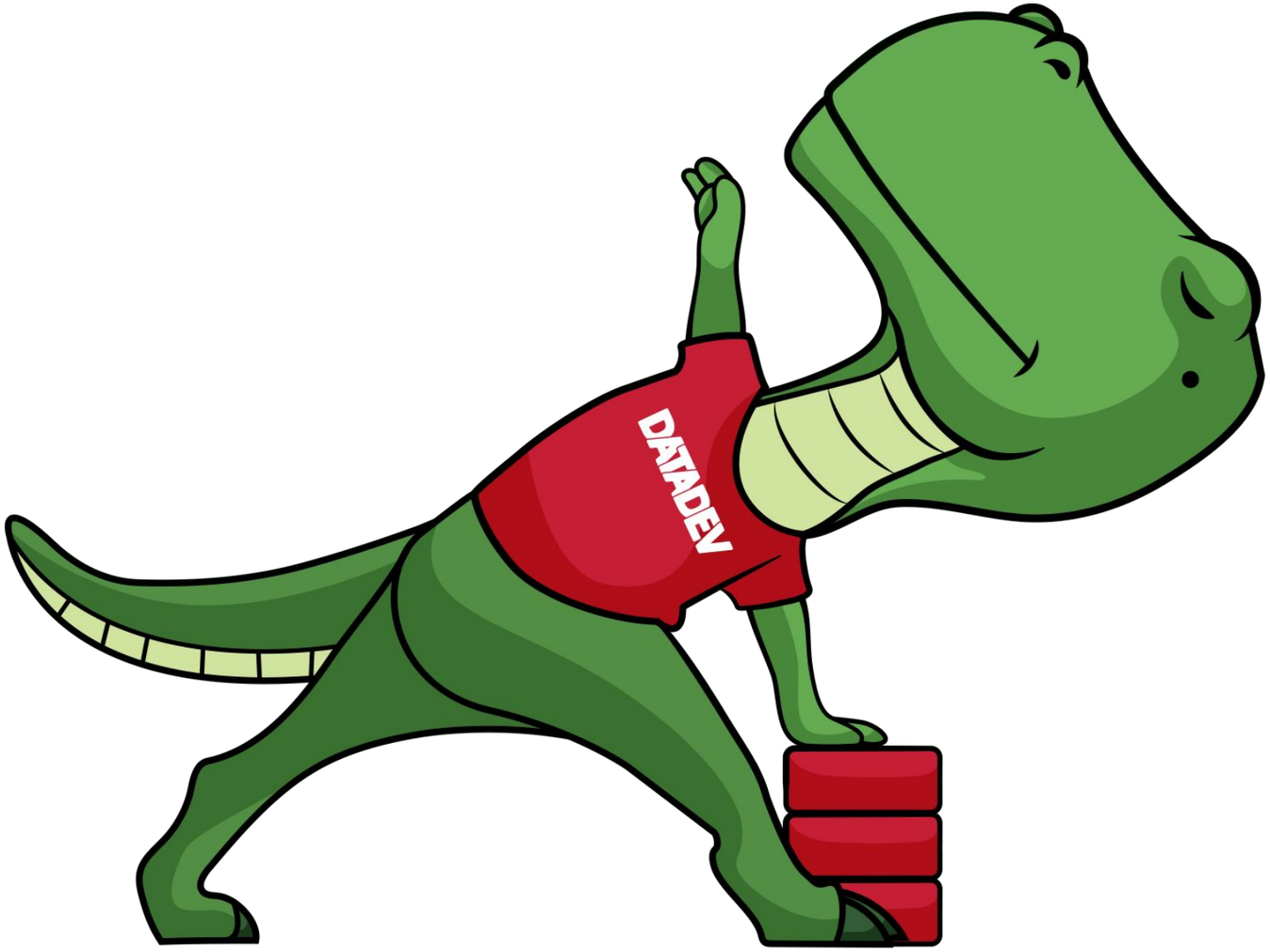
Intro to Tableau's Developer Tools

14 July 2022



ANYA PROSVETOVA

Tableau Visionary & DataDev Ambassador
BI Analyst at Cosuno

By the end of this session you will…

… **understand** the Developer Platform APIs/tools and their use cases

… **know** when to use what

… **learn** where to find resources

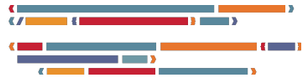


Tableau Developer Tools

Automation / Integration

Automate tedious tasks,
create custom workflows
and manage Tableau content

Extensibility

Give dashboards
new capabilities, and
integrate them with
other applications

Advanced Analytics

Integrate Tableau
with advanced models
in R, Python, and Matlab

Embedding

Embed Tableau content
into other applications

Data Connectivity

Get any data into Tableau
via custom connector or extract

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- Connector SDK
- Hyper API
- Web Data Connector

	Web Data Connector	HYPER API	Connector SDK
Connect to	Web-based data only (e.g. REST APIs, HTML)	Any data source/API	Any Database using an ODBC or JDBC driver

