



Applying Analytics for Success:
Practical Solutions

December 13, 2018



Who Am I?

Aaron Clark
Data Scientist
3 Years @ STARS

Strategic Administrative & Reimbursement Services
A wholly owned subsidiary of Advanced Radiology Services (ARS)

Co-Founder
West Michigan R Users Group

Bachelor of Science – Statistics
Master of Science – Biostatistics



- **Who is ARS?**
- **The Team**
- **Data & Technology We Use**
- **Practical Data Products We've Produced**



Who is ARS?



- ARS: **3rd largest** privately owned radiology practice in the nation

146 Rads

27 PAs & NPs

Formed

1997

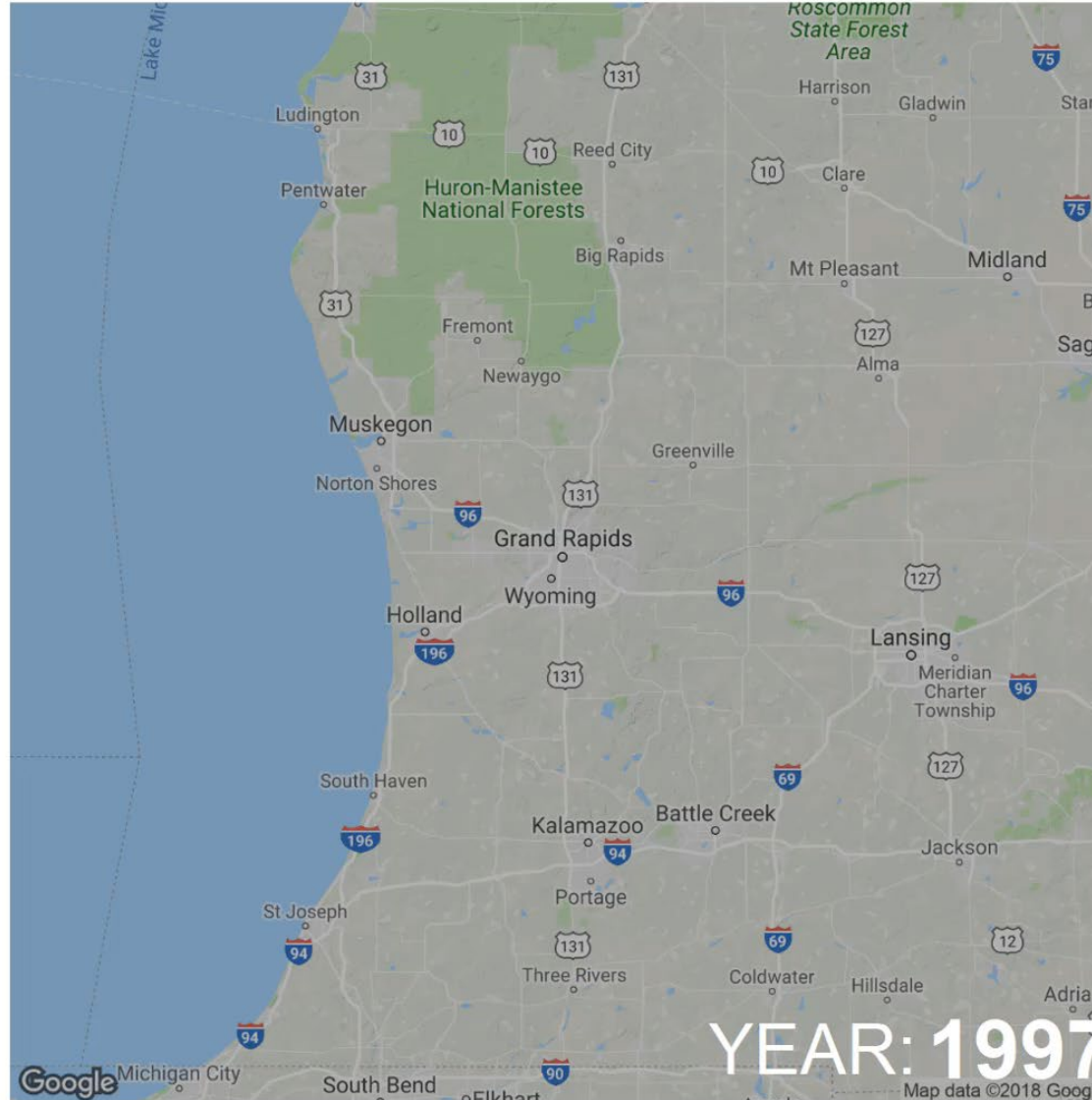


2M

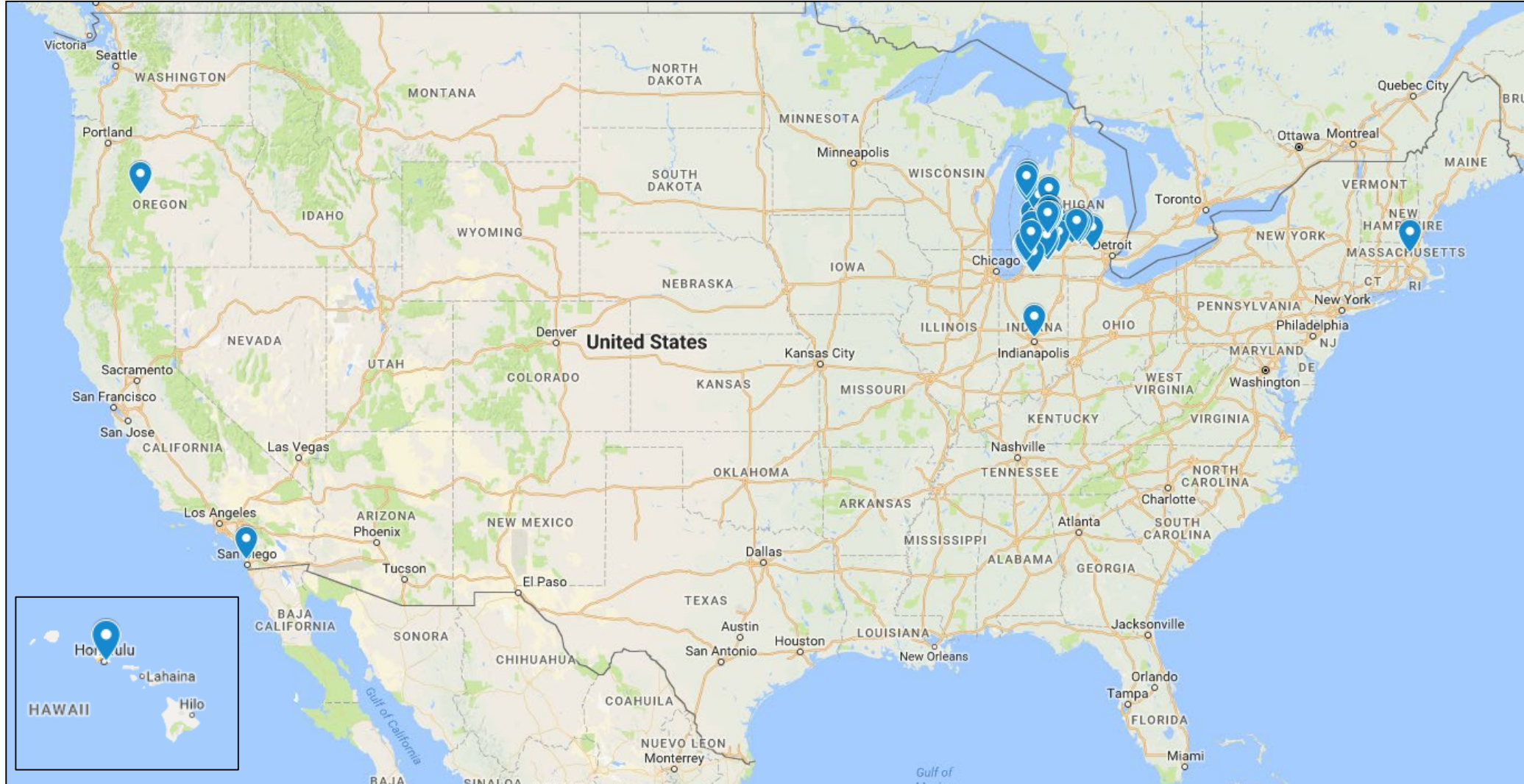
Studies
Performed/ Year

- STARS, LLC (~100 Employees) provides administrative support
 - IT, Billing, Clinical Quality, Accounting, HR, Legal, Scheduling, Software Development, Data Analytics

