

# AI capabilities in Power BI

to make AI accessible for everyone





Artificial intelligence



Alle Video's A



Artificial Intelligence



Ongeveer 119.000.000 resultaten

ALL

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Artificial Ir  
Emerce - 23  
Artificial Inte  
gezichtsherkenning

Topverhalen



Nieuw op Y  
NPO 3FM - 2  
Een serie val  
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Zaken  
Entertainment



4 dingen w  
Business Ins  
Strategiespel  
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Nederland  
Wetenschap/techniek  
Sport



NEDERLA  
Persberichten  
Amsterdam, :  
te worden qu

Wereld



Dominante  
Customer Ta  
En hoewel er  
trends en inv



AI Is About  
TIME - 23 jar  
But the latest  
prospect of n



Artificial ir  
ZDNet - 23 ja

Past 24 hours

Best match

All sources

Emerce

customertalk.nl

FashionUnited

De Morgen

Computable

>

## Artificial Intelligence in 2020, waar moeten business leaders op letten?

Artificial Intelligence is veelomvattend: van het spelen van games tot gezichtsherkenning en zelfrijdende auto's. De meeste mensen realiseren zich niet eens hoe vaak AI achter de schermen werkt om ...

Emerce | 1d

## Dominante rol voor artificial intelligence in IT-trends 2020

En hoewel er voor 2020 een hoop voorspellingen worden gedaan over de nieuwste trends en invloeden, is artificial intelligence ...

customertalk.nl | 9d



## Aandeel artificial intelligence (AI) in de modeindustrie naar verwachting meer dan 36 procent gegroeid in 2027

New York - De waarde van artificial intelligence (AI) in de modeindustrie bedroeg wereldwijd 270 miljoen dollar (242 miljoen ...

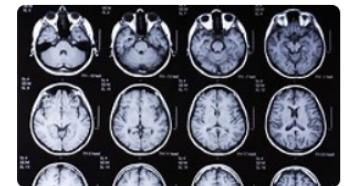
FashionUnited | 8d



## Trifork helpt detacheerde The Employment Group met AI

Trifork ontwikkelde hiervoor samen met The Employment Group(TEG) en PwC het digitale matchingplatform Boest. Dit platform ...

Emerce | 2d



## Vrouw? Computer says no

# Marc Lelijveld

MVP | MCT | FastTrack Recognized Solution Architect | Data & Analytics Consultant

*Data & analytics specialized in Power BI. Focus on integration within the organization, user adoption and enhanced capabilities such as Artificial Intelligence and Power Platform integrations*



