

2016

# DISCOVERY SUMMIT

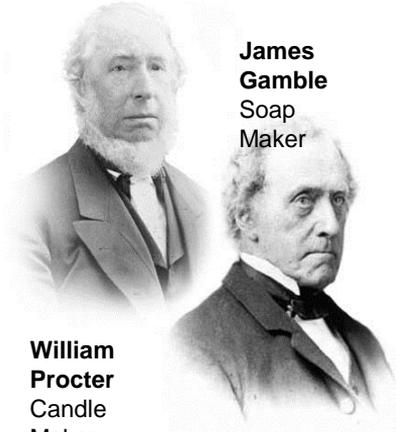
EXPLORING DATA  
INSPIRING INNOVATION

# Leading With Analytics: Fostering a Supportive Analytics Culture



# How Historians Know P&G...

Founded in 1837  Technology Optimization & Management, LLC



**James Gamble**  
Soap  
Maker

**William Procter**  
Candle  
Maker

# P&G



Founded on the  
Banks of the Ohio  
River, in Cincinnati

....5<sup>th</sup> oldest on the  
Fortune 500

# Today: Investors Know P&G

## Large, Global, & Successful Consumer Goods Manufacturer

- Sales: \$65.3 Billion FY June 30<sup>th</sup>, 2016
- Net Earnings: \$10.4 Billion
- Sell Products in 180+ Countries

## P&G consistently builds lasting shareholder value

### Celebrated their 178th year in business

- P&G has paid Dividends without Interruption since 1890
  - » (one of only 9 publically traded companies to have done this)
- 60 consecutive years of Increasing Dividend Payments
  - » (6 companies to have done this)
  - » Annual Compound Average rate of over 9%
- Market Cap ~ 232 billion COB 8/14/16

## P&G Innovates to Grow:

- Invested ~ \$1.9 Billion/yr in R&D...in 2016



# Why Cincinnati?



...Rivers & Pigs

# “Porkopolis” a.k.a. Cincinnati, Ohio

## Cincinnati was the U.S. chief pork packing center



Meat was stuffed in brine filled barrels & shipped down the rivers incl. to New Orleans

Salt pork, bacon, & sausage were staple foods throughout the 1800s

Throughout the 1800's the meatpacking industry in Cincinnati was so successful the city was given the moniker "Porkopolis". In 1880 there were sixty-eight pork and beef packers and twenty-five sausage makers in the city.

# The Great 19<sup>th</sup> Century Industrial Cities



Grew up near  
waterways.

In 1840,  
Cincinnati was  
the 6<sup>th</sup> largest U.S.  
city... 10 times  
larger than Chicago

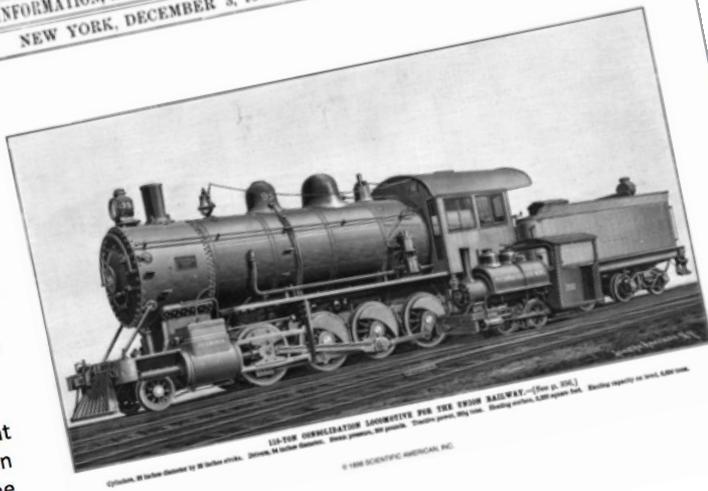
# Why Innovate?

- The Innovator's Dilemma

# SCIENTIFIC AMERICAN

A WEEKLY JOURNAL OF PRACTICAL INFORMATION, ART, SCIENCE, MECHANICS, CHEMISTRY, AND MANUFACTURES.  
 NEW YORK, DECEMBER 3, 1898

VERNE SURPASSED—"When Jules Verne wrote his fascinating book, 'Around the World in Eighty Days' [1873], he aimed to show the utmost that could be accomplished by the means of transportation of his day. A quarter of a century later we are near the day when the ordinary tourist can make the trip in less than half of eighty days. The Russian minister of communication has stated that when the great Trans-Siberian railroad is opened, early in the twentieth century, the tour of the world can be completed in thirty-three days."

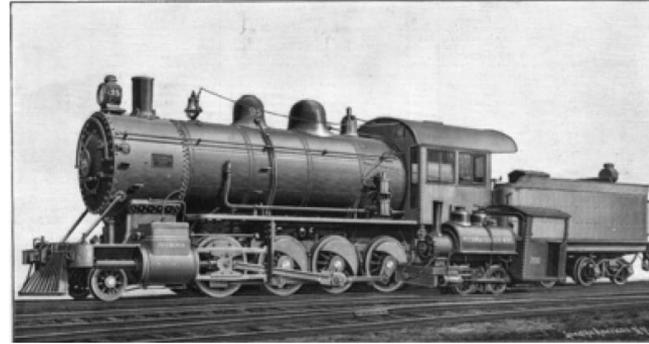


## Scientific American

...  
 December  
 1898

- What was their NEXT BIG THING?

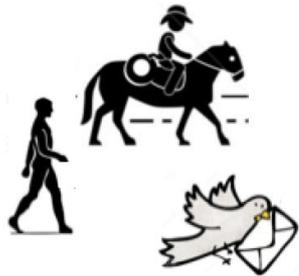
# December... 1898



“The Russian minister of communication has stated that when the great Trans- Siberian railroad is opened, early in the twentieth century, the **tour of the world can be completed in thirty-three days.**”

# At the Speed of the Wind, River or the Horse ...

- Prior to Rail... **Communication** was only as fast as walking, water or animals...



5 MPH



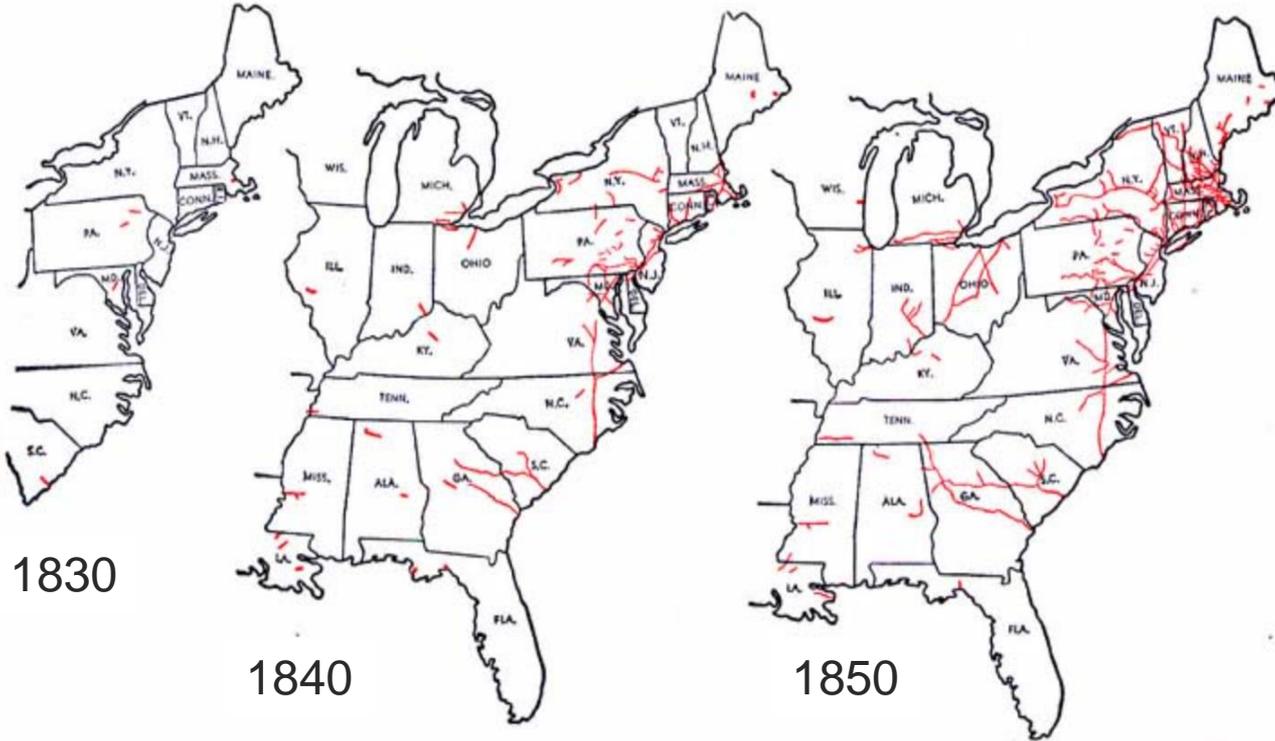
Wooden Oar & Sailing Ships



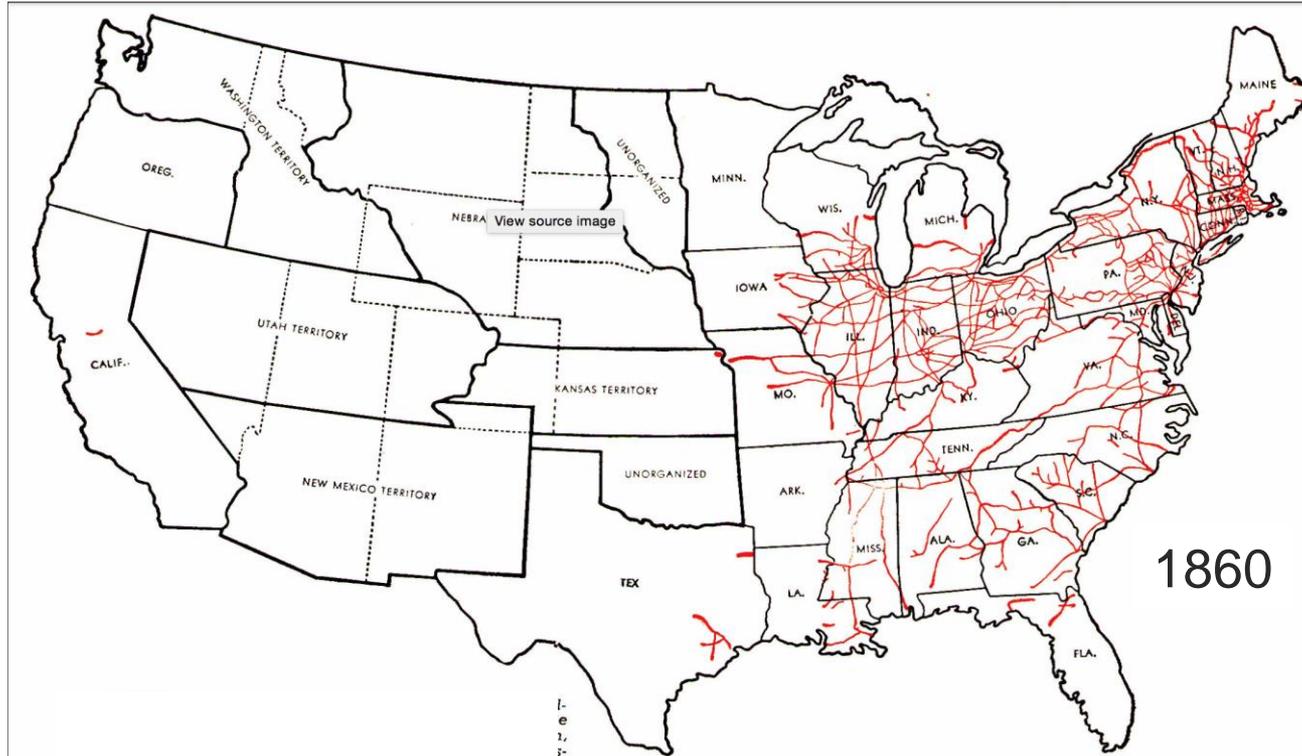
~5-10  
MPH...

