

# Creating a Data-Driven Organization

Carl Anderson

9:15am, Grand 2

Why data-driven?



Controlling for other factors, data-driven orgs are

5% more productive



Analytics pays back

**\$13** / \$1 invested



What is data-driven?





Having lots of reports does not make you data-driven.

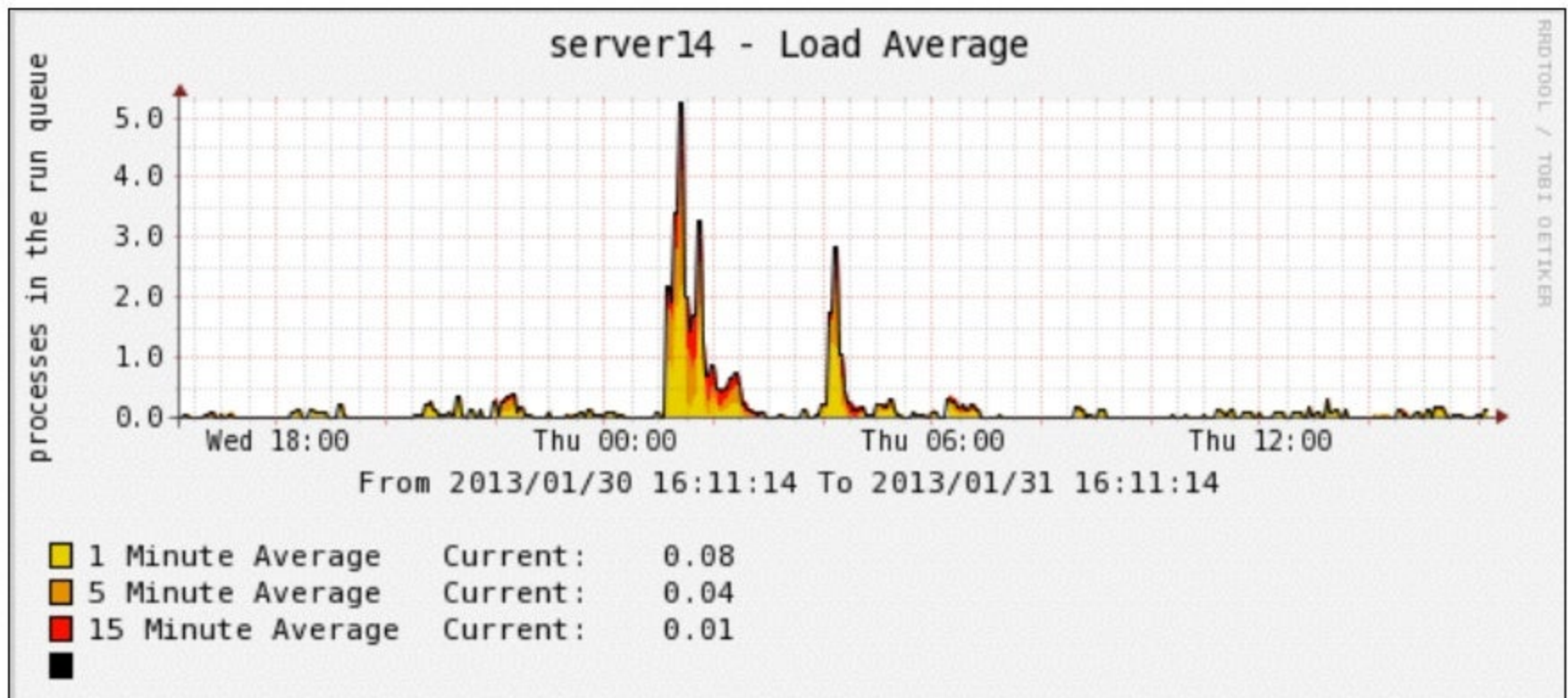


Having lots of dashboards does not make you data-driven.





Having lots of alerts does not make you data-driven.