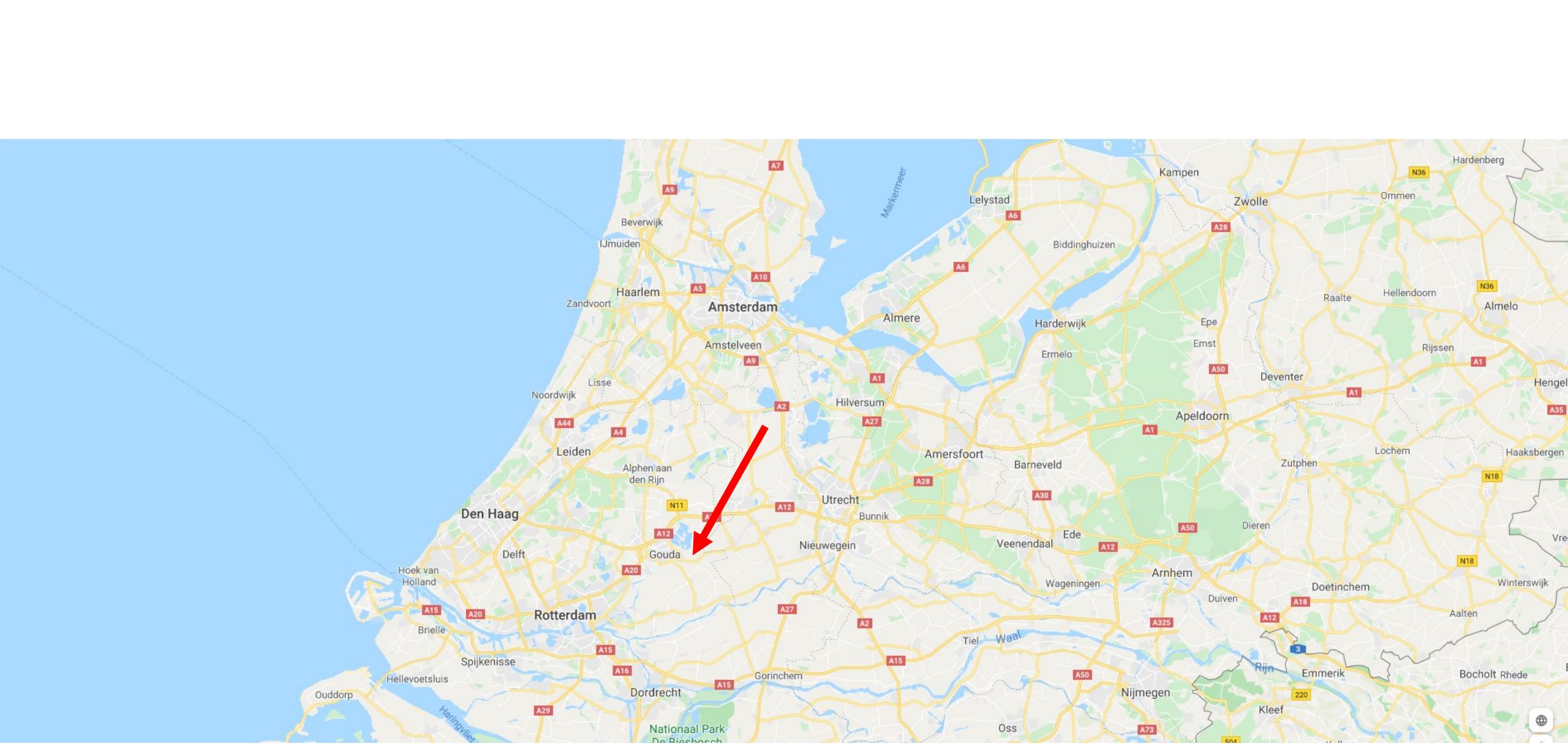
 Marc.Lelijveld@macaw.nl

 @MarcLelijveld

 linkedin.com/in/MarcLelijveld

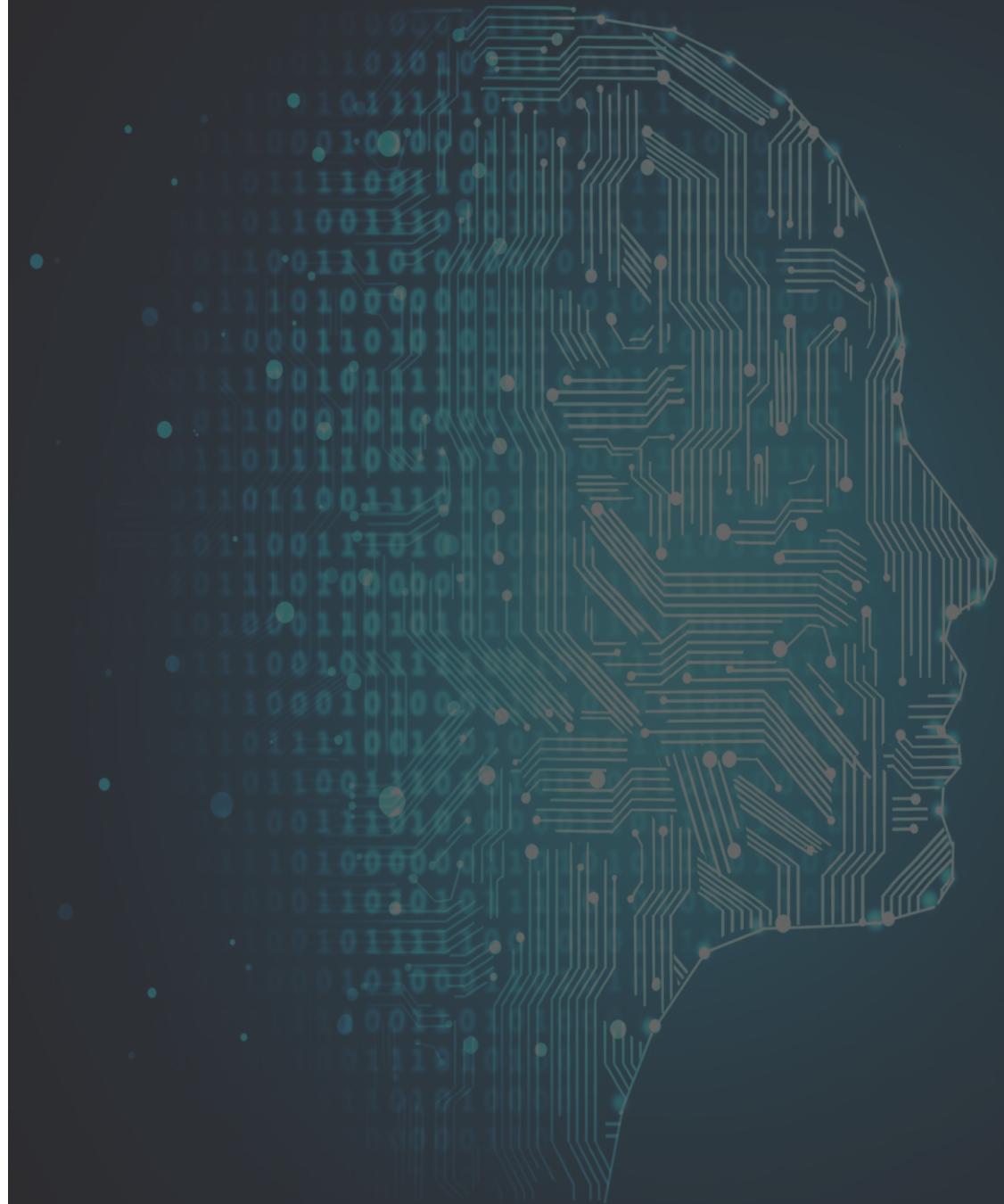
 Data-Marc.com





# What we cover today

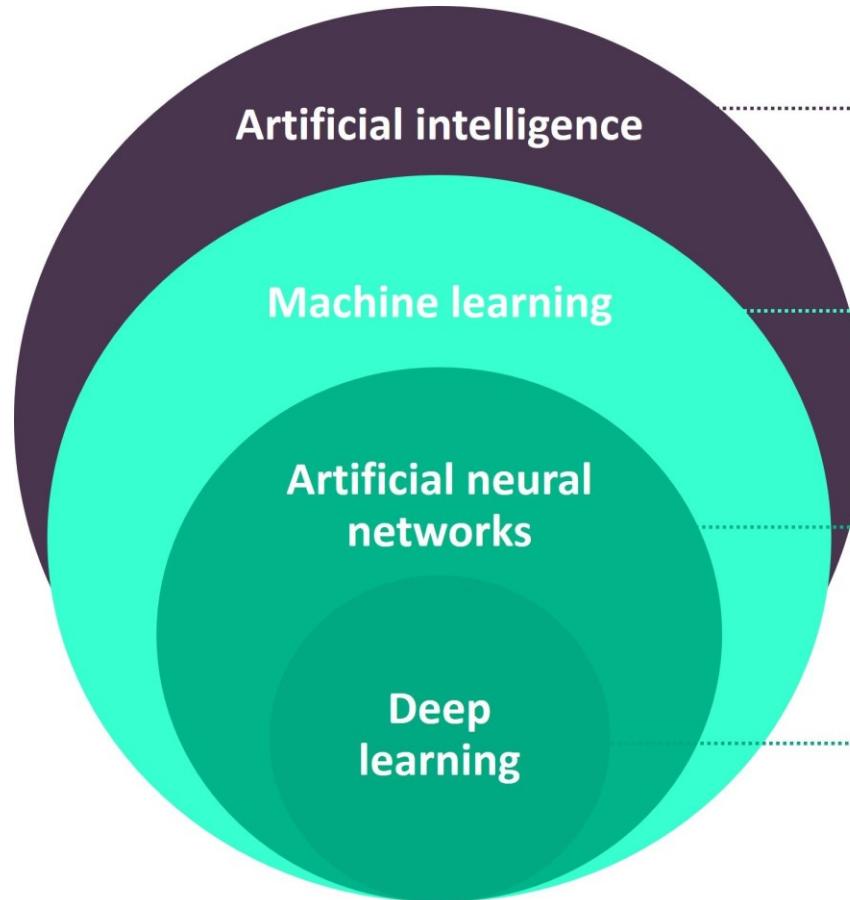
- Introduction to AI
- Reporting & dashboarding now a days
- AI in Power BI
- Demo time!



# Artificial Intelligence

# For me as a newbie in this area

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## **Artificial intelligence (AI)**

Any techniques that enable machines to solve a task in a way like humans do

## **Machine learning (ML)**

Algorithms that allow computers to learn from examples without being explicitly programmed

## **Artificial neural networks (ANN)**

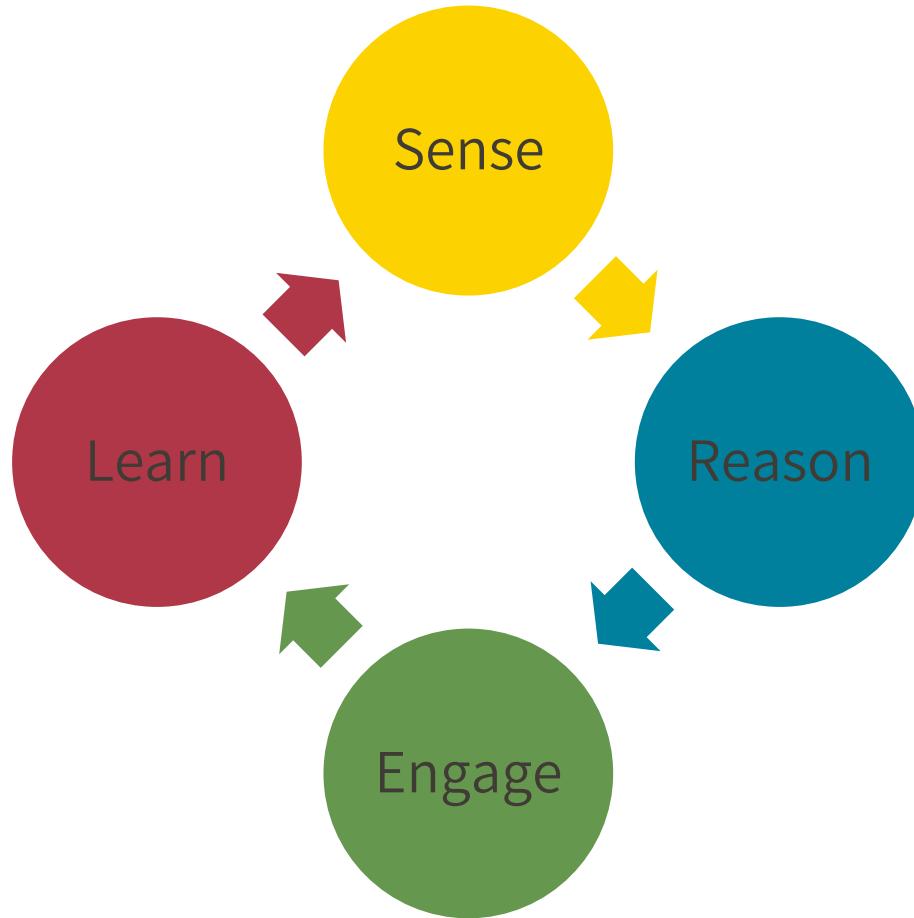
Brain-inspired machine learning models

## **Deep learning (DL)**

A subset of ML which uses deep artificial neural networks as models and automatically builds a hierarchy of data representations