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Analytics Extensions API

R | Matlab | Python

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Data Connectivity

Get any data into Tableau
via custom connector or extract

Python & R integration

Available on:

Tableau Desktop (Tableau Server & Online)

Tableau Prep (Tableau Server only)

Dependencies: TabPy / R Serve

Input Data

SCRIPT_BOOL
SCRIPT_INT
SCRIPT_REAL
SCRIPT_STR

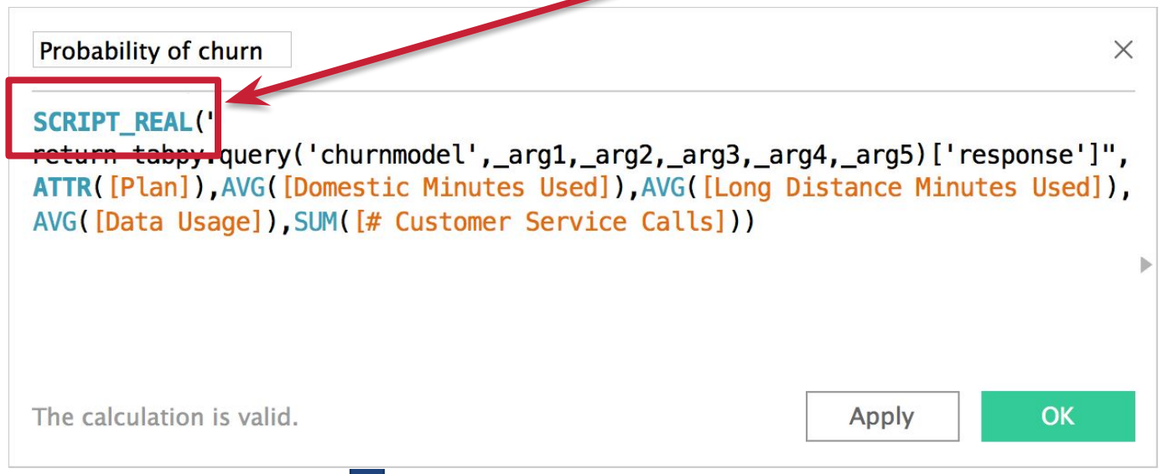
Output Data

Pass Python or R scripts and data

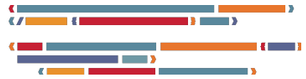
Probability of churn

```
SCRIPT_REAL('
return tabpy.query('churnmodel',_arg1,_arg2,_arg3,_arg4,_arg5)['response']",
ATTR([Plan]),AVG([Domestic Minutes Used]),AVG([Long Distance Minutes Used]),
AVG([Data Usage]),SUM([# Customer Service Calls]))
```

The calculation is valid. Apply OK



Interactive data visualization



Analytics Extensions API

Available: 2020.1

Available on:

Tableau Desktop (Tableau Server & Online)

Tableau Prep (Tableau Server only)

