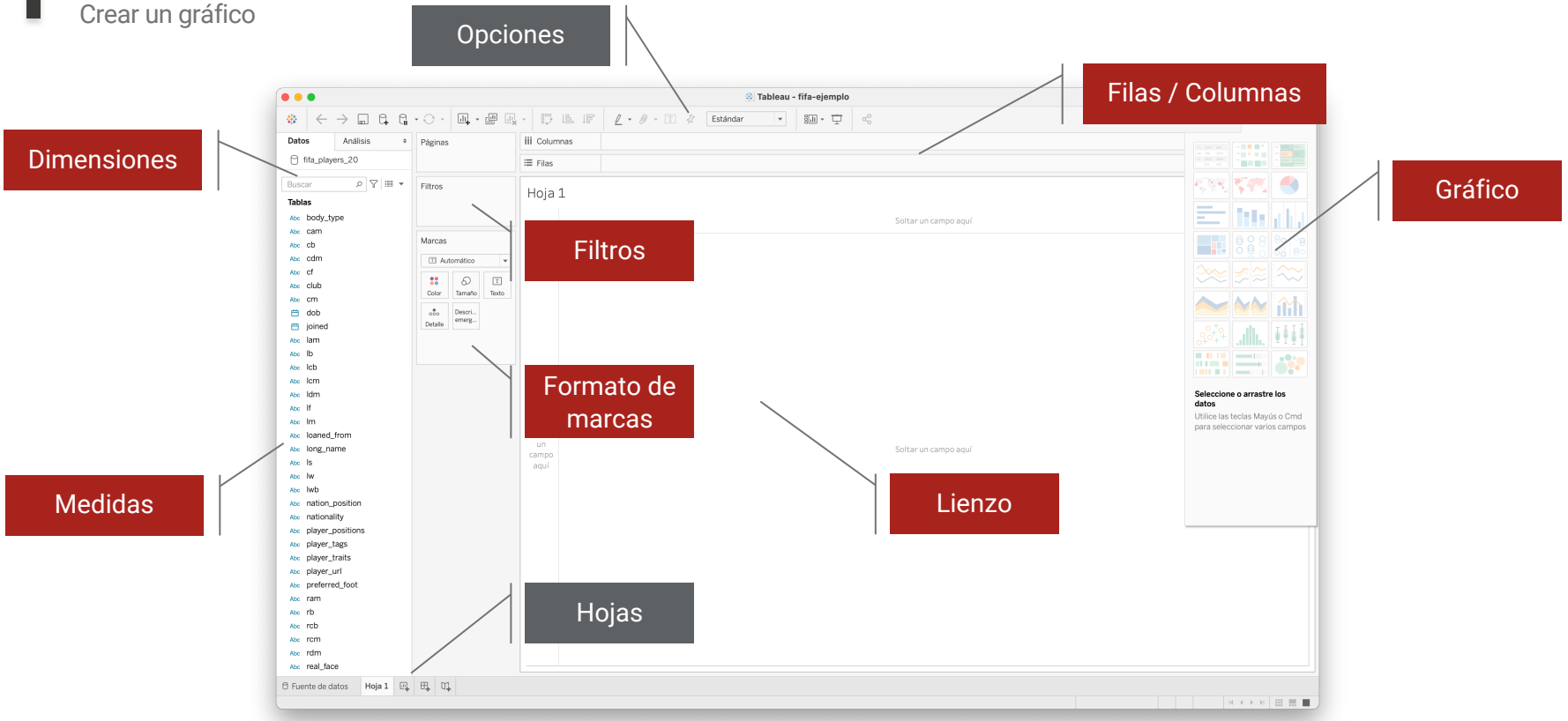


Los nombres de campo están en la primera fila

Propiedades del archivo de texto > Separador de campos > Coma

Tableau

Crear un gráfico



Tableau

Definir dimensiones y medidas

Hecho

Elemento importante que se pretende analizar.

Ejemplo: futbolistas.

Dimensiones

Propiedades de los hechos que determinan el análisis.

Las dimensiones contienen valores cualitativos (por ejemplo, nombres, fechas o datos geográficos). Puede utilizar las dimensiones para categorizar, segmentar y revelar los detalles de los datos. Las dimensiones afectan al nivel de detalle de la vista.

Ejemplo: *body_type*, *club*, *team_position*, *etc*.

Medidas

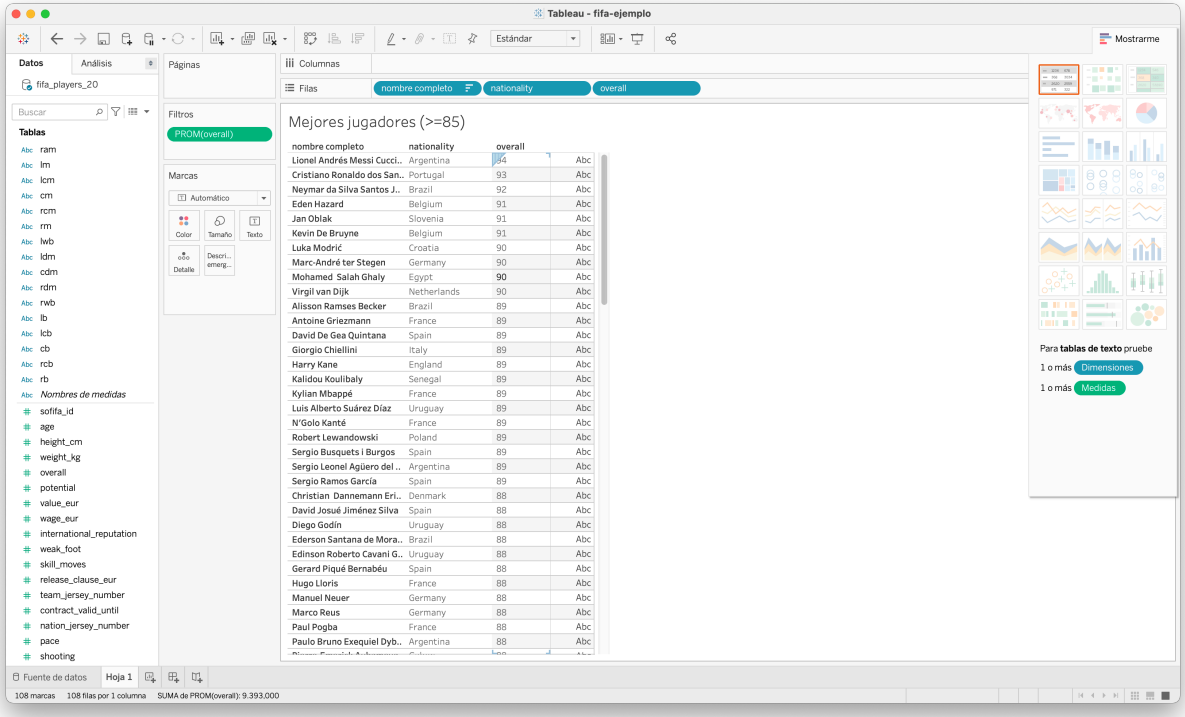
Valoración numérica acerca del hecho que nos va a servir para analizarlo.

Las medidas contienen valores numéricos cuantitativos que se pueden medir. Las medidas se pueden agregar. Al arrastrar una medida a la vista, Tableau aplica una agregación a esa medida (de forma predeterminada).

Ejemplo: *age, overall, wage_eur, etc*.

