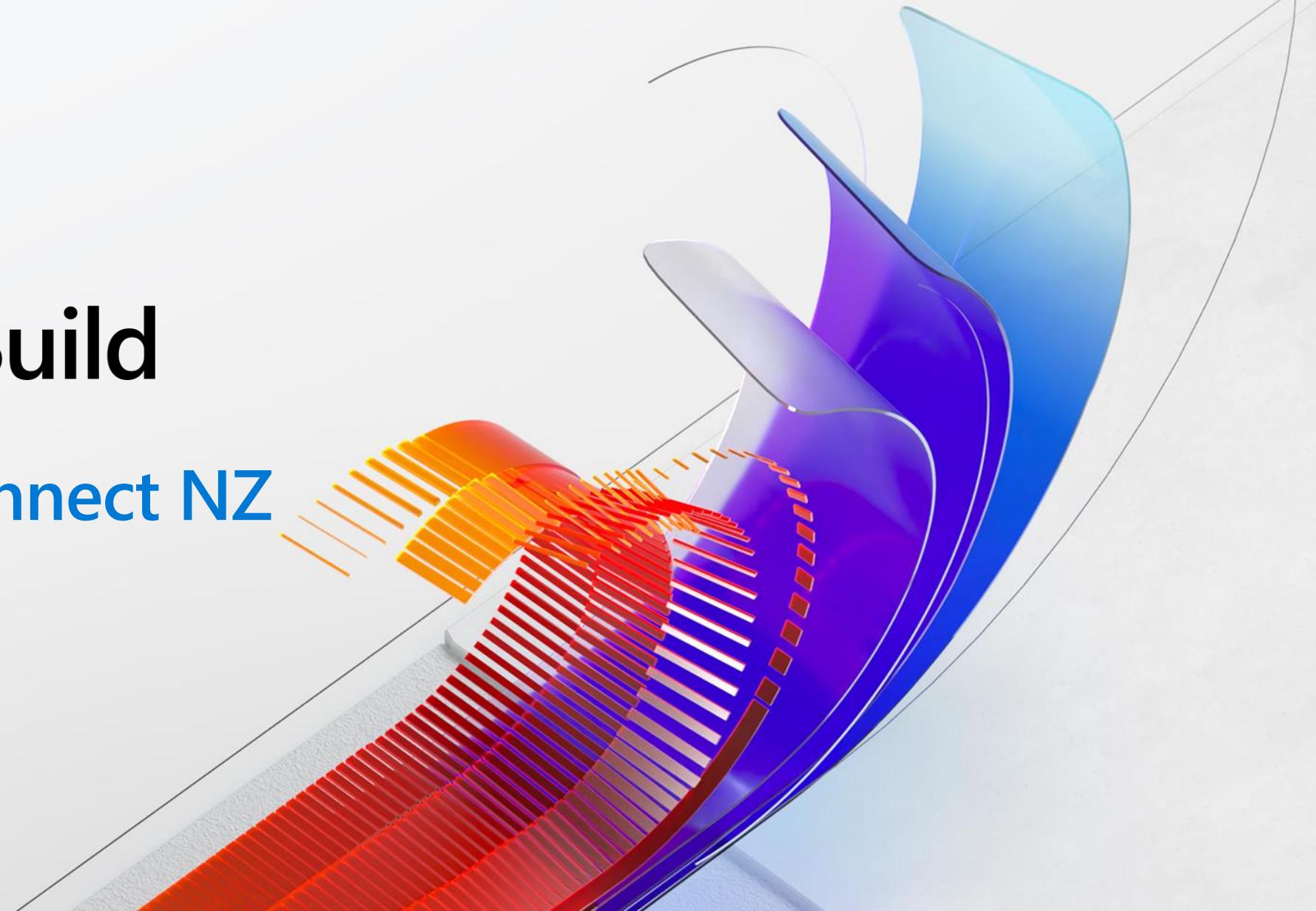




Microsoft Build

Community Connect NZ



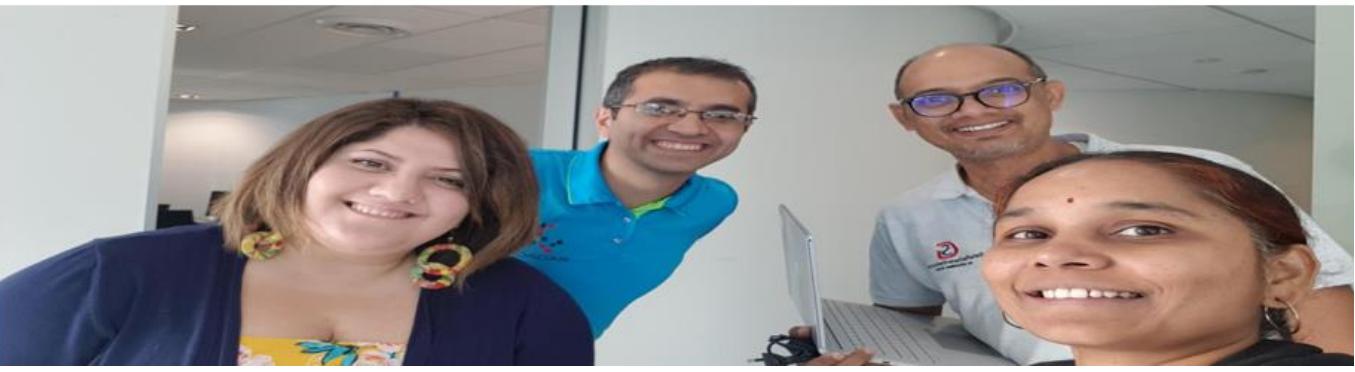
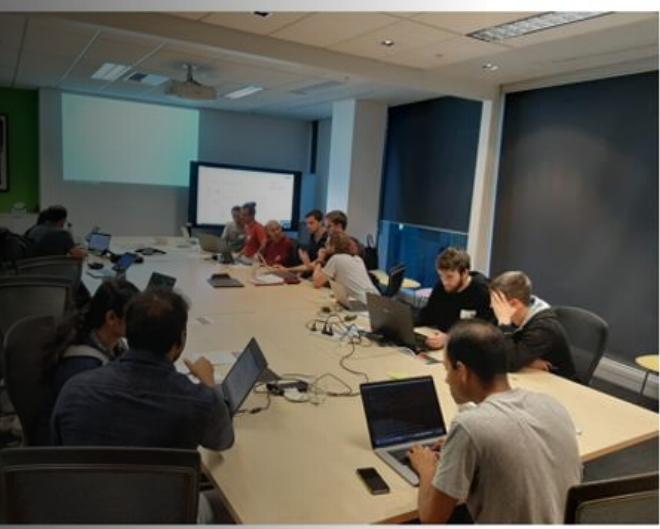
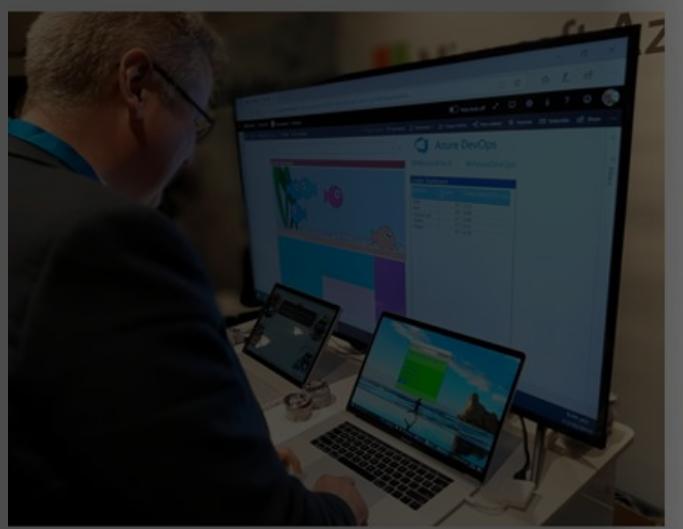
Kickoff

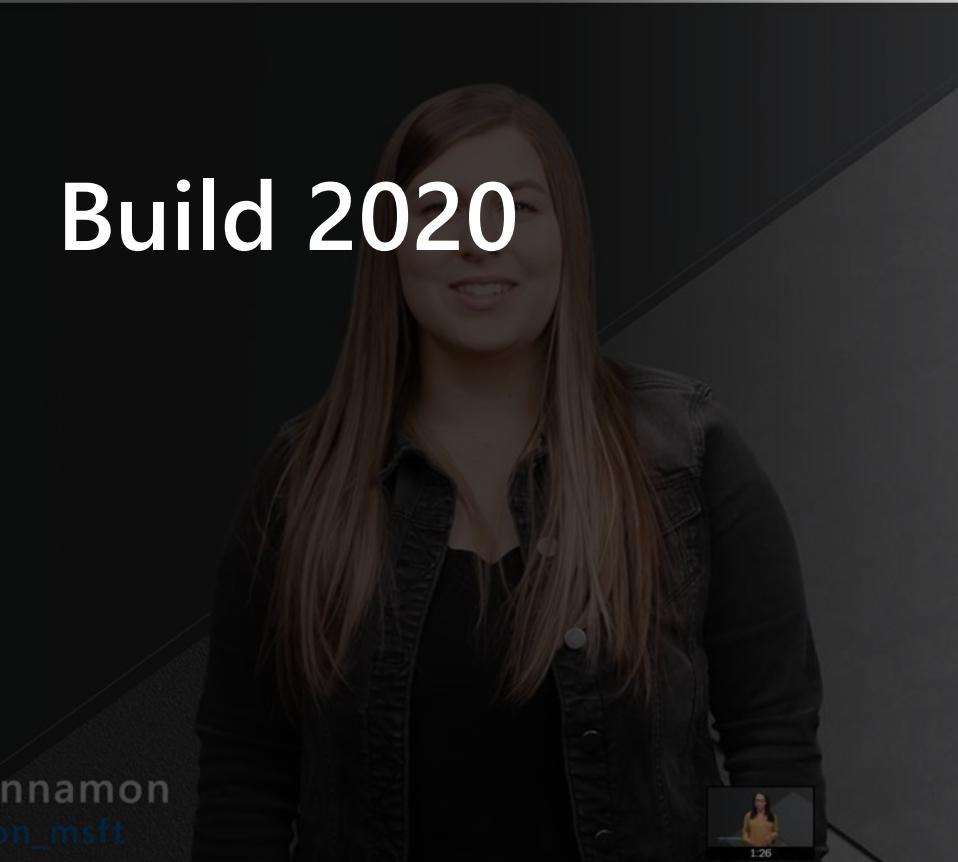


**Developer Product
Marketing Manager**
@rawatsudhir

Agenda

- Kickoff
- Connect with community
- D&I and Careers
- Ask-me-anything & Build warp-up
- Community Spotlight 1
- Community Spotlight 2
- Community Spotlight 3





Microsoft Technology Expert



Jourdan Templeton
@journadt



Reza Rad
@Rad_Reza



Samar Alrayyes
@SamarAlrayyes



Leila Etaati
@leila_etaati

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Microsoft Technology Expert



Hamish Watson
@TheHybridDBA



Anupama Natarajan
@shantha05

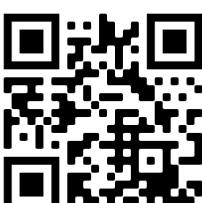


Sudeep Ghatak
@sudeepghatak



Hitesh Arora

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Community Connect



Sudeep Ghatak
@sudeepghatak



Hitesh Arora



Sudhir Rawat
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D&I and Careers



Samar Alrayyes
@SamarAlrayyes



Anupama Natarajan
@shantha05



Sudhir Rawat
@rawatsudhir

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Ask Me Anything



Jourdan Templeton
@journant



Reza Rad
@Rad_Reza

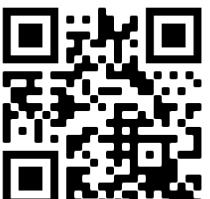


Hamish Watson
@TheHybridDBA



Sudhir Rawat
@rawatsudhir

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Find abnormalities in live Data to avoid any disaster