Patient Service Sites



Location of Radiologists





The Team

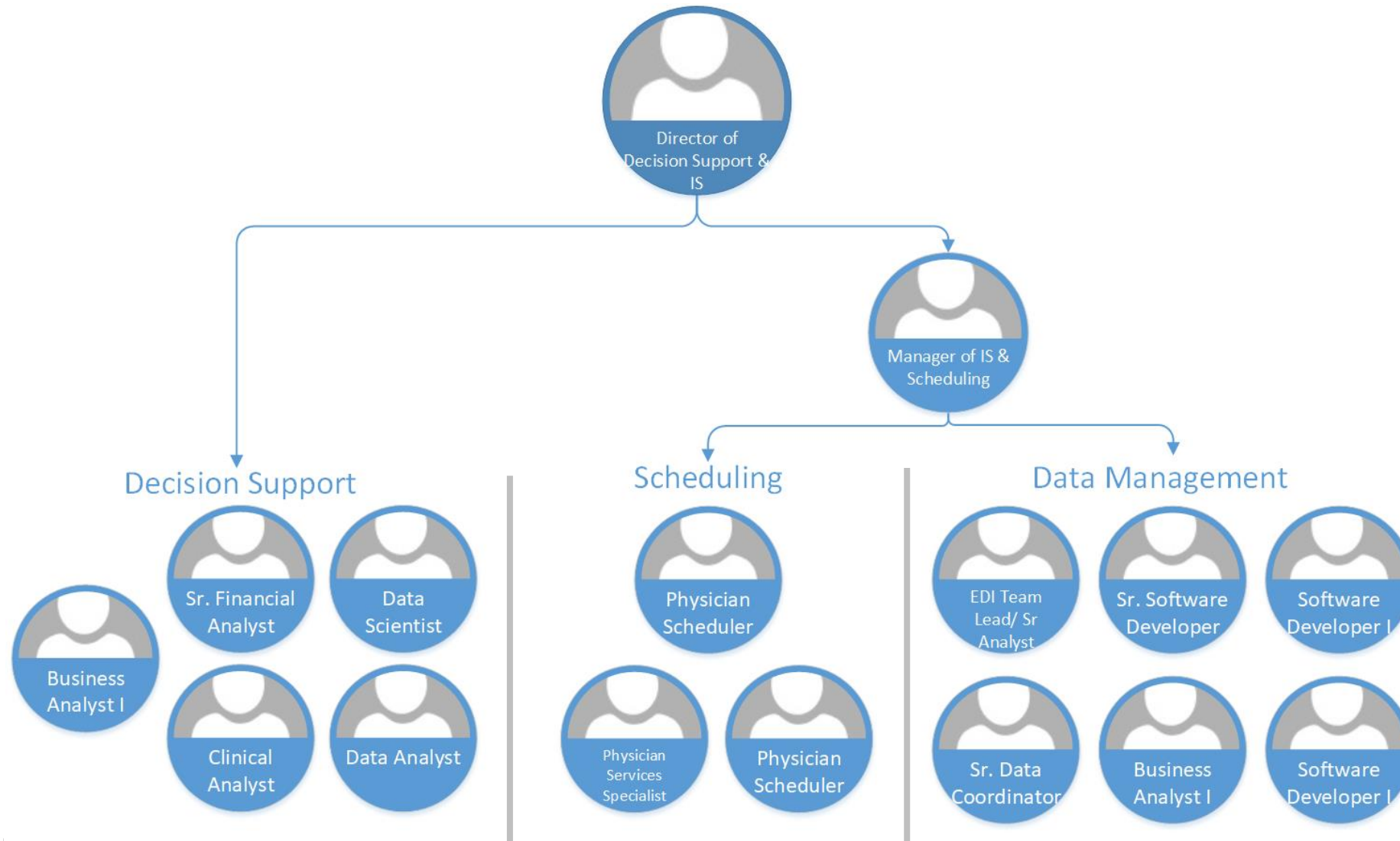




Decision Support Mission Statement...