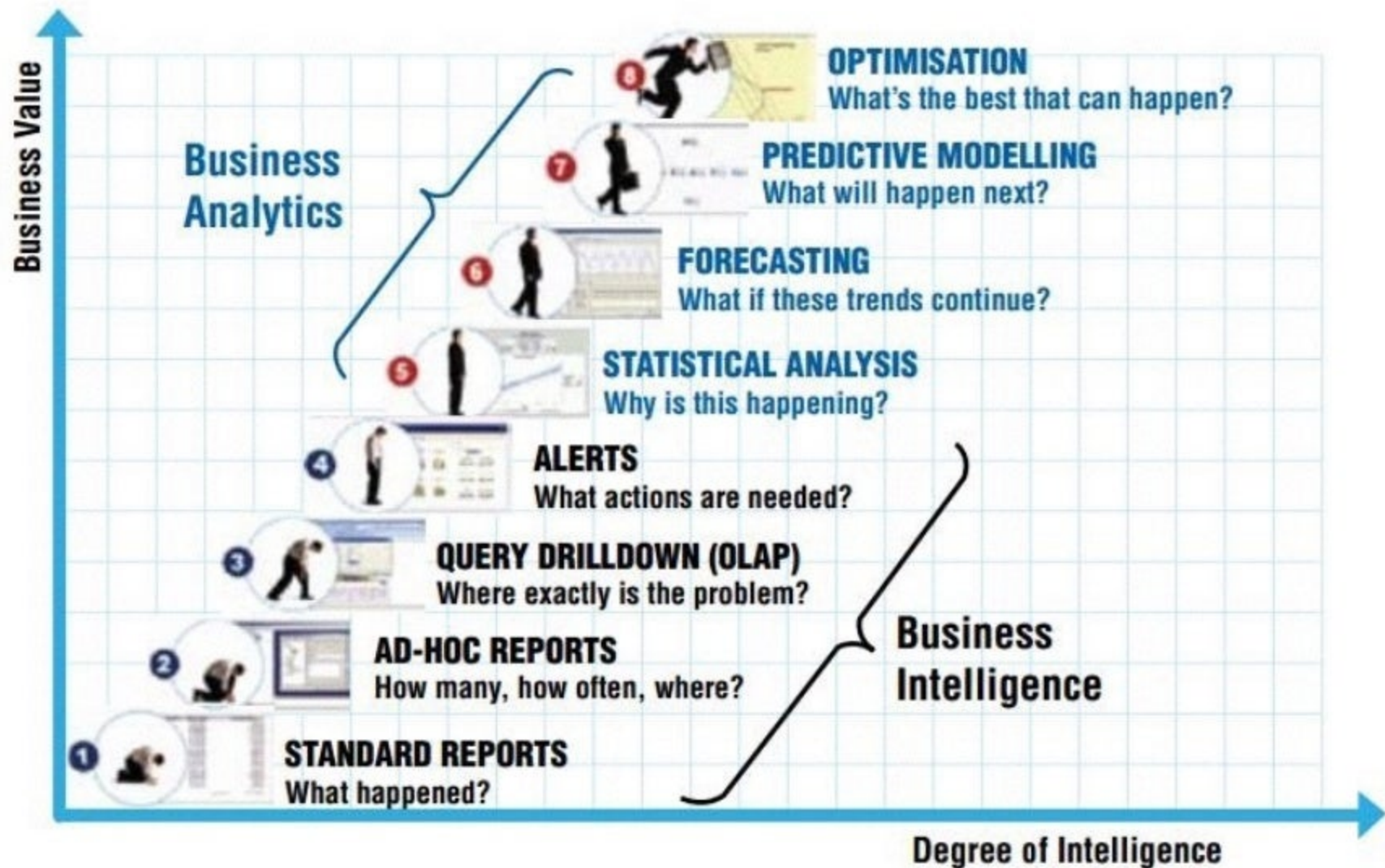


## Data-driven: you must have analytics

Reporting	Analysis
Descriptive	Prescriptive
What?	Why?
Backward-looking	Forward-looking
Raise questions	Answer questions
Data → Information	Data + Information → insights
Reports, dashboards, alerts	Findings, Recommendation
No context	story telling

Not necessarily data-driven !

# Levels of Analytics



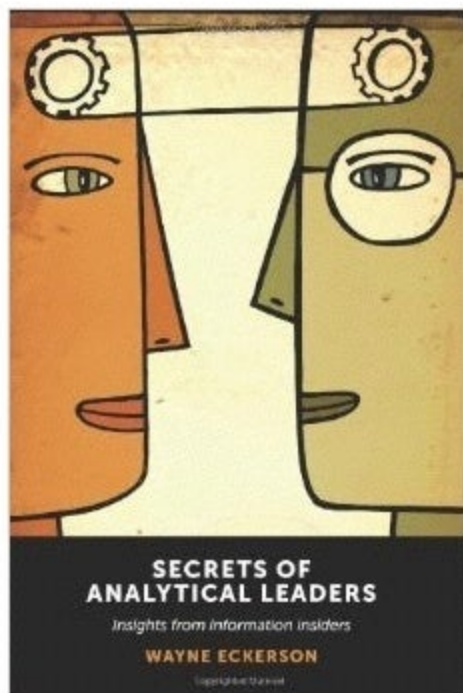


# Analytics Value Chain





"Analytics is about **impact**...In our company [Zynga], if you have brilliant insight and you did great research and no one changes, you get zero credit."



Ken Rudin

Facebook





Train analysts to be business savvy



Having a hadoop cluster does not make you data-driven.

WHY ARE WE DOING  
A/B TESTING?



WHY ARE WE PREDICTING  
FUTURE TRENDS?



WHY ARE WE ANALYZING  
SENTIMENT?



WHY ARE WE CREATING  
A RECOMMENDER SYSTEM?



WHY?  
WHY?  
WHY!





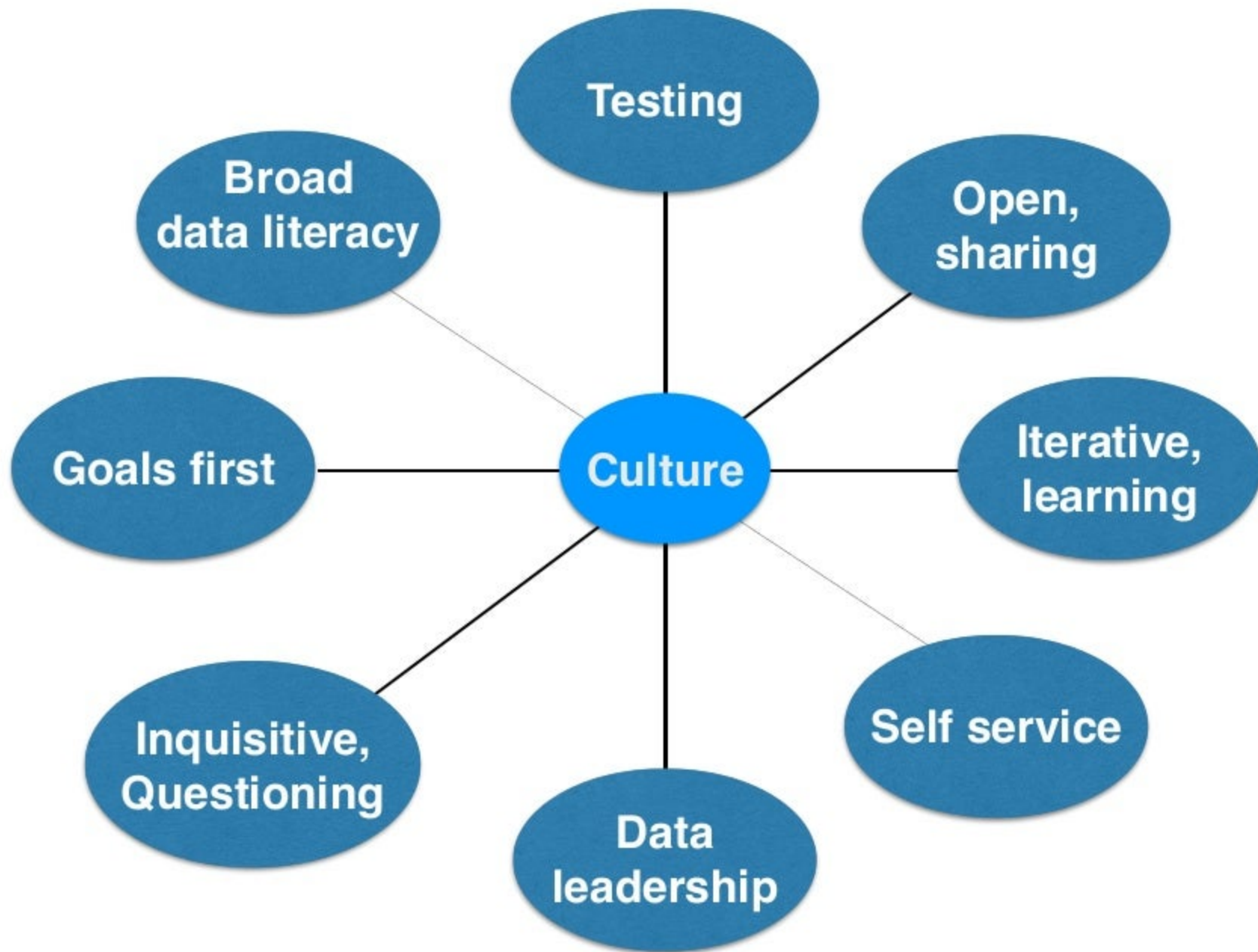
Leverage data as a strategic asset.