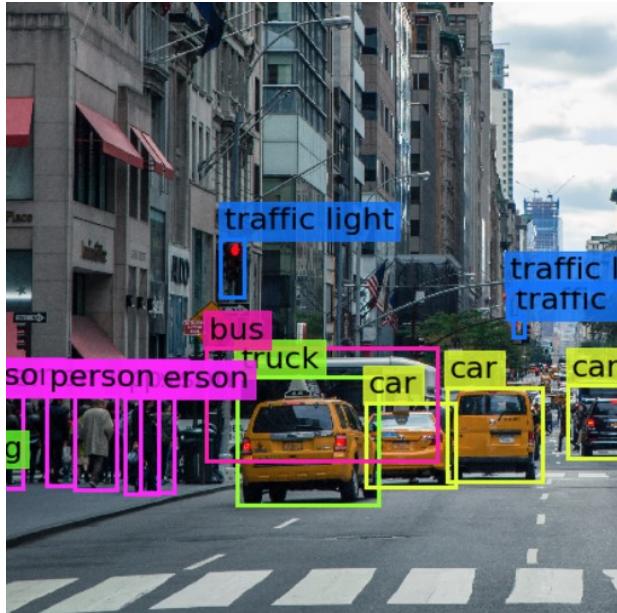
# Artificial Intelligence

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# Ability to sense, reason, engage and learn!

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Computer vision



Voice recognition



Robotics



And more....

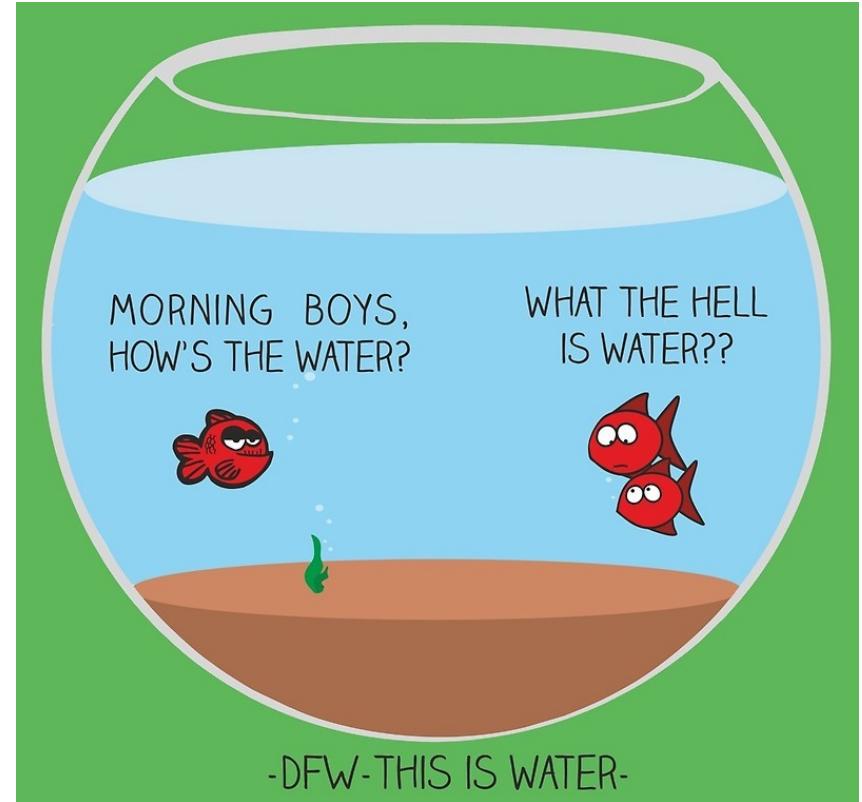
# AI != Innovation

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Does not understand the real world!

But Artificial Intelligence can:

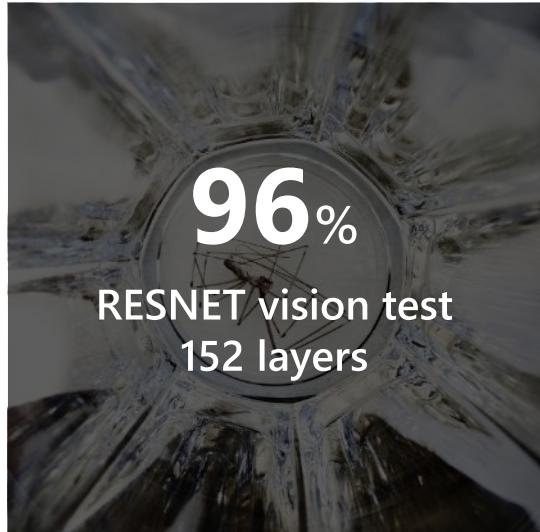
- Learn
- Optimize
- Detect patterns
- Inform
- Inspire



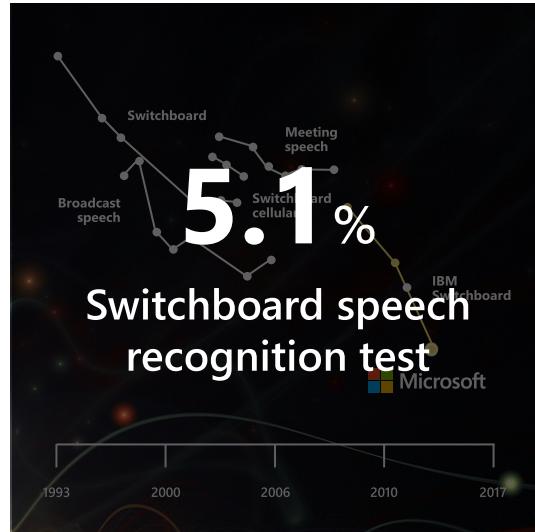
AI lives in water, yet it doesn't know what water is.  
David Foster Wallace

# Microsoft AI breakthrough

## Vision



## Speech



## Language



2016

Object recognition  
human parity

2017

Speech recognition  
human parity

March 2018

Machine translation  
human parity

January 2018

Machine reading  
comprehension  
human parity

# The world's first AI whisky

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*Aqua vitae. Uisce beatha. Whisky - May 2019*

**“We want the AI to create a recipe that tastes good enough to win awards... we want to discover recipes that will never have occurred to a person”**