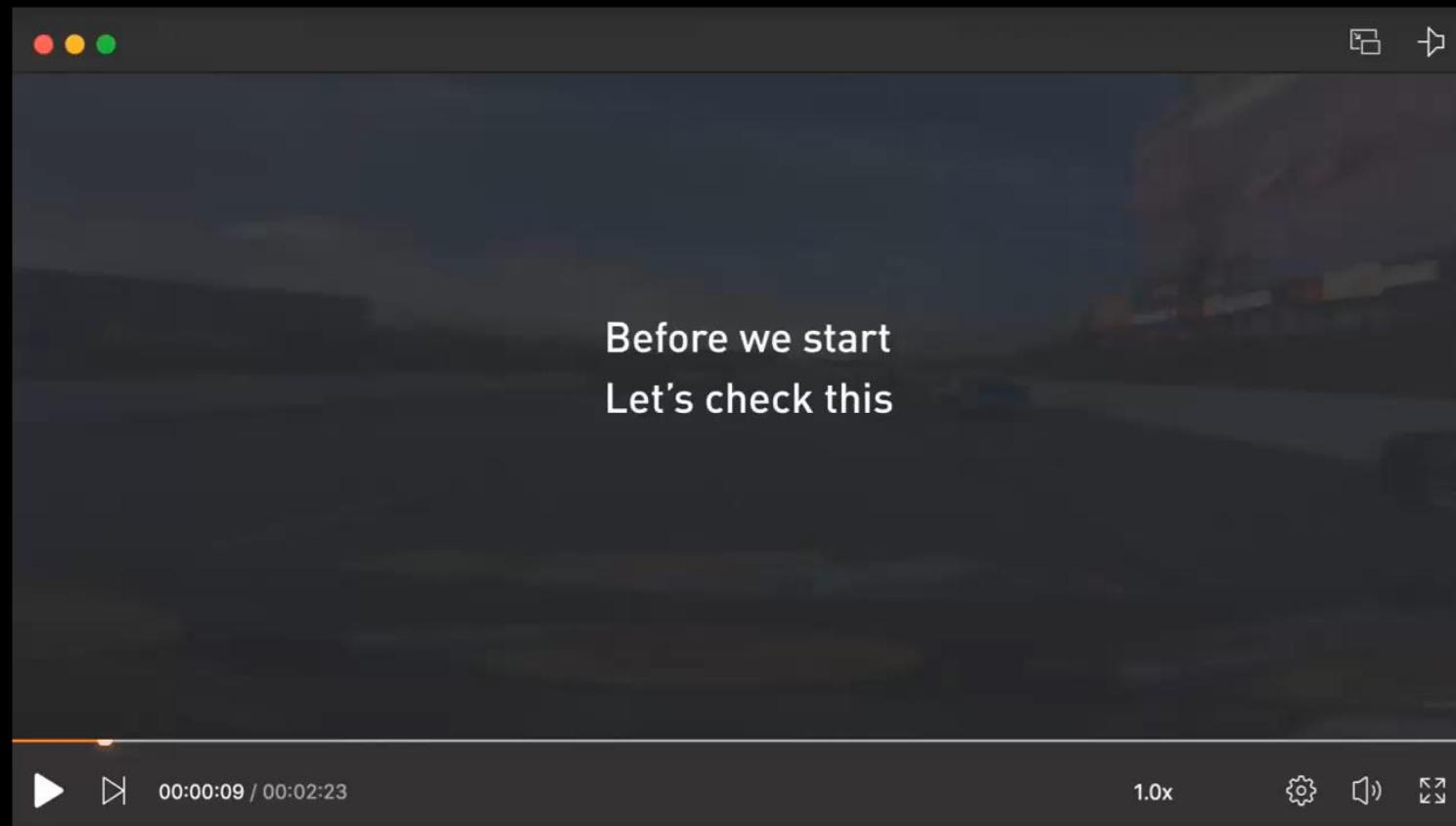
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Leila Etaati
[@leila_etaati](https://twitter.com/leila_etaati)

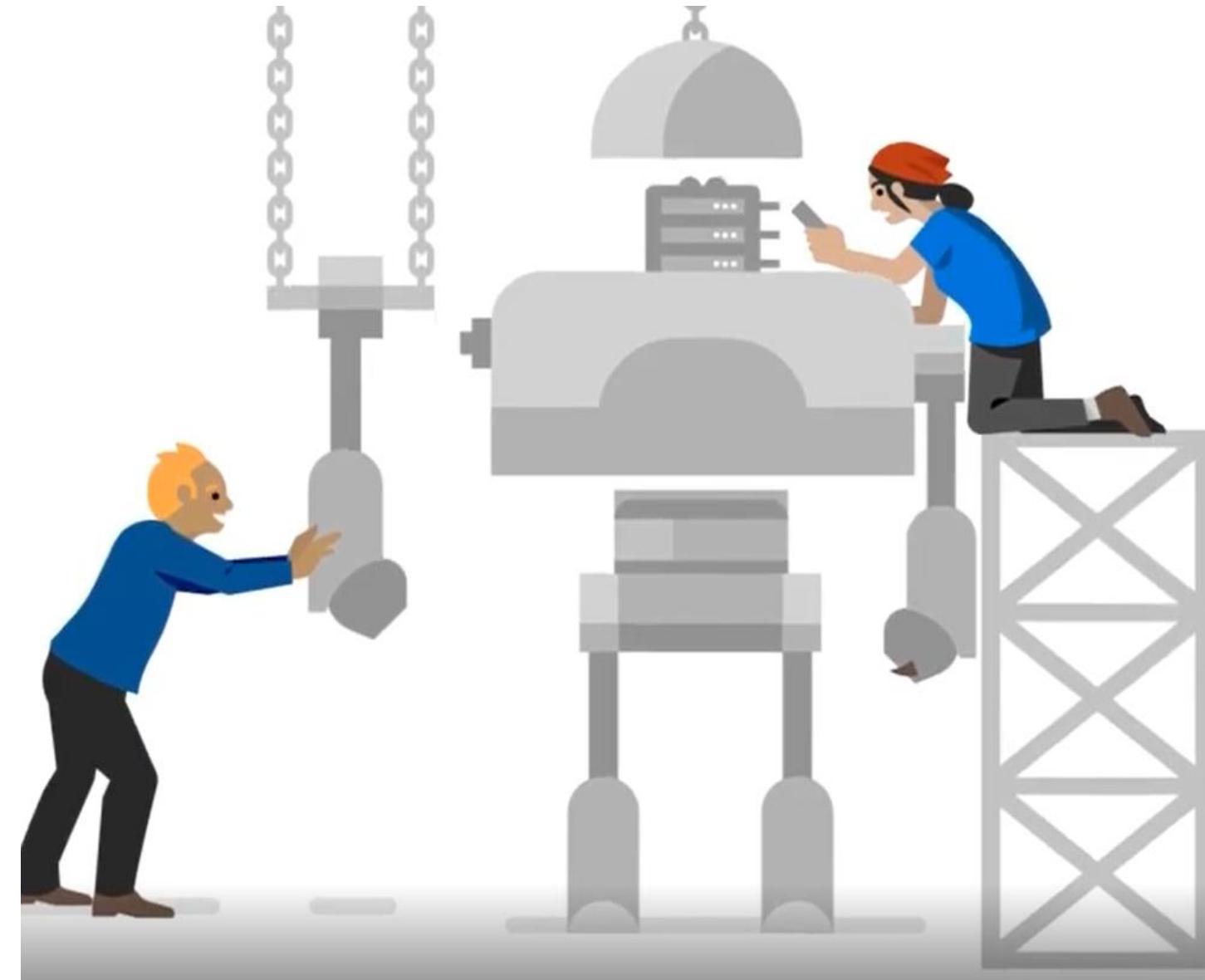


Yes, it could be a spark plug



Or any other small components

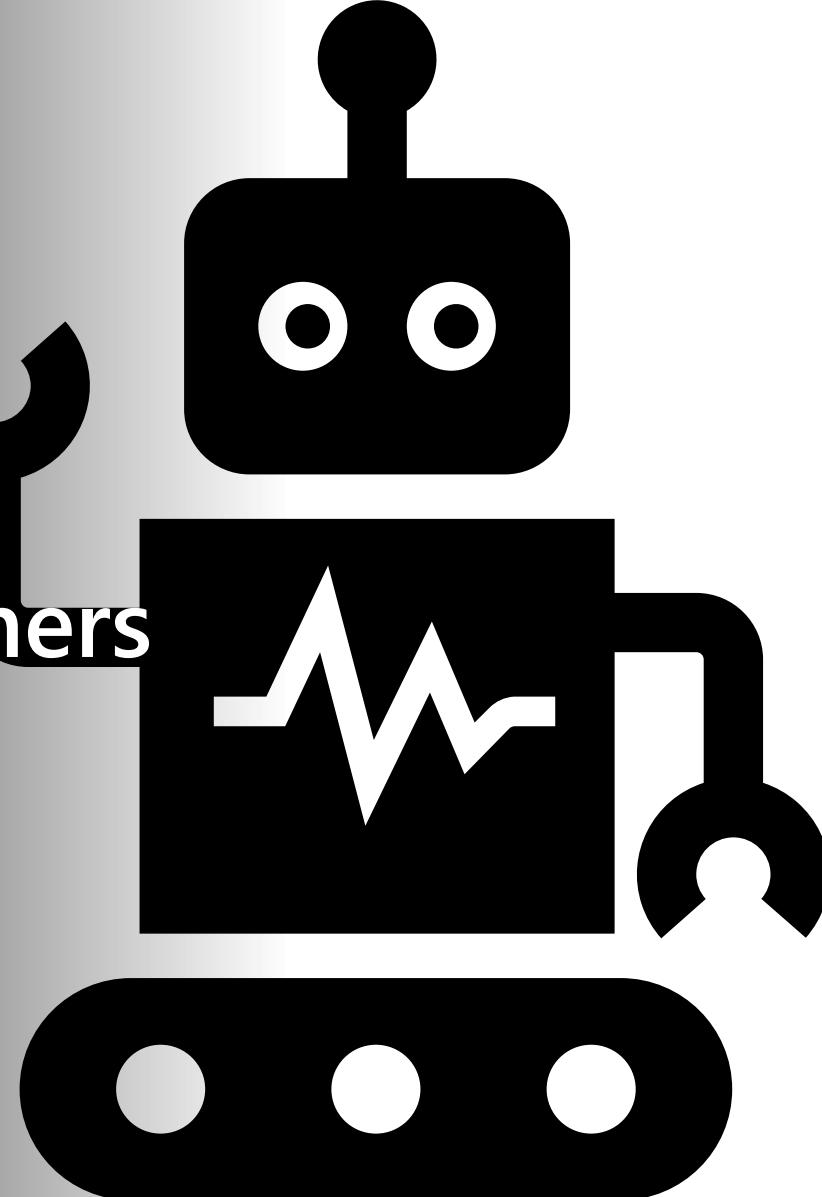




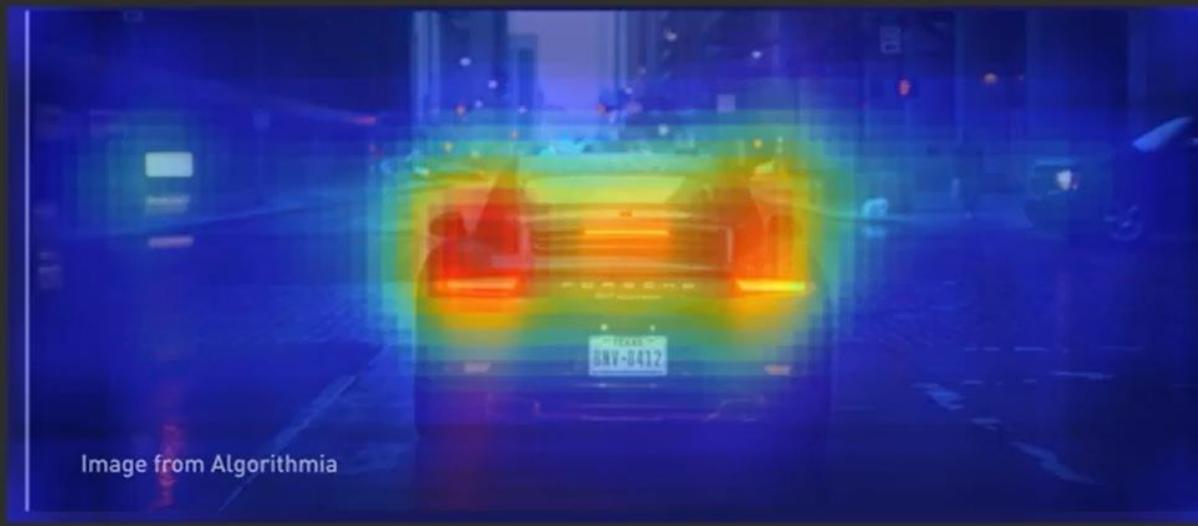
Small problems make a
Big Difference

That's why we need a better
ANOMALY DETECTION technology

It's AI that detects
problems before
systems or customers
being severely
impacted