~ TONS  
OF  
CARGO

# Growth of Railroads 1830-1850s



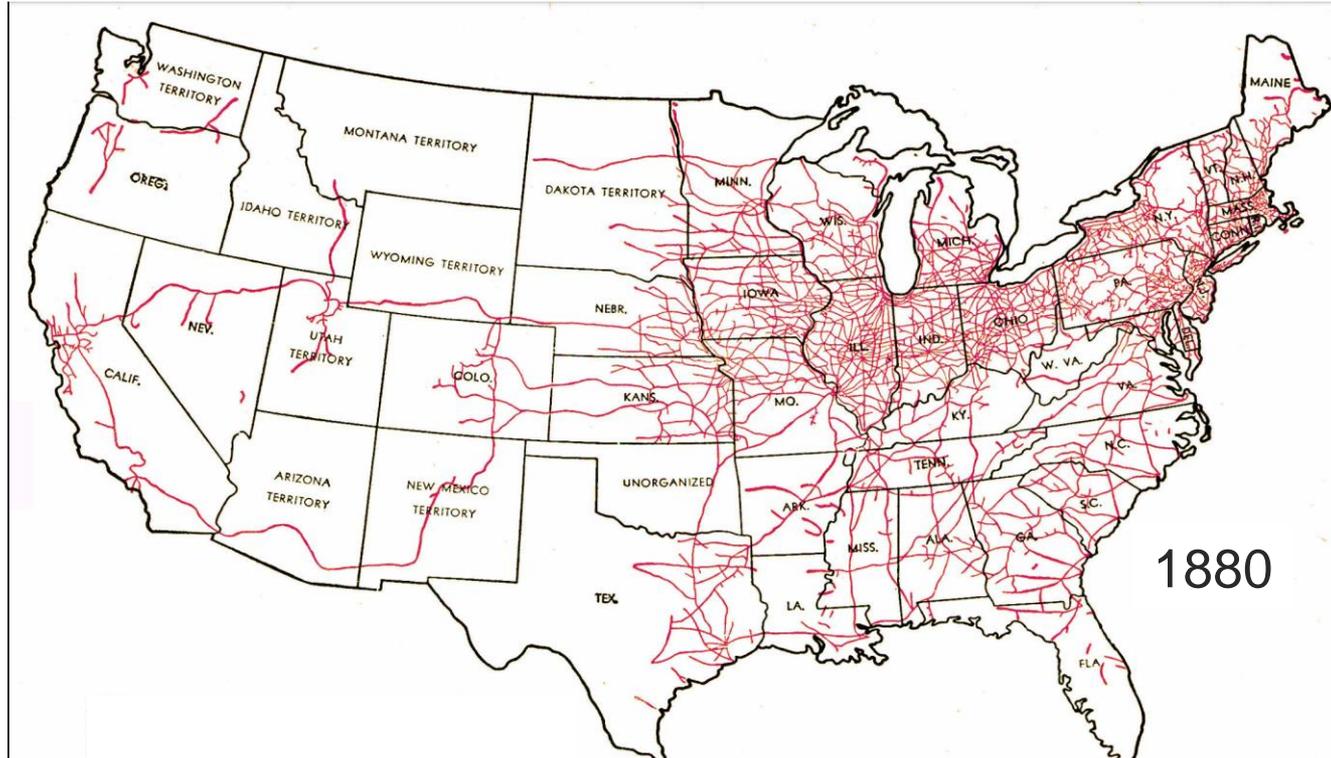
# Growth of Railroads 1860



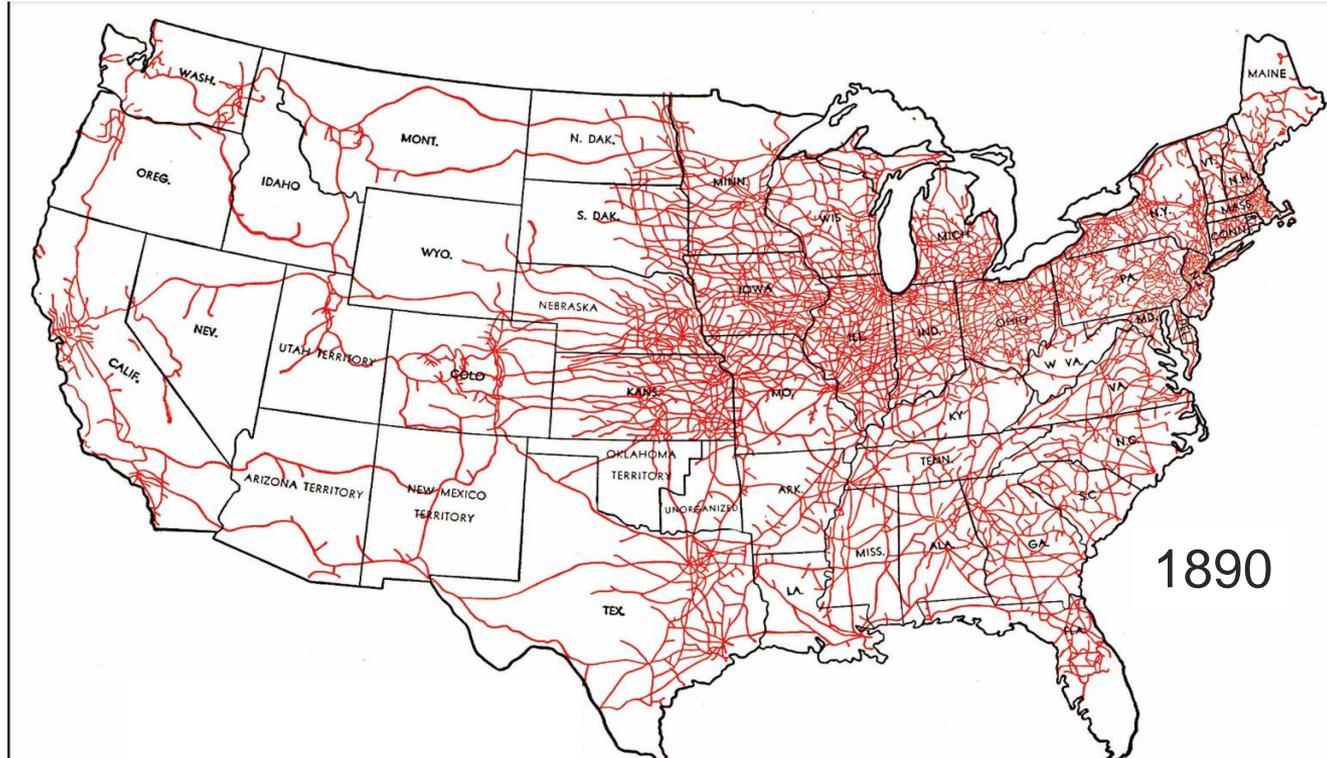
# Growth of Railroads 1870



# Growth of Railroads 1880



# Growth of Railroads 1890



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**What iconic retailer  
leveraged that innovation  
into unprecedented  
expansion?**



Richard Warren Sears



Richard Warren Sears began as a railroad station agent in North Redwood, MN... Circa 1880s

# SEARS, ROEBUCK & CO.

WE SELL EVERYTHING BY MAIL ORDER ONLY. YOUR MONEY WILL BE PROMPTLY RETURNED FOR ANY GOODS NOT PERFECTLY SATISFACTORY AND WE WILL PAY FREIGHT OR EXPRESS CHARGES BOTH WAYS

By 1890... Chicago was the 2<sup>nd</sup> largest city in the U.S. with over 1M people.

# What 'Data' Innovations Enabled Railroad Growth?

- Telegraph
- Standard Time
- Planning & Scheduling
- Complex Financing



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**The ball keeps bouncing...  
what came next?**

# What company is this?

- Began as a small chain of specialty retail stores in a major city
- ~20 years later migrated from specialty to become a mainstream & grocery products retailer
- First to introduce 'economy store concept' and grew to 1600 stores.
- ~30 years later became the U.S. largest retailer... with 16,000 stores.