Sales data

70

Azure  
Cognitive  
Services

million  
recipes

Customer preferences

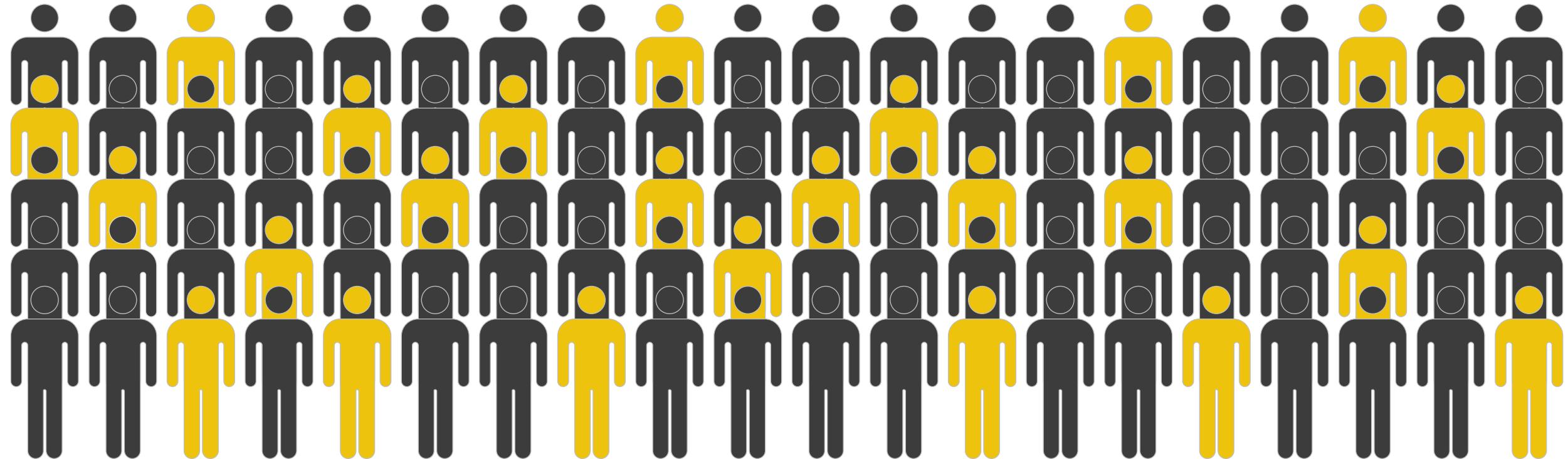
Azure  
cloud platform

Ingredients of  
award-winning  
blends

# Reporting and dashboarding

# Everyone engages with ~~software~~ Power BI

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# Types of reporting

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Describe



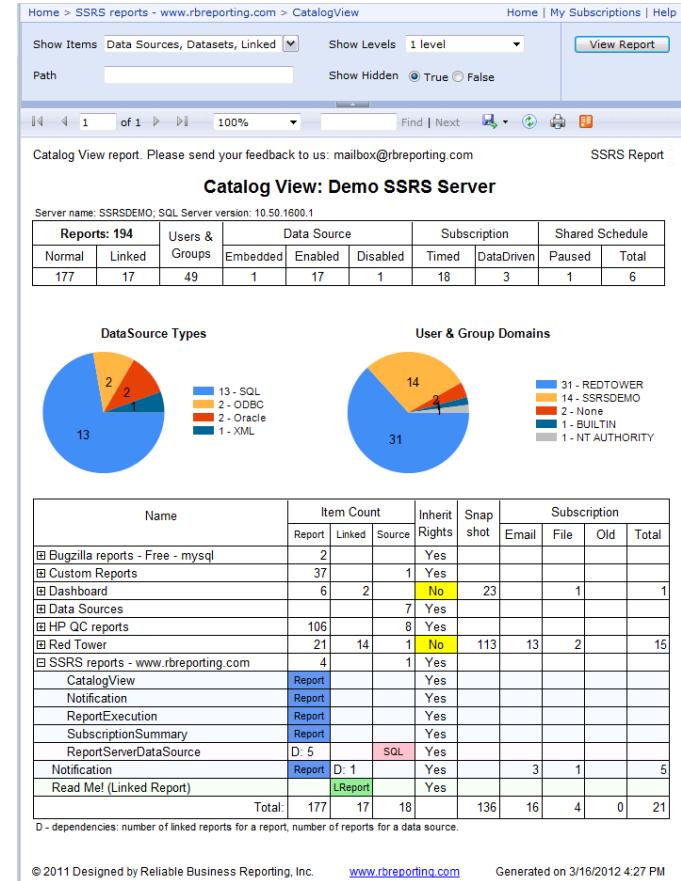
Declare



Explore

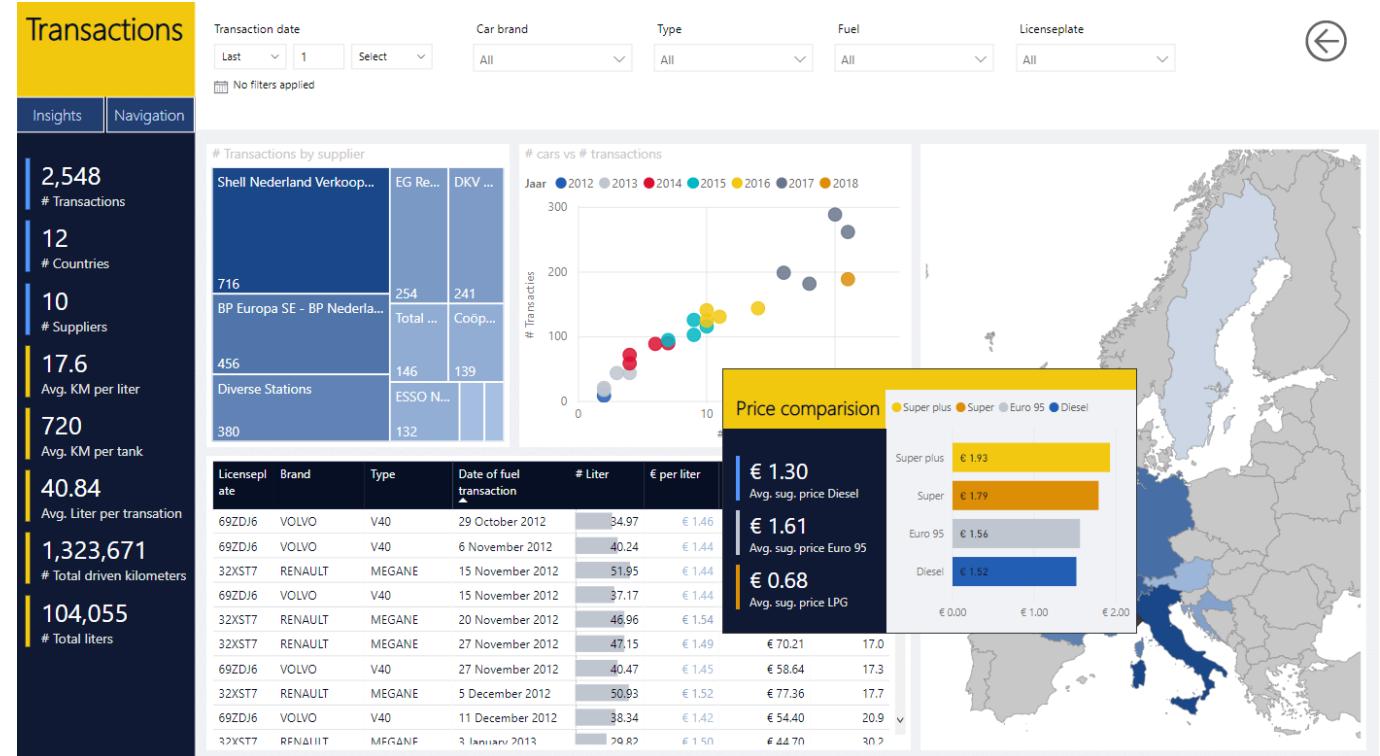
# Reporting in the past

- Static
- Paginated
- Textual



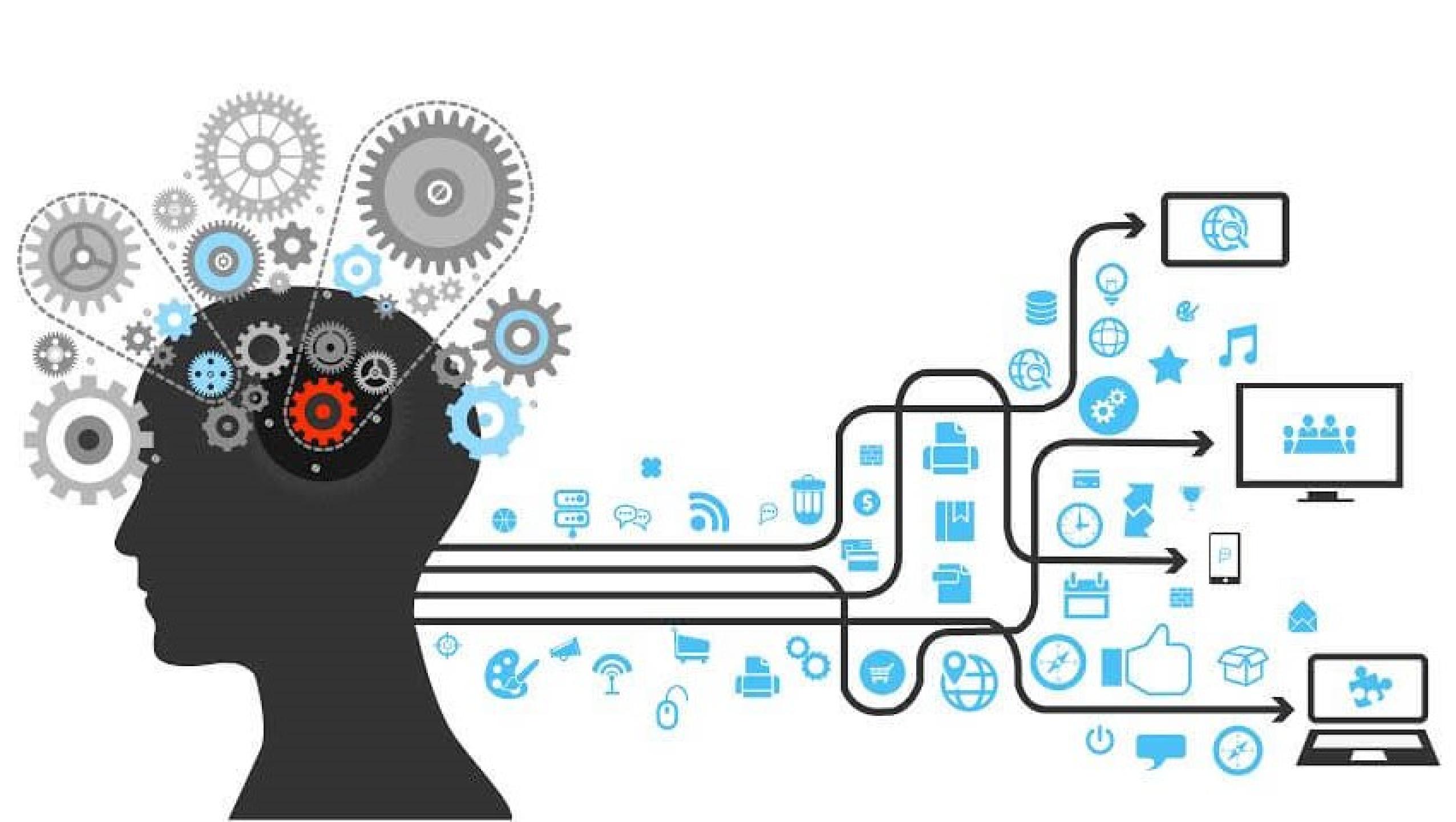
# Intuitive reporting

- Clear navigation
- Consistent across pages
- Interactive experience