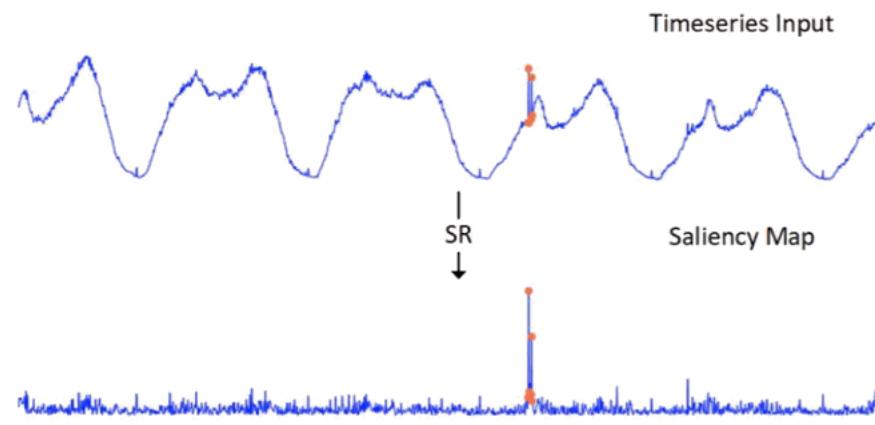
Saliency is what “stands out” in a photo or scene



Saliency View

Saliency typically arises from contrasts between items and their neighbourhood, such as a red dot surrounded by white dots,

The combination of Saliency Detection and CNN improves
the accuracy of time-series anomaly detection



Widley Used in lots of Industry



Environmental



Health



Manufacturing



Smart Home



Transportation



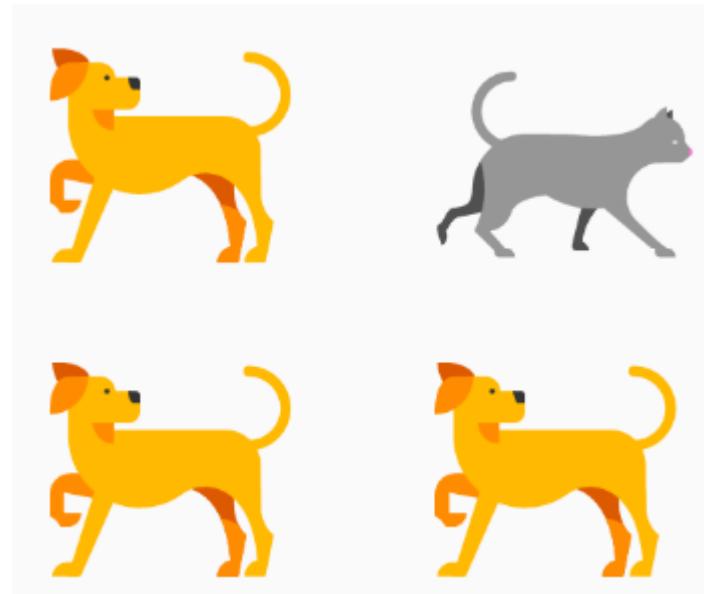
Social Media



Finance and Insurance

Anomaly Detection

Anomaly detection is the process of detecting time-series data outliers; points on a given input time-series where the behaviour isn't what was expected, or "weird".



Anomaly detections

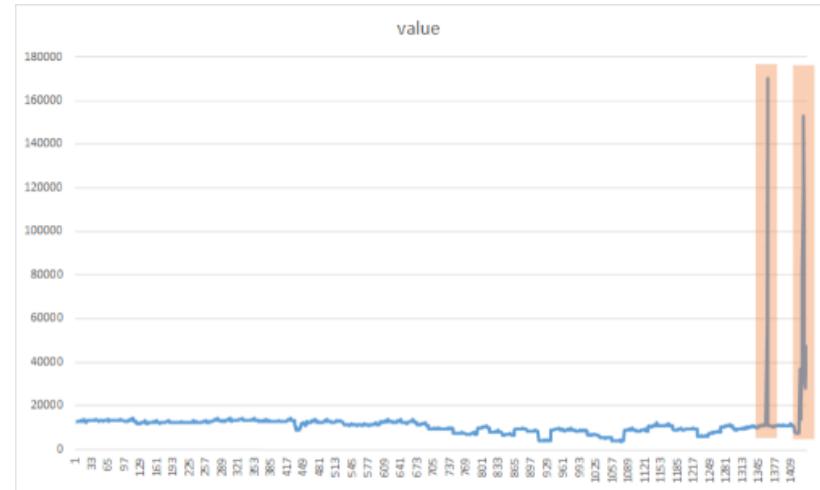


Car Accident :

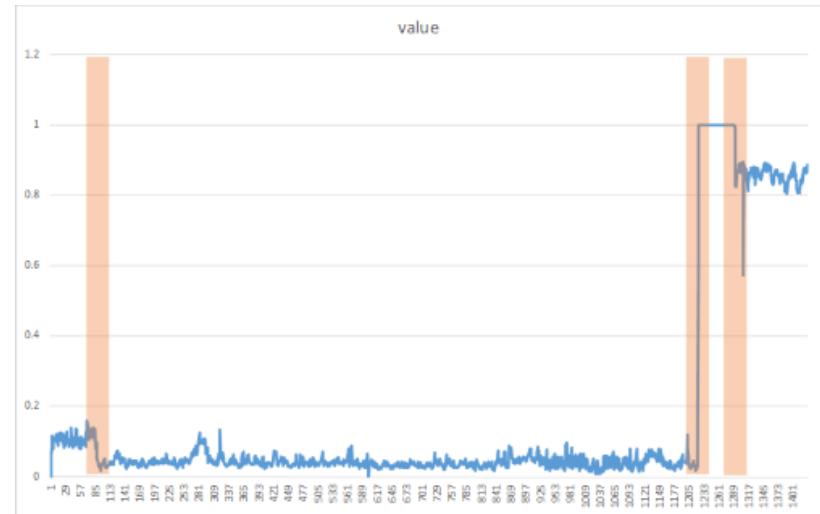
Is this oil gauge reading normal, or do I have a leak? If you're monitoring power consumption, you'd want to know: Is there an outage?

Two types of time series anomalies

Spikes indicate temporary bursts of anomalous behaviour in the system.

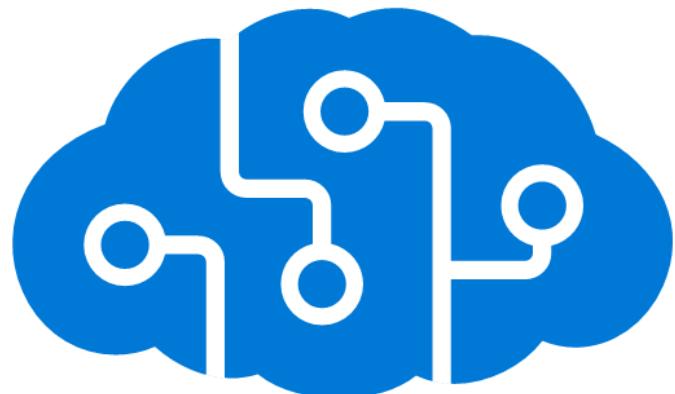


Change points indicate the beginning of persistent changes over time in the system.



Microsoft Anomaly Detection Approaches

Pre Build AI



Custom AI



Sample 1

Sample 2

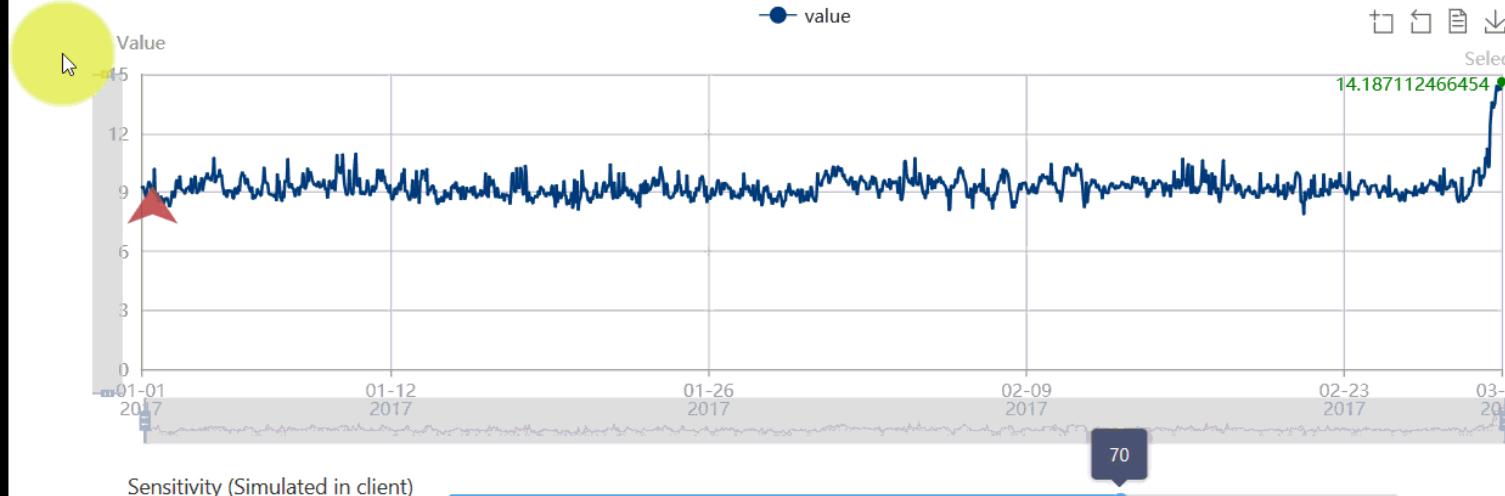
Sample 3 with seasonality

Choose local file

Please click any point on the chart, detection will start at the point

Status: Stopped

Start



Sensitivity (Simulated in client)

"Sensitivity" is from 0 to 99, it defines how sensitive the backend API performs filtering on the result of anomaly detection algorithms. Adjust the sensitivity to see how it affects the anomalies filtering.

Max detecting window

"Max detecting window" defines how many history points are used to detect current anomalies. The size of the window varies according to different granularity.