- *Use data and analytics to support our Physicians and Organization as we work to create superior value more efficiently.*

The Dream Team



Data Analytics Life Cycle

**PLANT ANALYTICS SEEDS EARLY
TO ACCELERATE YOUR GROWTH**



**Seed
Planted**
**No
Analytics**



Sprouting
**Very Early
Development**



A Sapling
Descriptive



**A Young
Tree**
Diagnostic



**Bearing
Fruit**
Predictive



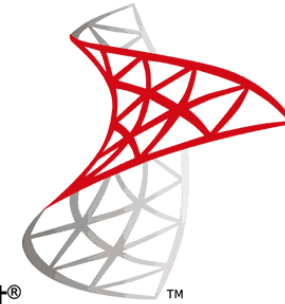
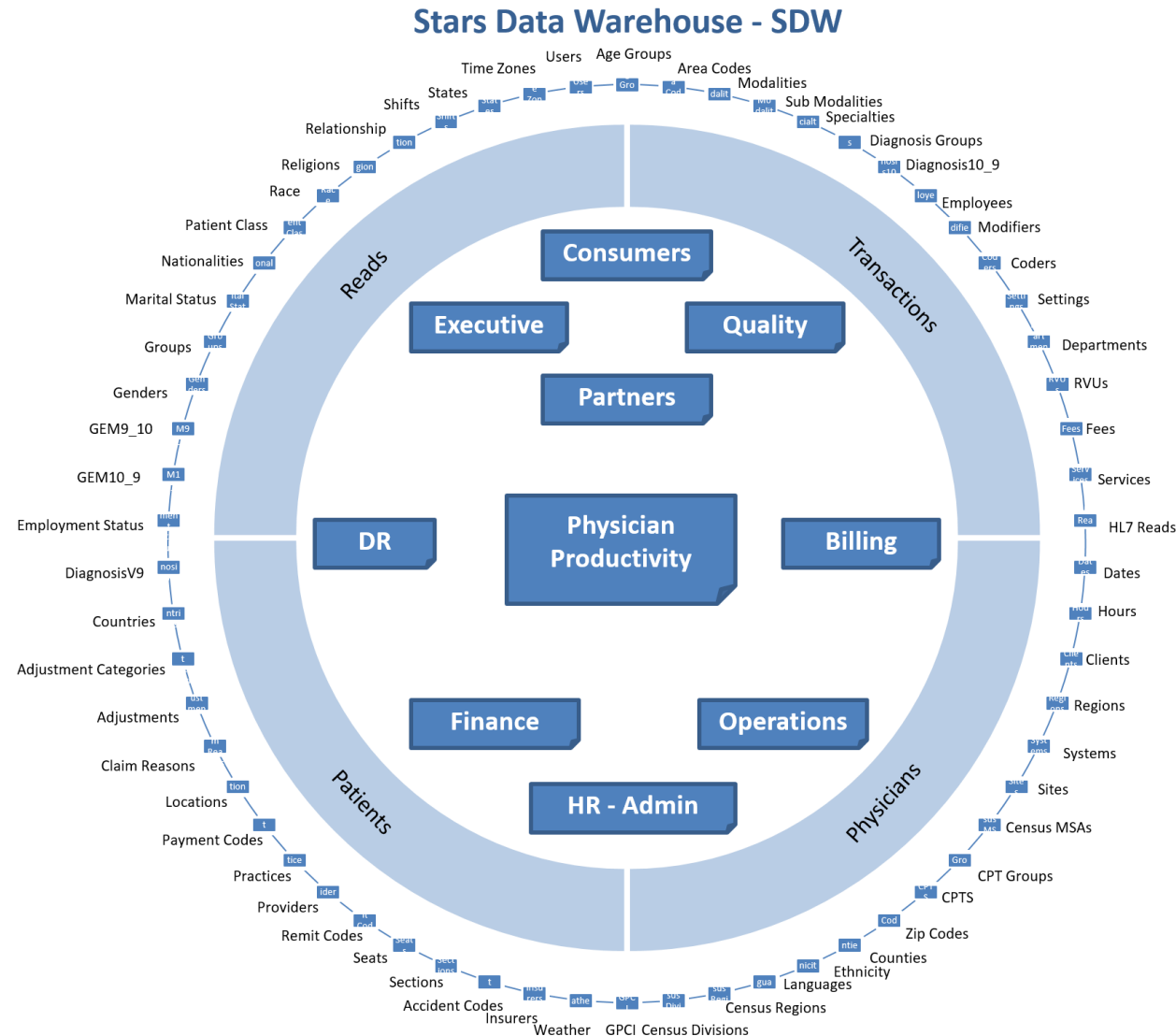
**Deeply
Rooted**
Prescriptive