Data-driven requires a **data culture**

# Data Driven Culture



# Being data-driven means having...



## a strong testing culture

Innovate through online and offline experimentation.  
Encourage hypothesis generation broadly across org.

“you get surprises more often, and surprises are a key **source of innovation**. You only get a surprise when you are trying something and the result is different than you expected, so the sooner you run the experiment, the sooner you are likely to find a surprise, and the surprise is the **market speaking to you**, telling you something you didn’t know.”

Scott Cook

Intuit

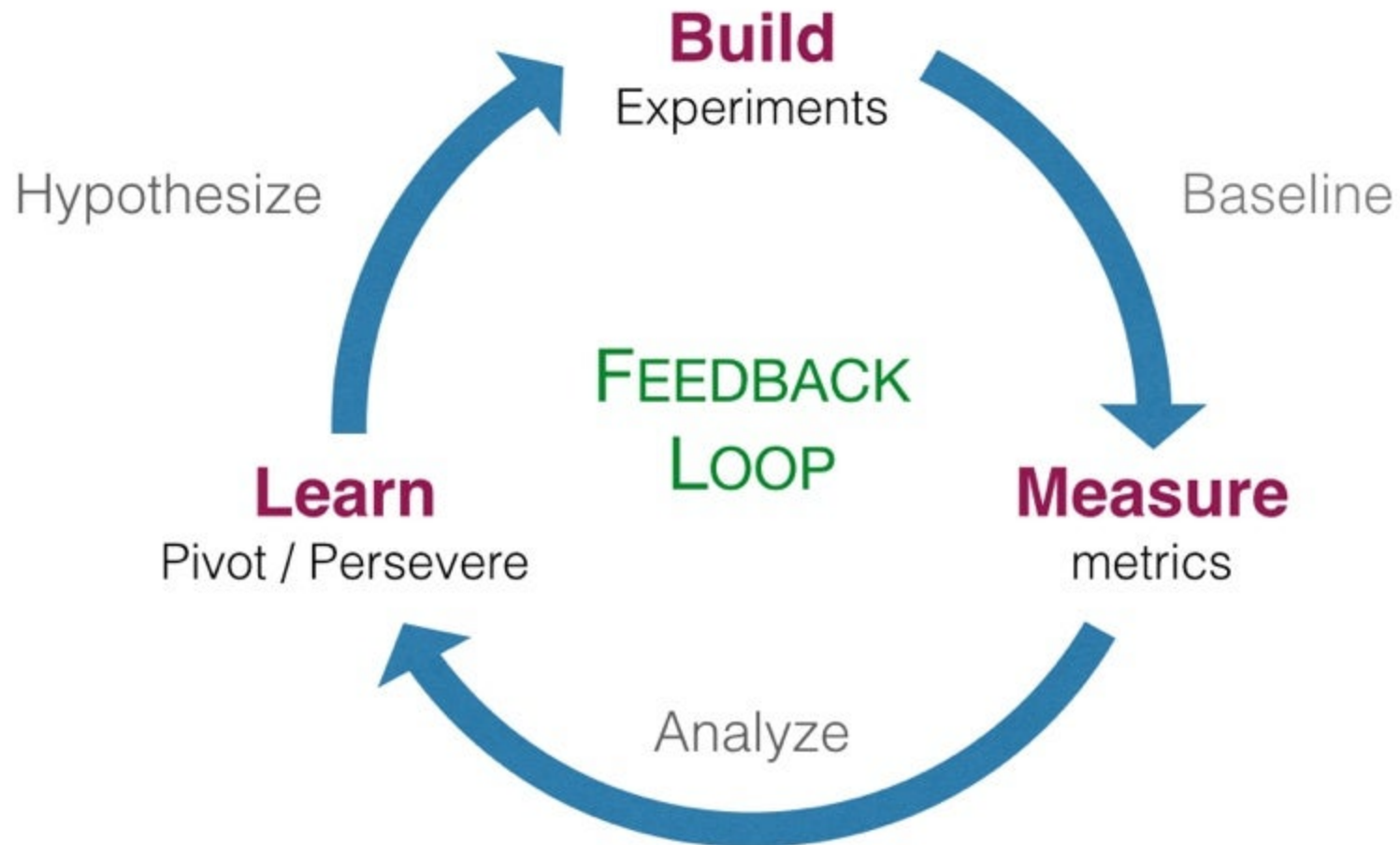


# Optimize for Right Thing





# Iterate





Let data drive decisions, not the Highest Paid Person's Opinion.

# Being data-driven means having...



## an open, sharing culture

No data hoarding or silos. Bring data together to create rich contexts. Connect the dots.