- High-level > detailed level



# BUSINESS INTELLIGENCE

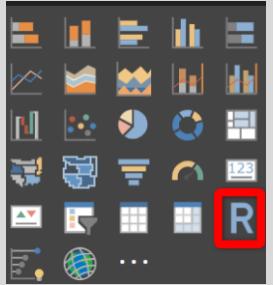




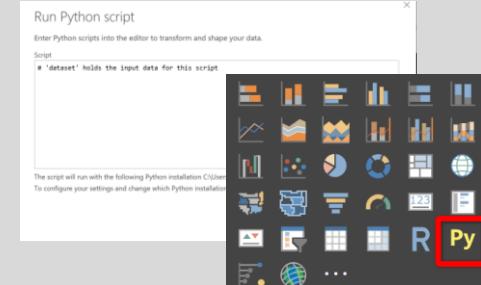
# AI in Power BI

# Power BI advanced capabilities

**Desktop**  
Run R in  
Power BI  
visuals



**Desktop**  
Phyton in  
Visuals +  
Power  
Query



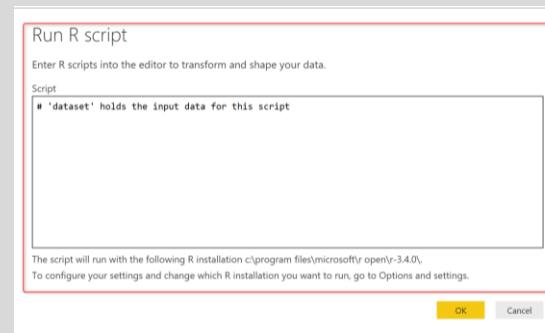
2015

2016

2018

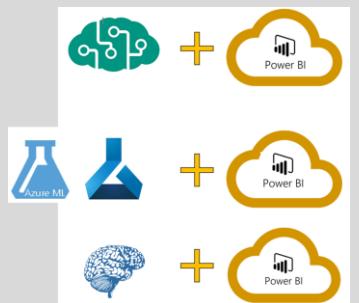
2019

**Desktop**  
R in  
Power  
Query



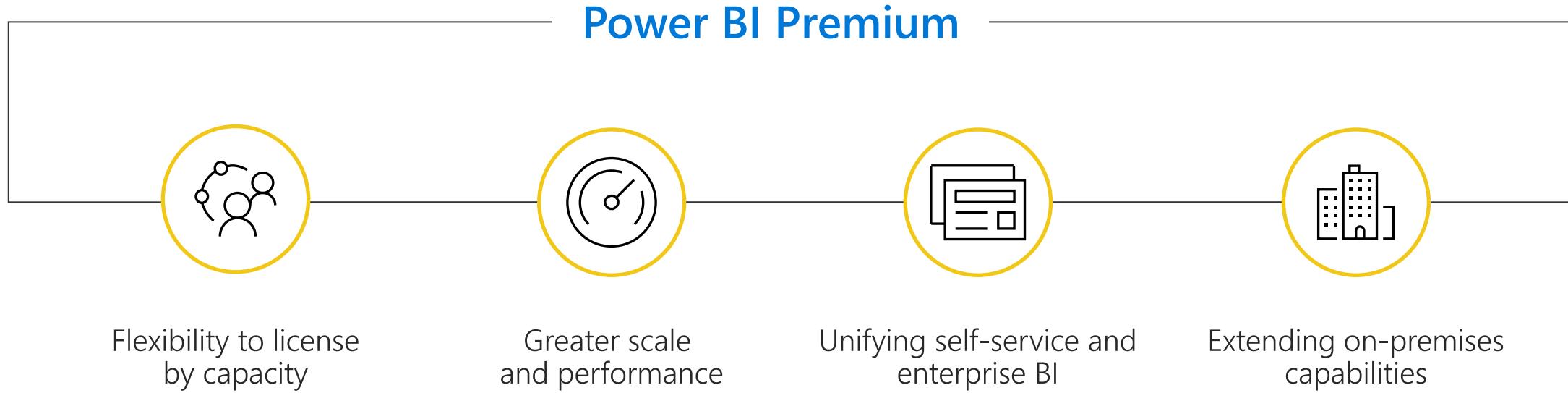
**Premium features**

- AI Insights
- Key Influencer
- Azure Auto ML
- ML Studio



# Part of Power BI Premium

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Dedicated resources in the cloud