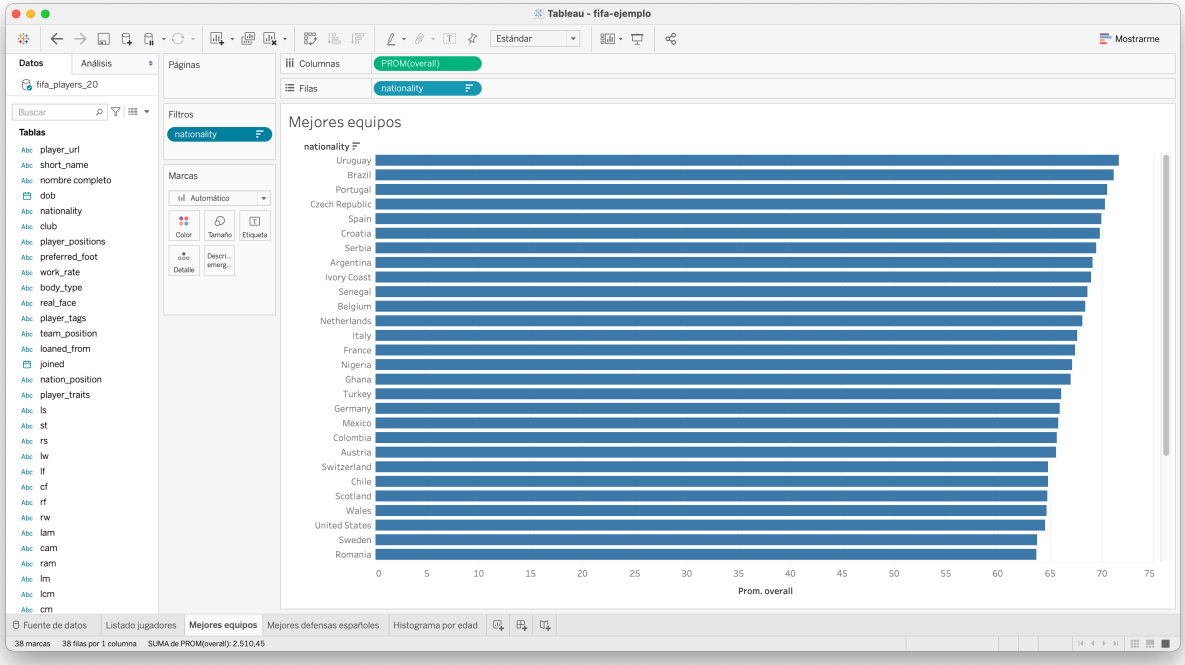
Tableau

Tablas de datos



Tableau

Agregaciones



Tableau

Crear gráfico

Barras

Representación gráfica de una variable en forma de barras, donde la superficie de cada barra es proporcional al valor de los valores representados. Suelen utilizarse para comparar valores de una misma variable.

Ejemplo: nombre de jugador y puntuación

Histograma

Representación gráfica de una variable en forma de barras, donde la longitud de cada barra es proporcional a la frecuencia de los valores representados.

Ejemplo: representar cuántos futbolistas hay para cada tramo de edad

Dispersión

Representación gráfica de una variable frente a otra, cada una en un eje diferente.

Ejemplo: puntuación general vs edad

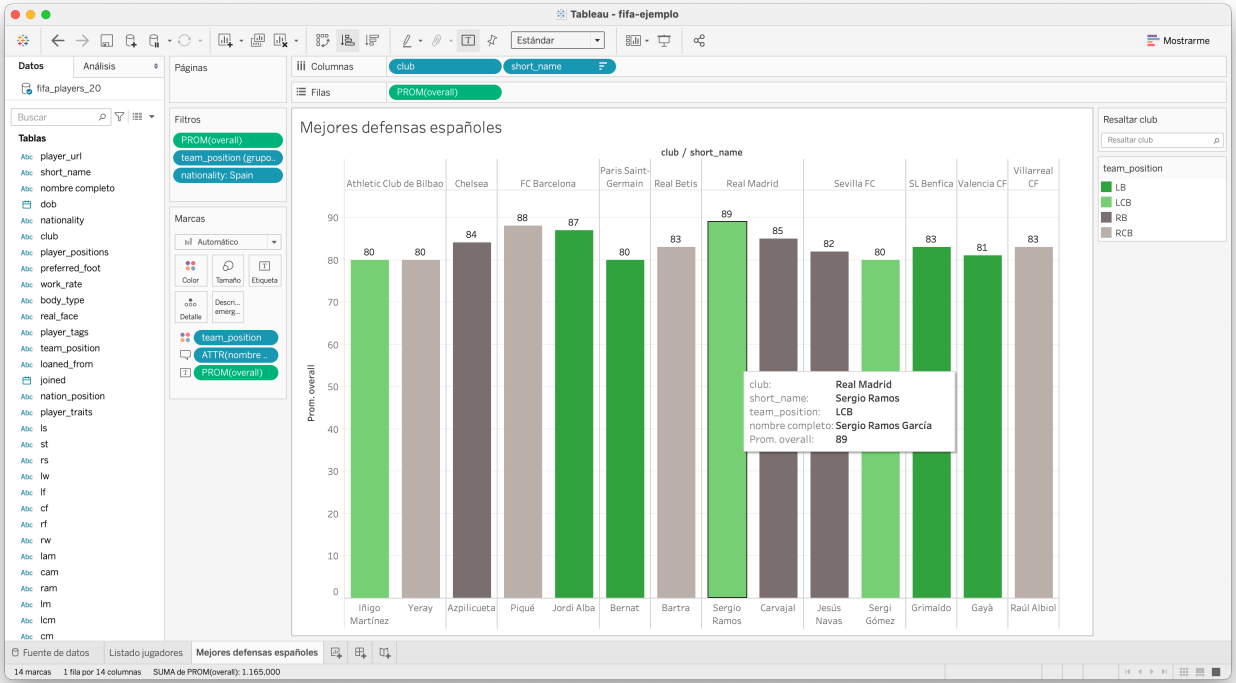
Bigotes

Elemento importante dentro del modelo de empresa que se pretende analizar: ventas, pedidos, trabajadores, etc.