# Context is King

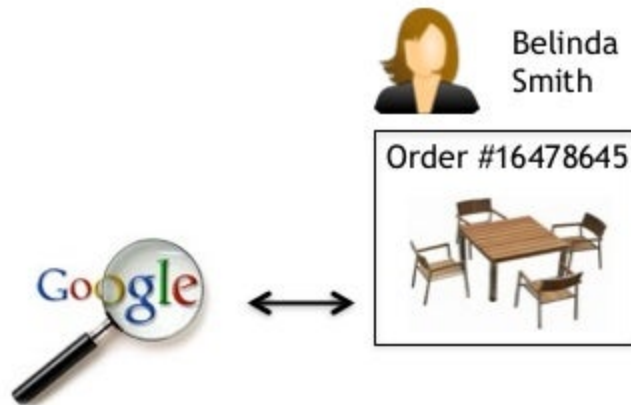


Belinda  
Smith

Order #16478645



# Context is King

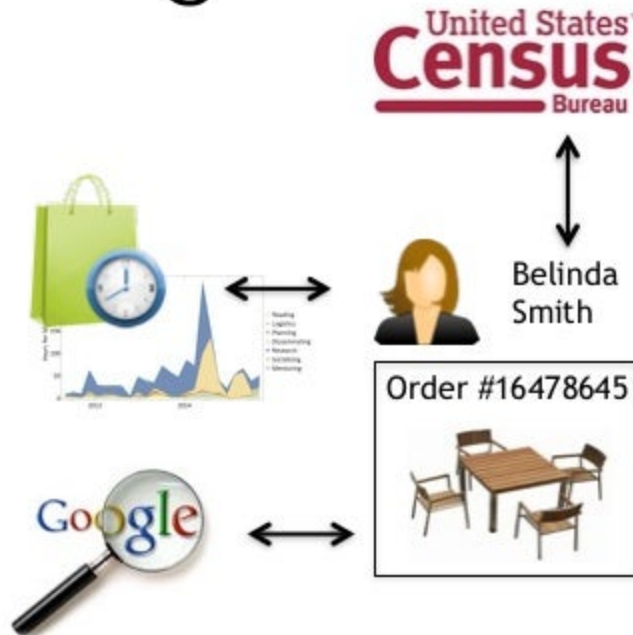




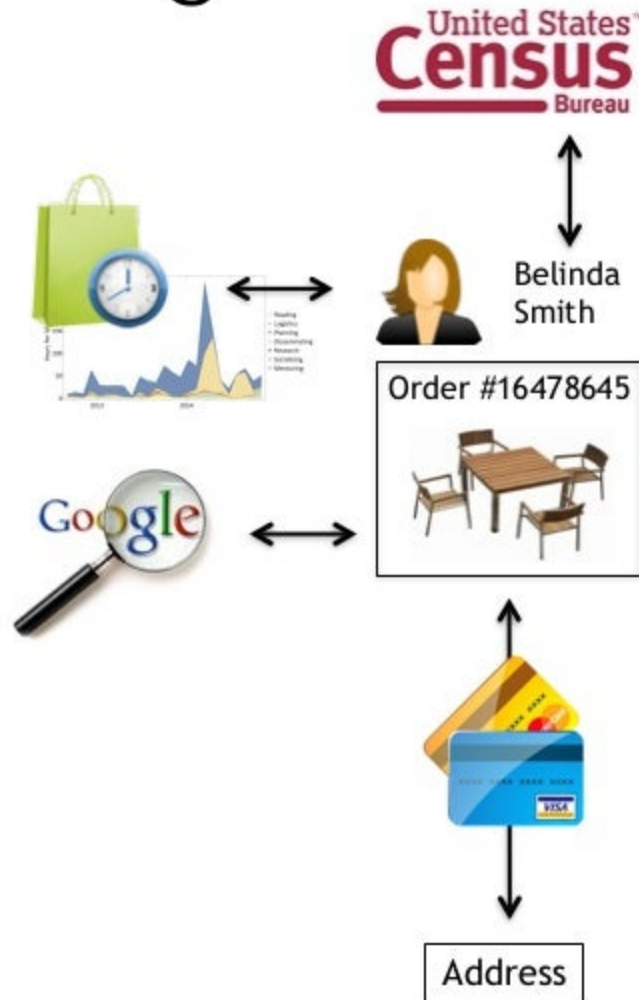
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