# AI in Power BI



End users



Analysts



BI Professionals



Data Scientists

Natural Language

Automated Insights

AI Enrichment

AI Transformations

ML Models

Model Deployments

CAPABILITIES

- Quick Insights
- Q&A
- AI Visualizations

CAPABILITIES

- Sentiment analysis
- Key phrase extraction
- Image detection

CAPABILITIES

- Predictions
- Classifications

Extends for Data  
Scientists

Azure ML  
Integrations

CAPABILITIES

- R
- Phyton

CAPABILITIES

- Auto ML

# Make AI available for everyone!

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| Goal                                      | How?           |
|---|----------------|
| Help Business Users understand their data | Q&A            |
|   | Quick Insights |
|   | Key Drivers    |
|   | Clustering     |

# Make AI available for everyone!

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| Goal                                      | How?   |
|---|--|
| Help Business Users understand their data | Q&A<br>Quick Insights<br>Key Drivers<br>Clustering                 |
| Help Analysts prepare their data          | Forecasting<br>Cognitive Services<br>Automated ML<br>R Integration |

---

# Make AI available for everyone!

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| Goal   | How?                 |
|--|----------------------|
| Help Business Users understand their data                    | Q&A                  |
|  | Quick Insights       |
|  | Key Drivers          |
| Help Analysts prepare their data                             | Clustering           |
|  | Forecasting          |
|  | Cognitive Services   |
| Make it easy for Data Scientists and Analysts to collaborate | Automated ML         |
|  | R Integration        |
|  | Python Integration   |
|  | Azure ML Integration |

# Demo time!

Because life is boring without risks



# Demos

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- Power BI Natural Language Query
- Explain increase / decrease
- Analyze distribution
- Key influencer visual
- Decomposition tree
- AI Insights



## Questions to get you started

show me average trip length for the last year

show me average trip length YoY% for the last year

show me expenditures for the last year

show me expenditures YoY% for the last year

show me spending per trip (PP) for the last year

number of seasons

Number of visits by region over time

Ask a related question

Clear

Add this question

Visits by Date and Region

Region ● Canada ● Japan ● Other ● US East ● US West

450K

400K

350K

300K



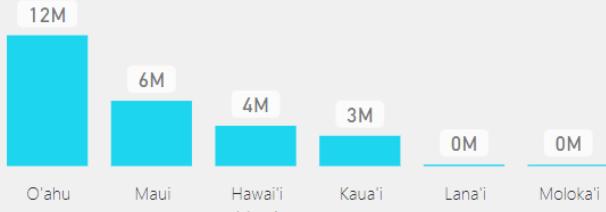
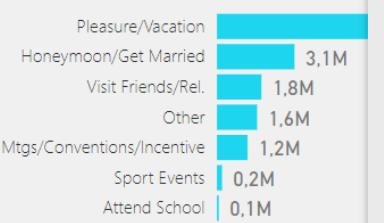
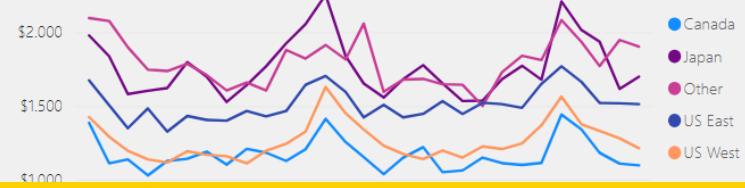
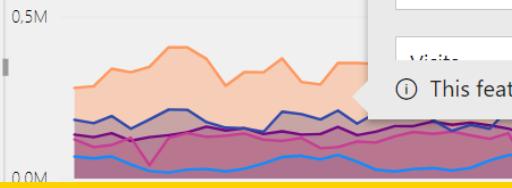
# Natural Language Query

**27.5M****948K****\$39.9bn**

Visitors

Arrivals per month

Expenditures

**VISITS BY ISLAND****TRIP PURPOSE****SPENDING PER TRIP (PP)****VISITS BY REGION**

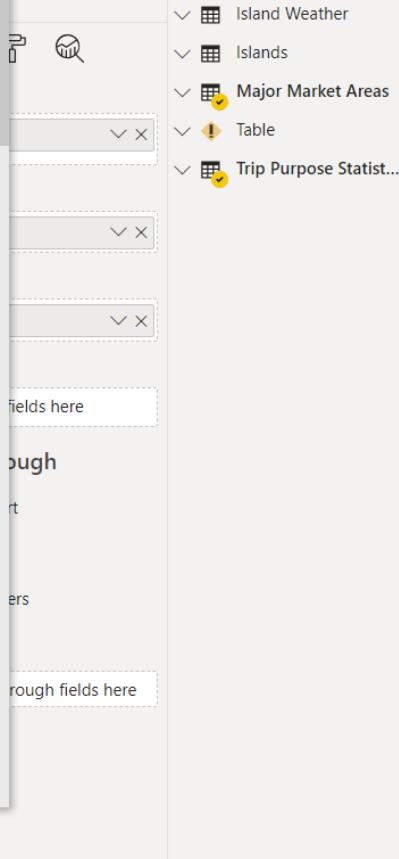
'Pleasure/Vacation' accounted for the majority of the increase among Trip Purpose, offsetting the decrease of 'Visit Friends/Rel.'. The relative contributions made by 'Pleasure/Vacation' and 'Visit Friends/Rel.' changed the most.

● Increase ● Decrease ● Total ● Other



This feature is in preview. [Learn more](#)