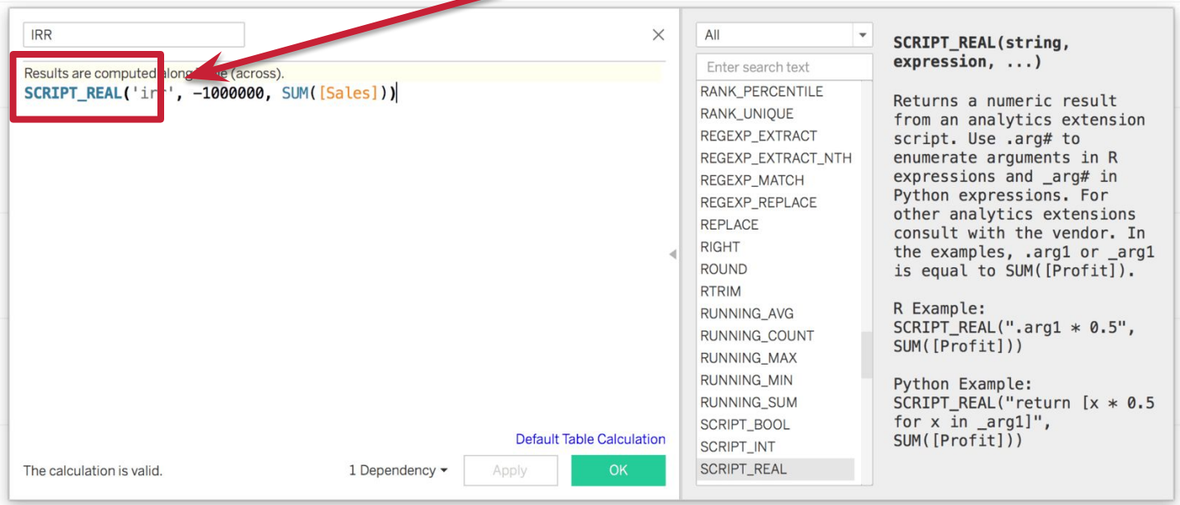
Input Data

SCRIPT_BOOL
SCRIPT_INT
SCRIPT_REAL
SCRIPT_STR

Analytics Extension

Output Data

Pass Scripts And Data



Interactive Data Visualization

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Tableau Developer Tools

Automation / Integration

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REST API	Webhooks
Metadata API	TSC
Hyper API	TSM

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Data Connectivity

Get any data into Tableau
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REST API

Programmatic access to work with your content, users, sites and more.

Provisioning
Permissions
Publishing

Available: All version of Tableau
Product Involved: Tableau Server/Online
Coding language: Wide language support

Use Cases:

- Automate set up of new servers with users and sites
- Create custom portal for organizations to manage their server with just the functionality they want to expose
- Generate images from Tableau dashboards
- Programmatically publishing extract to server
- Programmatically create new subscriptions for users

Tableau Server Client (TSC)

A Python library for the Tableau Server REST API

Available: All versions of Tableau
Product Involved: Tableau Server/Online
Coding language: Python

Use Cases:

- Automate the set up of new servers with users and sites
- Create custom portals for organizations to manage their servers with just the functionality they want to expose
- Generate images from Tableau dashboards
- Programmatically publishing extract to server
- Programmatically create new subscriptions for users

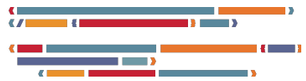

Tableau Services Manager (TSM)

TSM gives servers admin command-line and web-based options for configuring and maintaining Tableau Server

Available: From version 10.5
Product Involved: Tableau Server

Use Cases:

- Backup your Production Environment
- Restore Production to Test Environment
- Server Upgrades

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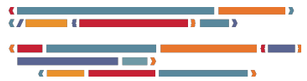
Webhooks

Allows other services to respond to events that happen on Tableau Server or Online

Available: 2019.4
Product Involved: Tableau Server/Online
Coding language: Wide language support

Use Cases:

