

# Let the Data do the Work for You! Designing an Automated Disparities Calculator

Karina Tello-Medina – Quality Management Analyst

Jeremy Hyvarinen – Quality Manager

Maricopa County's Ryan White Part A Program

Phoenix EMA

20  
22

NATIONAL  
**RYAN WHITE**  
CONFERENCE  
ON HIV CARE & TREATMENT

# Learnings Objectives

- Background story
  - Data analysis, automation, and statistical analysis
  - Interpreting results for data-driven decision making
  - Lessons learned
- We hope this is you by the end of this presentation




# Where we started...

- Educated GUESS(es) regarding existing disparities.
  - Obvious disparities in existing data
  - Anecdotal information from Sub-recipients
- How do we prove/confirm/validate those guesses?

# What we were doing...

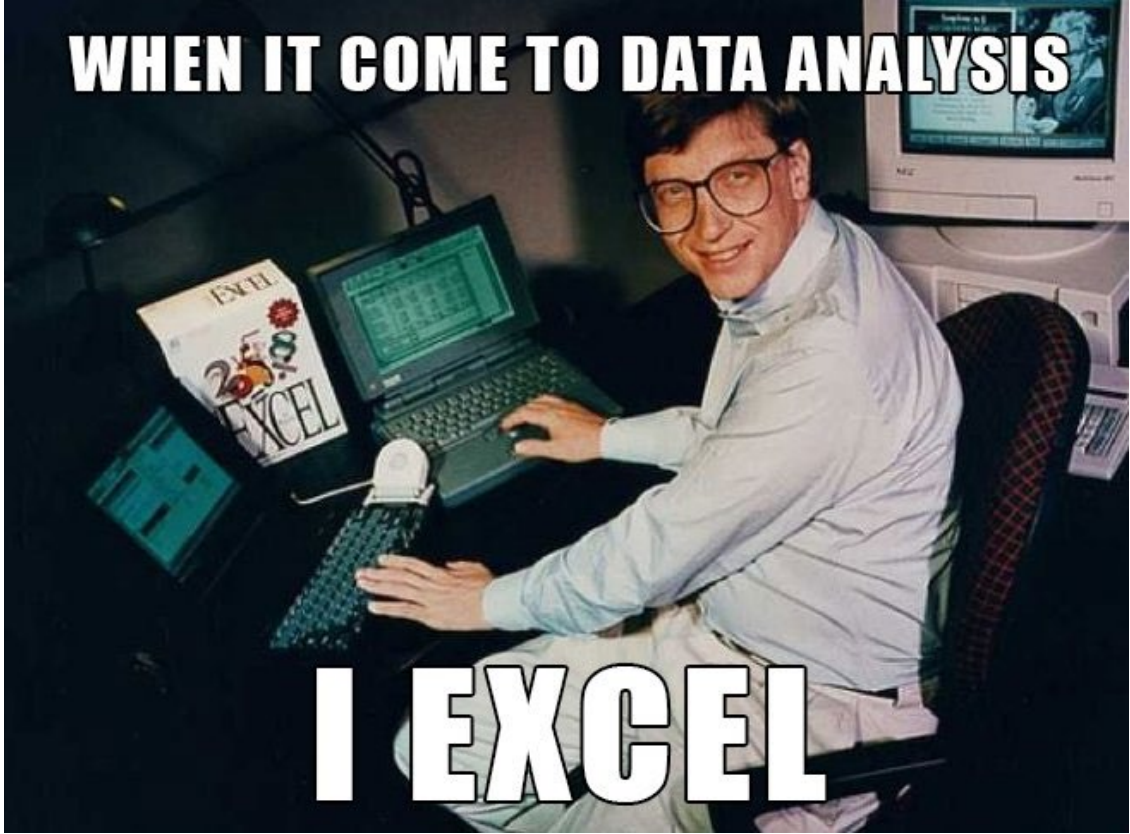
- CQII (formerly NQC) Disparities Calculator