 API key [Get a key](#)

Endpoint:

<https://westus2.api.cognitive.microsoft.com>

/anomalydetector/v1.0/timeseries/last/detected

Key:

Current request

```
{"series":[{"timestamp":"2018-08-13T00:00:00Z","value":2224746},{"timestamp":"2018-08-14T00:00:00Z","value":2238861},{"timestamp":"2018-08-15T00:00:00Z","value":2224746},{"timestamp":"2018-08-16T00:00:00Z","value":2238861},{"timestamp":"2018-08-17T00:00:00Z","value":2224746},{"timestamp":"2018-08-18T00:00:00Z","value":2083945},{"timestamp":"2018-08-19T00:00:00Z","value":2084364}]},"{"series":[]}]
```

Current response

```
{"expectedValue":2393744.8925330527,"isAnomaly":true,"isNegativeAnomaly":false,"isPositiveAnomaly":true,"lowerMargin":331144.8925330527,"period":0,"suggestedWindow":29,"upperMargin":718123.4677599156}
```

Sample 1

Sample 2

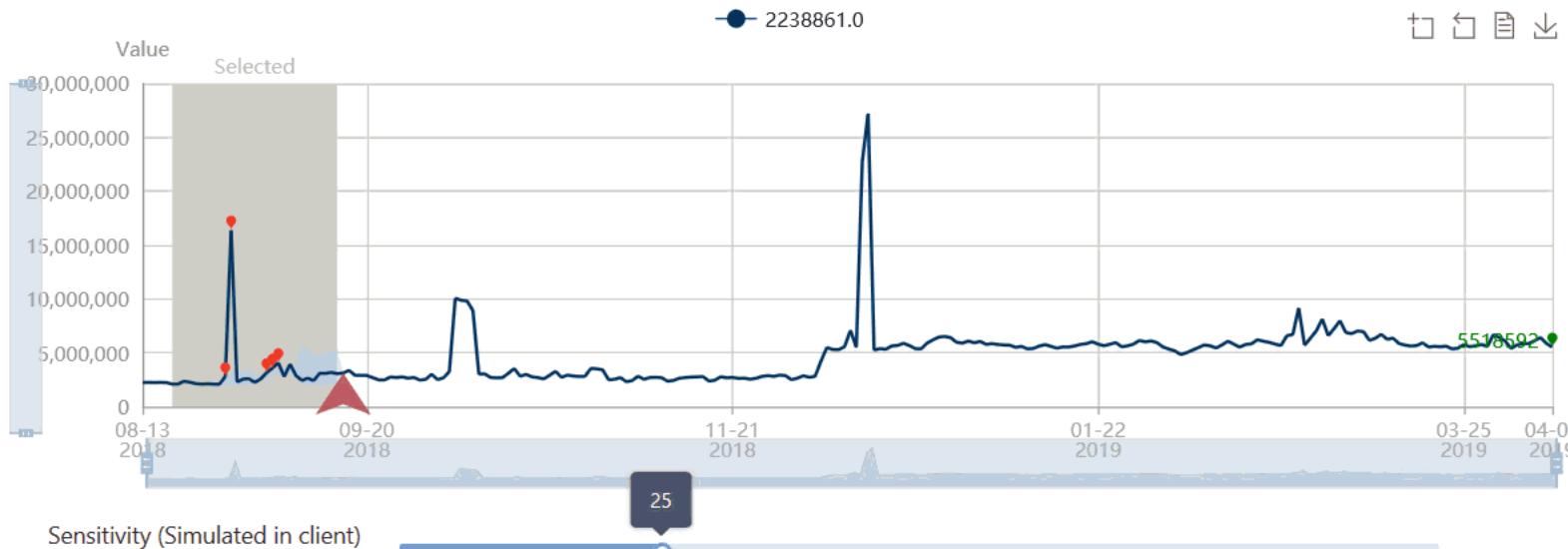
Sample 3 with seasonality

Choose local file

Please click any point on the chart, detection will start at the point.

Status: Stopped

[Continue](#)



"Sensitivity" is from 0 to 99, it defines how sensitive the backend API performs filtering on the result of anomaly detection algorithms. Adjust the sensitivity to see how it affects the anomalies filtering.

Max detecting window

28

"Max detecting window" defines how many history points are used to detect current anomalies. The size of the window varies according to different granularity.

 API key [Get a key](#)

Endpoint:

<https://westus2.api.cognitive.microsoft.com>

/anomalydetector/v1.0/timeseries/last/detec

Key:

 Current request

```
{"series":[{"timestamp":"2018-08-18T00:00:00Z","value":2083945},{"timestamp":"2018-08-19T00:00:00Z","value":2084364},{"timestamp":"2018-08-20T00:00:00Z","value":2345557},{"timestamp":"2018-08-21T00:00:00Z","value":2259315},{"timestamp":"2018-08-22T00:00:00Z","value":2126929},{"timestamp":"2018-08-23T00:00:00Z","value":2085586},{"timestamp":"2018-08-24T00:00:00Z","value":2109472}]},"{"timestamp":"2018-08-25T00:00:00Z","value":2109472}
```

Current response

```
{"expectedValue":2892269.5047701252,"isAnomaly":false,"isNegativeAnomaly":false,"isPositiveAnomaly":false,"lowerMargin":829669.5047701253,"period":0,"suggestedWindow":29,"upperMargin":2169202.1285775937}
```

Detect anomalies using C# Code

C#

```
using System;
using System.IO;
using Microsoft.ML;
using System.Collections.Generic;
```

C#

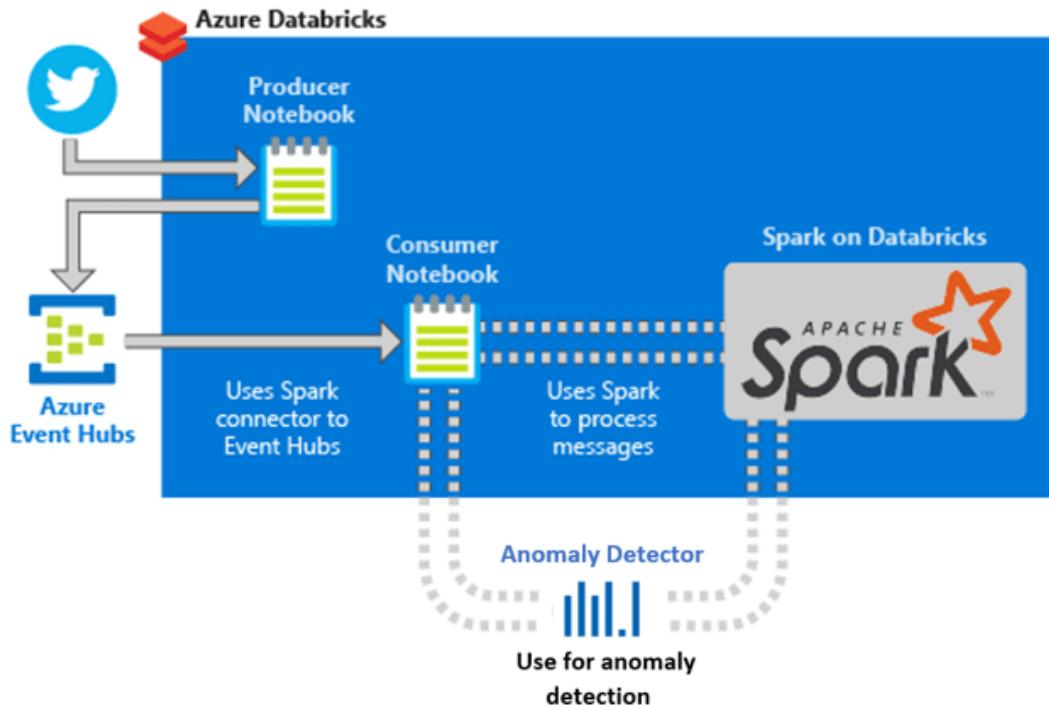
 Copy

```
static void DetectSpike(MLContext mlContext, int docSize, IDataView productSales)
{
}
```

C#

```
ITransformer iidSpikeTransform = iidSpikeEstimator.Fit(CreateEmptyDataView(mlContext));
```

Anomaly Detection On Streaming Data Using Azure Databricks



```
// Cognitive Services API connection settings
val subscriptionKey = "[Placeholder: Your Anomaly Detector resource access key]"
val endpoint = "[Placeholder: Your Anomaly Detector resource endpoint]"
val latestPointDetectionPath = "/anomalydetector/v1.0/timeseries/last/detect"
val batchDetectionPath = "/anomalydetector/v1.0/timeseries/entire/detect";
val latestPointDetectionUrl = new URL(endpoint + latestPointDetectionPath)
val batchDetectionUrl = new URL(endpoint + batchDetectionPath)
val gson: Gson = new GsonBuilder().setDateFormat("yyyy-MM-dd'T'HH:mm:ss.SSS'Z").setPrettyPrinting()

def getConnection(path: URL):HttpsURLConnection = {
  val connection = path.openConnection().asInstanceOf[HttpsURLConnection]
  connection.setRequestMethod("POST")
  connection.setRequestProperty("Content-Type", "text/json")
  connection.setRequestProperty("Ocp-Apim-Subscription-Key", subscriptionKey)
  connection.setDoOutput(true)
  return connection
}
```

Visualize anomalies using batch detection and Power BI

Queries [14]

fx Query1

WeatherData (1)

WeatherData (2)

data1

A^B anomaly

Invoked Function (4)

fx Query1 (2)

Invoked Function (5)

A^B Query2

fx anomalyVersion1

milk

dataAnomalyV2

Other [12]

fx Query1 (2)

Invoked Function (6)

= "#anomalyVersion (2)"(dataAnomalyV2)

	timestamp	1.2 value	isAnomaly	1.2 expectedValues	isPositiveAnomaly	isNegativeAnomaly	1.2 upperMargins	1.2 lowerMargins
1	1/03/2017 1:00:00 PM	5	FALSE	31.81102784	FALSE	FALSE	38.69016597	24.931885
2	2/03/2017 1:00:00 PM	6	FALSE	31.24656574	FALSE	FALSE	36.54559713	25.947534
3	3/03/2017 1:00:00 PM	8	FALSE	30.68210363	FALSE	FALSE	33.3910283	27.973178
4	4/03/2017 1:00:00 PM	0	FALSE	30.11764153	FALSE	FALSE	31.6235236	28.611755
5	5/03/2017 1:00:00 PM	7	TRUE	29.55317942	TRUE	FALSE	31.03083839	28.075520
6	6/03/2017 1:00:00 PM	2	FALSE	28.98871732	FALSE	FALSE	32.03011283	25.94732
7	7/03/2017 1:00:00 PM	6	FALSE	27.95985736	FALSE	FALSE	29.93931329	25.980401
8	9/03/2017 1:00:00 PM	8	FALSE	26.88055867	FALSE	FALSE	28.2245866	25.536530
9	10/03/2017 1:00:00 PM	5	FALSE	25.86804604	FALSE	FALSE	27.16144835	24.574643
10	11/03/2017 1:00:00 PM	4	FALSE	25.03537835	FALSE	FALSE	26.28714727	23.783605
11	12/03/2017 1:00:00 PM	2	FALSE	24.49561445	FALSE	FALSE	27.01618504	21.975043
12	13/03/2017 1:00:00 PM	3	FALSE	24.3618132	FALSE	FALSE	25.73724453	22.986381
13	14/03/2017 1:00:00 PM	7	FALSE	24.70529828	FALSE	FALSE	27.02294702	22.387645
14	15/03/2017 1:00:00 PM	9	FALSE	25.43045265	FALSE	FALSE	29.03569547	21.825205
15	16/03/2017 1:00:00 PM	7	TRUE	26.39992408	TRUE	FALSE	27.71992029	25.079927
16	17/03/2017 1:00:00 PM	5	FALSE	27.47636034	FALSE	FALSE	29.97748428	24.97523
17	18/03/2017 1:00:00 PM	6	FALSE	28.5224092	FALSE	FALSE	31.07004249	25.974775
18	19/03/2017 1:00:00 PM	2	FALSE	29.40071843	FALSE	FALSE	32.02599282	26.775444
19	20/03/2017 1:00:00 PM	4	TRUE	29.94334543	TRUE	FALSE	31.4405127	28.446176
20	21/03/2017 1:00:00 PM	1	FALSE	30.48597243	FALSE	FALSE	32.01027106	28.961673
21	22/03/2017 1:00:00 PM	6	FALSE	31.02859944	FALSE	FALSE	36.10748487	25.949714
22	23/03/2017 1:00:00 PM	8	FALSE	31.57122644	FALSE	FALSE	35.17816514	27.964287
23	24/03/2017 1:00:00 PM	6	TRUE	32.11385344	TRUE	FALSE	33.71954611	30.508160