- Have Alexa talk when an extract refresh fails
- Send an image of a dashboard after the extract refresh
- Start a workbook performance review when a workbook is uploaded
- Integration with Slack and other platforms



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POST Sign in (personal access token) | POST Create a webhook | GET List webhooks

Create a webhook

POST {{server}}/api/3.6/sites/{{site-id}}/webhooks

Params | Authorization | Headers (12) | Body | Pre-request Script | Tests | Settings

none | form-data | x-www-form-urlencoded | raw | binary | GraphQL | JSON

```
{
  "webhook": {
    "webhook-source": {
      "{{webhook-source-api-event-name}}": {}
    },
    "webhook-destination": {
      "webhook-destination-http": {
        "method": "POST",
        "url": "{{webhook-url}}"
      }
    },
    "name": "{{webhook-name}}"
  }
}
```

Body | Cookies (2) | Headers (13) | Test Results

Pretty | Raw | Preview | Visualize | JSON

```
{
    "webhook": {
        "webhook-source": {
            "webhook-source-event-datasource-refresh-failed": {}
        },
        "webhook-destination": {
            "webhook-destination-http": {
                "method": "POST",
                "url": "https://maker.ifttt.com/trigger/[redacted]"
            }
        },
        "owner": {
            "id": "[redacted]",
            "name": "[redacted]"
        },
        "id": "[redacted]",
        "name": "extract-failed",
        "isEnabled": true,
        "statusChangeReason": ""
    }
}
```

Jobs

Failed Jobs: 4 Completed Jobs: 2 Cancelled Jobs: 7

Sort By: Jo

ID	Status	Priority	Task Type	↓ Job Requested Time	Run Time (min)	Queue Time (min)
9091780	Failed	50	Extract Refresh/Creation	14 Jun 2020, 08:22	0.0	1.1

Anya Prosvetova
@Anyalitica

Hi @illonage! The refresh of 'T-rex shopping list' extract failed on my #Tableau Online at June 14, 2020 at 08:23AM. #datadev

8:23 AM · Jun 14, 2020 · IFTTT

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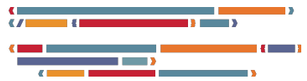
Metadata API

A **read-only** GraphQL API that allows querying for resources on Tableau Server and how they relate to other assets

Use Cases:

- Understand the impact of changing or removing a data sources across an entire server
- Programmatically discover all calculated fields created from a database column
- Automatically output descriptions and formulas for all fields being used in a workbook

Available: 19.3
Product Involved: Tableau Server/Online
Coding Skills: Wide language support



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Extensions API

Embedding API

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Embedding

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Data Connectivity

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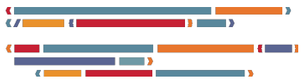
JavaScript API

Lets you display and interact with visualizations in a web page

Extensions API

Enable Tableau users to integrate and interact with data from other application directly in Tableau