Data & Technology



STARS Data Warehouse (SDW)



Microsoft®
SQL Server

3.2

TERABYTES



"Open Source Language and Software Environment for Statistical Computing and Graphics"

5 Reasons We Use R

1. It's \$0
2. It's designed for me
3. It's open source
4. It's well supported
5. It's VERSATILE



**A file format for making dynamic documents with R.
Compile output from data source to deliverable, all in 1 script
Output to HTML, PDF, Microsoft Word, or even HTML5 or PDF Slideshow**

**A web application Framework for R!
Turn your analyses into interactive web applications
No HTML, CSS, or JavaScript knowledge required**

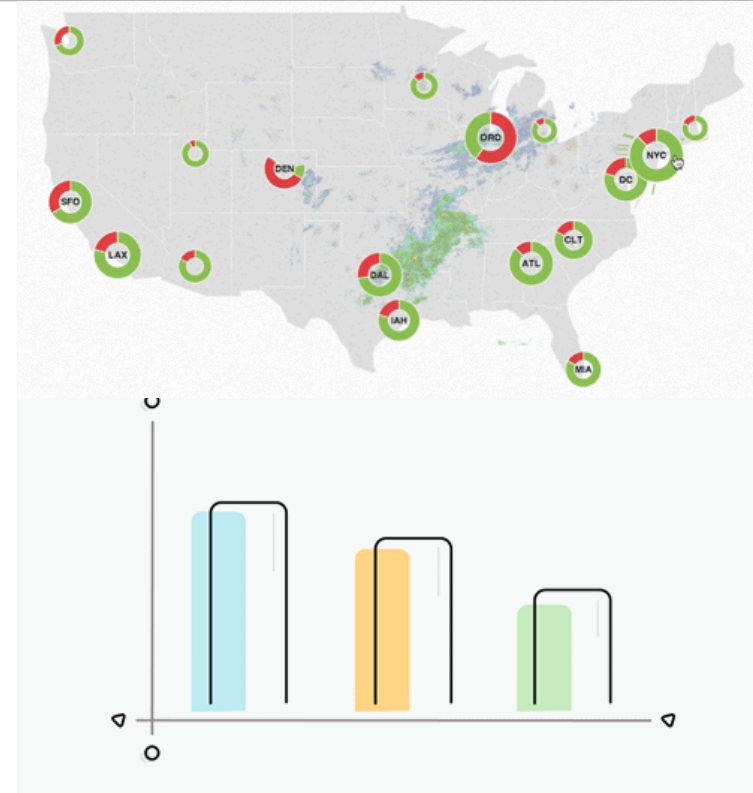
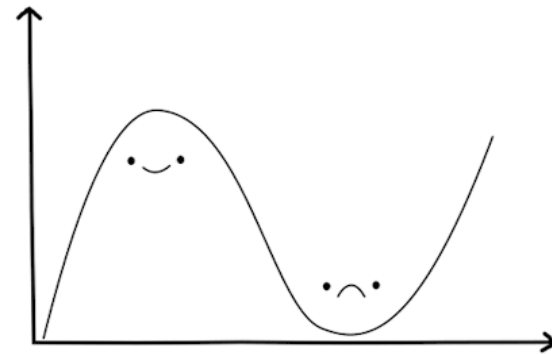




Practical Solutions



A Theme...