Ejemplo: futbolistas

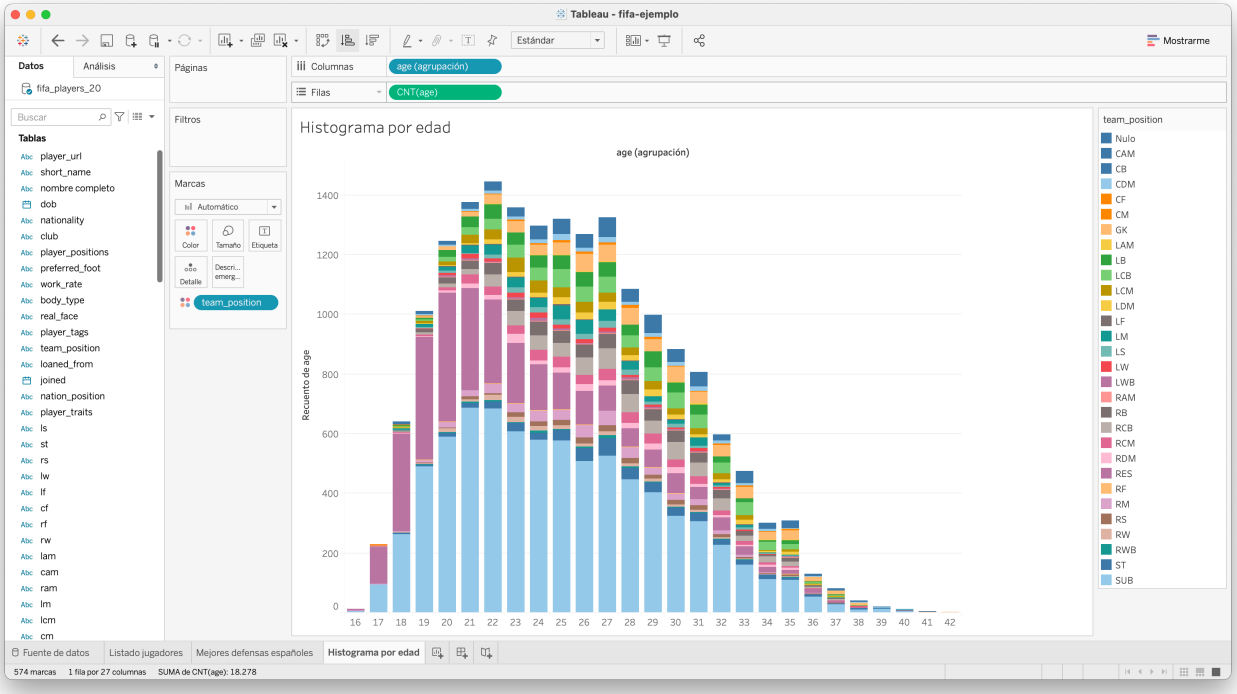
Tableau

Diagrama de barras



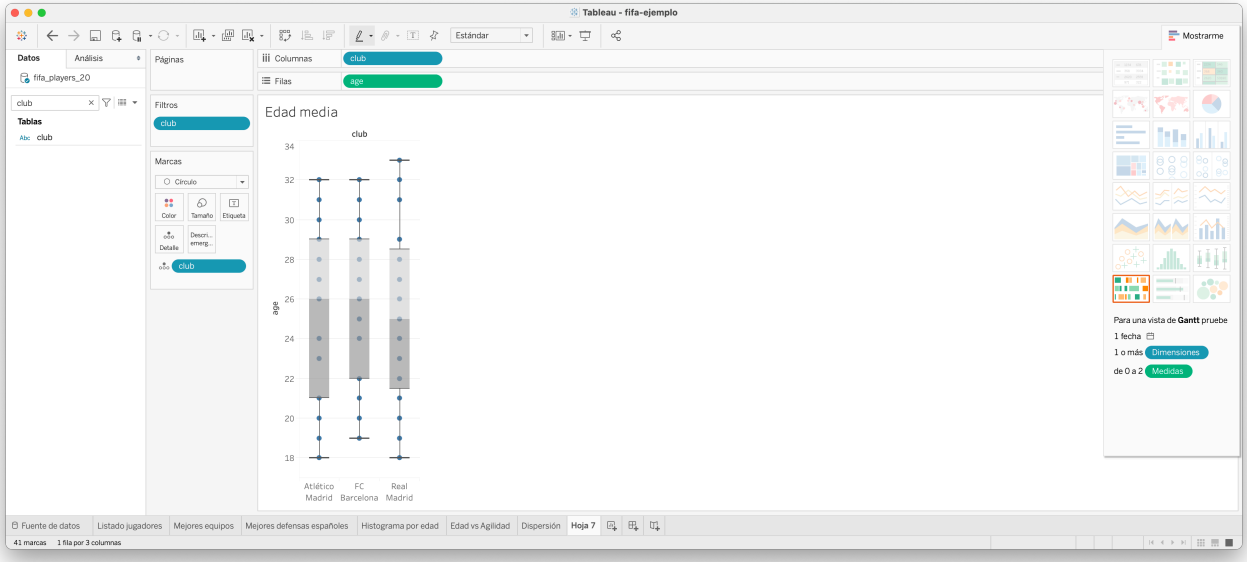
Tableau

Histograma



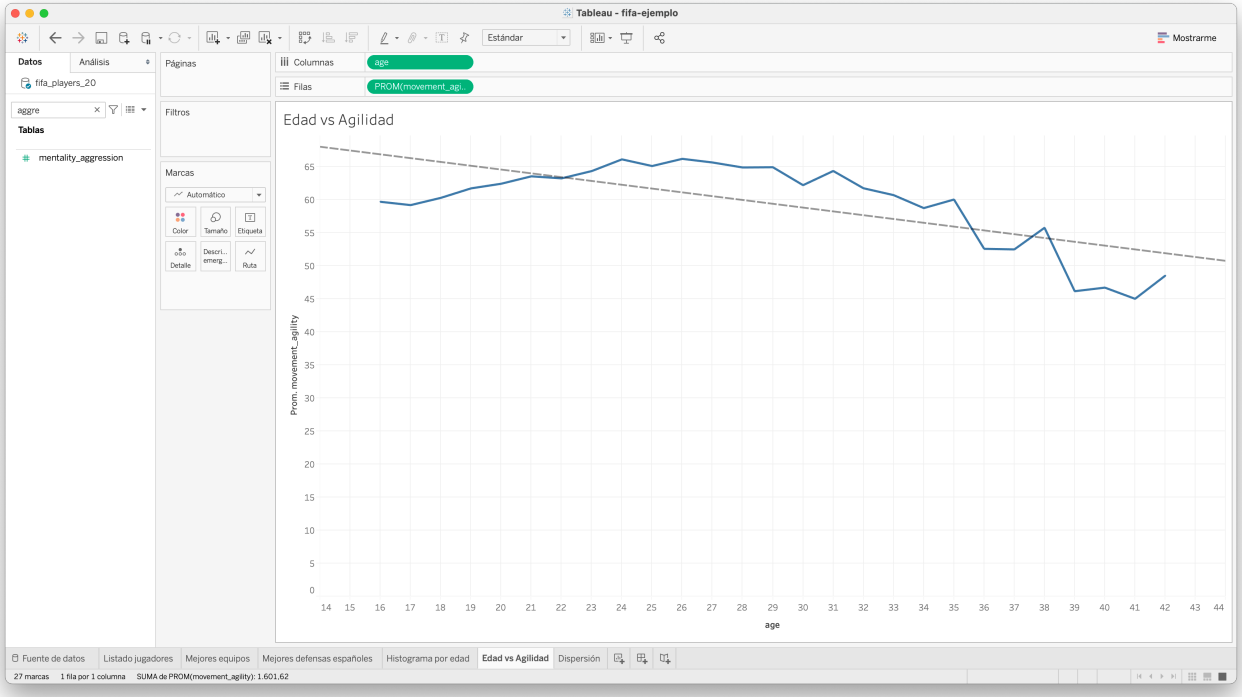
Tableau

Cajas y bigotes



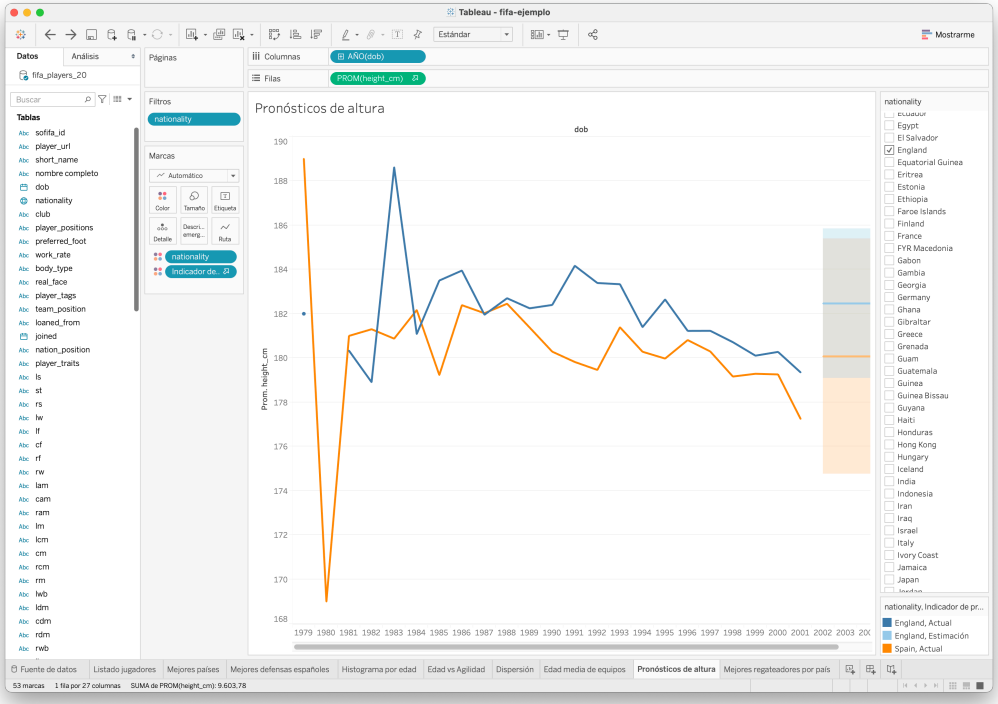
Tableau

Comparación de variables



Tableau

Comparación de variables

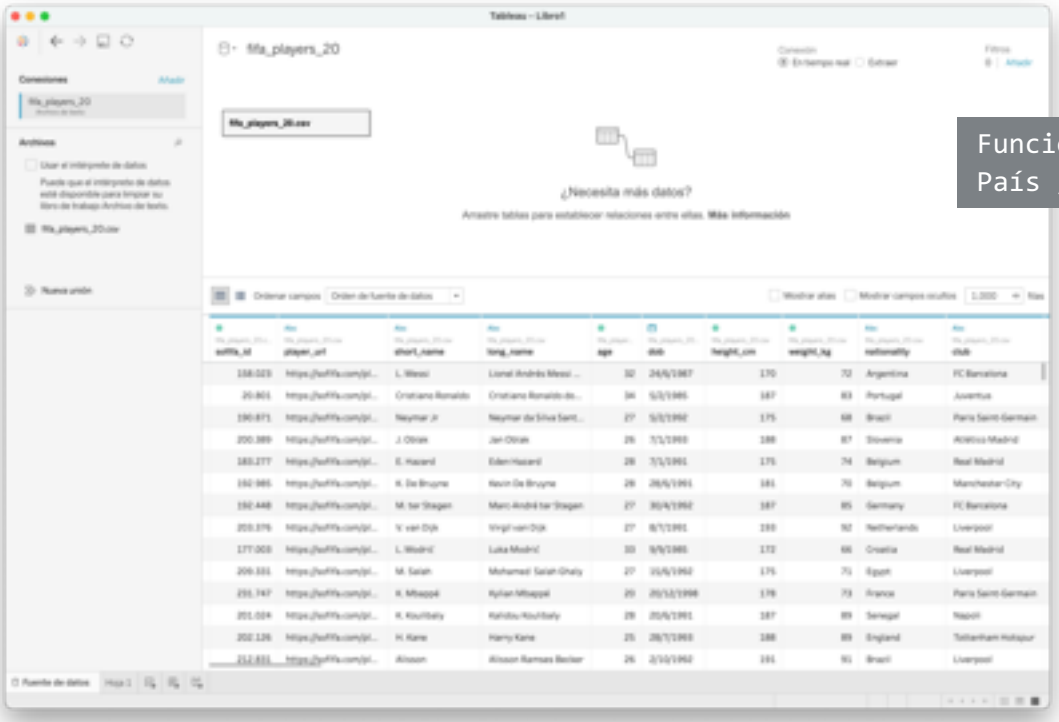


Tableau

Dispersión + Líneas de tendencia

Tableau

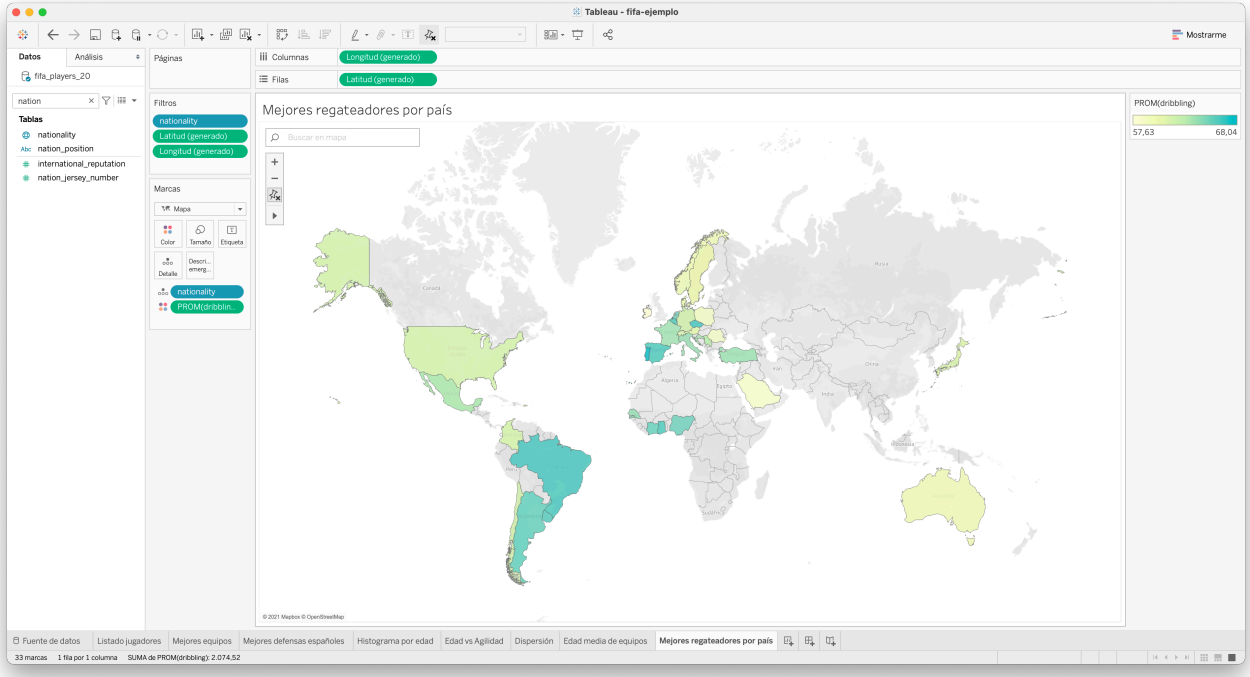
Ajustar



Función geográfica >
País / Región

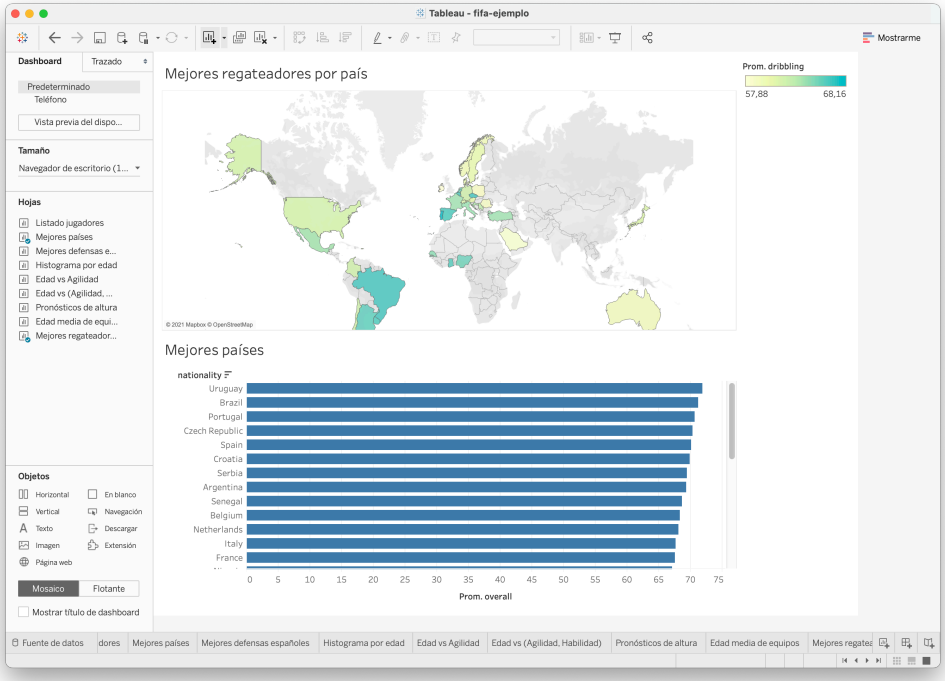
Tableau

Mapa



Tableau

Dashboard

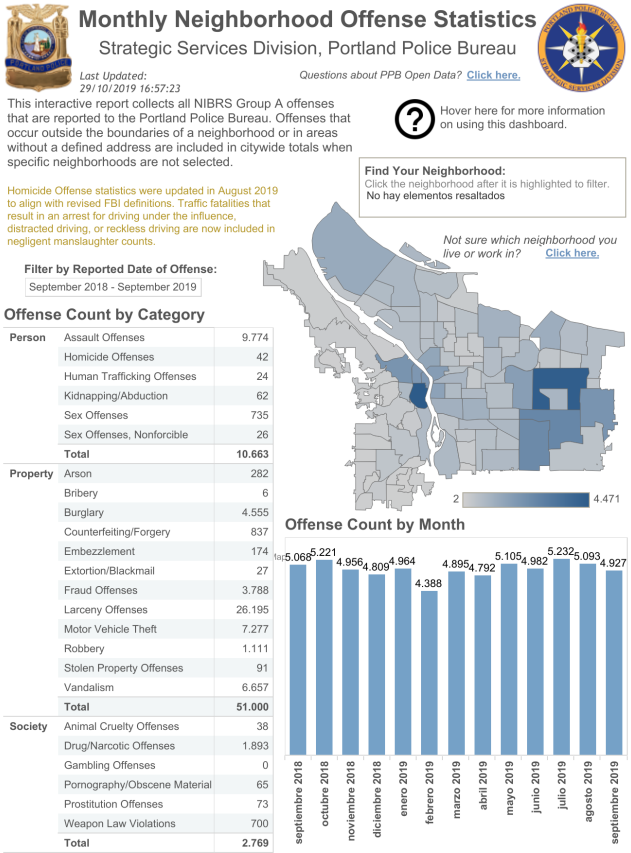


PORTLAND

EJERCICIO

Tableau

Dataset *portland_1972-2018*



Monthly Neighborhood Offense Statistics

Strategic Services Division, Portland Police Bureau

Last Updated: 29/10/2019 16:57:23

Questions about PPB Open Data? Click here.