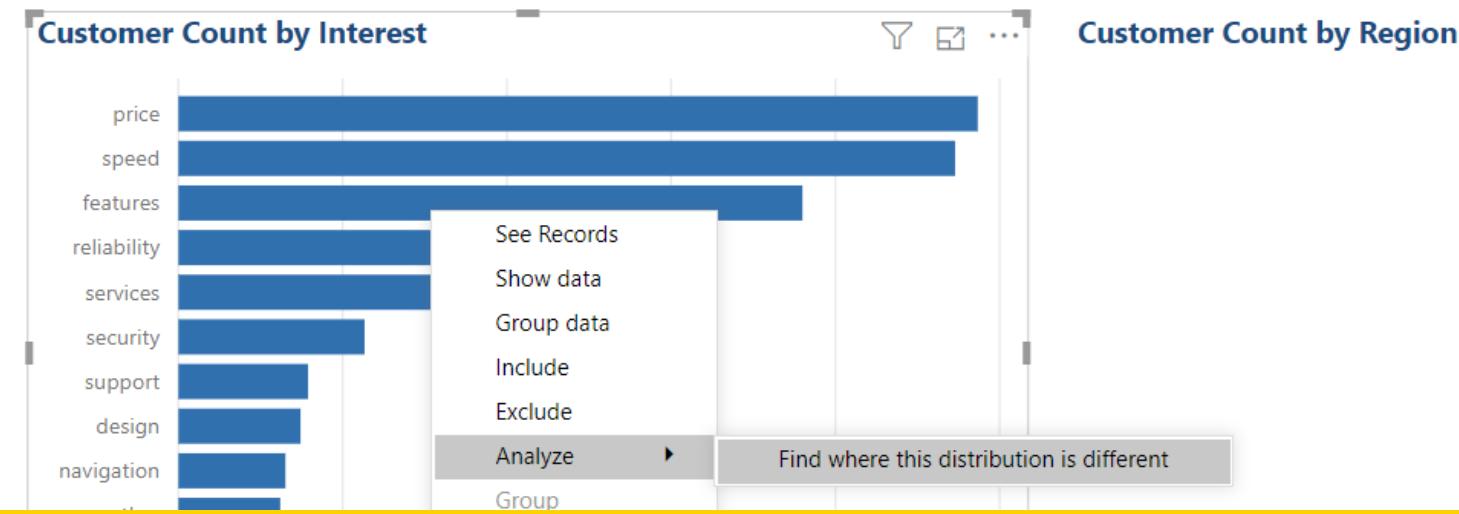
# Explain Increase / decrease



# NEW CUSTOMERS

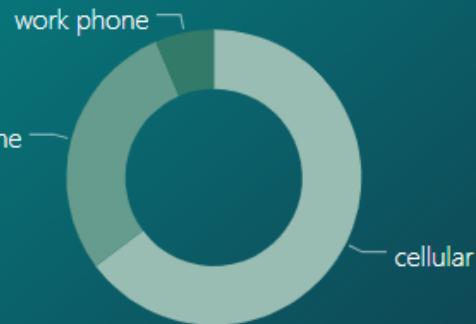
New Customers (February)

45.218



## Analyze distribution

## COMMUNICATION TYPE



## CUSTOMERS BY AGE

Key influencers Top segments

What influences Customers to be Returning ▼ ?

When...

....the likelihood of  
Customers being Returning  
increases by

Country is UK

2.32x

Country is Japan

1.84x

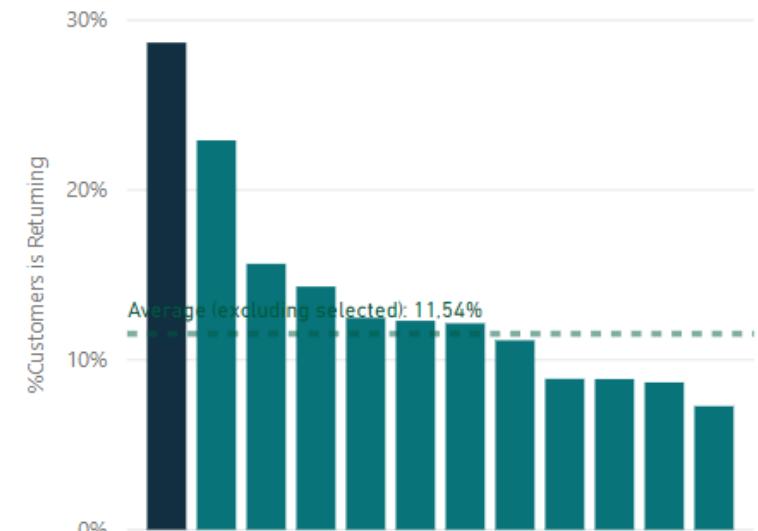
Purchased Spa Visit is yes

1.66x

Primary Interest is relaxation

1.54x

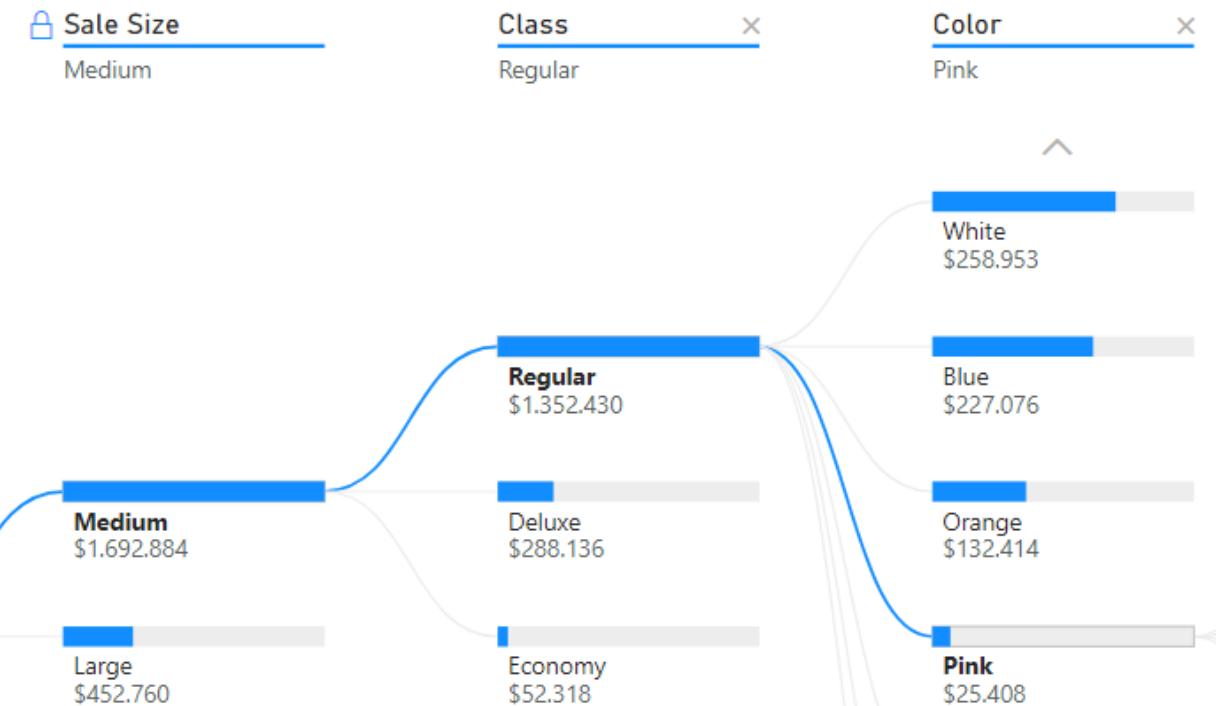
← Customers is more likely to be Returning when Country is UK than otherwise (on average).



# Key Influencer Visual



| ProductName                                 | Sales Amount |
|---|--------------|
| Fabrikam Budget Movie-Maker 1" 25mm E400    | \$10.550     |
| Fabrikam Budget Moviemaker 1" 25mm E400     | \$50.996     |
| Fabrikam Budget Movie-Maker 1/2" 3mm E300   | \$8.208      |
| Fabrikam Budget Moviemaker 1/2" 3mm E300    | \$42.158     |
| Fabrikam Budget Movie-Maker 1/3" 8.5mm E200 | \$11.508     |
| Fabrikam Budget Moviemaker 1/3" 8.5mm E200  | \$34.182     |
| Fabrikam Budget Movie-Maker 2/3" 17mm E100  | \$13.120     |
| Fabrikam Budget Moviemaker 2/3" 17mm E100   | \$31.130     |
| Fabrikam Business Videographer 1 25mm M600  | \$24.030     |



# Decomposition Tree

# Cognitive services



Vision



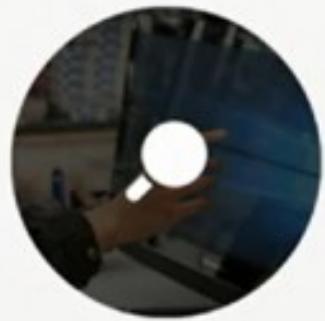
Speech



Language



Knowledge



Search

# Pervasive application of AI

New capabilities that make AI accessible for everyone

- Text analytics and image recognition through Azure Cognitive Services integration
- Key driver analysis helps surface what drives an outcome
- Enable business analysts to create new ML models through Automated ML
- Seamless collaboration between business analysts and data scientists through Azure ML integration