Shift Minimum Program

Quarterly Physician Progress Report

07/01/2018 - 07/31/2018

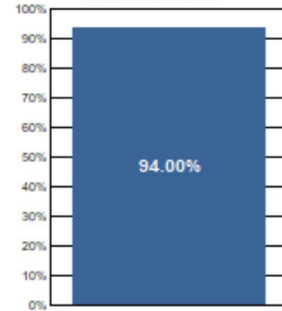
Data as of 08/24/2018

Mentor Sak: 117

Physician Sak: 229

229

Percent of Shifts at or above the Shift Minimum



Status to date for this Quarter is **Green**. Option 1 has been met, Rvu Deficit does not need to be made up.



Option 1 - Meet Shift Minimum or (120 Studies and 40 Rvus) 90% of the Time.	Option 2 - Exceed Sum of the Shift Median for all Shifts with a Minimum and Option1 not met.	Rvu Deficit
✓	✓	
17 Work Shifts 16 Met 1 Miss (94.12)%	980.92 needed 1,023.29 produced	

Shift Date	Task	Minimum	Median Q4 2017	Work Rvus a	In Shift Time Tracker Rvus b	Peer To Peer Rvus c	Total Rvus (a+b+c)	Successful Shift
07/01/2018	Shift A	52.00	56.32	53.21	0.00	0.00	53.21	✓
07/02/2018	Shift B	52.00	54.52	52.68	0.00	0.00	52.68	✓
07/03/2018	Shift A	52.00	53.89	62.76	0.00	0.00	62.76	✓
07/04/2018	Not Scheduled	0.00	0.00	0.00	0.00	0.00	0.00	-

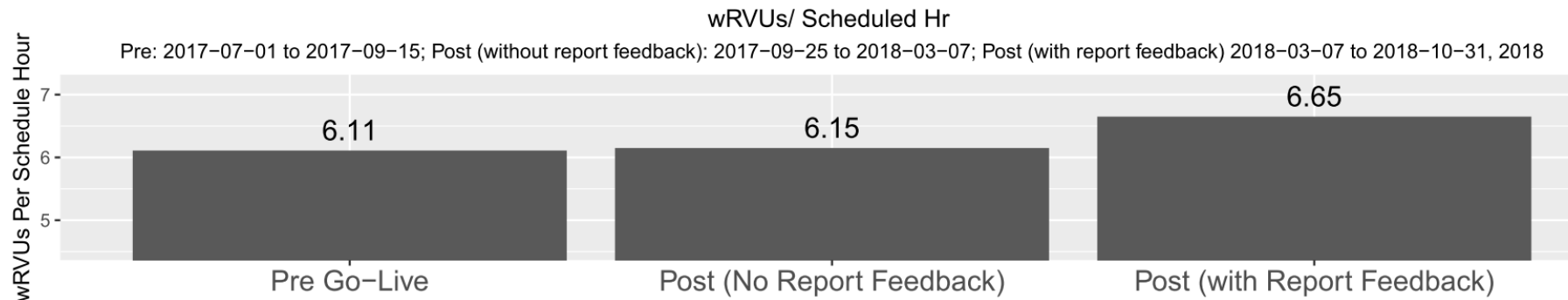


OR



crystal reports

Using Data Analytics and Physician Reporting we have increased Radiologist Productivity across the corporation. Formal productivity reporting has created an organic 8.8% increase in Work Rvus Per Scheduled Hour, saving us from hiring 8 physicians!



8.8%

The ARS Volume Tool



ARS Volume Tool Parameters

What kind of query would you like to run?