This interactive report collects all NIBRS Group A offenses that are reported to the Portland Police Bureau. Offenses that occur outside the boundaries of a neighborhood or in areas without a defined address are included in citywide totals when specific neighborhoods are not selected.

Hover here for more information on using this dashboard.

Homicide Offense statistics were updated in August 2019 to align with revised FBI definitions. Traffic fatalities that result in an arrest for driving under the influence, distracted driving, or reckless driving are now included in negligent manslaughter counts.

Find Your Neighborhood:
Click the neighborhood after it is highlighted to filter.
No hay elementos resaltados

Not sure which neighborhood you live or work in? Click here.

Filter by Reported Date of Offense:
September 2018 - September 2019

Offense Count by Category

Person	Assault Offenses	9.774
	Homicide Offenses	42
	Human Trafficking Offenses	24
	Kidnapping/Abduction	62
	Sex Offenses	735
	Sex Offenses, Nonforcible	26
	Total	**10.663**
Property	Arson	282
	Bribery	6
	Burglary	4.555
	Counterfeiting/Forgery	837
	Embezzlement	174
	Extortion/Blackmail	27
	Fraud Offenses	3.788
	Larceny Offenses	26.195
	Motor Vehicle Theft	7.277
	Robbery	1.111
	Stolen Property Offenses	91
	Vandalism	6.657
	Total	**51.000**
Society	Animal Cruelty Offenses	38
	Drug/Narcotic Offenses	1.893
	Gambling Offenses	0
	Pornography/Obscene Material	65
	Prostitution Offenses	73
	Weapon Law Violations	700
	Total	**2.769**

2 4.471

Offense Count by Month

Portland Police Bureau, ***Monthly neighborhodd offense Statistics***. *2019.*

https://www.portlandoregon.gov/police/71978

Tableau

Dataset *portland_1972-2018*

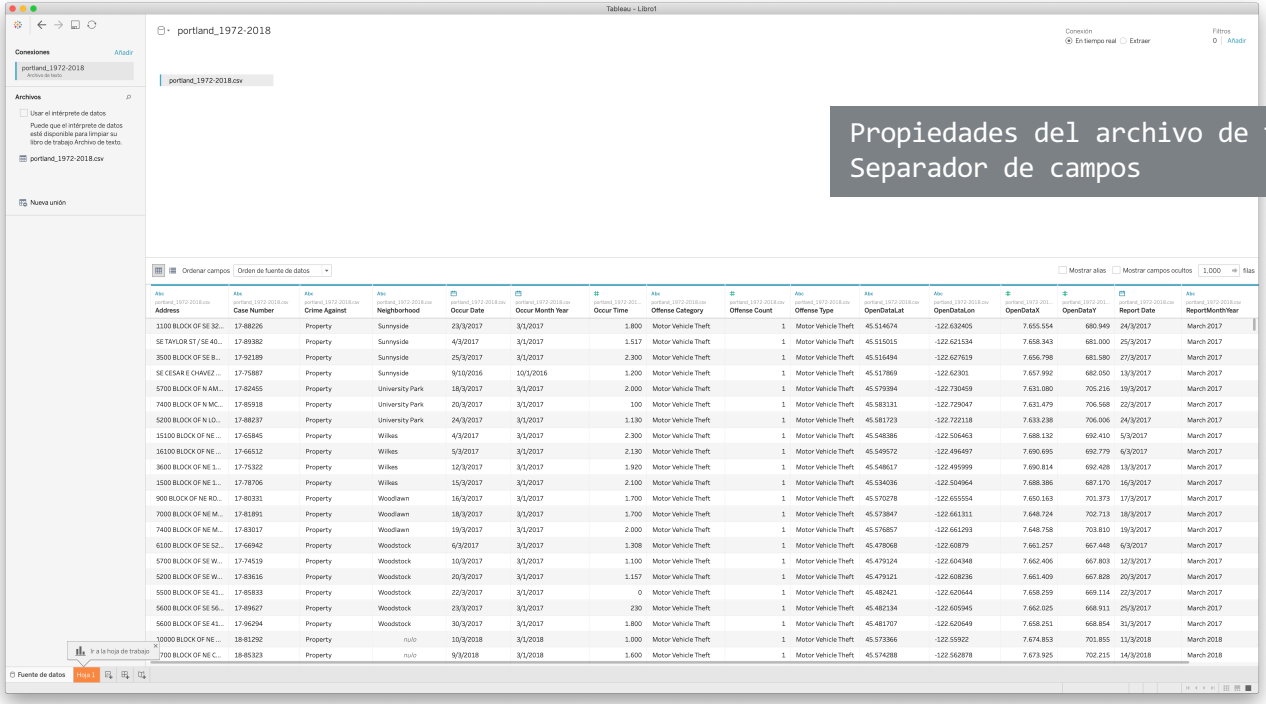
https://www.kaggle.com/katzwigmore/portland-oregon-crime-data/data