# History of A&P

- Founded in 1859 as The Great Atlantic & Pacific Tea Company
- Post WW1 Added Meat & Produce to 'Dry Groceries'
- Reached \$1B in sales in 1930
- 1936 Adopted 'Self-Serve' Concept
- From 1915 -1975 was the largest food/grocery retailer in U.S...(and the largest U.S. Retailer of any kind)
- Peak reached in 1950
- Filed Chapter 11 in 2010
- Ceased Operations in 2015 after 156 years of business
- A&P was considered an American icon...as well known as McDonalds or Google is today



# What Disruptive Innovations Shaped A&P's history? ...Both its Rise and Fall



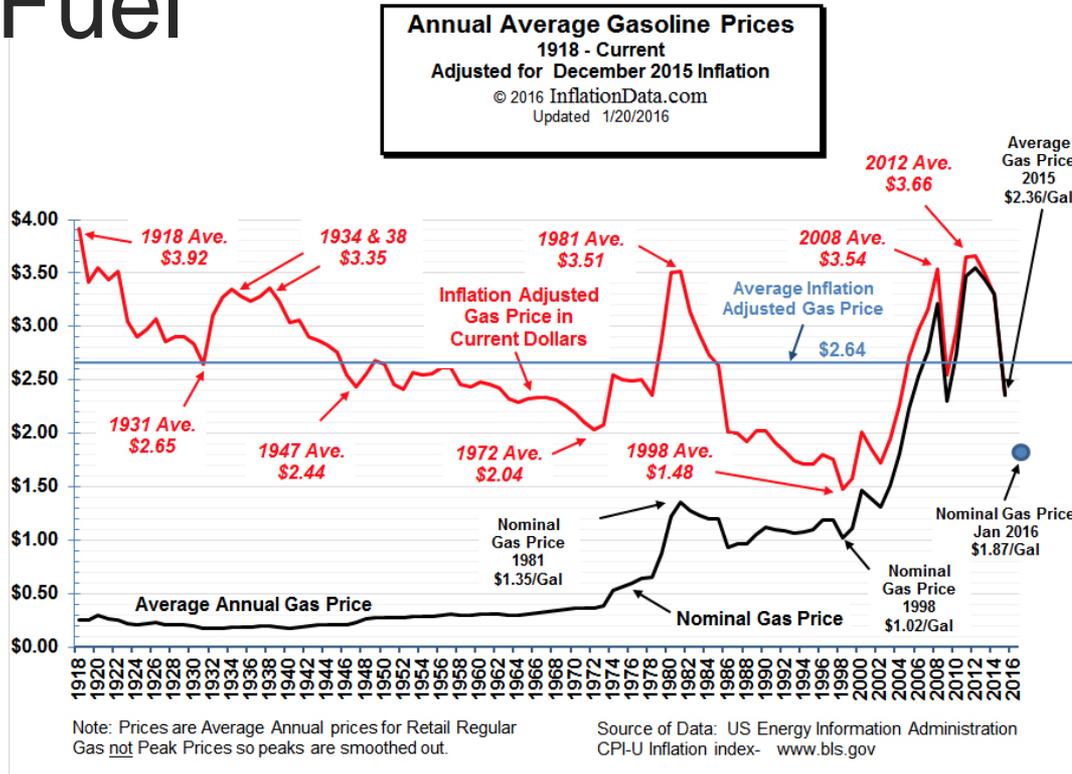
# Interstate Highways



WW2

Cheap Fuel

# Cheap Fuel



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**What iconic entity  
took advantage ?**

WALMART



More Versatile Boy--SAM WALTON

WAL-MART

WAL-MART®

WAL★MART®

Walmart



Walton, as he appears in David H. Hickman  
High School's yearbook

“To make his model work, he emphasized logistics, particularly locating stores within a day’s drive proximity to Wal-Mart’s regional warehouses, and distributed through its own trucking services”

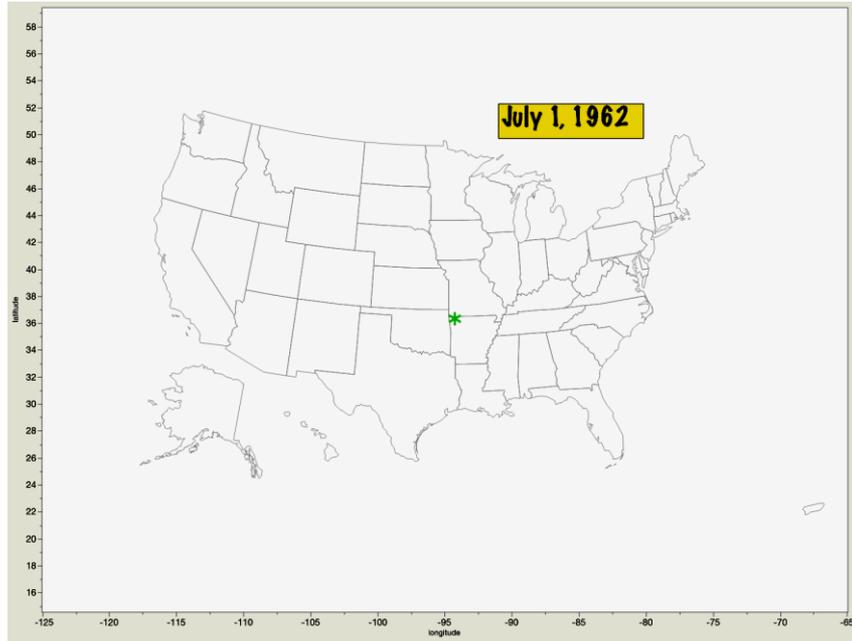
[en.wikipedia.org](https://en.wikipedia.org)

# BTW... back to SEARS

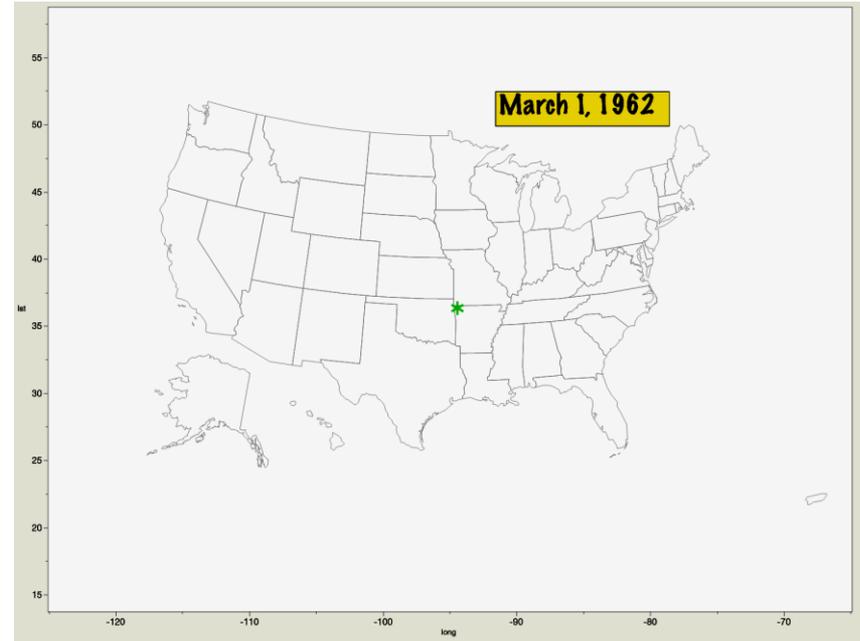
Sears became and remained  
the largest retailer in the United  
States until October 1989,  
when it was surpassed by  
**WALMART**