- ☒ New Query
- ☐ Load Saved Query
- ☐ Comparative Query

Select Date Parameters:

Date Variable

- ☒ Dictation Date
- ☐ Exam Date
- ☐ Shift Start Date

Date Range

- ☒ Most Recent Day
- ☐ Month to Date
- ☐ Year to Date
- ☐ Custom Date Range

Begin Date (mm-dd-yyyy)

12-09-2018

End Date (mm-dd-yyyy)

12-09-2018

*Most recent data available: 12-09-2018

Submit Parameters



The ARS Volume Tool

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Date Range

- Most Recent Day
- Month to Date
- Year to Date
- Custom Date Range

Begin Date (mm-dd-yyyy)

09-06-2018

End Date (mm-dd-yyyy)

09-06-2018

*Most recent data available: 09-06-2018

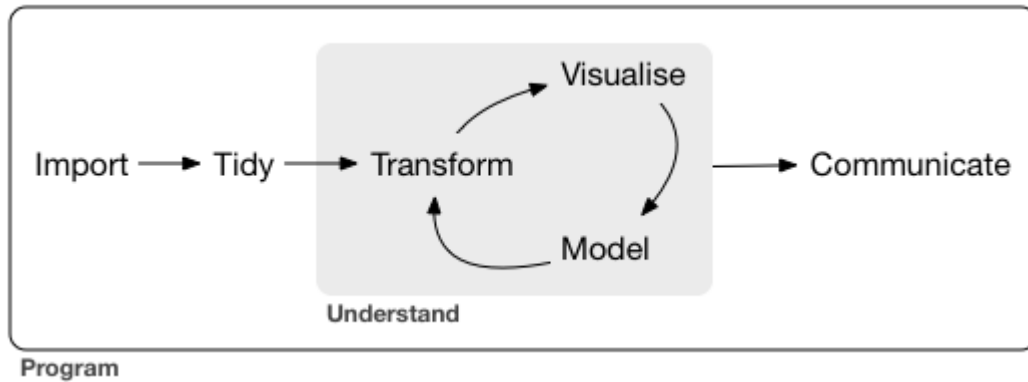
Submit Parameters

STARS

Shiny

Life Before the Query Tool...

**Timeline: 1 to 3 days for
"simple" data requests**



Leadership

Director of
Decision Support



Data Scientist



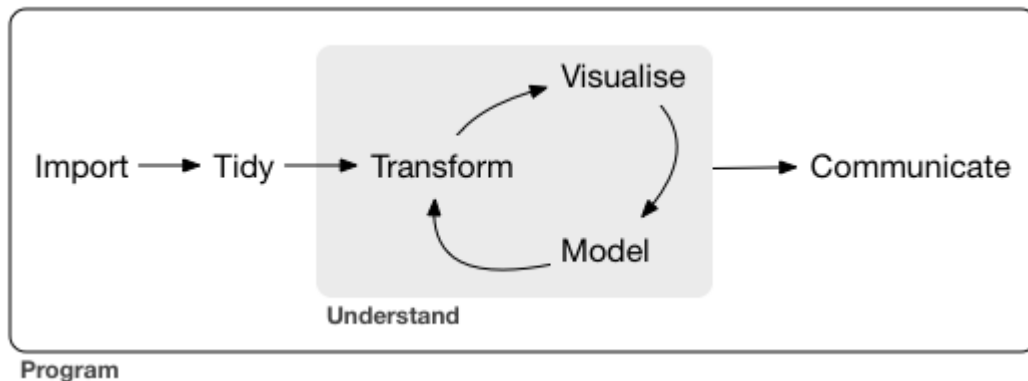
**Timeline: 5 – 10
minutes**



Leadership



 **The ARS Volume Tool**



267 Queries 2018 YTD
Avg 24 Queries/Month

15% 

THANK YOU





Aaron Clark

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 [linkedin.com/in/dataaaronclark](https://www.linkedin.com/in/dataaaronclark)

 Slides: bit.ly/ITMA_Dec2018