*** Case Number**	The case year and number for the reported incident (YY-######). Sensitive cases have been randomly assigned a case number and are denoted by an X following the case year (YY-X######).
Occur Month Year	The Month and Year that the incident occurred.
*** Occur Date**	Date the incident occurred. The exact occur date is sometimes unknown. In most situations, the first possible date the crime could have occurred is used as the occur date. (For example, victims return home from a week-long vacation to find their home burglarized. The burglary could have occurred at any point during the week. The first date of their vacation would be listed as the occur date.)
Occur Time	Time the incident occurred. The exact occur time is sometimes unknown. In most situations, the first possible time the crime could have occurred is used as the occur time. The time is reported in the 24-hour clock format, with the first two digits representing hour (ranges from 00 to 23) and the second two digits representing minutes (ranges from 00 to 59).
*** Address**	Address of reported incident at the 100-block level (e.g.: 1111 SW 2nd Ave would be 1000 Block SW 2nd Ave). To protect the identity of victims and other privacy concerns, the address location of certain case types are not released.
Open Data X / Y	Generalized XY point of the reported incident. For offenses that occurred at a specific address, the point is mapped to the block's midpoint. Offenses that occurred at an intersection is mapped to the intersection centroid. To protect the identity of victims and other privacy concerns, the points of certain case types are not released. XY points use the Oregon State Plane North (3601), NAD83 HARN, US International Feet coordinate system.
*** Open Data Lat / Lon**	Generalized Latitude / Longitude of the reported incident. For offenses that occurred at a specific address, the point is mapped to the block's midpoint. Offenses that occurred at an intersection is mapped to the intersection centroid. To protect the identity of victims and other privacy concerns, the points of certain case types are not released.
*** Neighborhood**	Neighborhood where incident occurred. If the neighborhood name is missing, the incident occurred outside of the boundaries of the Portland neighborhoods or at a location that could not be assigned to a specific address in the system (e.g., Portland, near Washington Park, on the streetcar, etc.). Note: Neighborhood boundaries and designations vary slightly from those found on the Office of Neighborhood Involvement website.
*** Crime Against**	Crime against category (Person, Property, or Society)
*** Offense Category**	Category of offense (for example, Assault Offenses)
*** Offense Type**	Type of offense (for example, Aggravated Assault) Note: The statistic for Homicide Offenses has been updated in the Group A Crimes report to align with the 2019 FBI NIBRS definitions. The statistic for Homicide Offenses includes (09A) Murder & Non-negligent Manslaughter and (09B) Negligent Manslaughter. As of January 1, 2019, the FBI expanded the definition of negligent manslaughter to include traffic fatalities that result in an arrest for driving under the influence, distracted driving, or reckless driving. The change in definition impacts the 2019 homicide offenses statistic and the comparability of 2019 homicide statistics to prior year.
Offense Count	Number of offenses per incident. Offenses (i.e. this field) are summed for counting purposes.

Tableau

Carga de datos

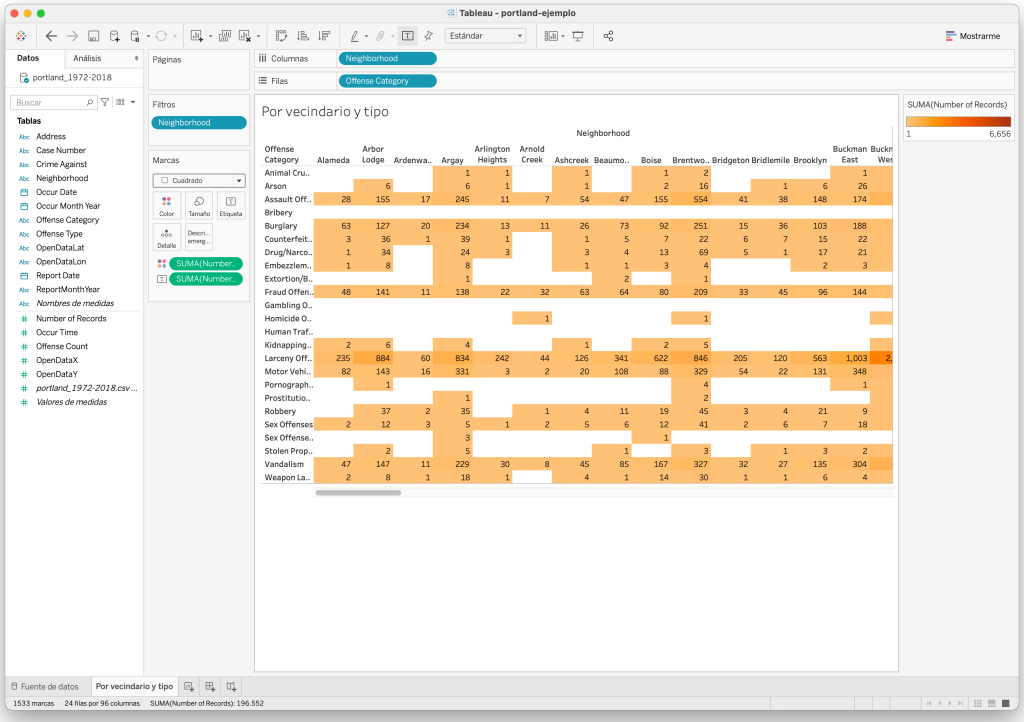
Descargar: https://github.com/jgromero/dataviz21