	A	B	C	D	E	F	G	H	I
1	Name of Reporting Agency:	 NATIONAL QUALITY CENTER	<b>NQC Disparities Calculator</b>						
2	Name of Staff Person Reporting:								
3	Measurement Period:								
4	Reporting Date:								
5	Data Source(s):								
6	Aggregated Data For Disparities Analysis	# of Agencies in Dataset	HIV Viral Load Suppression			Retention in HIV Care			Data Limitations / Comments
7			Num.	Denom.	%	Num.	Denom.	%	
8	<b>Total</b>	1			#DIV/0!			#DIV/0!	not applicable
9	Black	1			#DIV/0!			#DIV/0!	not applicable
10	Black Heterosexual	1			#DIV/0!			#DIV/0!	not applicable
11	Hispanic MSM	1			#DIV/0!			#DIV/0!	not applicable
12	Other	1			#DIV/0!			#DIV/0!	not applicable

# What we needed to know...

- Are we missing disparities in other populations?
- Are there *less obvious* disparities?
- Can we design SOMETHING automated that requires minimal manual work?
- Could that SOMETHING be easily updated as new data comes in?

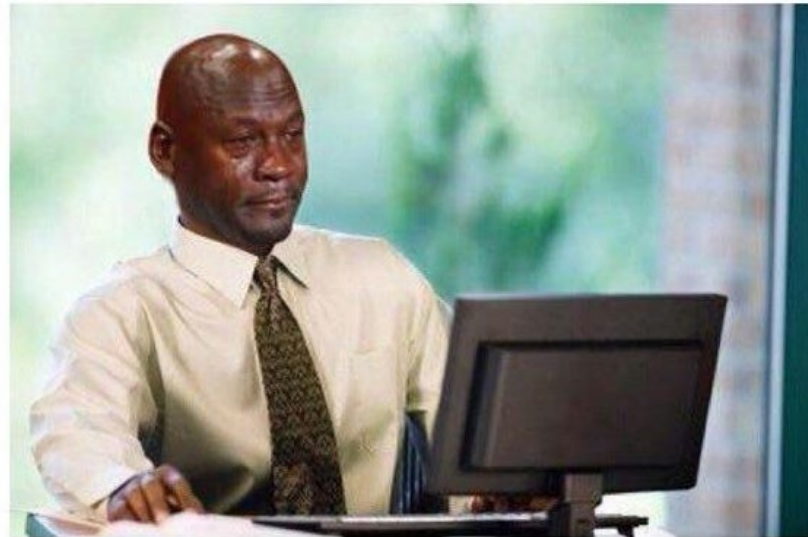
# Building our Calculator!



# Fancy tools not required!

- Who feels like this when you hear MS Excel?

When you lied on your resume about being proficient at Excel



- For simple data analysis, you only need to know three things:
- Data arranging
- Data summarizing
- Data refreshing

Let's see a demo!