The screenshot shows the Power BI Entities screen. The title bar reads "Power BI AI test > SalesOpportunities". The left sidebar has icons for Home, Entity, Machine learning models, and Data flow. The main area shows a table with columns: ENTITY NAME, ENTITY TYPE, and ACTIONS. The ACTIONS column contains icons for Edit entities, Add entities, Save, and Close. The table lists the following entities:

| ENTITY NAME        | ENTITY TYPE | ACTIONS |
|--------------------|-------------|---------|
| Account            | Custom      |         |
| Contact            | Custom      |         |
| Lead               | Custom      |         |
| Opportunity        | Custom      |         |
| OpportunityProduct | Custom      |         |
| Product            | Custom      |         |
| SystemUser         | Custom      |         |

ENTITY NAME

- ▶  Language Detection
- ▶  Key Phrases
- ▶  Sentiment Score

# AI Insights

Airbnb analysis

300+ stays · May 28 - 29 · 1 guest

## Stays in Stockholm

[Cancellation flexibility](#) [Type of place](#) [Price](#) [Instant Book](#) [More filters](#)

**Check travel restrictions before booking.** The health and safety of our communities come first. Please follow government guidelines and travel only if it's essential. [Learn more](#)



Hotel room

**Generator - Bed in 6 Bed Dorm**

1 guest · 1 bedroom · 1 bed · 1 bath

Wifi · Washer

★ 4.48 (206)

€19 / night

€19 total

**SUPERHOST** Private room**Great Room in City Center**

2 guests · 1 bedroom · 0 beds · 1 shared bath

Kitchen · Wifi

★ 4.91 (558)

€50 / night

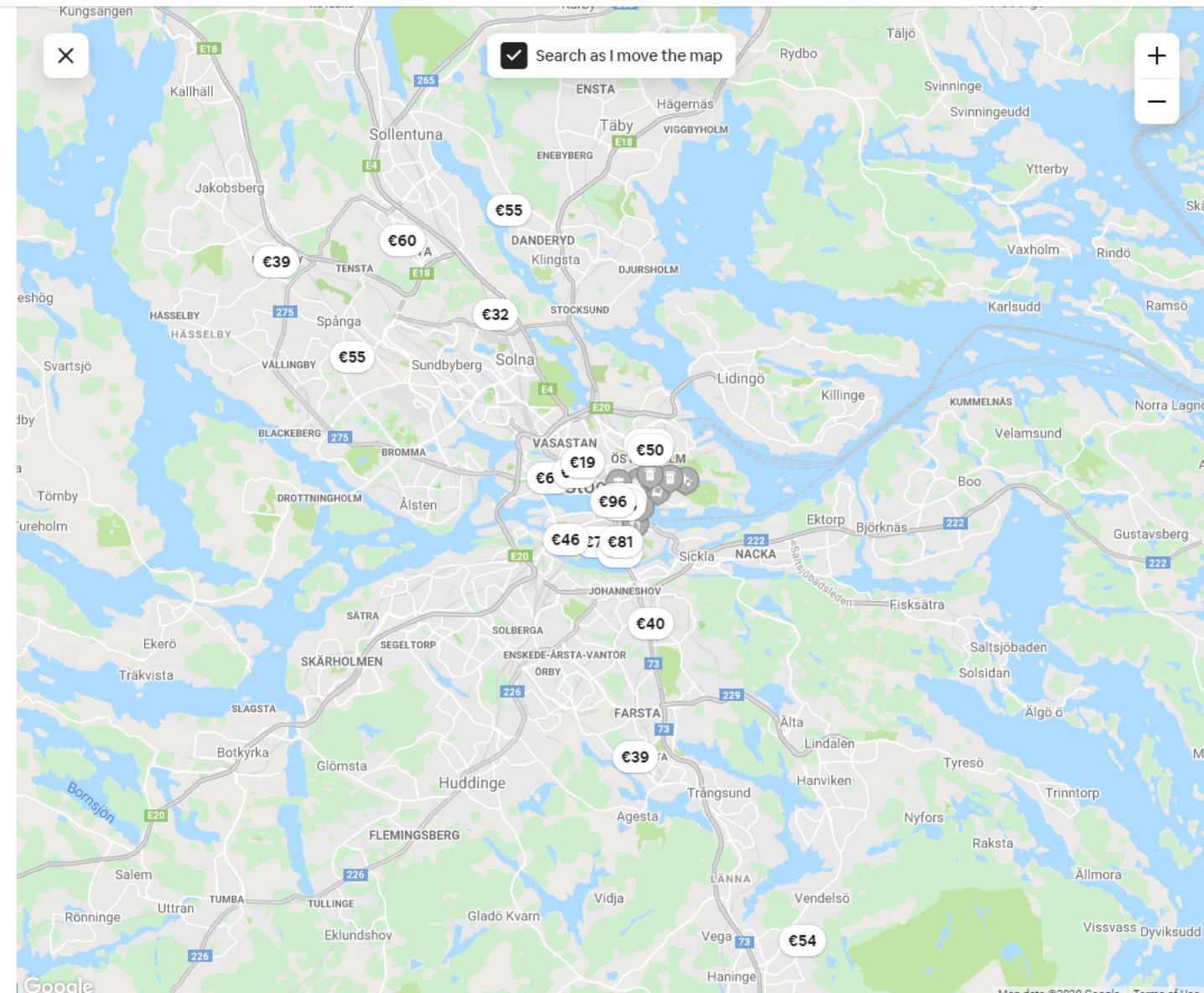
€50 total

**SUPERHOST** Private room**Fint stort rum i Solna**

2 guests · 1 bedroom · 1 bed · 1.5 shared baths

Kitchen · Wifi · Washer

★ 4.86 (124)



# Recap

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- AI is more than BI
- AI != Innovation
- Inspire, optimize and detect patterns
- AI on your fingertips in Power BI
- Next level insights with AI insights  
(PBI Premium)



LET'S  
RECAP...

# Download for free!

[Https://bit.ly/cheatsheetpbi](https://bit.ly/cheatsheetpbi)



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- 🌐 Data-Marc.com

The graphic shows a yellow and white 'Power BI Cheat Sheet' document with three main sections: 'Power Query', 'Data Model', and 'DAX'. The 'Power Query' section includes tips like 'Give every step an explanatory name and merge steps of the same type, for better M coding experience.' and 'Always use a separate Date table in your data model. Mark it as a Date Table, and use it as a source for all date-related calculations.' The 'Data Model' section covers topics from 'Turn off "Enable Load" for queries/tables that you don't need in the Data Model.' to 'Keep your PBIX file fast and small by using TOP N (<http://bit.ly/ImproveReportBuilding>) and switch underlying data source in PBIX service after publishing (<http://bit.ly/ParameterizeDataSource>).'. The 'DAX' section provides tips from 'Use DAX Calculated Columns when it's not possible to create it using Power Query. This improves clarity and manageability of your report as transformations are located where you expect them; it also improves query speed of the model and reduces refresh duration.' to 'Increase the readability of your DAX calculations: <https://www.daxformatter.com>'. A 'Resources' section at the bottom lists links to Power Query M Formula Reference, Power BI Studio, and Tabular Editor.

**Power BI Cheat Sheet**

**Power Query**

**Data Model**

**DAX**

**Resources**

<https://bit.ly/cheatsheetpbi> (PDF download)

April 2019

English version - October 2019

9 bi