Propiedades del archivo de texto > Separador de campos

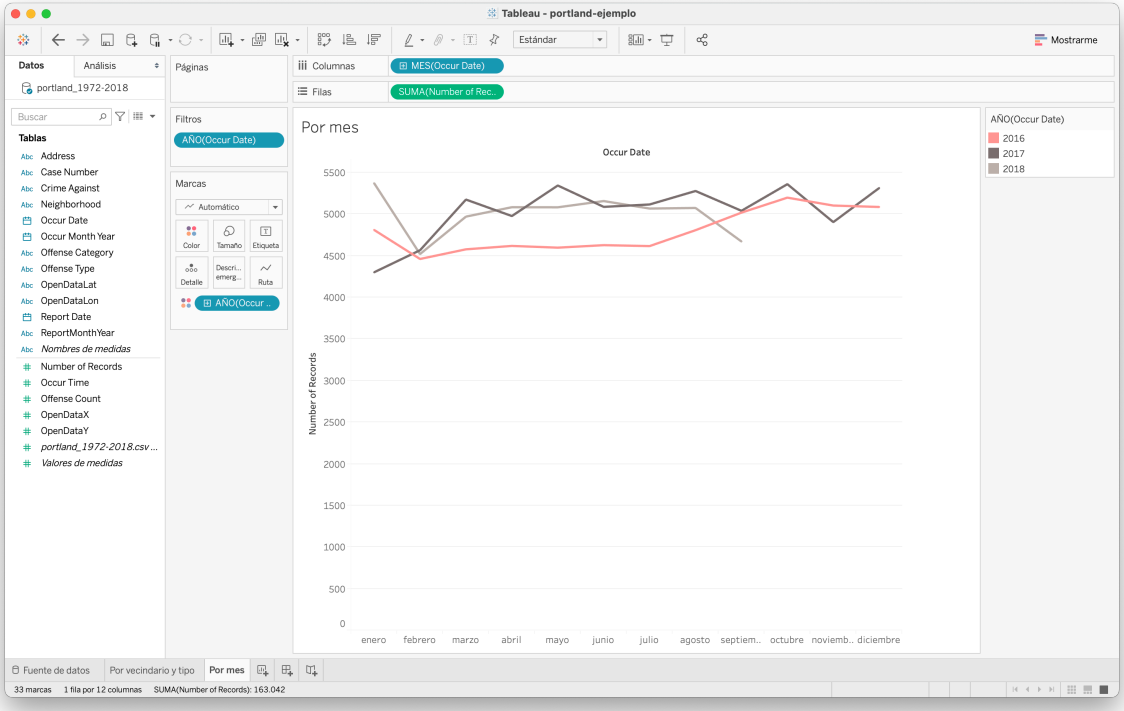
Tableau

Tabla



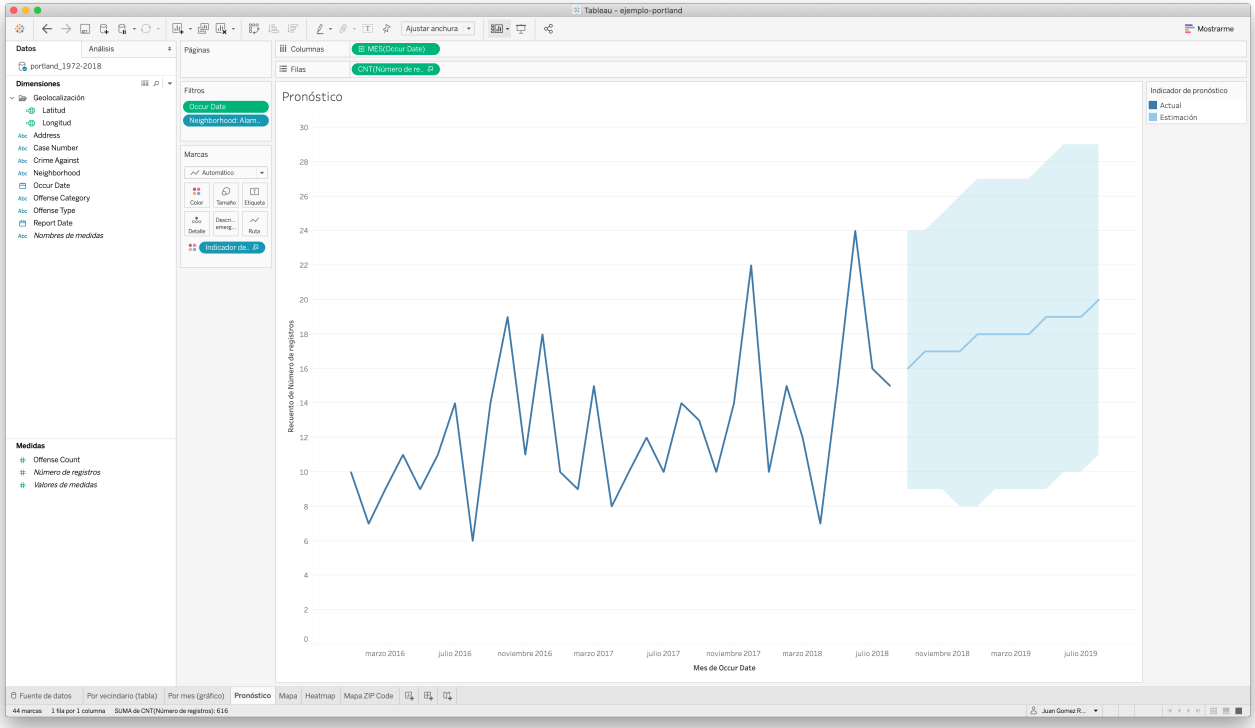
Tableau

Líneas



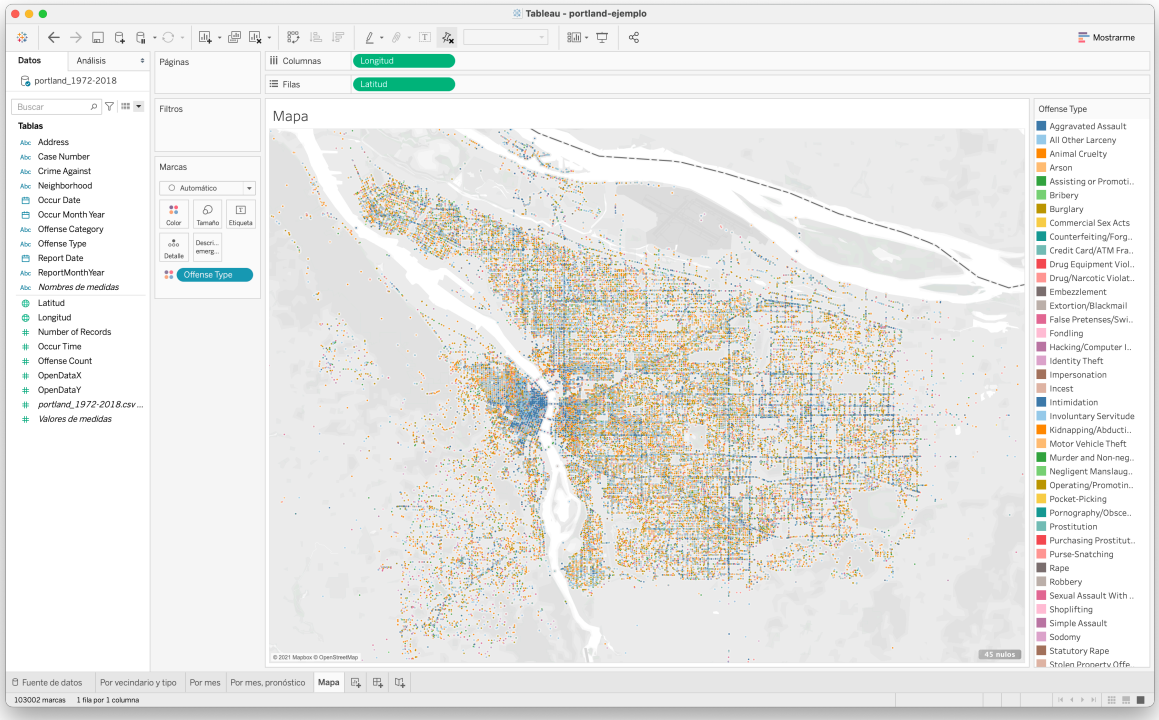
Tableau

Pronóstico



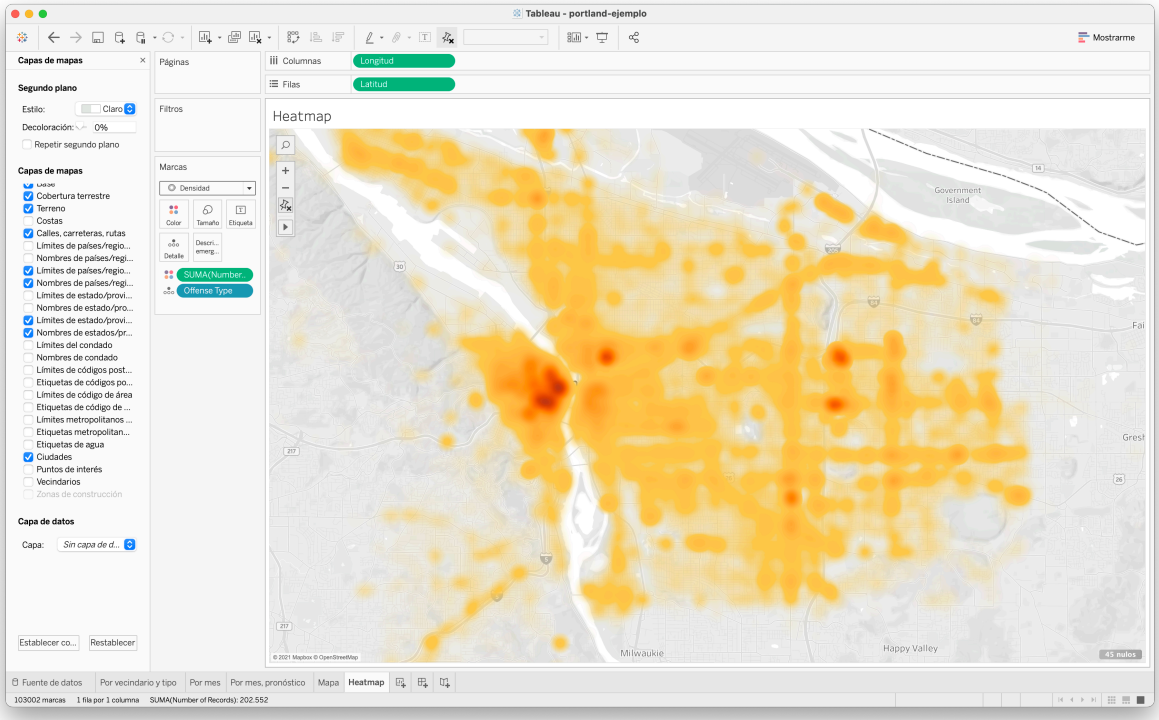
Tableau

Mapa



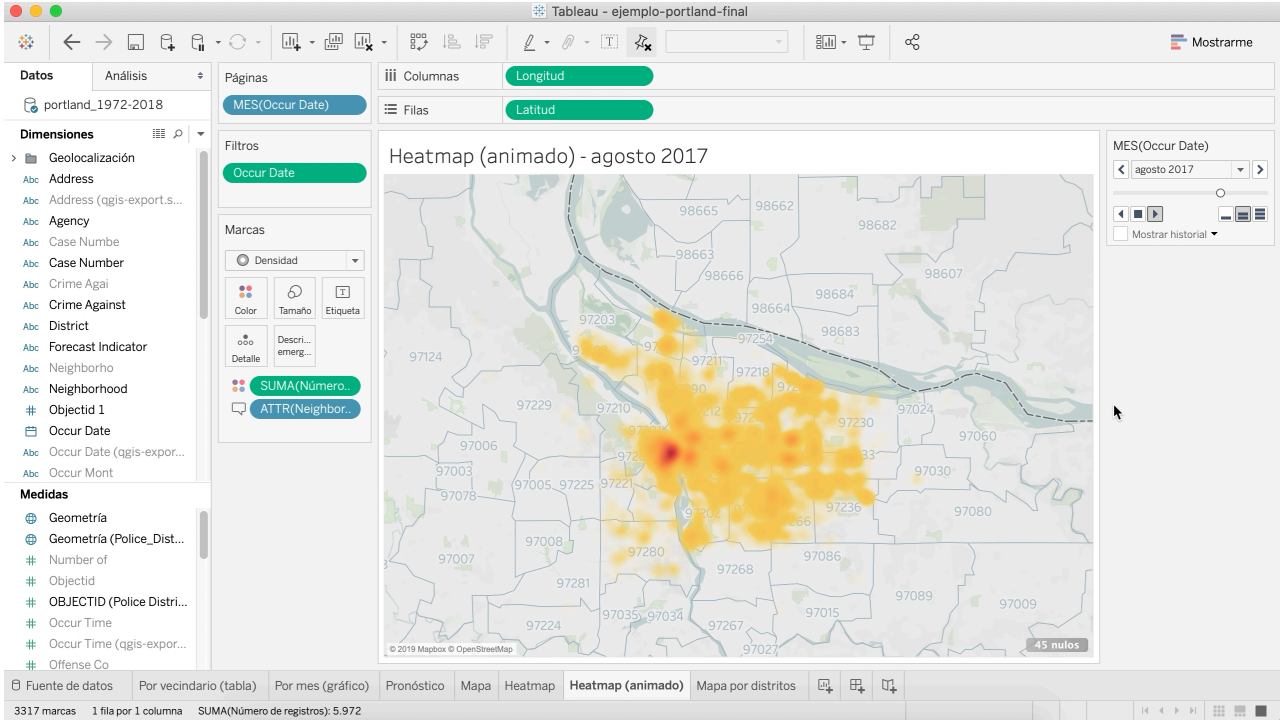
Tableau

Heatmap



Tableau

Heatmap animado



Tableau

Funciones avanzadas de mapas

Geolocalización personalizada

La geocodificación personalizada significa que asigna coordenadas de latitud y longitud a sus ubicaciones para que Tableau pueda trazarlas de forma precisa.