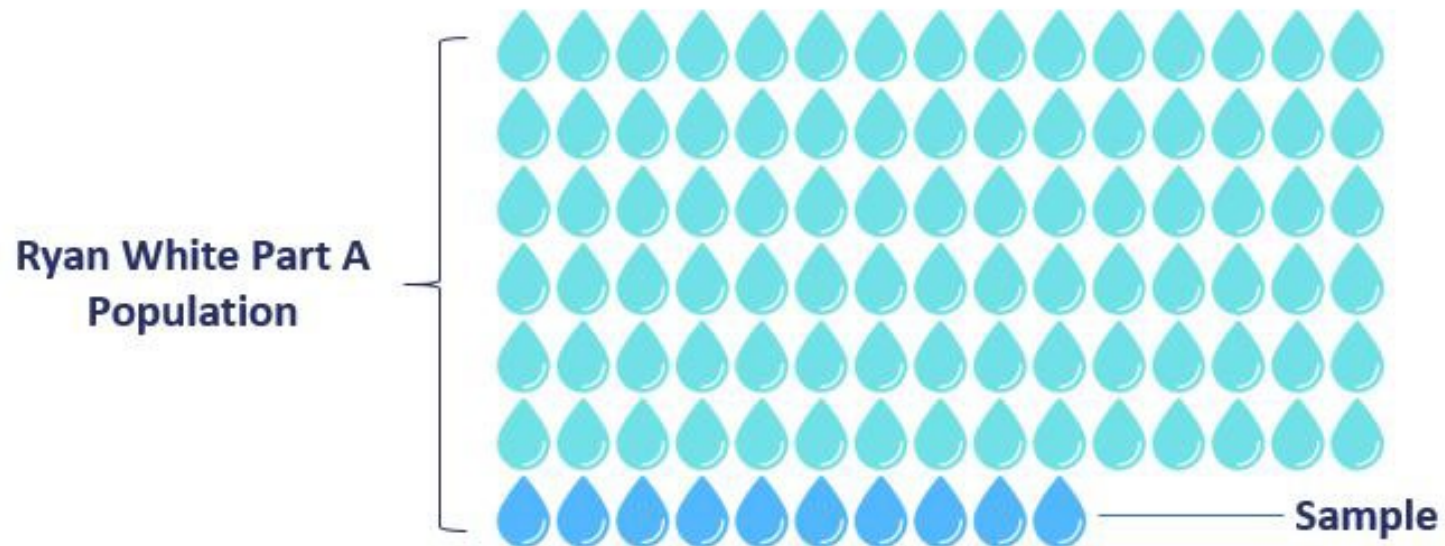


# “Significant”

- You may have heard the term “...SIGNIFICANT...”
- Two different meanings:
  - Everyday meaning: big or important to (worth our attention).
    - i.e., a significant increase in sales
  - Statistical meaning:
    - Something can be “statistically significant” and be big and important.
    - Something can be “statistically significant” and be small and unimportant.

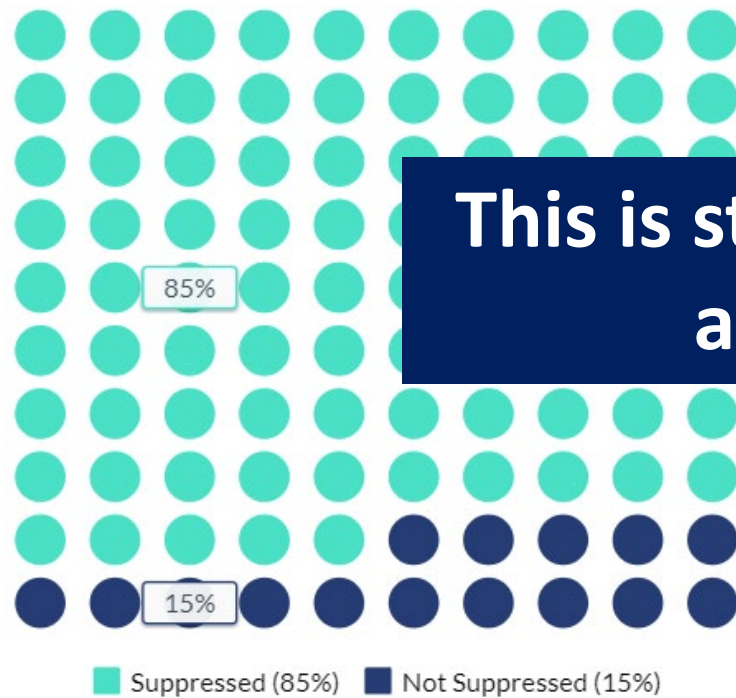
# Understanding Significance

- We have evidence that the results we see in the (representative) **sample** also exist in the **population**.



# Disparities

- RWPA Suppression Rate



N= 4,000

- Black/AA Suppression Rate



N= 800

**This is statistically significant and important!**

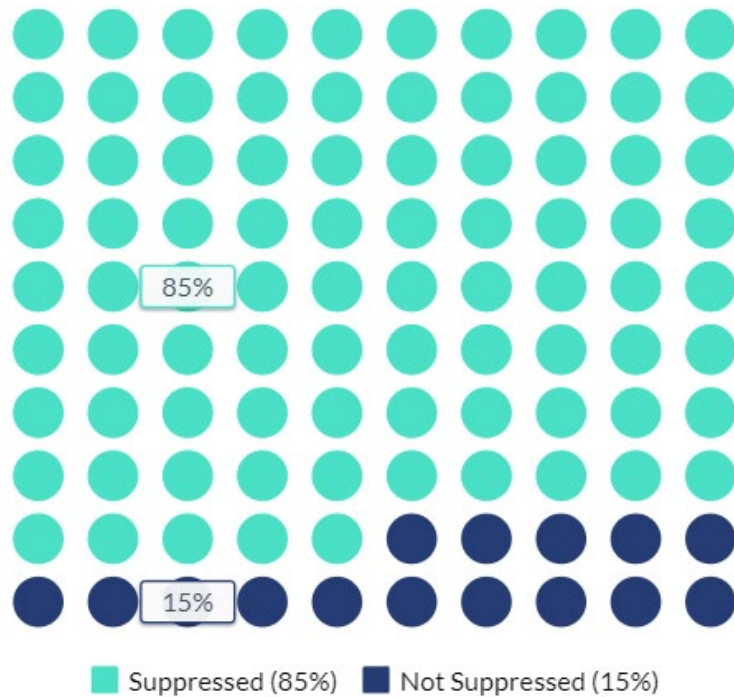
-5%  
difference

Statistically  
significant

“there is a  
statistically  
significant  
suppression  
disparity...”