# Growth of WALMART...

## Store Openings

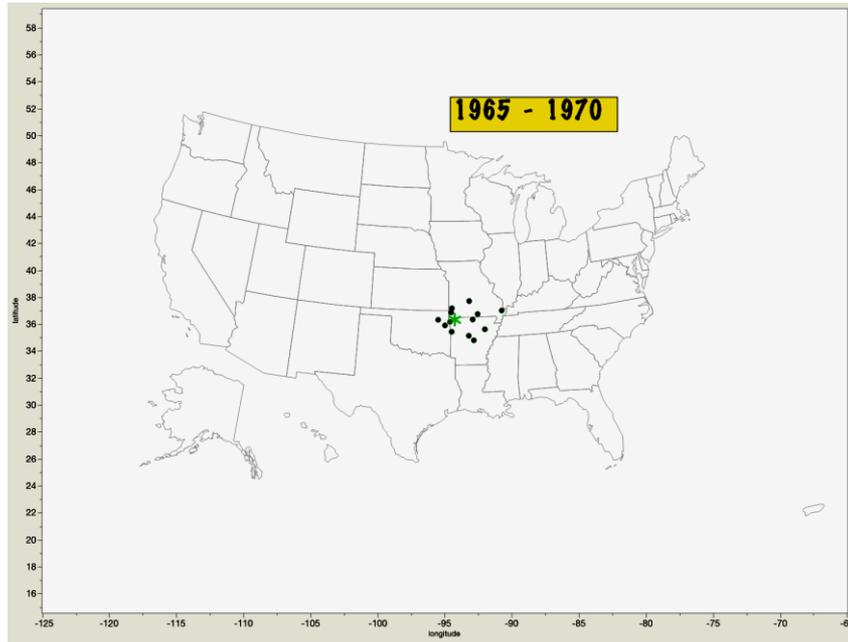


## Distribution Centers

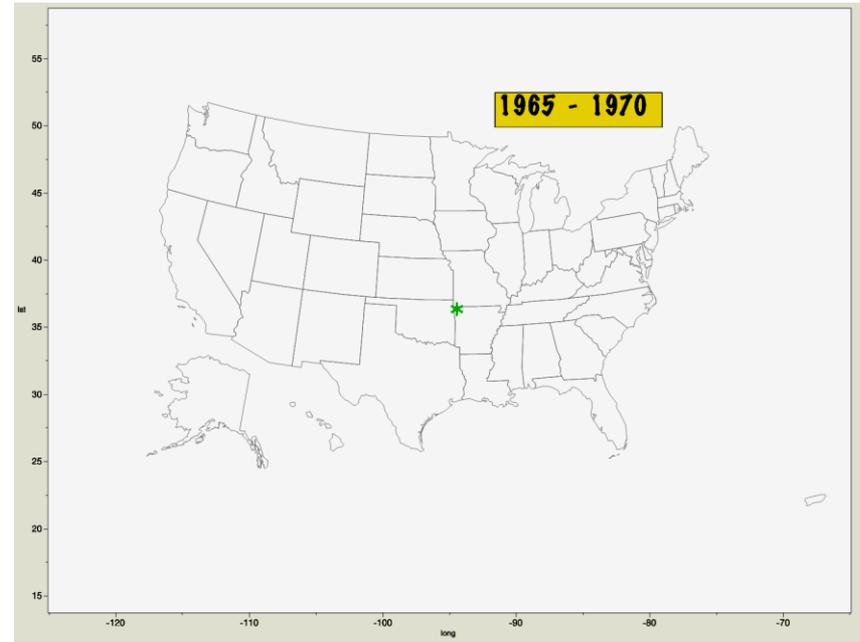


# Growth of WALMART...

## Store Openings

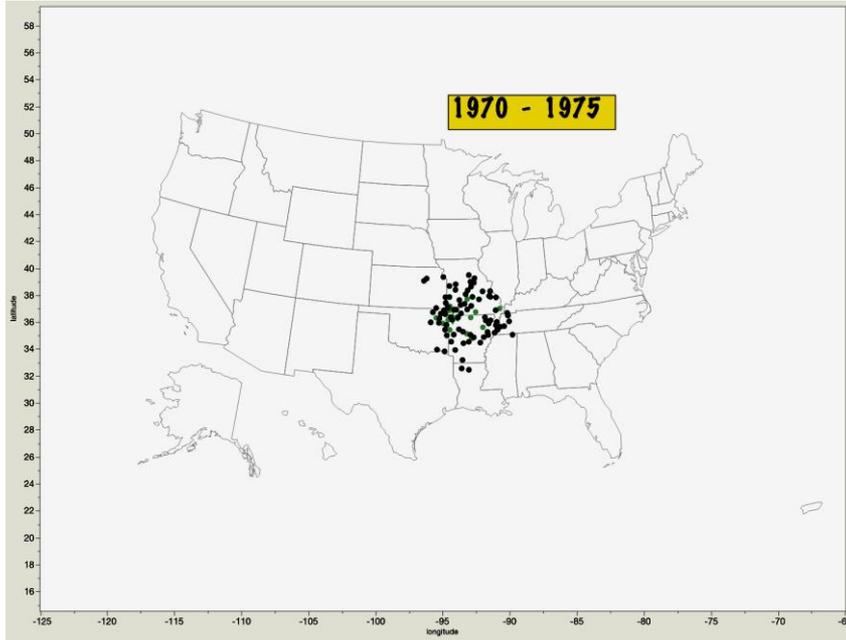


## Distribution Centers

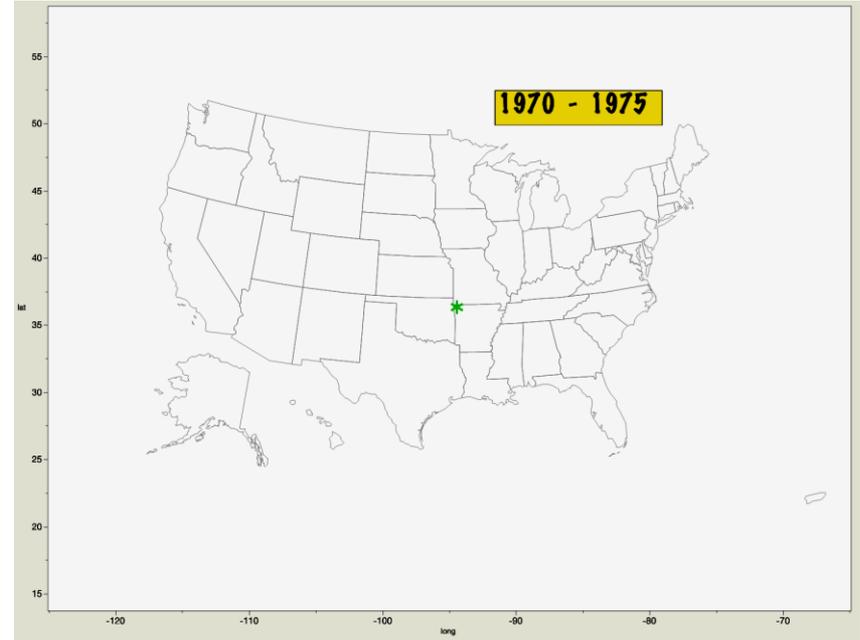


# Growth of WALMART...

## Store Openings

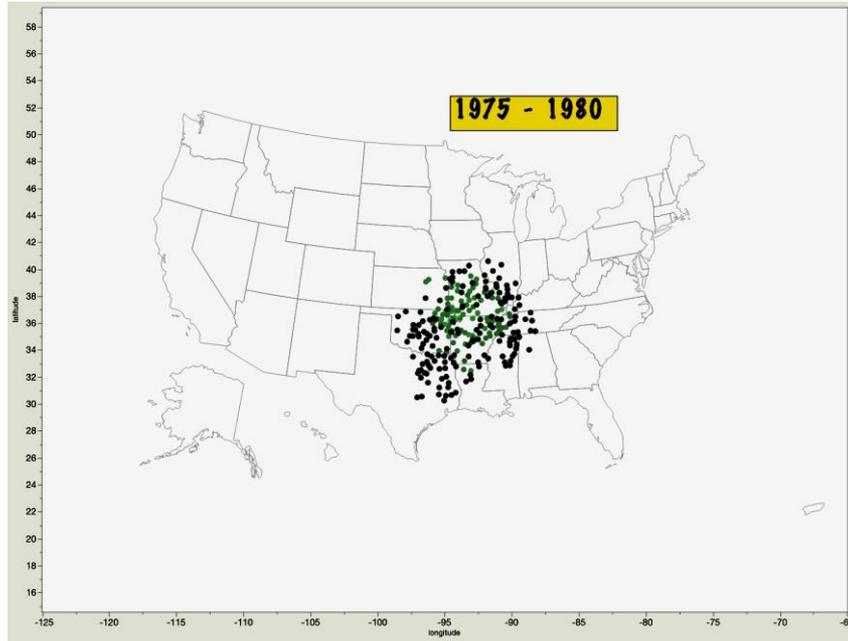


## Distribution Centers

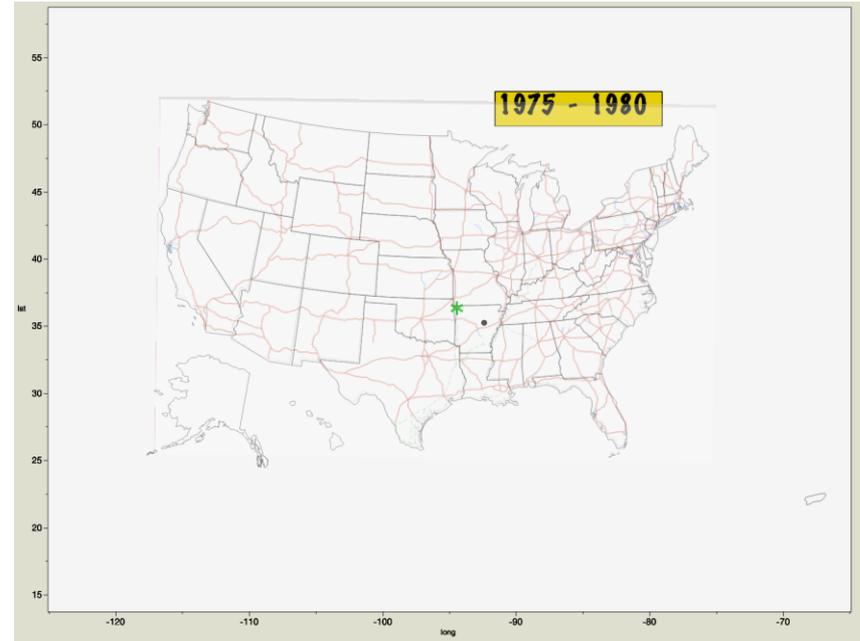


# Growth of WALMART...

## Store Openings

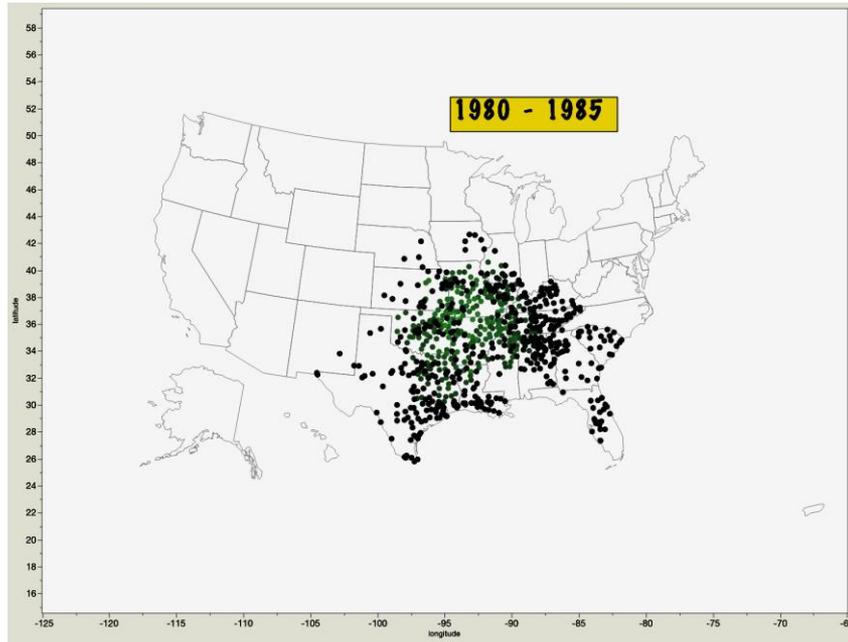


## Distribution Centers

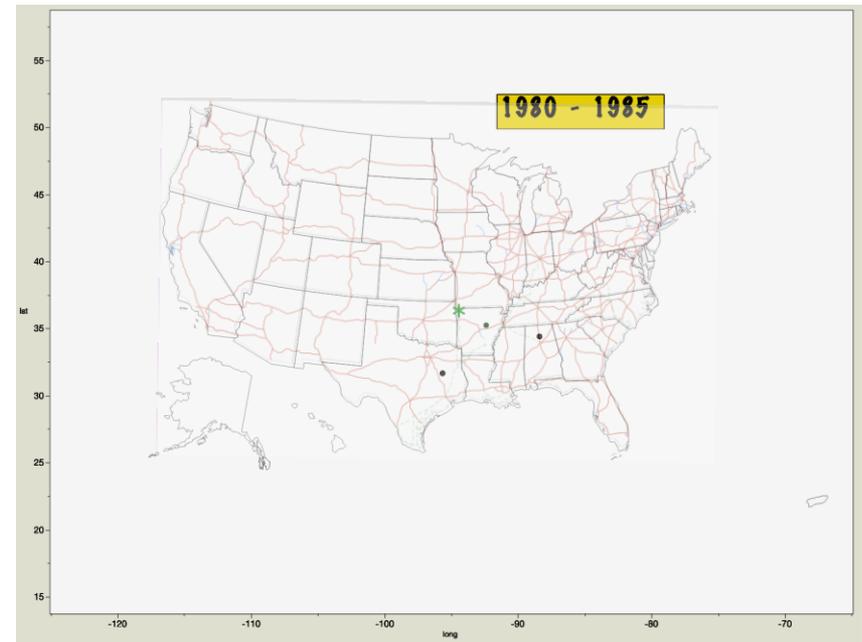


# Growth of WALMART...

## Store Openings

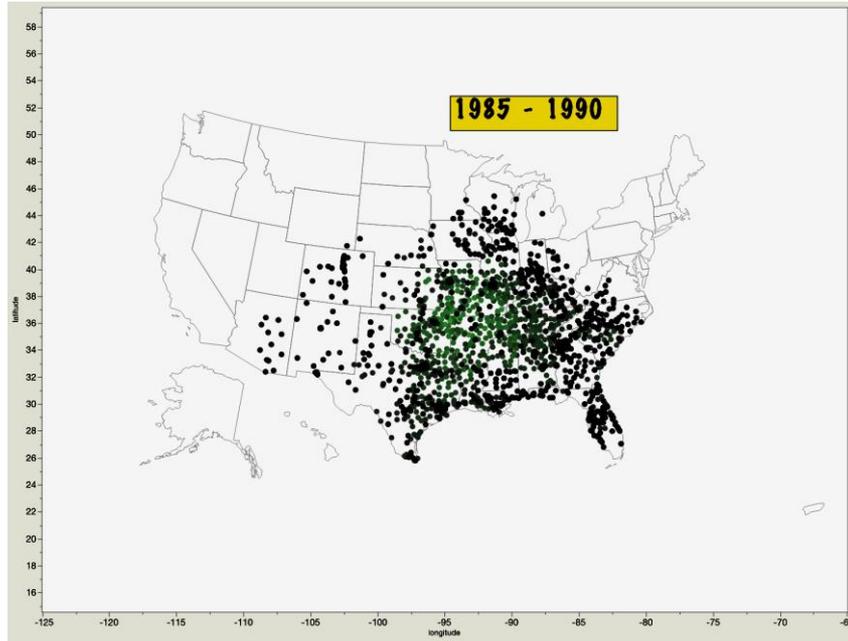


## Distribution Centers

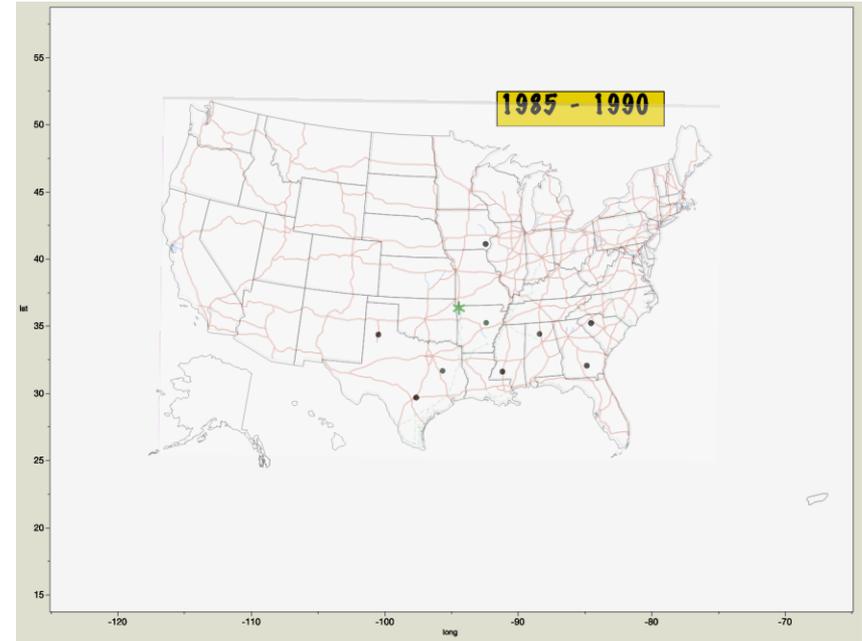


# Growth of WALMART...

## Store Openings

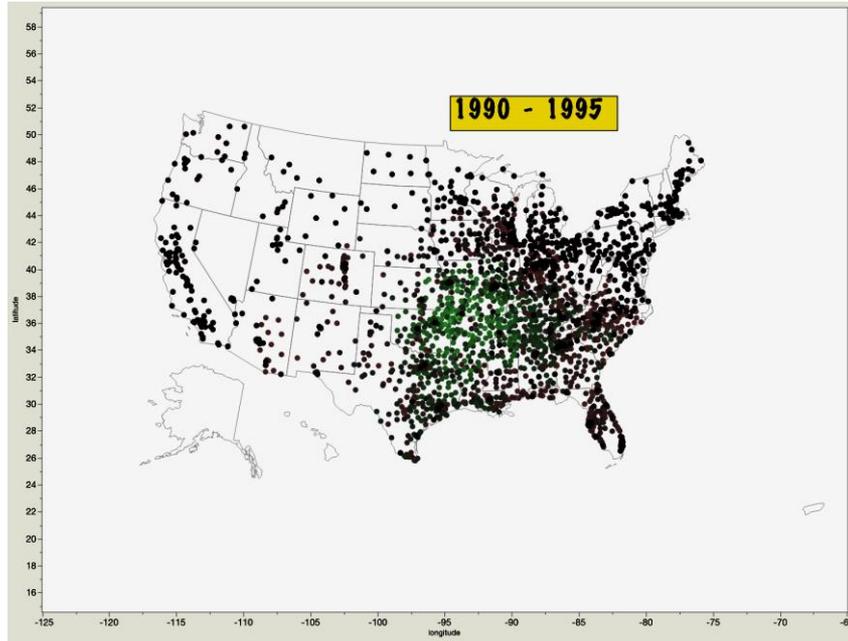


## Distribution Centers

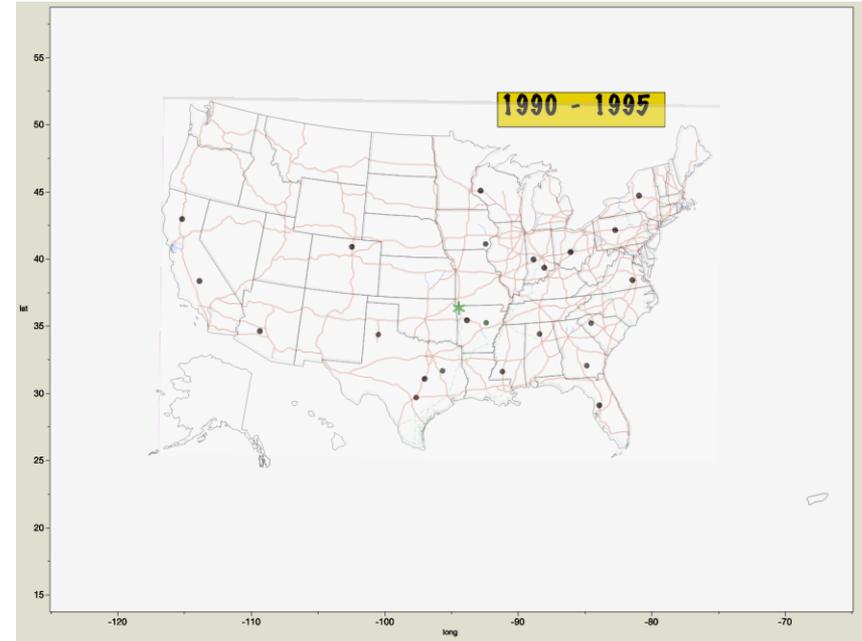


# Growth of WALMART...

## Store Openings

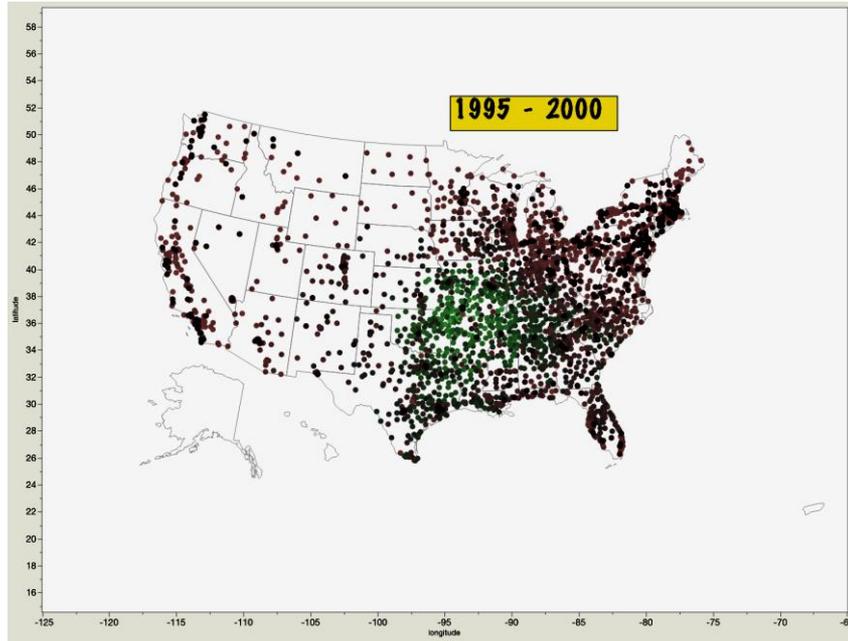


## Distribution Centers

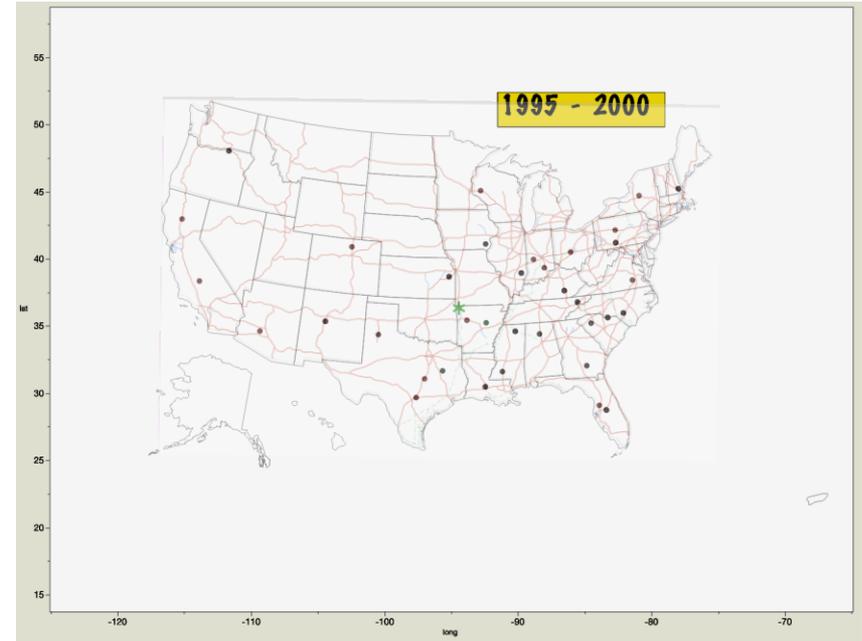