Properties

Name

Invoked Func

All Properties

Applied STE

Source

Resources

[Microsoft Cognitive Service for Anomaly Detection](#)

<https://docs.microsoft.com/en-nz/azure/cognitive-services/anomaly-detector/>



<http://radacad.com/author/leila>



@Leila_Etaati



Leila@radacad.com



<https://www.youtube.com/c/RADACAD>

[Anomaly Detection for Stream Data](#)

<https://docs.microsoft.com/en-us/azure/cognitive-services/anomaly-detector/tutorials/anomaly-detection-streaming-databricks>

[Anomaly Detection for Developers in ML.NET](#)

<https://docs.microsoft.com/en-us/dotnet/machine-learning/tutorials/sales-anomaly-detection>

[Anomaly Detection for Developers in Power BI](#)

<https://radacad.com/time-series-anomaly-detection-in-power-bi-using-cognitive-service-and-power-query>

<https://docs.microsoft.com/en-nz/azure/cognitive-services/anomaly-detector/tutorials/batch-anomaly-detection-powerbi>

How Power BI Helps to spread the information on COVID-19 pandemic

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Reza Rad
@Rad_Reza



RADACAD



Reza Rad

Consultant, Mentor, Trainer, Speaker
Blogger, (and YouTube content creator)
Microsoft Regional Director
Microsoft Data Platform MVP
Author of BI books
Author of **Power BI from Rookie to Rock Star**
Author of **Pro Power BI Architecture**
Author of **Row-level security in Power BI**



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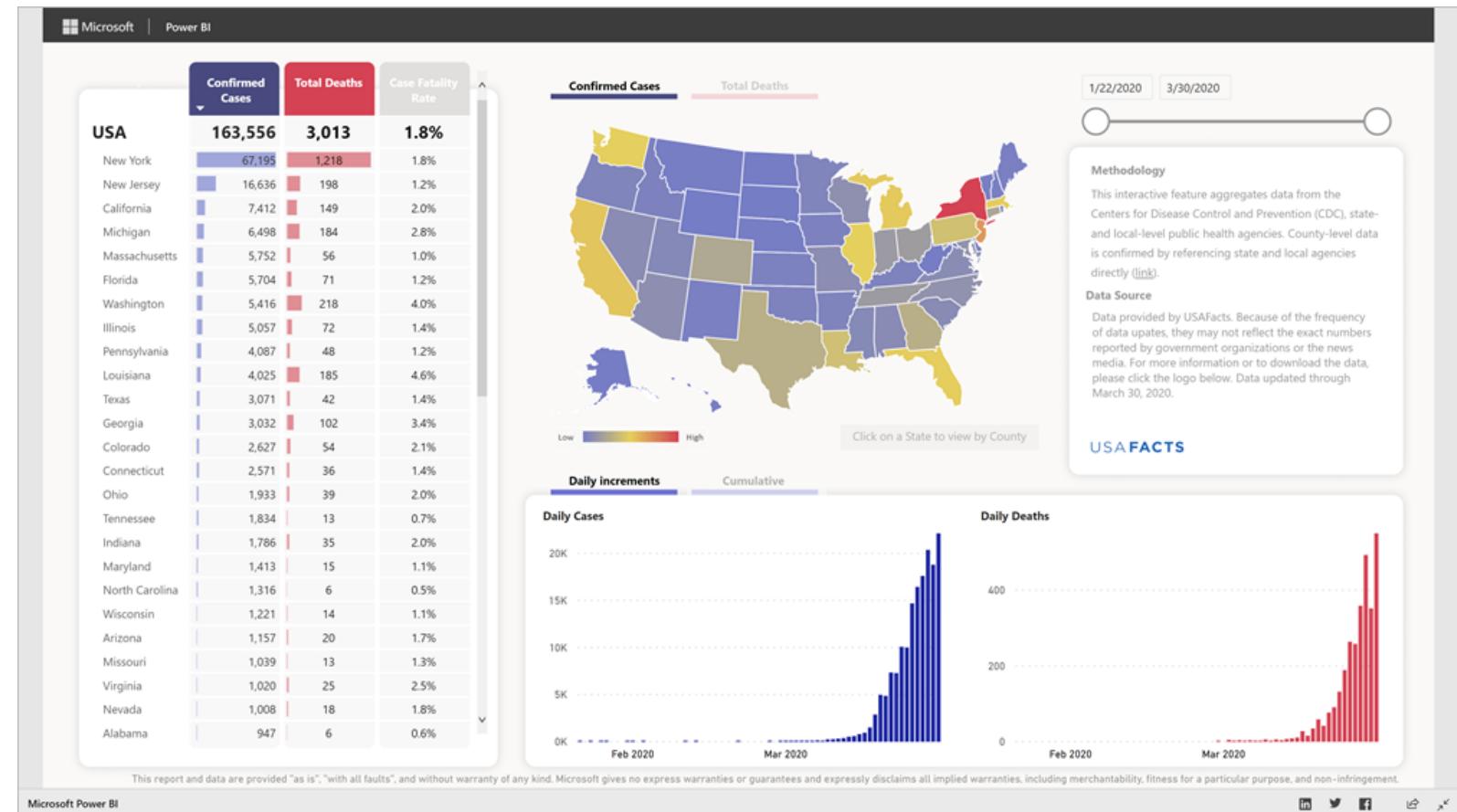


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Professional



What is Power BI?

- Power BI Desktop:
Data analysis &
report authoring tool
- Easy enough for self-
service user
- Power BI Service:
hosting the reports
and platform for
sharing





File Home Insert Modeling View Help



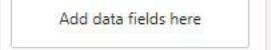
Queries

Transform Refresh data v New visual Text box More visuals v Insert Calculations Share

Filters >



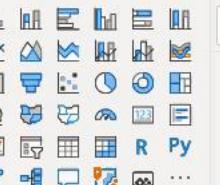
Filters on this page ...



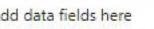
Filters on all pages ...



Visualizations >



Values

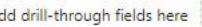


Drill through

Cross-report

Off

Keep all filters

On 

Fields >



Page 1



https://microsoft.github.io/PowerBI-JavaScript/demo/v2-demo/index.html#

Microsoft Power BI Embedded Playground

Samples Code

Welcome to the Power BI Embedded Playground

While you are here, you can try many of our features without writing any code. Explore our APIs and see the results instantly so you know the options for your application.

To get started, select the sample you want to explore, make any changes to get the results you want, and then click "Run".

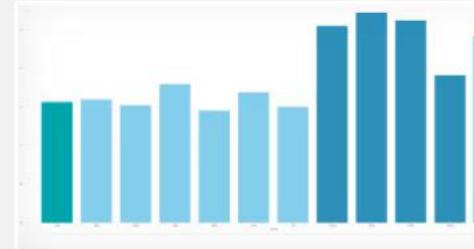
You can check out our interactive feature showcase to experience embedded features for your application.

We add the latest features into the Playground, so you can explore them before adding them to your implementation.

 Sample Report

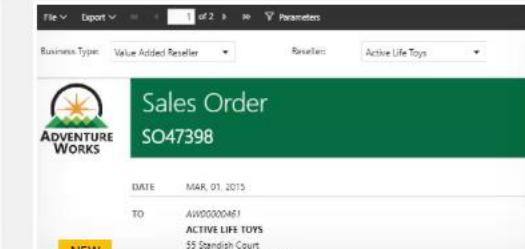
Embed a sample report and interact with Power BI Embedded firsthand.

[Try it](#)

 Sample Report Visual

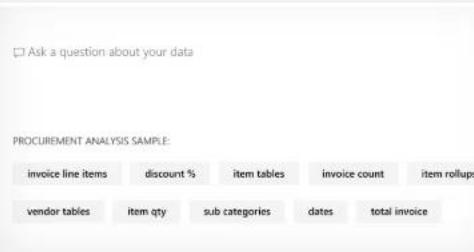
Embed a sample report visual and interact with Power BI Embedded firsthand.

[Try it](#)

 Sample Paginated Report

Embed a sample paginated report and interact with Power BI Embedded firsthand. (Preview)

[Try it](#)

 Ask a question about your data

PROCUREMENT ANALYSIS SAMPLE:

invoice line items discount % item tables invoice count item rollups

vendor tables item qty sub categories dates total invoice



9:28 AM 5/21/2020

COVID-19 in Washington State

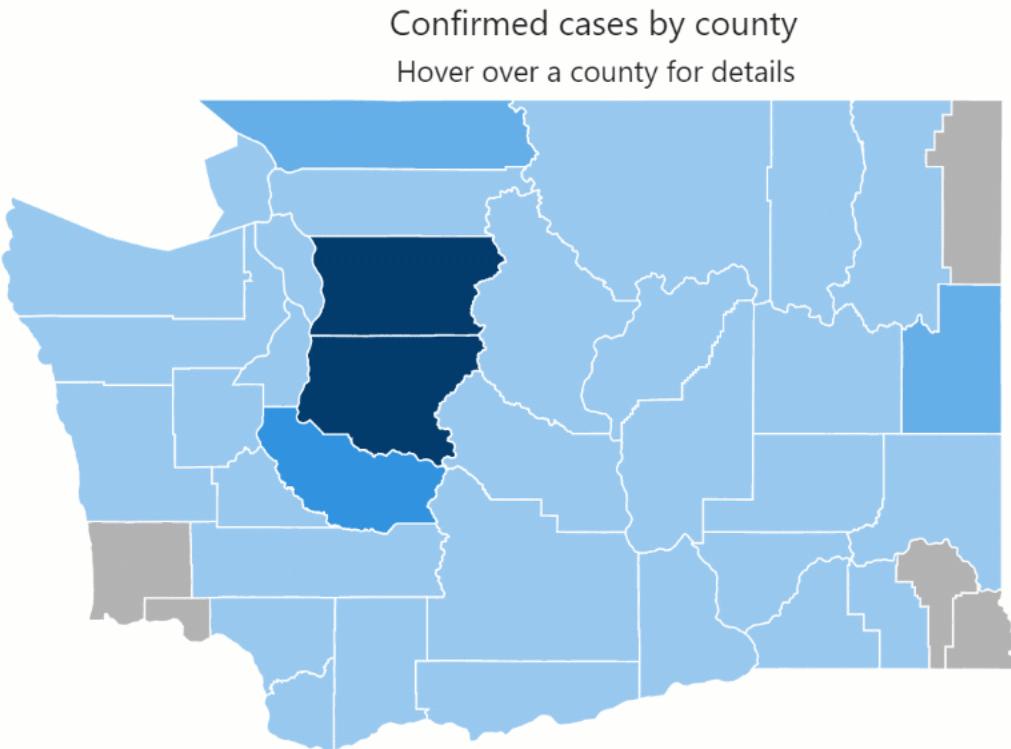
Data as of March 28, 2020 11:59PM PT

Total Confirmed Cases 4,896

Total Deaths 195
Percent deaths
(deaths / confirmed cases) 4.0%

Total tests 65,462

Percent Positive 7.5%



Links to local health jurisdiction websites are located on the local health jurisdiction map ([click here](#)).

COVID-19 data are reported as timely, accurately and completely as we have available. Data are updated as we receive information that is more complete and will change over time as we learn more.