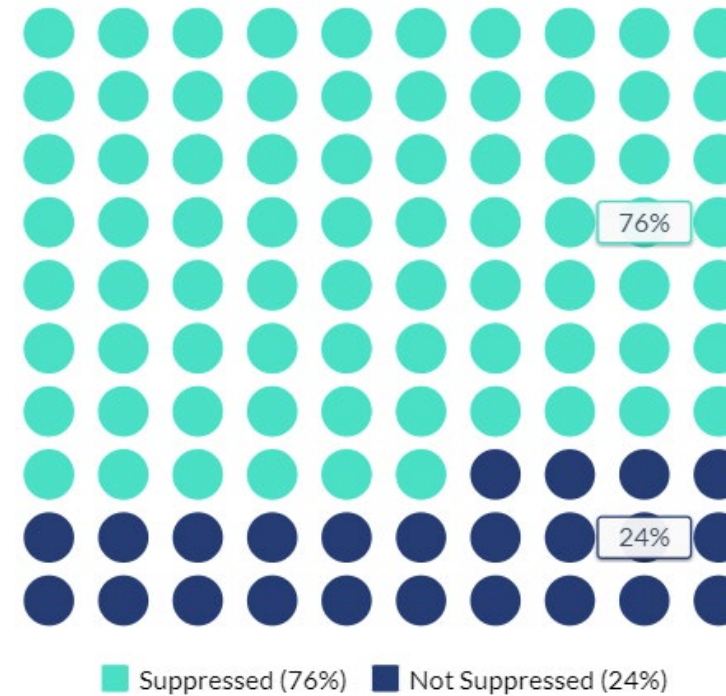
# Disparities Continued

- RWPA Suppression Rate



N= 4,000

- American Indian Males Suppression Rate



N= 70

-9%  
difference

Not statistically  
significant

“there is **not** a  
**statically**  
**significant**  
suppression  
disparity...”

# Our Disparities Calculator!

## RWPA Disparities Calculator CY 2021

Disparity Description: **-10% Acute Disparity** -5%-10% Mild Disparity -4% to -1% Small Disparity >0% No Disparity

Sig at a 95% CI, p<0.05 Compared to the RWPA average

Population/Subpopulation	Total	Unsuppressed	Suppressed	% Suppressed	Disparity	Sig Disparity?
All RWPA Clients	4,167	633	3534	85%		
Men	3,392	527	2865	84%	-1%	Not Sig
Female	678	85	593	87%	2%	Not Sig
Transwomen	92	20	72	78%	-7%	Not Sig
Transwomen of Color	77	16	61	79%	-6%	Not Sig

Population/Subpopulation	Total	Unsuppressed	Suppressed	% Suppressed	Disparity	Sig Disparity?
Females	678	85	593	87%	2%	Not Sig
Females White	155	28	127	82%	-3%	Not Sig
Females of Color	523	57	466	89%	4%	Sig
Females Hispanic	203	17	186	92%	7%	Sig
Females Black	266	34	232	87%	2%	Not Sig

Population/Subpopulation	Total	Unsuppressed	Suppressed	% Suppressed	Disparity	Sig Disparity?
All Races	4,167	633	3534	85%		
White non-Hispanic	1,500	225	1275	85%	0%	Not Sig
Communities of Color	2,667	408	2259	85%	0%	Not Sig
American Indian	87	22	65	75%	-10%	Sig
Asian/Pacific Islander	72	5	67	93%	8%	Not Sig
Black/African American	814	163	651	80%	-5%	Sig
Hispanic	1,546	193	1353	88%	3%	Sig
More than one race	148	25	123	83%	-2%	Not Sig

Population/Subpopulation	Total	Unsuppressed	Suppressed	% Suppressed	Disparity	Sig Disparity?
All Races Males	3,392	527	2865	84%	-1%	Not Sig
White non-Hispanic Males	1,328	193	1135	85%	0%	Not Sig
Communities of Color Males	2,064	334	1730	84%	-1%	Not Sig
American Indian Males	68	16	52	76%	-9%	Not Sig
Asian/Pacific Islander Males	58	4	54	93%	8%	Not Sig
Black/African American Males	529	123	406	77%	-8%	Sig
Hispanic Males	1,292	168	1124	87%	2%	Not Sig
More than one race Males	117	23	94	80%	-5%	Not Sig

# Our Disparities Calculator! Continued

## RWPA Disparities Calculator CY 2021

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Disparity Legend: -4% to -1% Small Disparity >0% No Disparity

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# The technical details...