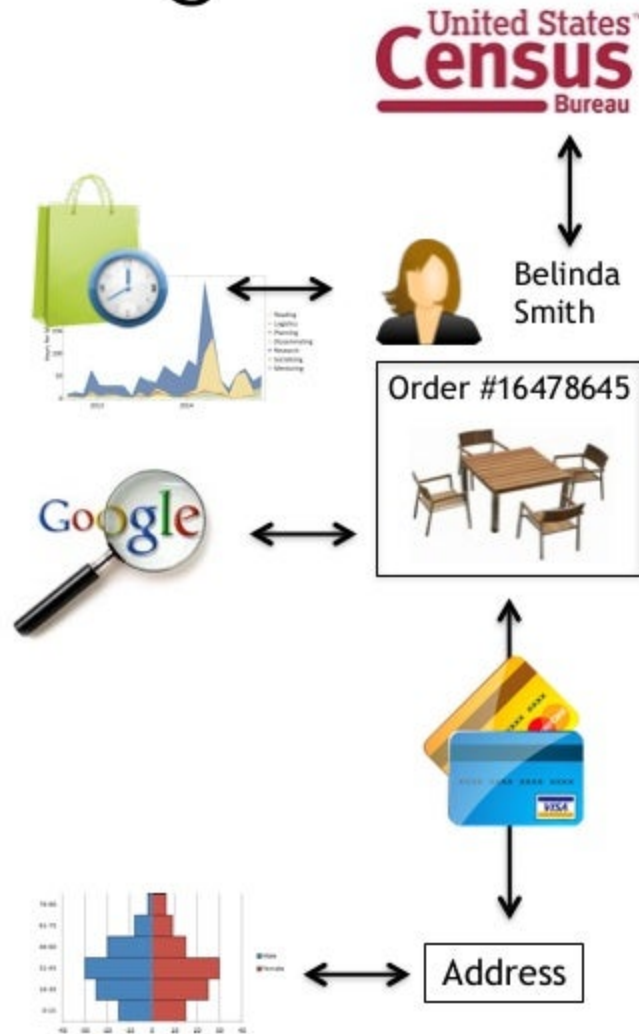
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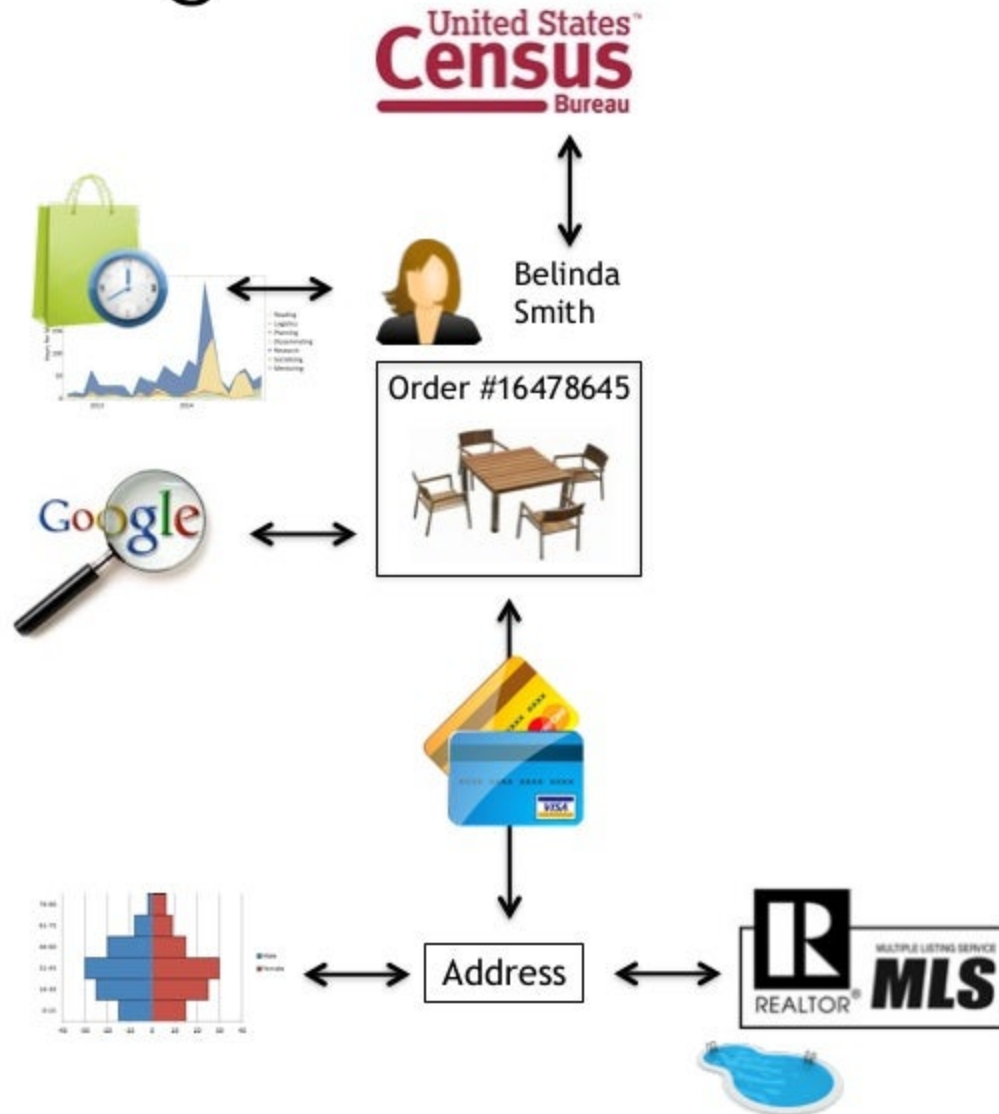
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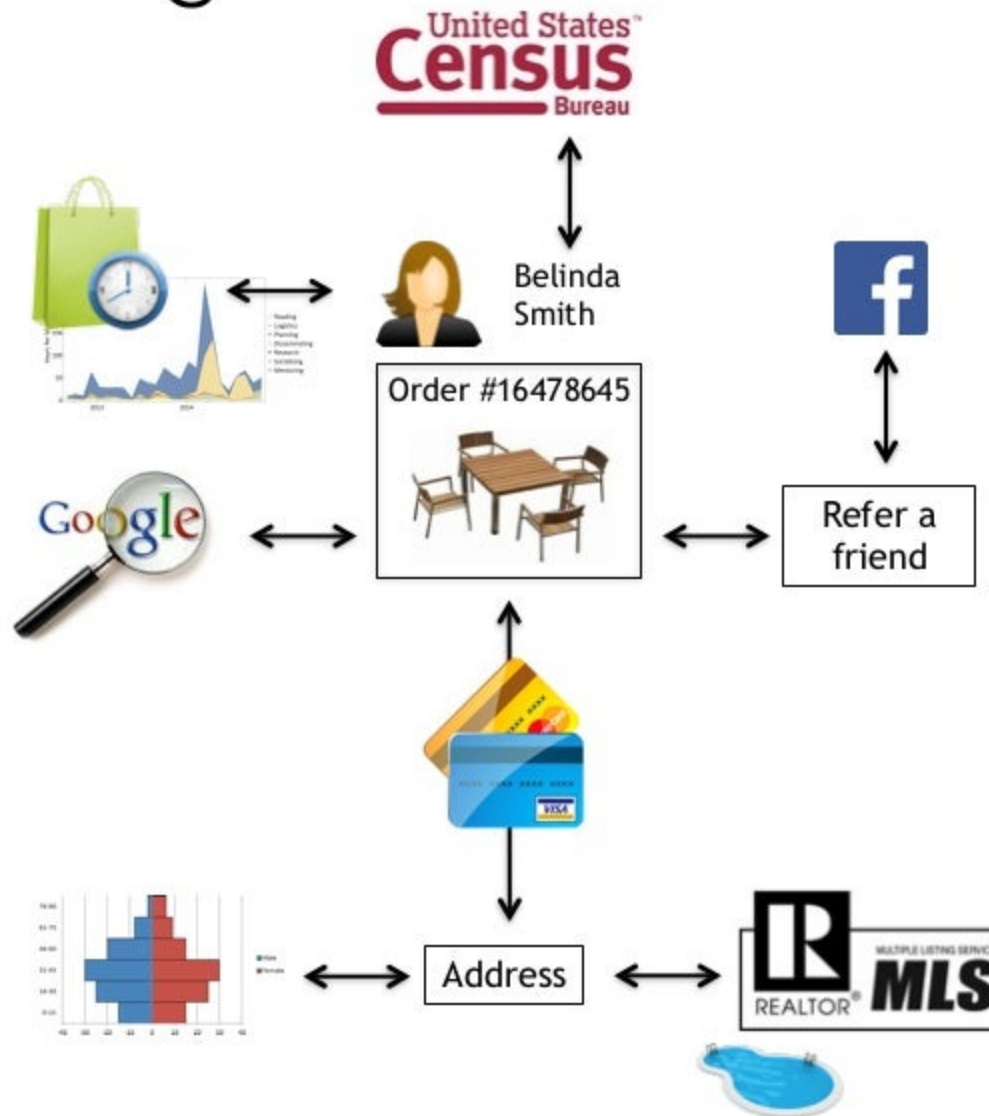
# Context is King