Click here:

Table view

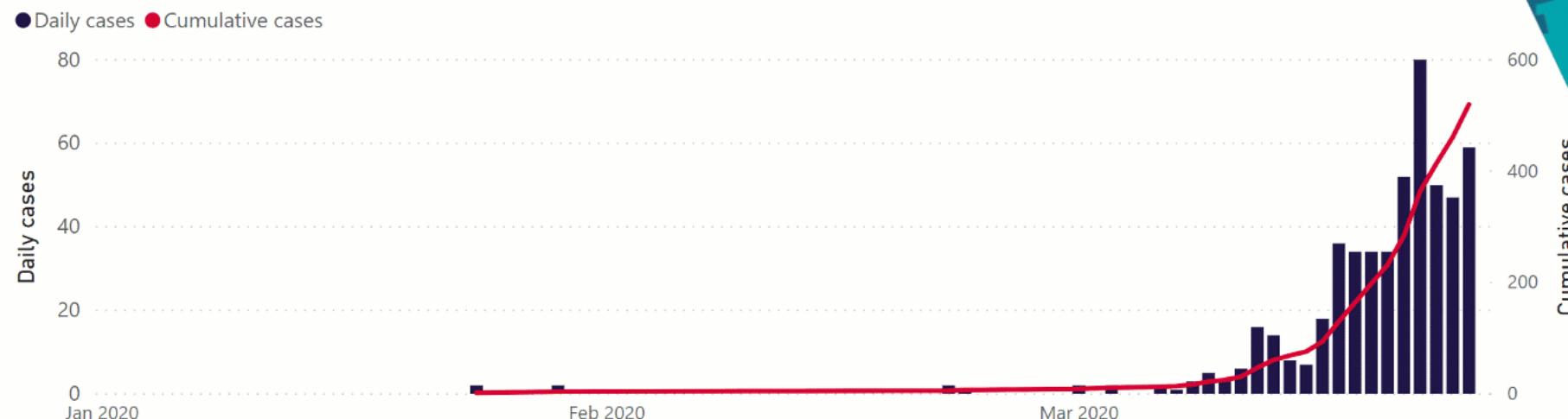
Counties

- Select all
- Adams County
- Asotin County
- Benton County
- Chelan County
- Clallam County
- Clark County
- Columbia County
- Cowlitz County
- Douglas County
- Ferry County
- Franklin County
- Garfield County
- Grant County
- Grays Harbor County
- Island County
- Jefferson County
- King County
- Kitsap County
- Kittitas County
- Klickitat County
- Lewis County
- Lincoln County
- Mason County
- Okanogan County
- Pacific County
- Pend Oreille County
- Pierce County
- San Juan County
- Skagit County
- Skamania County
- Snohomish County
- Spokane County
- Stevens County
- Thurston County
- Unassigned
- Wahkiakum County
- Walla Walla County
- Whatcom County
- Whitman County
- Yakima County

Coronavirus COVID-19 in Victoria

Last updated: 26/03/2020 8:44:44 AM

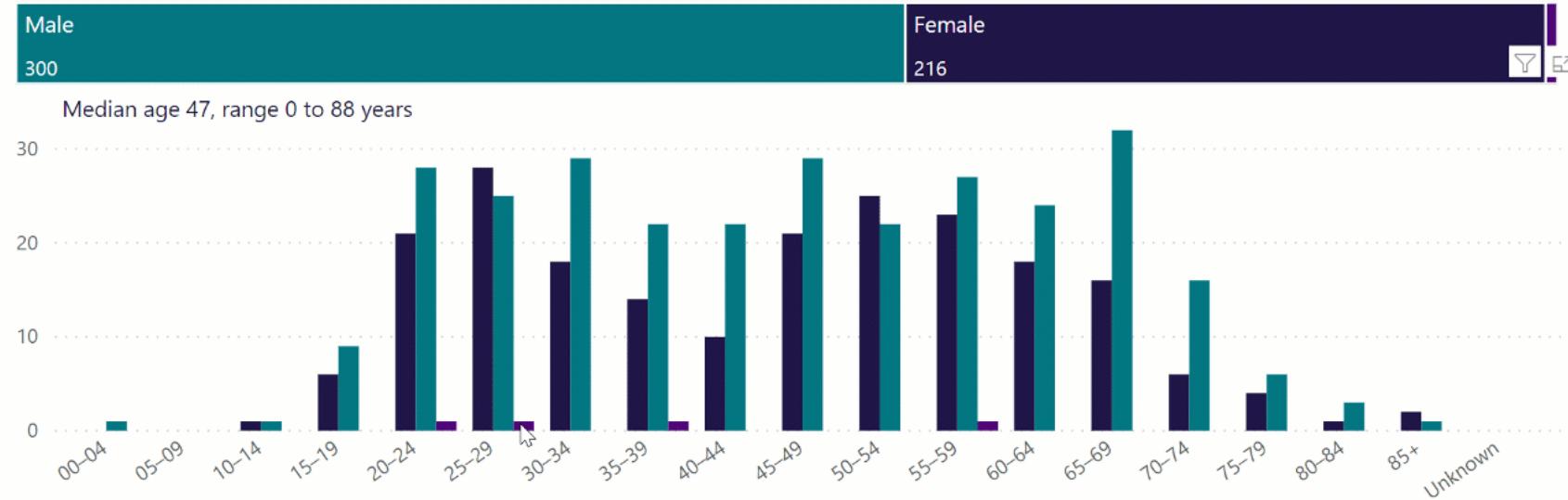
520
Confirmed cases
2
Deaths
149
Recovered
26905
Tested



Cases by mode of acquisition

Travel overseas	326
Contact with a confirmed case	139
Under investigation	46
Acquired in Australia, unknown source	9

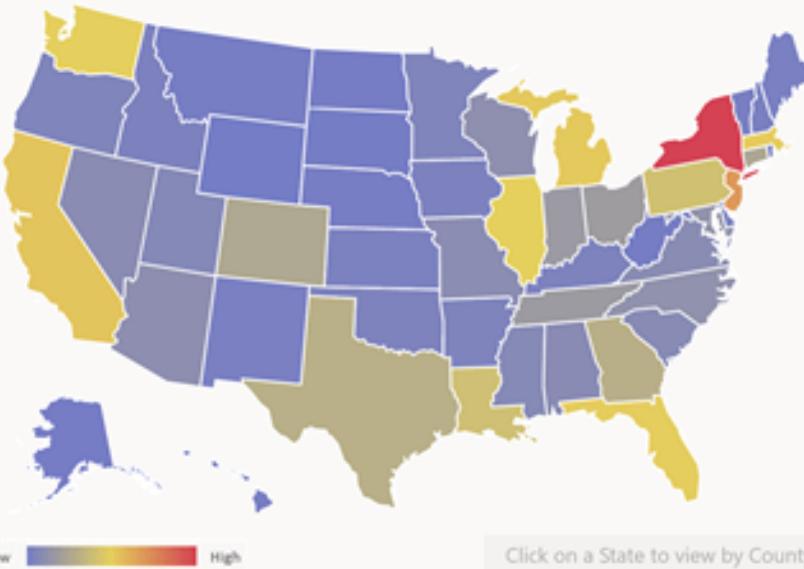
Cases by age group and sex



Health
and Human
Services

	Confirmed Cases	Total Deaths	Case Fatality Rate
USA	163,556	3,013	1.8%
New York	67,195	1,218	1.8%
New Jersey	16,636	198	1.2%
California	7,412	149	2.0%
Michigan	6,498	184	2.8%
Massachusetts	5,752	56	1.0%
Florida	5,704	71	1.2%
Washington	5,416	218	4.0%
Illinois	5,057	72	1.4%
Pennsylvania	4,087	48	1.2%
Louisiana	4,025	185	4.6%
Texas	3,071	42	1.4%
Georgia	3,032	102	3.4%
Colorado	2,627	54	2.1%
Connecticut	2,571	36	1.4%
Ohio	1,933	39	2.0%
Tennessee	1,834	13	0.7%
Indiana	1,786	35	2.0%
Maryland	1,413	15	1.1%
North Carolina	1,316	6	0.5%
Wisconsin	1,221	14	1.1%
Arizona	1,157	20	1.7%
Missouri	1,039	13	1.3%
Virginia	1,020	25	2.5%
Nevada	1,008	18	1.8%
Alabama	947	6	0.6%

[Confirmed Cases](#) [Total Deaths](#)



Click on a State to view by County

[Daily increments](#) [Cumulative](#)

Daily Cases

20K
15K
10K
5K
0K

Feb 2020 Mar 2020

Daily Deaths

400
200
0

Feb 2020 Mar 2020

1/22/2020 3/30/2020

Methodology

This interactive feature aggregates data from the Centers for Disease Control and Prevention (CDC), state- and local-level public health agencies. County-level data is confirmed by referencing state and local agencies directly ([link](#)).

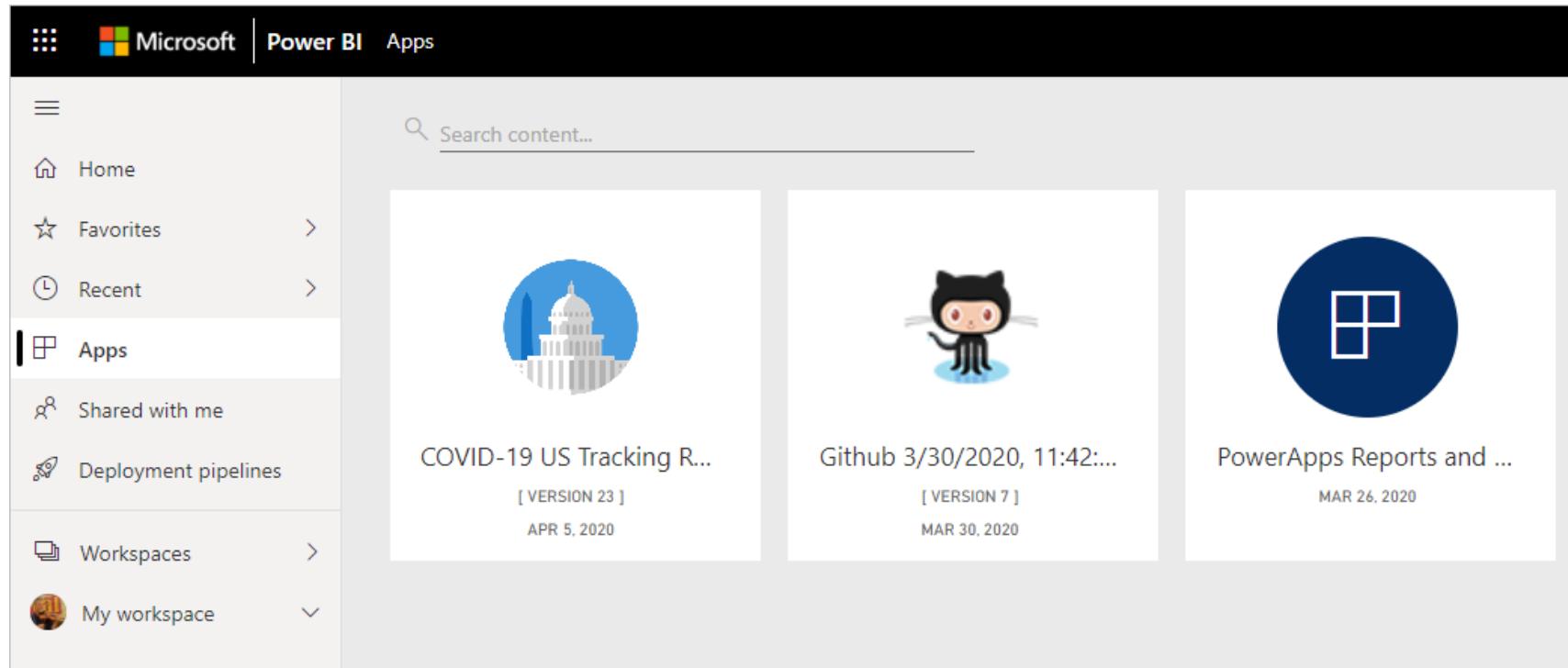
Data Source

Data provided by USAFacts. Because of the frequency of data updates, they may not reflect the exact numbers reported by government organizations or the news media. For more information or to download the data, please click the logo below. Data updated through March 30, 2020.