# Growth of WALMART...

## Store Openings

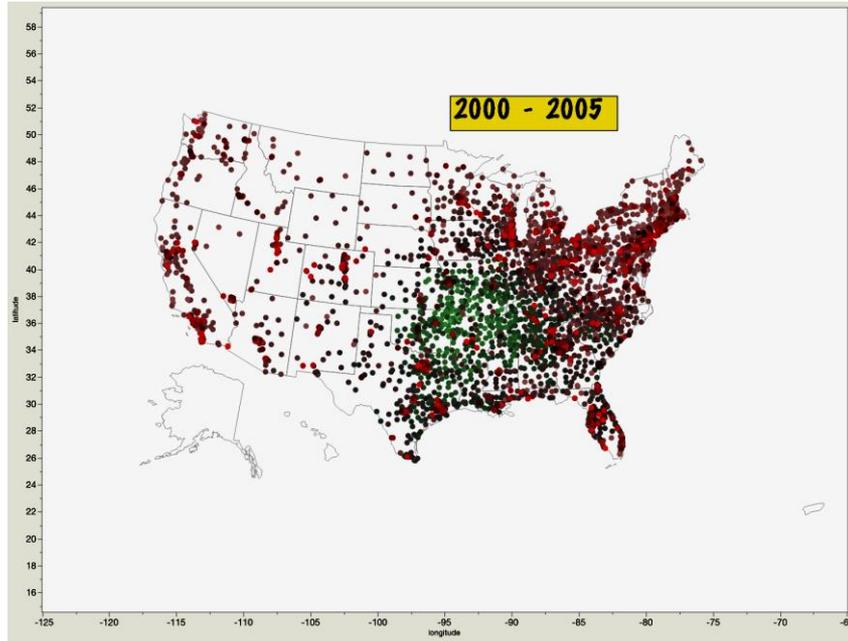


## Distribution Centers



# Growth of WALMART...

## Store Openings

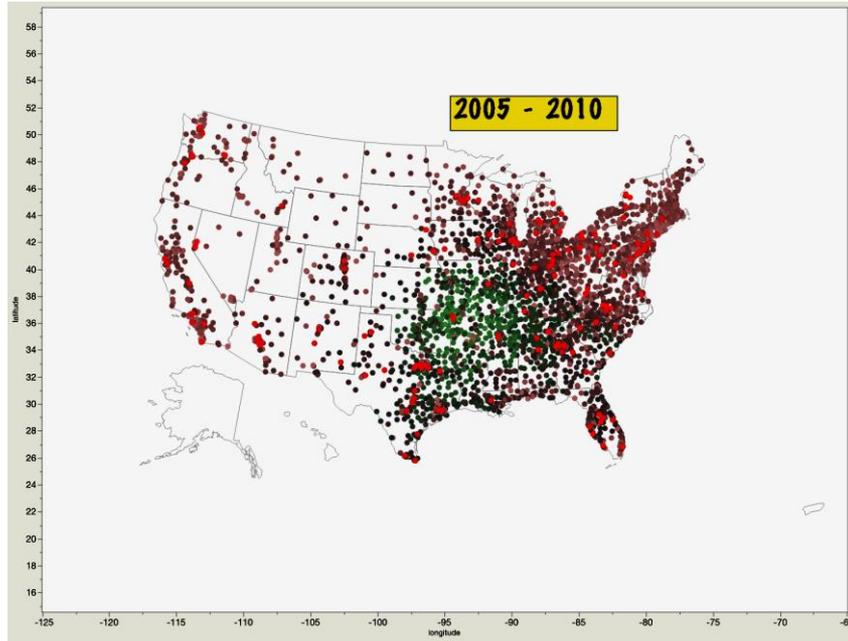


## Distribution Centers



# Growth of WALMART...

## Store Openings

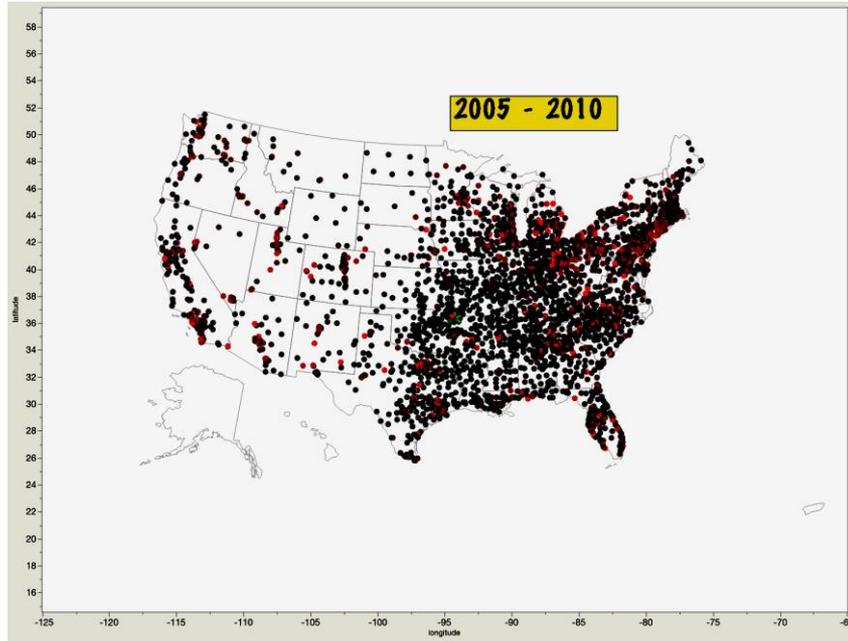


## Distribution Centers

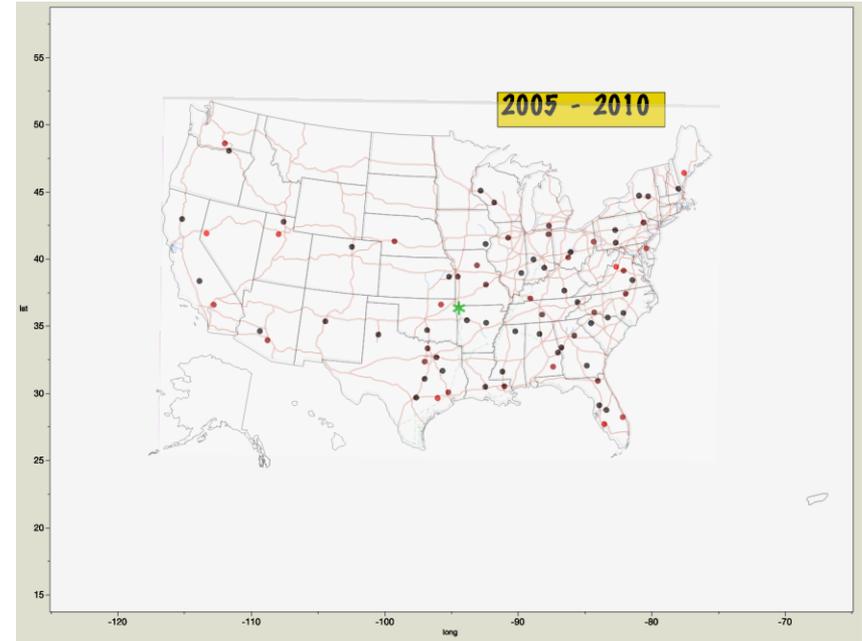


# Growth of WALMART...

## Store Openings



## Distribution Centers



# Roads, trucks & fuel were not the whole story...but it is hard to tell it

- Automated 'Order, Shipping, & Billing' using 'High-Performance' Computers replaced paper transactions, & sales calls
- Predictive Analytics lead to Purchase Decision Support

The Ball Keeps Bouncing...

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**What disruption are we in  
the midst of today?**

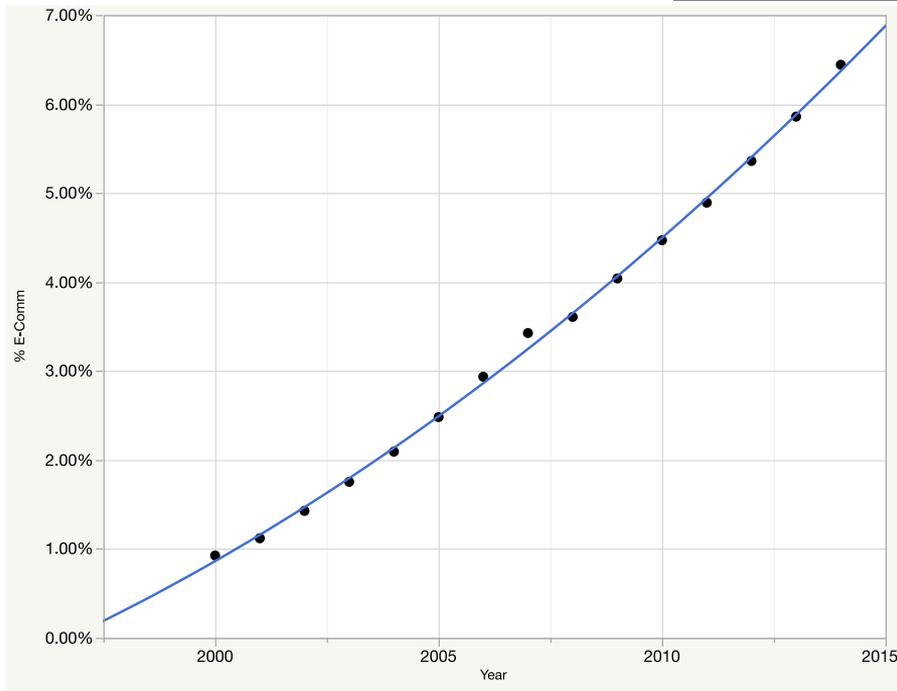
# Jeff Bezos



Bezos at the ENCORE awards in 2011



## Bivariate Fit of % E-Comm By Year



$$\% \text{ E-Comm} = -7.863744 + 0.0039343 * \text{Year} + 7.5376e-5 * (\text{Year} - 2007)^2$$

# It never was about free shipping ...

- Knowing what you want--before you do...
- Getting “want” fulfilled as fast as you need it ... at same cost.

# From Water to Wireless...

Lesson: Prosperity followed from those who mastered each disruption in its time -- before it was obvious to competitors

# What 'masteries' will this latest disruption demand?

- Perpetually-kept, curated, Big Data
- Analytics to forecast vs. explain
- Visualizations to simplify complexity
- Support decision making through understandable stories

# WHERE and HOW stuff (& services) are “created”

- Localized, ‘scaled-down’ manufacturing...without ‘scaled-up’ costs
- Mass-customized services but without direct human touch

# P&G mastered ‘making’ for each retail/tech disruption...

And to prosper for the next 175 years... it will need to master ‘the next big thing’ as well

# Rocket Science is necessary ...



To improve  
everyday  
life?



# Low Tech or High Tech?



It is the same failure of  
*Leadership* that led to the  
demise of A&P ...

that all enterprises face  
today...