# Context is King



# Context is King





# Invest in data quality

# 1/3

business leaders frequently make decisions  
with data that they cannot trust

# Being data-driven means having...



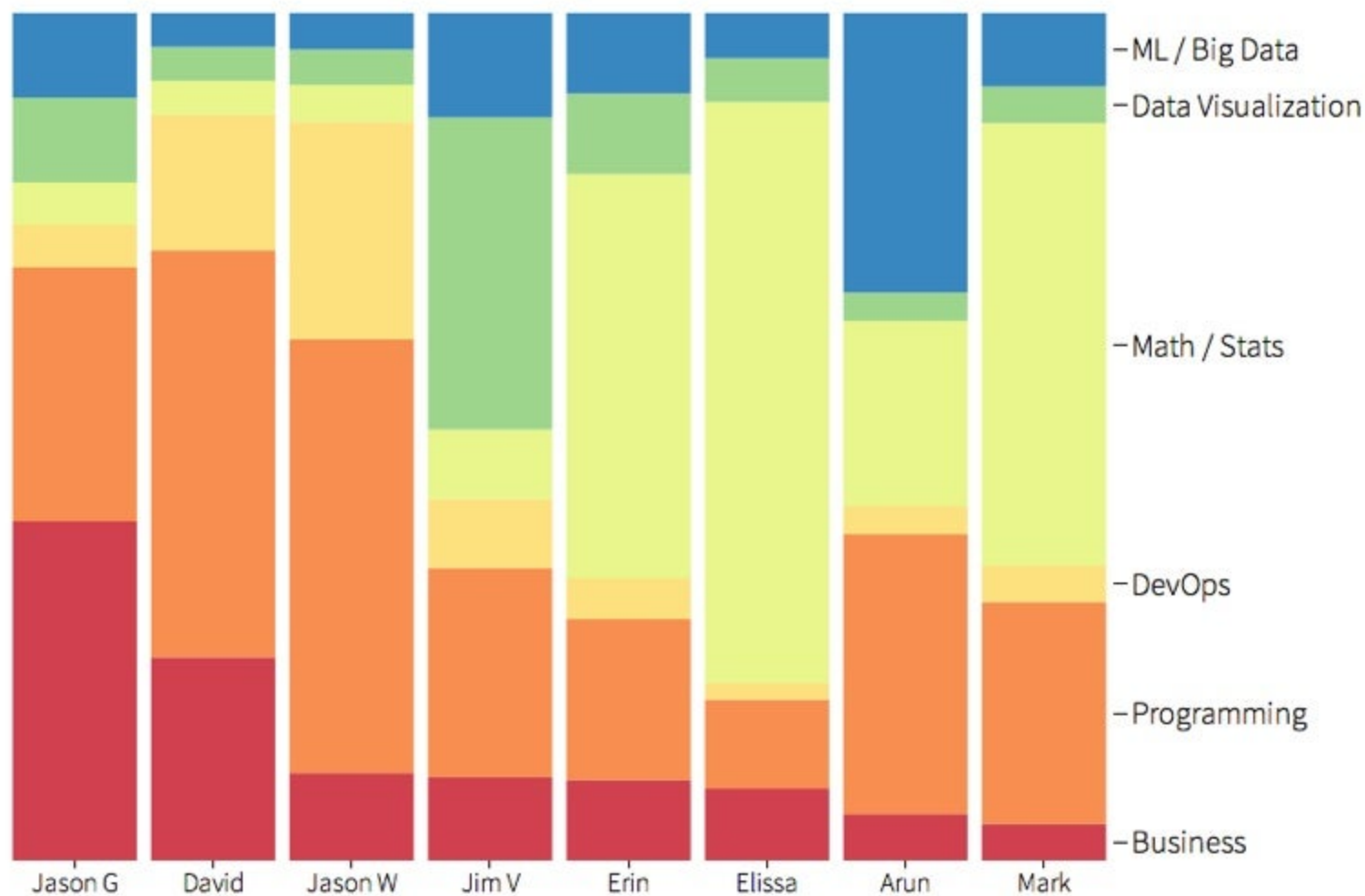
## a self service culture

Business units have necessary data access as well as within-team analytical skills to drive insights, actions, and impact.

# Traits of great analysts

- Numerate
- Detail-oriented
- Skeptical
- Confident
- Curious
- Communicators
- Data lovers
- Business savvy

# Hiring not just as individuals but to complement team



Nordstrom data lab (as of Strata 2013)

# Being data-driven means having...



## a broad data literacy

All decision-makers have appropriate skills to use and interpret data.

Analysts must sell, sell, sell their product



# Tie actions to outcomes

## Demonstrate Value: Connect Actions & Outcomes

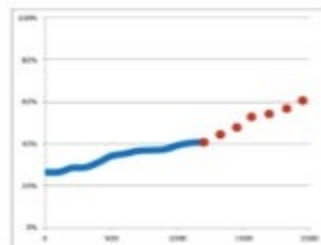
Show the decision

Explain with data

If you take  
this action

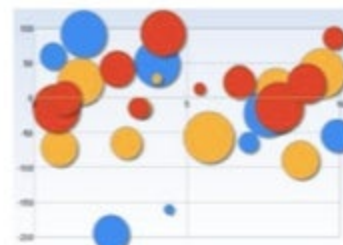
You can  
expect this  
outcome.

Here's why:



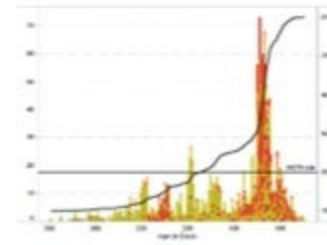
Evidence

Method: Linear  
Source: RCT  
"Historical trends  
show that ..."



DataSci

Method: Bubble  
Source: Customer  
"Analytics predict  
better outcome..."

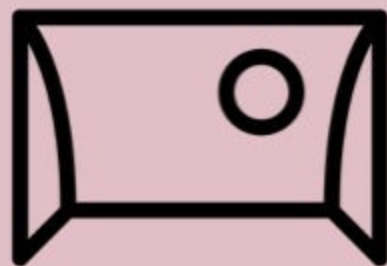


Cruncher

Method: Dynamo  
Source: SAS  
"Evidence shows  
this action will..."



# Being data-driven means having...



## a goals first approach.

Set out metrics before experiment. What does success mean?  
Have an analysis plan. Prevent gaming the system.