USA FACTS

Use it as you wish

- An embed code you can place on your own site
- A Power BI Desktop file for the report shown above
- Template app



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COVID-19

Submit your data story

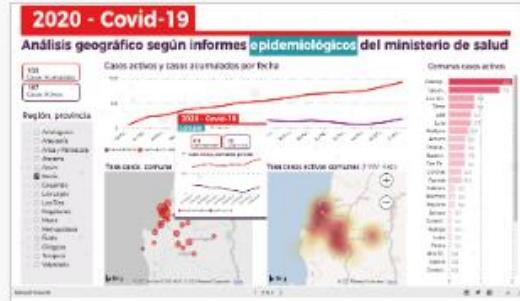
Options ▾



COVID19 Dashboard

RScheff

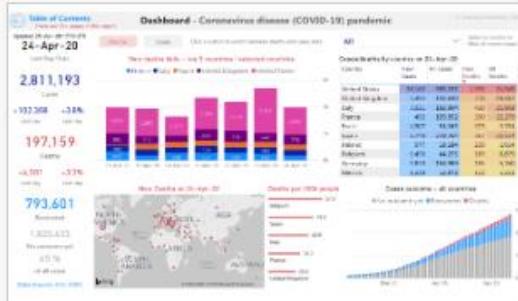
16



COVID 19 FOR CHILE AND
LATINAMERICA

waltercalcagno

8



COVID-19 disease / SARS-CoV-2
coronavirus

avatorl

6



COVID-19 Economic Impact Survey
Results

Greg_Deckler

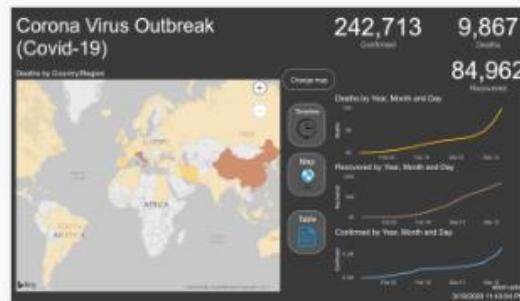
6



Visualising the Wuhan coronavirus
outbreak (COVID-19)

perell2020

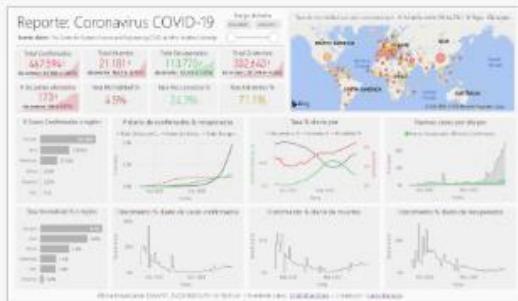
5



Coronavirus Outbreak

ArneHoefkens

5



Reporte: Coronavirus COVID-19 (Spanish
version)

cabc_xlorla

4



Covid - 19 Outbreak

ravimane

4

Build your own report

John Hopkins University data on Github:

<https://github.com/CSSEGISandData/COVID-19>

File Origin		Delimiter			Data Type Detection						
65001: Unicode (UTF-8)		Comma			Based on first 200 rows						
Column1	Column2	Column3	Column4	Column5	Column6	Column7	Column8	Column9	Column10		
Province/State	Country/Region	Lat	Long	1/23/20	1/23/20	1/24/20	1/25/20	1/26/20	1/27/20		
	Afghanistan	33.0	65.0	0	0	0	0	0	0	0	0
	Albania	41.1533	20.1683	0	0	0	0	0	0	0	0
	Algeria	38.0333	1.6596	0	0	0	0	0	0	0	0
	Andorra	42.5063	1.5218	0	0	0	0	0	0	0	0
	Angola	-11.2027	17.8739	0	0	0	0	0	0	0	0
	Antigua and Barbuda	17.0608	-61.7964	0	0	0	0	0	0	0	0
	Argentina	-38.4161	-63.6167	0	0	0	0	0	0	0	0
	Armenia	40.0691	45.0382	0	0	0	0	0	0	0	0
	Australian Capital Territory	Australia	-35.4735	149.0124	0	0	0	0	0	0	0
	New South Wales	Australia	-33.8688	151.2093	0	0	0	0	0	0	0
	Northern Territory	Australia	-12.4634	130.8456	0	0	0	0	0	0	0
	Queensland	Australia	-28.0167	153.4	0	0	0	0	0	0	0
	South Australia	Australia	-34.9285	138.6007	0	0	0	0	0	0	0
	Tasmania	Australia	-41.4545	145.9707	0	0	0	0	0	0	0
	Victoria	Australia	-37.8136	144.9631	0	0	0	0	1	1	1
	Western Australia	Australia	-31.9505	115.8605	0	0	0	0	0	0	0
		Austria	47.5162	14.5501	0	0	0	0	0	0	0
		Azerbaijan	40.1431	47.5769	0	0	0	0	0	0	0
		Bahamas	25.0343	-77.3963	0	0	0	0	0	0	0

Resources

- <https://aka.ms/pbicovid19ussample>

Azure Data Services have helped companies quickly understand their data more



Hamish Watson
@TheHybridDBA

Scan the QR Code to join our Developer Community



aka.ms/NZ/Newsletter



Working in IT for 7,849 days

Bringing DevOps to the masses is a personal passion

Understanding data and Azure is a company driver

Director-At-Large on PASS Community Board

Technologist who understands business value...

#MakeStuffGo



<https://hybriddbablog.com>



/hamishwatson8



hamish@morphit.co.nz



@theHybridDBA



Agenda

The Problem

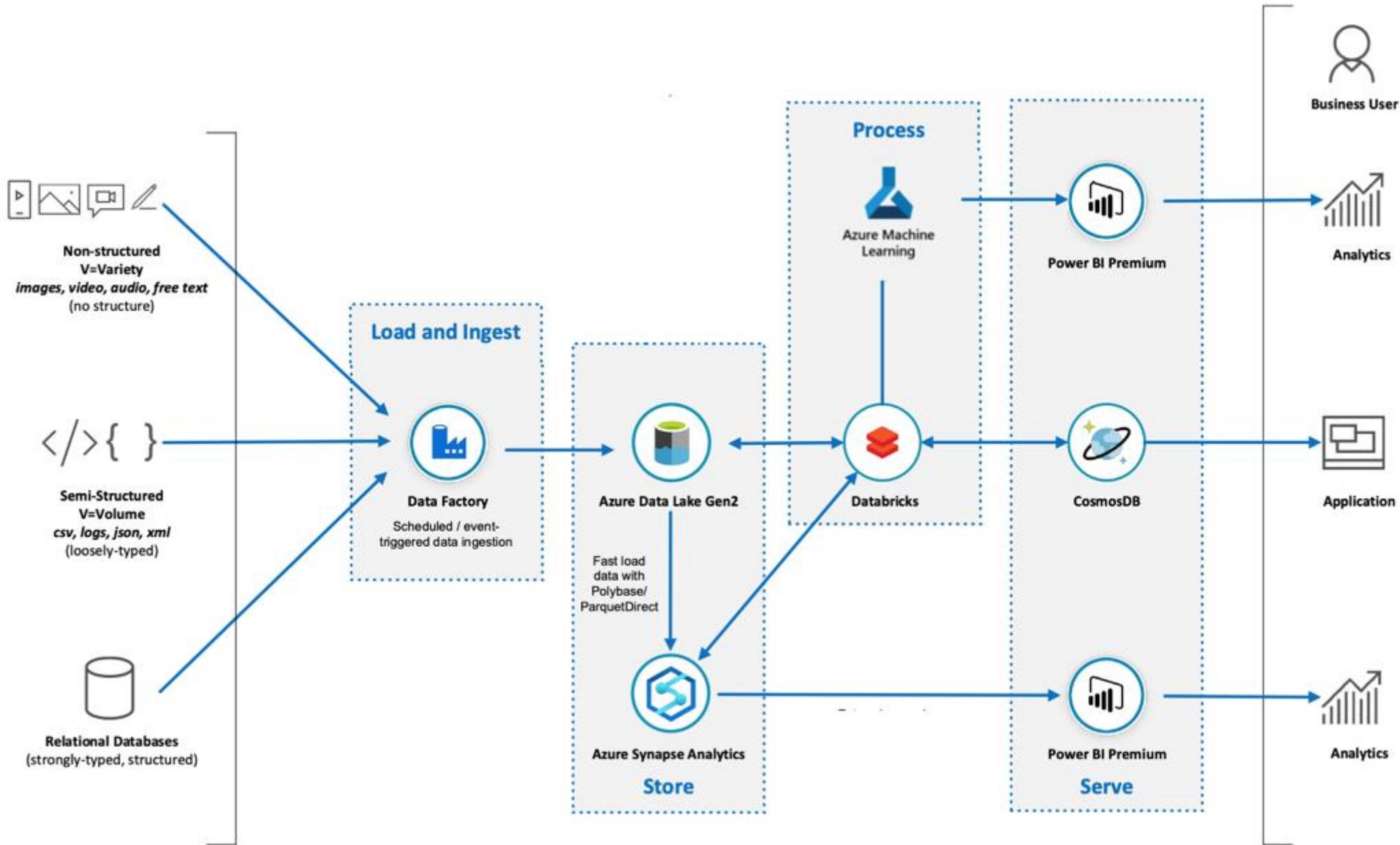
The Answer...

What you can do to learn more

Client had a problem....

- An 'old' Data Warehouse
- A data lake that was more of a data swamp and was leaky....
- Limited infrastructure resources and 12 months to implement 'things'
- A PoC that was getting data into Azure SQL Database
- DBAs who were swamped and didn't have the time
- Analysts who wanted to do analytics and make information from disparate data
- Then covid-19 hit....

The answer...



How we got there

```
$resourcegroupname = "EDH_ResourceGroup"
$location = "AustraliaEast"
# The logical server name:
$servername = "azuresynapse-$(Get-Random)"
# The ip address range that you want to allow to access your server – change as appropriate
$startip = "123.245.222.100"
$endip = "123.245.222.129"
# The database name
$databasename = "StagingDataWarehouse"

New-AzSqlServer -ResourceGroupName $resourcegroupname
    -ServerName $servername
    -Location $location
    -SqlAdministratorCredentials $(New-Object -TypeName System.Management.Automation.PSCredential -ArgumentList $adminlogin, $(ConvertTo-SecureString -String $password -AsPlainText))
#Scale the DWh
Set-AzSqlDatabase -ResourceGroupName $resourcegroupname -DatabaseName $databasename -ServerName $servername -RequestedServiceObjectiveName "DW300c"

#What saved us money...
#Pause database
Suspend-AzSqlDatabase -ResourceGroupName $resourcegroupname -ServerName $servername -DatabaseName $databasename
#Resume database
Resume-AzSqlDatabase -ResourceGroupName $resourcegroupname -ServerName $servername -DatabaseName $databasename
```

<https://docs.microsoft.com/en-us/azure/synapse-analytics/sql-data-warehouse/create-data-warehouse-powershell>

Where we all fit in and some good wins

- I was the 'DevOps' person – responsible for platform engineering
Make all the things in Azure
- DBAs become more like Data Engineers – Azure Data Engineers ☺
- The client wants to migrate more things to Azure
- Next step is utilising in-built Apache Spark for more analytics