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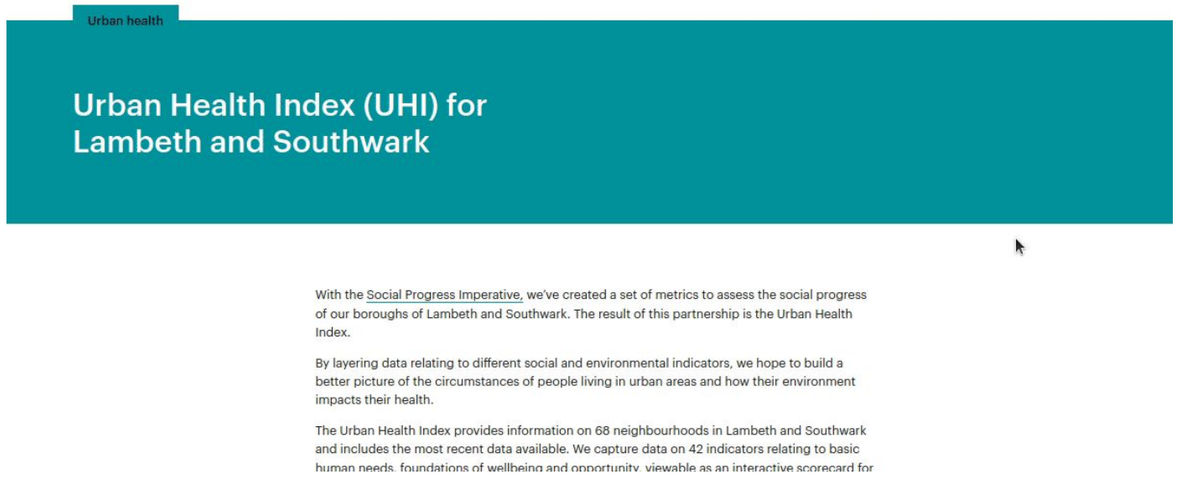
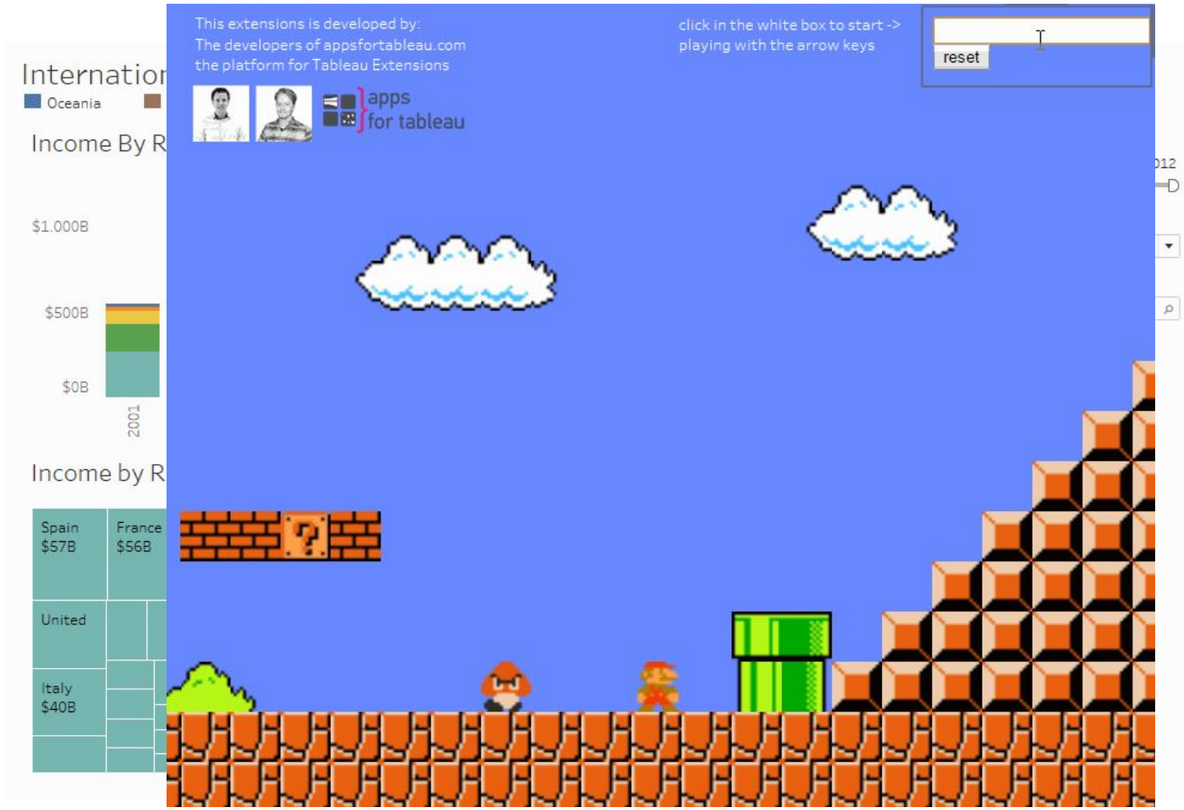
Difference between