https://help.tableau.com/v2020.4/pro/desktop/es-es/custom_geocoding.htm

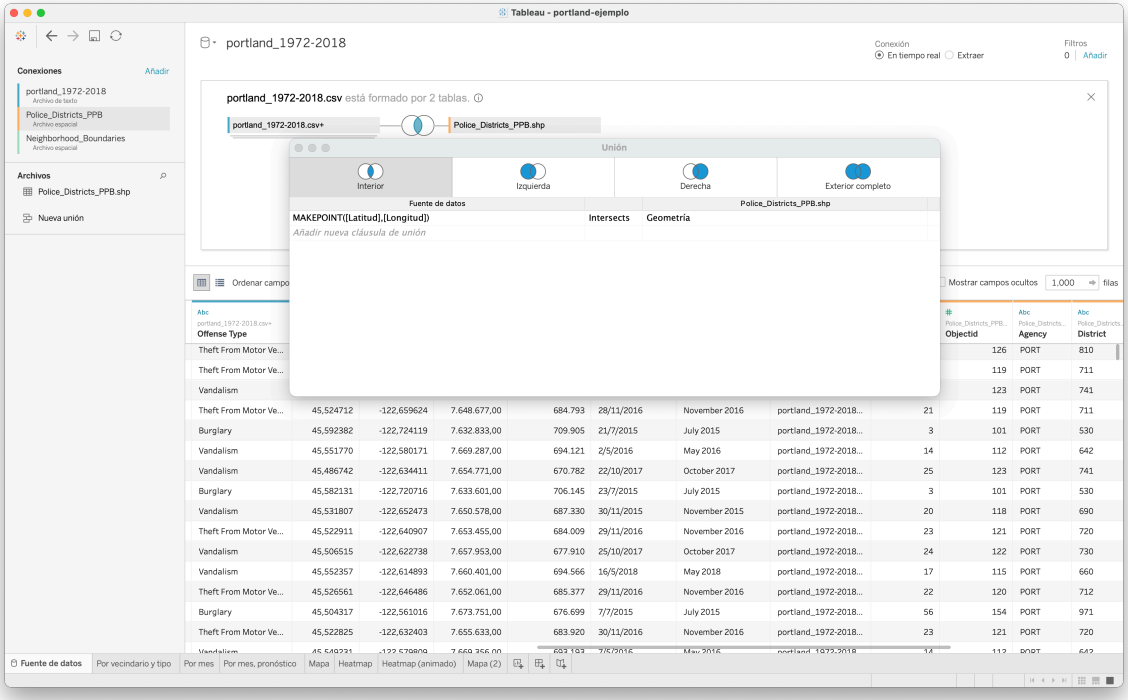
Mapas a partir de archivos espaciales

Tableau Desktop, puede conectarse a los siguientes tipos de archivos espaciales: archivos de forma, tablas MapInfo, archivos KML (Keyhole Markup Language), GeoJSON, TopoJSON y bases de datos geográficos de archivos ESRI. Tras ello, puede crear mapas de puntos, líneas o polígonos con los datos de esos archivos.

https://help.tableau.com/current/pro/desktop/es-es/maps_shapefiles.htm

Tableau

Divisiones personalizadas con Shapefile + Tableau



Tableau

Divisiones personalizadas con QGIS + Tableau