# Being data-driven means having...



## an objective, inquisitive culture

“Do you have data to back that up?” should be a question that no one is afraid to ask and everyone is prepared to answer’—Julie Arsenault.

# Being data-driven means having...



## a visible, clearly-articulated strategy

Commonly understood vision. Suite of well-designed, accessible KPIs. All staff understand how their work ties back to these metrics.

# Being data-driven means having...



## strong data leadership

A head of data to evangelize data as strategic asset with budget, team, and influence to drive cultural change.

Which strategies have proved successful in promoting a data-driven culture in your organization?

Strategy	% of respondents
<b>Top-down guidance and / or mandates from execs</b>	<b>49</b>
Promotion of data-sharing practices	48
Increased availability of training in data analytics	40
Communication of the benefits of data-driven decision-making	40
Recruitment of additional data analysts	17

# Change should not just be top-down

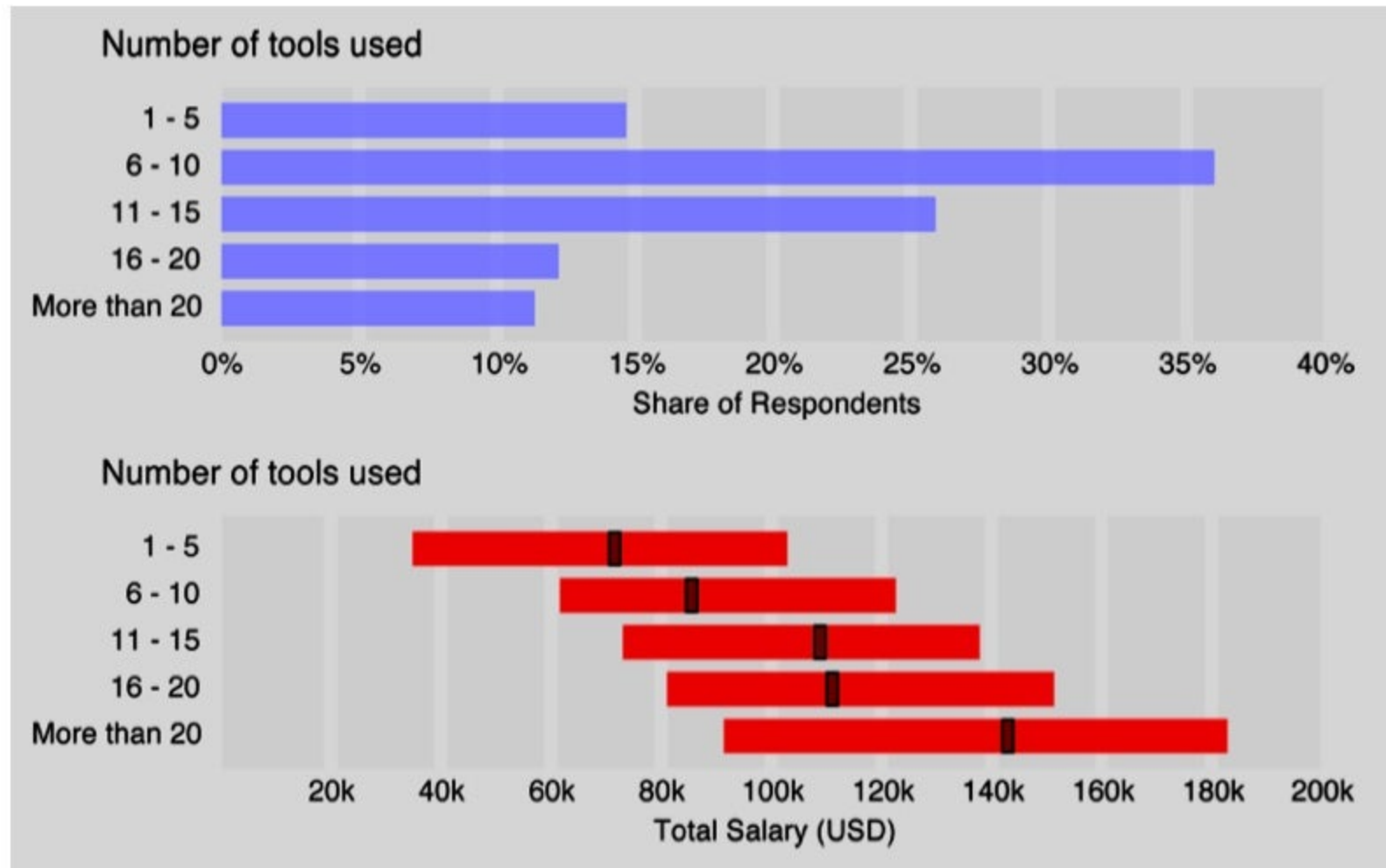


## but bottom up too

Everyone in org has role and responsibility through “leveling up” their data skills, mutual mentoring, and embedding data into their processes.



# Learn and you shall receive





# Being data-driven doesn't mean



# blindly following data.

Augment decision makers with objective, trustworthy, and relevant data.



▶ ⏮ 🔊 1:17 / 2:07

🕒 CC ⚙️ 📺 🔍

## Girls Crash into Lake following Bad GPS directions



CrushingBastards

▶ Subscribe

744

165,605



*"You can't always make a data-driven decision --  
sometimes you have to trust your gut!"*

# Ultimately, data-driven means



## using data to effect impact and results

Push data through “analytics value chain” from collection, analysis, decisions, action, and finally to impact. Partway along chain doesn’t count.