Sessions to look out for

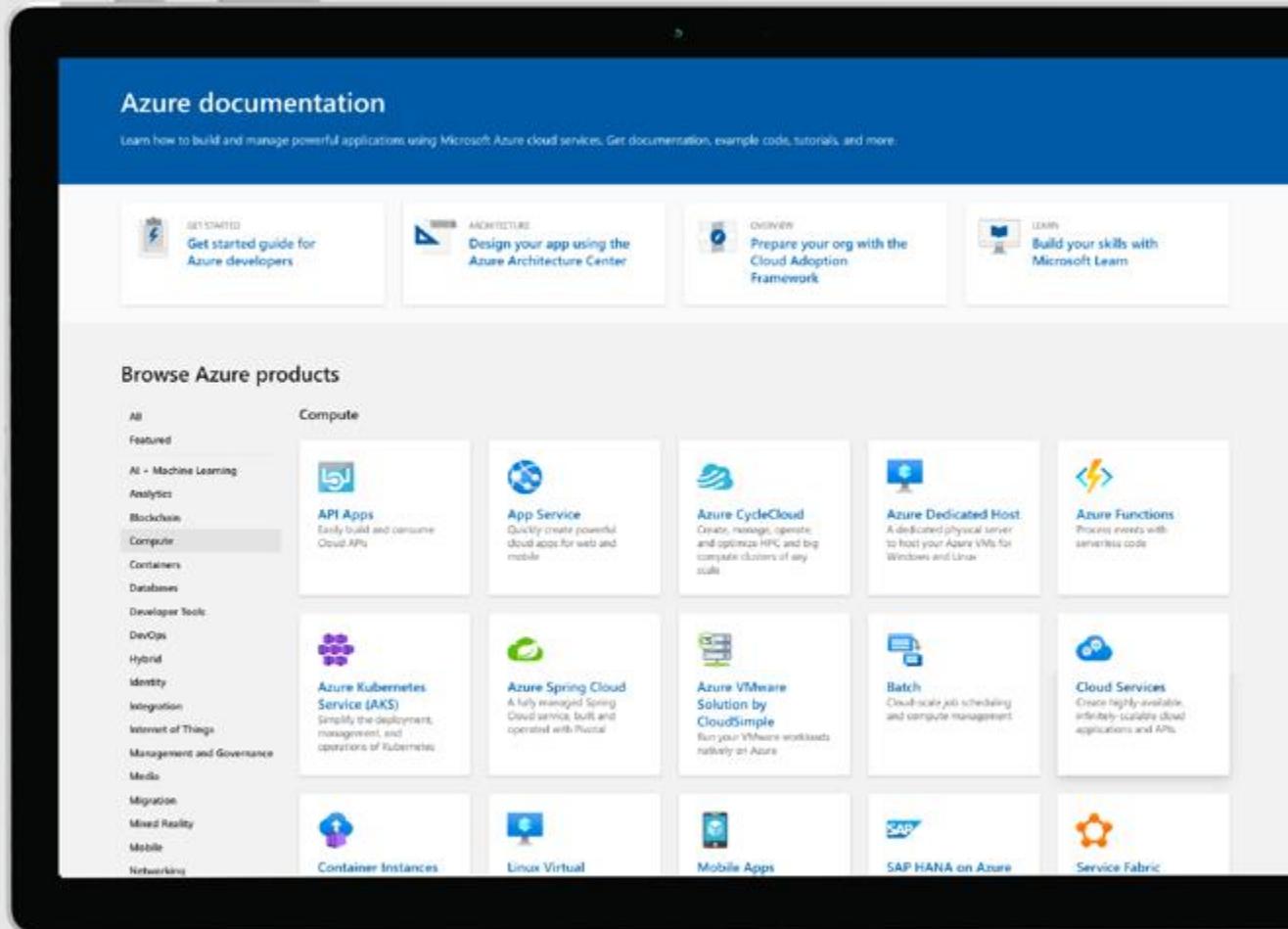
- **Asad Khan & Anna Hoffman: Azure SQL Game Changers for Developers**
- **Sri Chintala: Building real-time HTAP analytics solutions with Azure Cosmos DB & Azure Synapse Analytics**
- **James Baker: Running cost effective big data workloads with Azure Synapse and Azure Data Lake Storage**
- **Charles Feddersen: Developing end-to-end analytics solutions with the latest Azure Synapse features**

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The Microsoft Learn platform interface on a tablet. The screen displays a grid of learning modules for Azure, categorized under 'Core Cloud Services'. Each module card includes a thumbnail, title, duration, rating, and tags (Azure, Administrator, Beginner). A sidebar on the left features a 'Filter' section with dropdown menus for Products, Roles, Levels, and Types. A search bar at the top right shows '1,209 results found'.

Module	Title	Duration	Rating	Tags
MODULE	Create an Azure account	30 min	★★★★★ 4.7 (5,504)	Azure, Administrator, Beginner
MODULE	Cloud Concepts - Principles of cloud computing	1 hr 2 min	★★★★★ 4.8 (107,924)	Azure, Administrator, Beginner
MODULE	Core Cloud Services - Azure architecture and service guarantees	40 min	★★★★★ 4.7 (45,488)	Azure, Administrator, Beginner
LEARNING PATH	Azure Fundamentals	9 hr 48 min	★★★★★ 4.7 (36,533)	Azure, Developer, Beginner
MODULE	Core Cloud Services - Azure compute options	1 hr 13 min	★★★★★ 4.7 (32,735)	Azure, Developer, Beginner
MODULE	Core Cloud Services - Manage services with the Azure portal	1 hr 13 min	★★★★★ 4.7 (32,735)	Azure, Administrator, Beginner
MODULE	Core Cloud Services - Azure data storage options	25 min	★★★★★ 4.7 (32,895)	Azure, Developer, Beginner
MODULE	Core Cloud Services - Azure networking options	28 min	★★★★★ 4.8 (27,132)	Azure, Developer, Beginner
MODULE	Core Cloud Services - Introduction to Azure	30 min	★★★★★ 4.8 (45,818)	Azure, Administrator, Beginner

On Microsoft Learn Certifications

Learn More About Azure &
Data

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Validate your technical knowledge
and ability with Microsoft Certification.

The screenshot shows a digital tablet displaying the Microsoft Learn Certifications page. The page has a dark blue header with the title "Browse Certifications and Exams" and a subtitle "Learn new skills to boost your productivity and enable your organization to accomplish more with Microsoft Certifications." Below the header is a "Filter" section with dropdown menus for Products, Roles, Levels, Certification Types, and Types. A search bar is also present. The main content area displays a grid of 125 results, each represented by a card. The cards include icons for exams or certifications, titles like "Exam AZ-220: Microsoft Azure IoT Developer", "Microsoft Certified: Data Analyst Associate", and "Microsoft Certified: Azure Database Administrator Associate". Each card also lists the exam code (e.g., DA-100, DP-100), the certification type (e.g., Exam, Certification), the required platform (e.g., Azure, Power Platform), the role (e.g., Data Analyst, Database Administrator), and the difficulty level (e.g., Intermediate). The cards are arranged in a 5x25 grid.

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The Microsoft Learn platform interface on a tablet. The screen displays a grid of learning modules and paths. A sidebar on the left features a 'Filter' section with dropdown menus for Products, Roles, Levels, and Types. At the top, there is a search bar and a message stating '1,209 results found'. The main area shows a 4x3 grid of items:

- MODULE** Create an Azure account (39 min, ★★★★★ 4.7 (5,804) Azure, Administrator, Beginner)
- MODULE** Cloud Concepts - Principles of cloud computing (1 hr 2 min, ★★★★★ 4.8 (107,924) Azure, Administrator, Beginner)
- MODULE** Core Cloud Services - Azure architecture and service guarantees (41 min, ★★★★★ 4.7 (45,488) Azure, Administrator, Beginner)
- LEARNING PATH** Azure Fundamentals (9 hr 48 min, ★★★★★ 4.7 (36,533) Azure, Developer, Beginner)
- MODULE** Core Cloud Services - Azure compute options (1 hr 13 min, ★★★★★ 4.7 (32,735) Azure, Developer, Beginner)
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- MODULE** Core Cloud Services - Introduction to Azure (36 min, ★★★★★ 4.8 (45,818) Azure, Administrator, Beginner)

On Microsoft Learn Certifications

Certification session title here:

[Visit Microsoft.com/Certification](https://www.microsoft.com/certification)

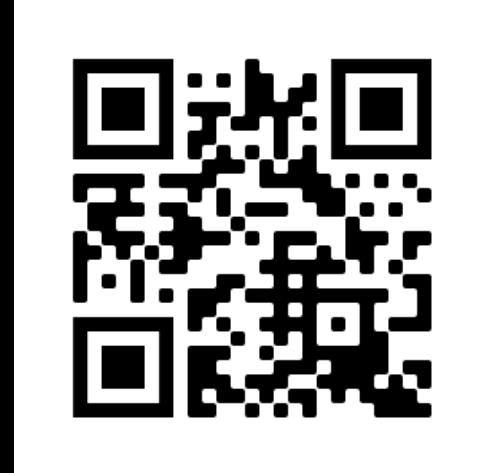
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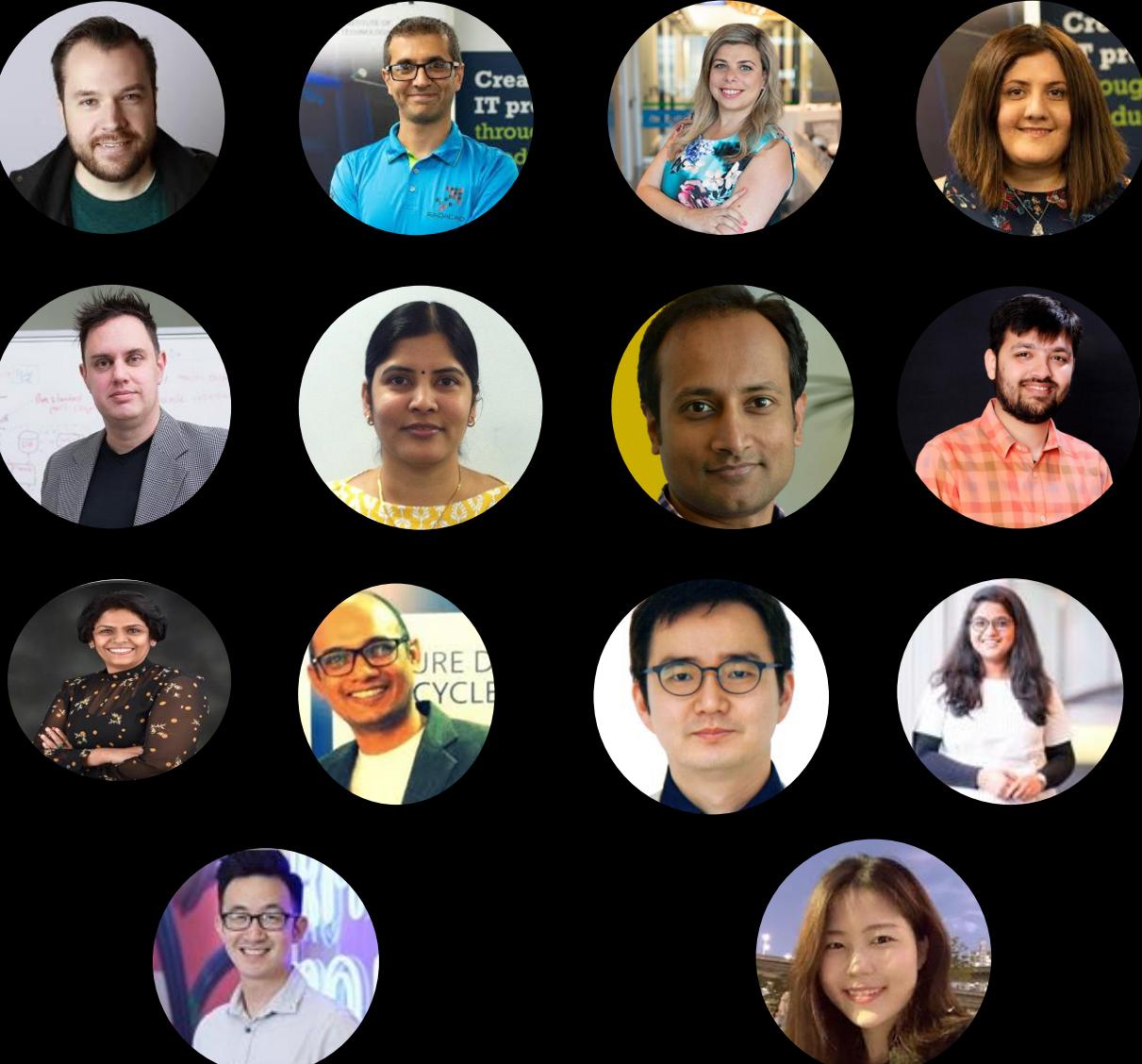


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Thanks All

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