It seems obvious to all in our 'choir' here... but

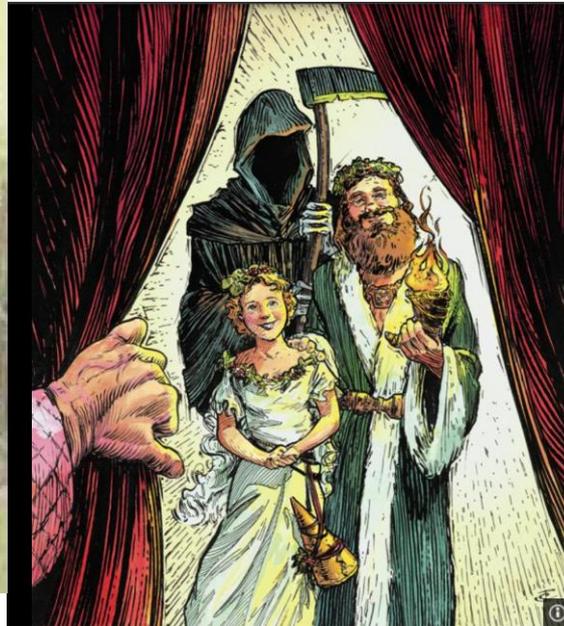
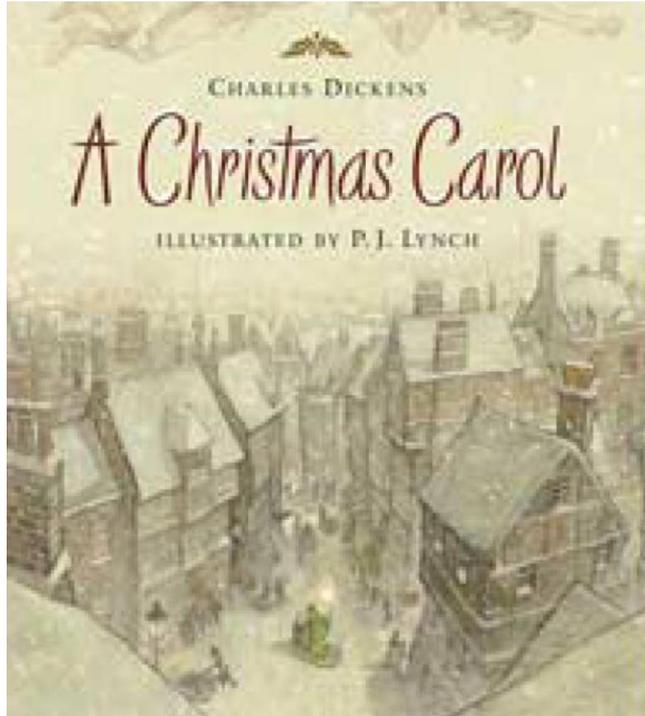
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# WHY DOESN'T EVERYONE USE *Analytics* TO INNOVATE?

**There is a *story* we have to learn  
to tell better...**

# Ghosts of Christmas

## Charles Dickens



My 'six'...

---

# A Leadership & Management Story

# 1. Create a Vision

# Two Famous Visions ...

‘Go To  
the  
Moon...’



We choose to go to the moon in this decade and do the other things, not because they are easy, but because they are hard, because that goal will serve to organize and measure the best of our energies and skills.

(John F. Kennedy)

‘I have a  
dream..’



I have a dream that my four little children will one day live in a nation where they will not be judged by the color of their skin, but by the content of their character.

(Martin Luther King, Jr.)

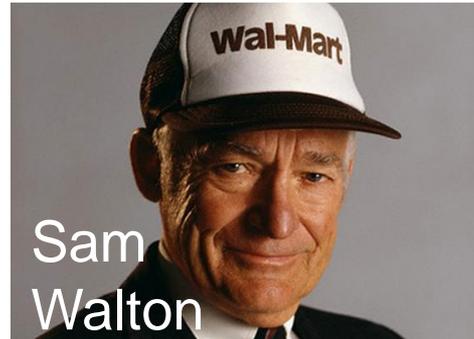
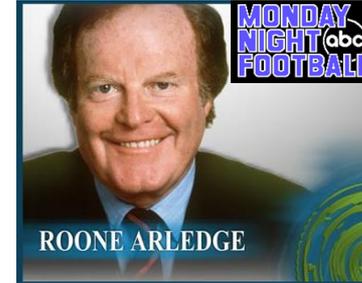
# Not all 'Visions' turn out so well..(even though well intended)

- Utopia
- Prohibition
- Federal Housing Projects
- ...you could probably name few in your enterprises...

# Some Successful Visionaries...



John Muir  
Theodore Roosevelt



# ...Call me biased...



Need I say more...

# What makes a compelling vision?

- Must *ultimately* result in “good” . . . for you, your organization, your stakeholders, etc.
- Must be rooted in *today’s* reality . . . realistic current landscape assessment, aware of adjacent approaches to analogous challenges
- Non-obvious path to ‘get there’ . . . often viewed as not possible, NOT a simplistic ‘do this and win’ list. The best serve as an aspirational lighthouse with both beach, dunes & ‘roads less traveled’ that have to be traversed and are only vaguely visible.

# Growing the use of analytics...

- What would be 'good' outcomes?
- Honestly...where is your org. today?
- Where are others heading... who in 'adjacent' enterprises?
- Not just where can we start?... But where should we head 3+ years out?

Some questions to ask yourself and your colleagues

# 2. Respond with Courage

# Explorers

Daniel Boone (1734-1820)



# Surveyors

Theodore Judah (1826-1863)



Railroad Surveyor  
1826-1863)

# Settlers

Nebraska: Settlers, C1885



# Driving Adoption (e.g. Change)...

- 3 Approaches to Drive Change:

-Below the Radar Pilot



-Horse Race  
(Must afford two horses)



-Everybody Jump!  
(PS...bridge is OUT ... BEFORE  
you crossed)

# The 'Below-the-Radar' Pilot



- Pick case for learning potential ... not for Business impact.
- Success is a good test of the idea not success of the test.
- Be honest with outcomes
- Fail early and often.

# The Horse Race



- Pick cases based on biggest business impact.
- Must be a public race. (AKA... 'the Admiral test' in Military testing)
- 'Loss' should change the idea. (or kill it!)

# Jump! Bridge is out



- **STOP** doing it the 'old' way.
- Status quo not an option...
- Similar to site closure or divestiture.

# 3. Develop Mastery

# Developing Mastery is about starting with the right questions

- Not starting with detailed knowledge, or tool mastery, or theory, or code etc...

*“It is useful to approach a problem with the knowledge of fundamentals but without the stifling influence of prior detailed expertise and experience”... From Address to MIT Graduates circa 1979*

*Paul B. MacCready  
 Aeronautical Engineer and Designer of the Gossamer Albatross*



1<sup>st</sup> Human Powered  
 Heavier than Air  
 Aircraft to fly the  
 English Channel



June 12, 1979

# Craft the Right 'Problem' Statement

- Contradictions are a good place to start...

# An early 'missed opportunity' by P&G Founders:

...P&G Sold

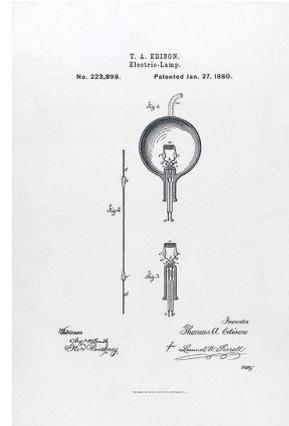
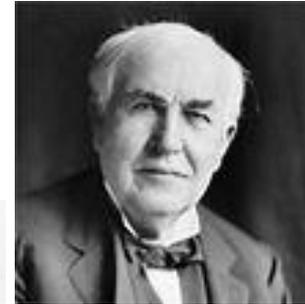
**Light**

not 'Candles'



Thomas Edison

~ age 15 was a telegraph runner to the P&G Candle Factory



# Innovation & Contradictions...

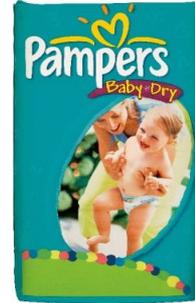


- strong but soft

## Materials

...

- stretch not break



- breath but contain



- absorbent but strong



## Packages ...

- creative design is key,
- strong but light, with least material
- never leak...but open easily.



# Use Contradictions...

## Formulations ...

- Be concentrated, but used easily.

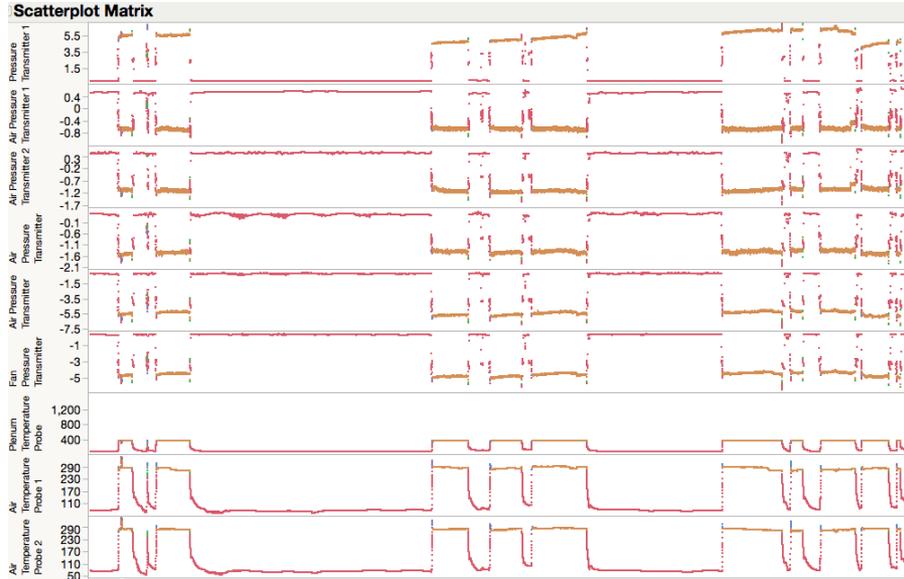


## Liquids ...

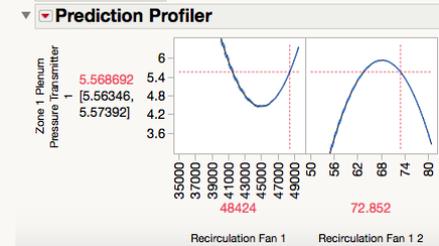
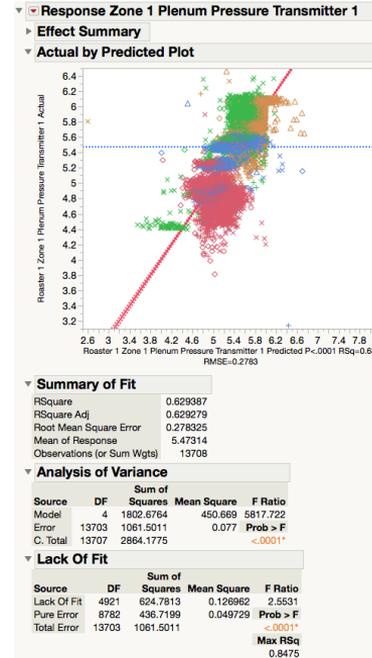
- mixtures can't separate,
- must dispense easily... but stay where applied.