# Example actions

- Analyst competency matrix
- Raise bar for new analyst hires
- Vision statement: data culture
- Stats for managers class
- Mentor / train analysts to improve skills such as stats, SQL
- Mentoring staff in experimental design
- Democratizing data access through BI tools
- Push on ROI, tie back to strategic objectives



# Don't get complacent!



"With the exception of, say, an Amazon, no global store chain was thought to have demonstrably keener data-driven insight into customer loyalty and behavior"

# Tesco Today



- Stock at 11 year low
- Shedding 9000 jobs
- Closing 43 stores
- \$9.6B loss for 2014 fiscal year
- Dunhumby, their analytics gem, up for sale
- Warren Buffett: “I made a mistake on Tesco”

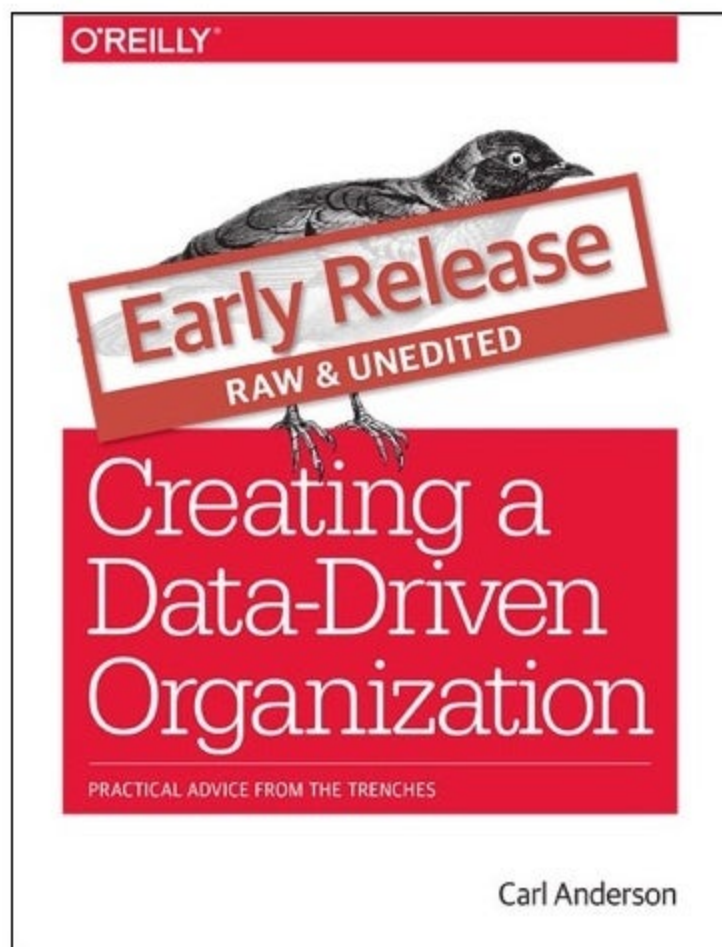


# Summary

<b>Culture</b>	Collaborative, inclusive, open, inquisitive
<b>Data Leadership</b>	Chief Data Officer / Chief Analytics Officer
<b>Decision Making</b>	Testing mindset, fact-based, anti-HiPPO
<b>Organization</b>	Embedded, federated analytics
<b>People</b>	Analytics org: composition, skills, training
<b>Data</b>	Data quality, data management



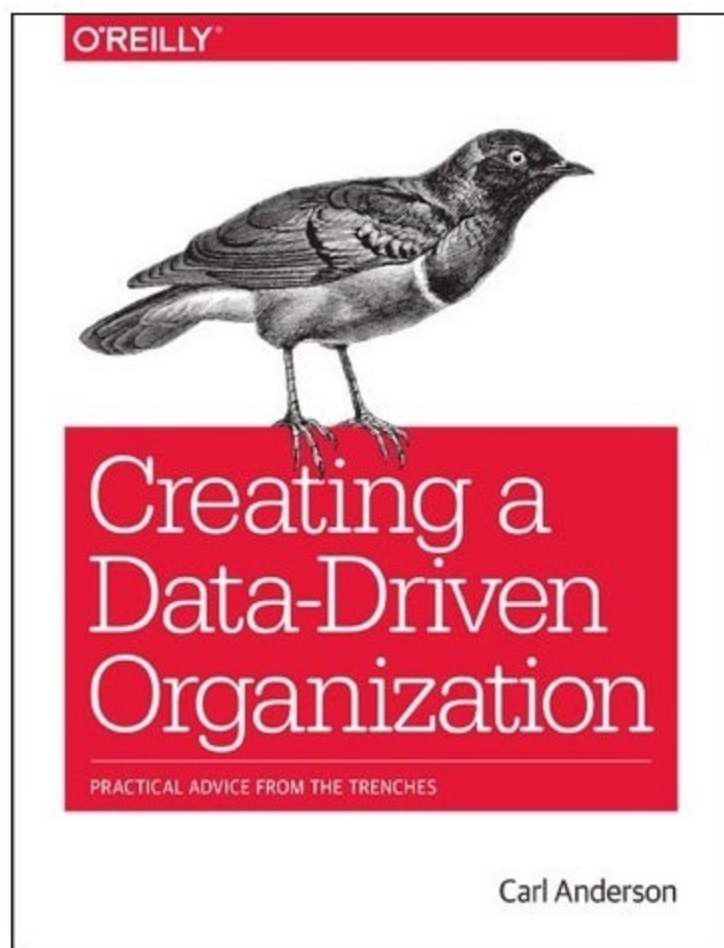
Bake in data-driven culture early!



1. What is Data-Driven?
2. Data Quality
3. Data Collection
4. Analyst Org
5. Data Analysis
6. Metric Design
7. Story Telling
8. A/B Testing
9. Decision Making
10. Data-Driven Culture
11. Data-Driven C-suite
12. Privacy, Ethics
13. Conclusions

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# Questions?



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<http://p-value.info>



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spares

# Vision Statement: data culture

*vision statement—an aspirational description of what an organization would like to accomplish in the mid-term or long-term future*

## **STRONG DATA LEADERSHIP**

- Data leaders that actively evangelize data as a strategic asset, leveraged to its fullest to impact all parts of the business.
- Strong data leadership that understands and support the needs of the business. It supports the analytics organization by providing them with a clear career path, enables them to perform their best, to be happy and productive, and to maximize their impact.
- Managers that expect and rely on data insights to make informed decisions. More generally across organization, data and analytics are deeply embedded into our processes and decisions



# Vision Statement: data culture

## **OPEN, TRUSTING CULTURE**

- A centralized set of coherent data sources without any silos.
- Business units have a sense of data ownership, proactively managing data quality of their sources.
- Broad access to data
  - Everyone who needs access to data to perform their function, has access.
  - Everyone only has access to the data that they need to perform their function. Sensitive data, such as customer and Rx data, should be treated with extreme caution: highly restrict access, anonymize, and encrypt.
  - All staff can easily get a holistic view of the company through highly visible and accessible dashboards, reports, and analysis. Systems are instrumented and alerted as reliable early warning systems.
- Analysts are highly collaborative, proactively reaching out (across departments) to help validate ideas and ensure objectivity.