JavaScript API	Extensions API
Brings Tableau into other web applications	Brings other applications into Tableau
Needs to embed Tableau into a web page	Can be used in Desktop, Server or Online
Custom-built for each embed scenario	Can be made as a re-usable, generic-built dashboard component
JavaScript	JavaScript

JavaScript API

Extensions API





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- Embedding API
- Mobile App Bootstrap
- REST API

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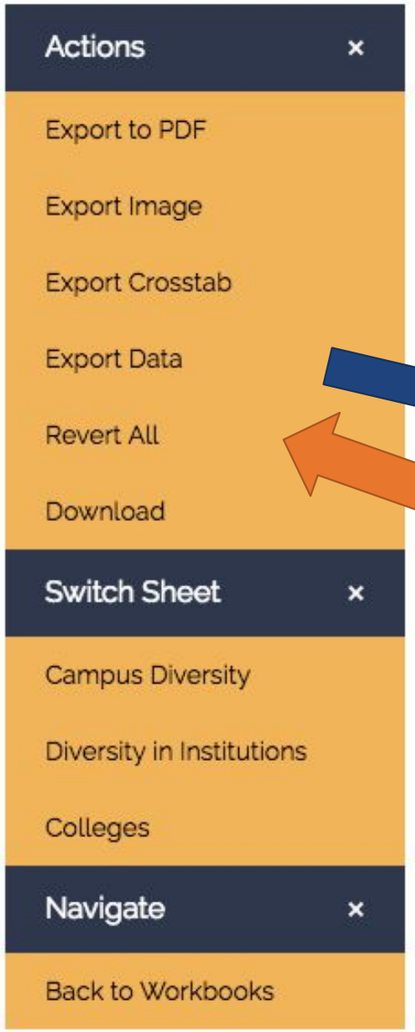
JavaScript API



Ethnicity ... Two or More Races | Y-Axis Sp... Region | First X-Ax... Urbanization | Second X... Control

To use this visualization: Select an ethnicity at top left. Then decide how you want the categories to break out by using the Y- and X-axis split controls. Reset at bottom. Hover over a box for details. Click the box to list the institutions at the bottom

Tableau

Diversity in Institutions: Hover over a box for details

	City			Rural			Suburb			Town		
	Public	Private not-for-profit	Private for-profit	Public	Private not-for-profit	Private for-profit	Public	Private not-for-profit	Private for-profit	Public	Private not-for-profit	Private for-profit
Far West AK CA HI NV OR	4.8% 119	5.4% 119	3.6% 353	4.0% 27	4.8% 10	4.6% 5	4.8% 83	6.1% 52	2.8% 165	5.8% 25	6.7% 7	4.1% 6
Great Lakes IL IN MI OH WI	2.2% 80	2.8% 114	2.3% 230	1.5% 79	1.1% 17	1.2% 5	2.4% 61	2.6% 67	2.0% 271	2.0% 48	2.2% 58	0.9% 36
Mid East DE DC MD NJ NY PA	1.8% 70	2.6% 188	1.3% 168	1.8% 55	1.9% 11	3.3% 5	2.1% 104	1.9% 137	2.0% 255	2.0% 46	1.8% 30	1.8% 18
New England CT ME MA NH RI VT	2.1% 31	2.9% 69	2.5% 39	1.8% 14	2.1% 15	8.2% 3	2.3% 47	2.1% 46	2.4% 93	1.8% 17	4.5% 12	1.2% 7
Plains IA KS MN MO NE ND SD	2.7% 55	2.7% 79	1.3% 154	1.5% 31	1.3% 17	2.6% 11	3.2% 12	2.1% 19	2.4% 78	2.1% 94	1.9% 53	2.7% 30
Rocky Mountains CO ID MT UT WY	2.9% 32	3.0% 26	3.4% 90	2.2% 9	0.1% 3	0.0% 3	2.8% 9	2.6% 8	3.3% 57	2.0% 30	5.8% 2	2.0% 17
Southeast AL AR FL GA KY LA MS NC SC TN VA WV	2.6% 192	2.1% 175	1.8% 459	1.7% 104	1.4% 34	1.6% 18	2.3% 95	2.0% 79	3.5% 307	1.6% 148	1.3% 60	3.0% 60
Southwest AZ NM OK TX	2.3% 89	2.6% 49	2.0% 335	2.3% 60	3.7% 9	0.9% 8	2.9% 22	1.9% 16	3.1% 68	3.3% 71	3.3% 12	1.0% 21