# Use of analytics to 'understand' fundamentals



Plant Operating Data



# 4. Act with Humility

# Act with Humility

Being Humble is not thinking less of yourself,  
it is thinking of yourself less

TS Elliot

# Numbers have no ego...

# 5. Display Passion

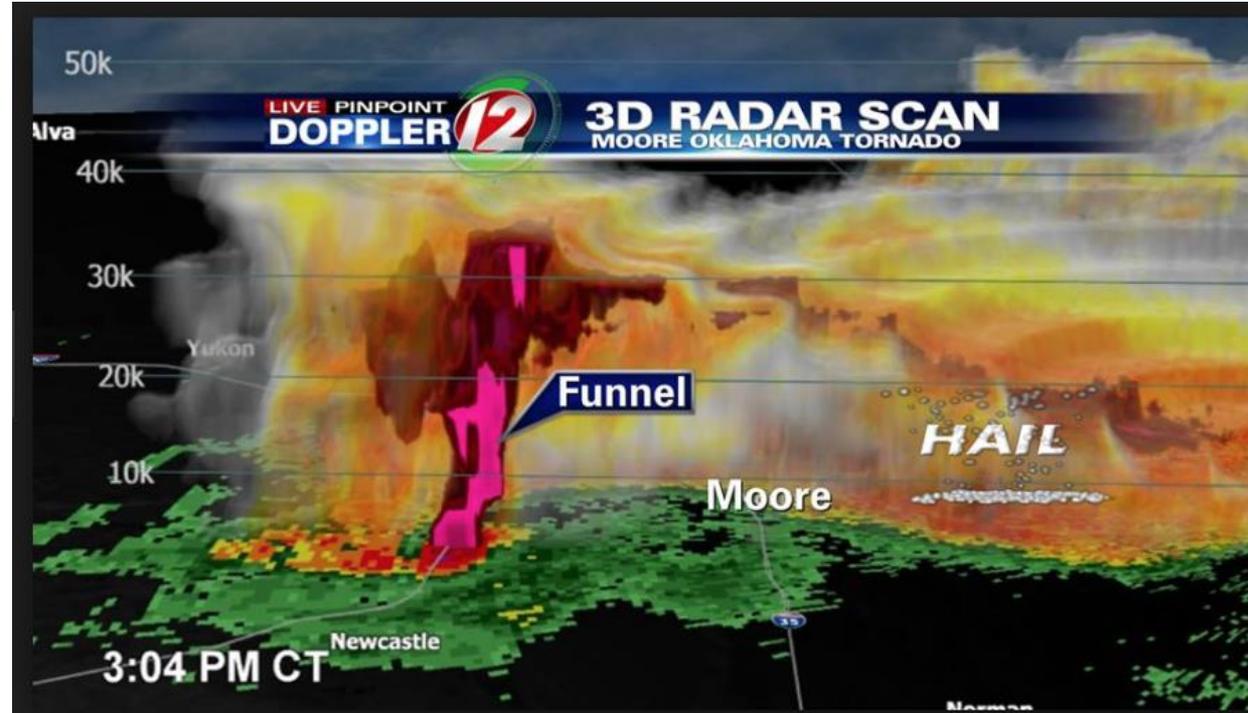
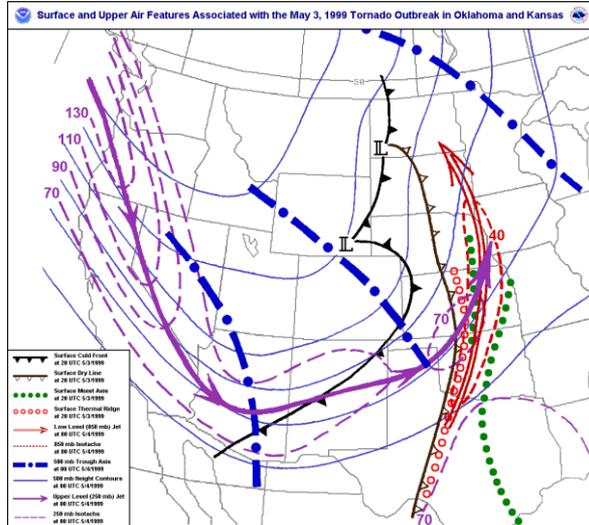
# Storytelling ... with Analytics.

We need to learn from the weather guys!

# All good stories have similar elements

- Heroes... (never yourself as an analyst)
- Obstacles... (nature, competitors, time...)
- Rewards ... (improving life, money...)
- Setting, Mentors, & Magic Items...(Lightsabers, Obi-Wan, your warehouse...)

# Visualization provides great views of Settings & Obstacles & Magic Items!



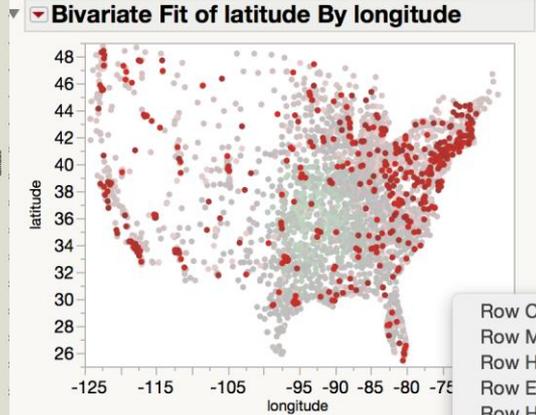
From This



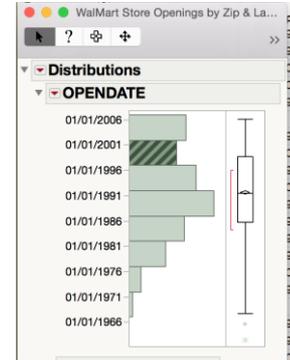
TO THIS!

# Using JMP visualization...

WalMart Store Openings by Zip & Lat Long: Fit Y by X of latitude by longitude



- Row Colors ▶
- Row Markers ▶
- Row Hide and Exclude ▶
- Row Exclude
- Row Hide
- Row Label
- Row Legend...
- Row Editor
- Select Matching Cells
- Name Selection in Column... ▶
- Background Color ▶
- Background Map... ▶
- Marker Size ▶
- Marker Drawing Mode ▶
- Marker Selection Mode ▶



WalMart Store Openings by Zip & Lat Long

| county | STREETADDR                   | STRCITY           | STRSTATE | ZIPCODE | type_store  | zip   | city              | state | latitude  | longitude  |
|--------|------------------------------|-------------------|----------|---------|-------------|-------|-------------------|-------|-----------|------------|
| 007    | 2110 WEST WALNUT             | Rogers            | AR       | 72756   | Supercenter | 72756 | Rogers            | AR    | 36.342235 | -94.07141  |
| 009    | 1417 HWY 62/65 N             | Harrison          | AR       | 72601   | Supercenter | 72601 | Harrison          | AR    | 36.236984 | -93.09345  |
| 011    | 30983 HWY 441 SOUTH          | Commerce          | GA       | 30529   | Supercenter | 30529 | Commerce          | GA    | 34.210423 | -83.46842  |
| 007    | 2901 HWY 412 EAST            | Siloam Springs    | AR       | 72761   | Supercenter | 72761 | Siloam Springs    | AR    | 36.179905 | -94.50208  |
| 045    | 1155 HWY 65 NORTH            | Conway            | AR       | 72032   | Supercenter | 72032 | Conway            | AR    | 35.075467 | -92.43401  |
| 119    | 3801 CAMP ROBINSON RD.       | North Little Rock | AR       | 72118   | Wal-Mart    | 72118 | North Little Rock | AR    | 34.813269 | -92.30229  |
| 029    | 1621 NORTH BUSINESS 9        | Morrilton         | AR       | 72110   | Supercenter | 72110 | Morrilton         | AR    | 35.156491 | -92.75858  |
| 143    | 1303 SOUTH MAIN              | Sikeston          | MO       | 63801   | Supercenter | 63801 | Sikeston          | MO    | 36.891163 | -89.58355  |
| 021    | 2020 SOUTH MUSKOGEE          | Tahlequah         | OK       | 74464   | Supercenter | 74464 | Tahlequah         | OK    | 35.923658 | -94.97185  |
| 005    | 65 WAL-MART DRIVE            | Mountain Home     | AR       | 72653   | Supercenter | 72653 | Mountain Home     | AR    | 36.329026 | -92.35781  |
| 131    | 1500 LYNN RIGGS BLVD         | Claremore         | OK       | 74017   | Supercenter | 74017 | Claremore         | OK    | 36.327143 | -95.61192  |
| 097    | 2705 GRAND AVE               | Carthage          | MO       | 64836   | Supercenter | 64836 | Carthage          | MO    | 37.168985 | -94.31164  |
| 105    | 1800 S JEFFERSON             | Lebanon           | MO       | 65536   | Supercenter | 65536 | Lebanon           | MO    | 37.678528 | -92.64733  |
| 091    | 1310 PREACHER RD/HGWY 160    | West Plains       | MO       | 65775   | Supercenter | 65775 | West Plains       | MO    | 36.719145 | -91.87408  |
| 033    | 2214 FAYETTEVILLE RD         | Van Buren         | AR       | 72956   | Supercenter | 72956 | Van Buren         | AR    | 35.456536 | -94.34581  |
| 145    | 3200 LUSK DRIVE              | Neosho            | MO       | 64850   | Supercenter | 64850 | Neosho            | MO    | 36.86429  | -94.39016  |
| 067    | 2500 MALCOLM ST/HWY 67 NORTH | Newport           | AR       | 72112   | Wal-Mart    | 72112 | Newport           | AR    | 35.586065 | -91.24895  |
| 023    | 333 S WESTWOOD               | Poplar Bluff      | MO       | 63901   | Supercenter | 63901 | Poplar Bluff      | MO    | 36.759357 | -90.41689  |
| 083    | 1712 EAST OHIO               | Clinton           | MO       | 64735   | Supercenter | 64735 | Clinton           | MO    | 38.364214 | -93.76042  |
| 169    | 185 ST ROBERT BLVD           | St. Robert        | MO       | 65584   | Supercenter | 65584 | St. Robert        | MO    | 37.827415 | -92.135741 |
| 097    | 4901 SO. MILL ROAD           | Pryor             | OK       | 74361   | Supercenter | 74361 | Pryor             | OK    | 36.294174 | -95.30295  |
| 064    | 1201 MEEBEE ROAD EAST        | Dumas             | LA       | 71270   | Supercenter | 71270 | Dumas             | LA    | 32.51178  | -92.61898  |

# 6. Keep Hope

# My challenge for you...

Develop a **Vision**, that commands you to  
respond with **Courage**, requiring you to  
develop your **Mastery**, while  
acting with **Humility**, and yet excites you to  
display your **Passion**, kindled by the  
**Hope** you always keep ...

**for a better tomorrow--**For you, your family, the enterprise you work for, the communities in which we live and work, and all our stakeholders!

# Thank You