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REST API

Agency
Home
About Us
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Reporting
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Reporting Center
Choose from a reporting category to work with our interactive reports
ALL REPORTS
SOCIAL MEDIA
WEB ANALYTICS
E-MAIL OPTIMIZATION
SALES
FINANCE
Service Impact by Customer Segment
Incoming Web Traffic

Custom Mobile Apps: Mobile App Bootstrap

Embed Tableau visualizations in your own mobile app

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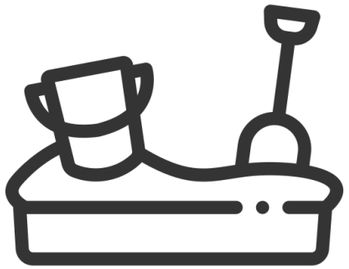
Join the Tableau Developer Program!

Early API Access

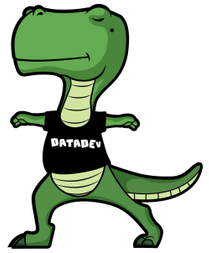


Free Development Site

Engineering Team Connection

First to know

Community



Wake up the TREX in you

developer.tableau.com

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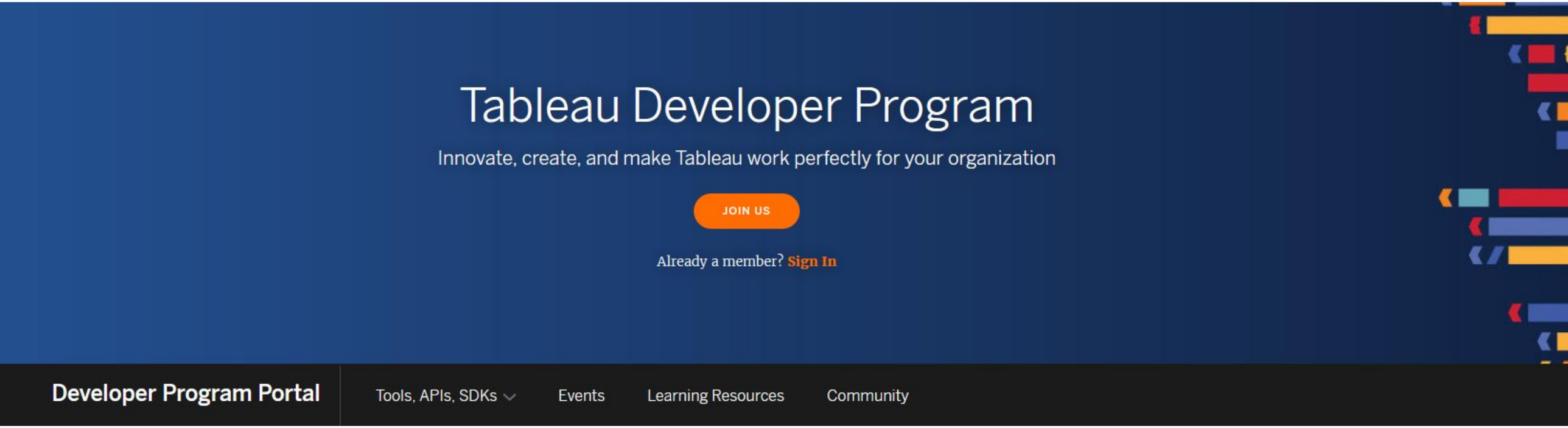

https://www.tableau.com/developer

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https://www.tableau.com/developer/mini-challenges

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Don’t forget to have fun!