## How is statistical significance calculated?

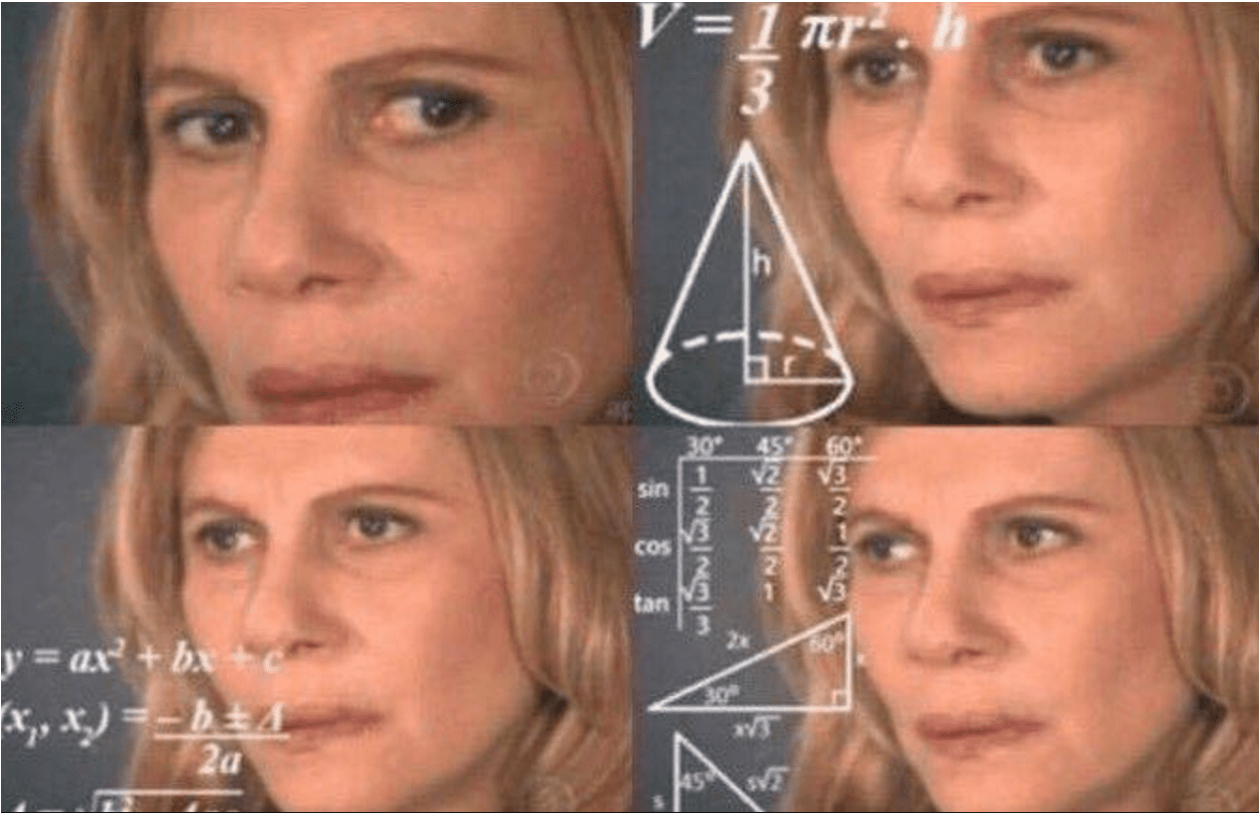
- Confidence Interval

- *“How certain do you want your results to be?”*
- 99%
- 95%
- 90%

- P-Value

- $p < 0.05$  statistically significant difference
- $P > 0.05$  no statistically significant difference

# Statistical Significance Example





# What we learned...

## Lessons Learned

- The calculator cannot be 100% automated, it still needs human eyes.

## Limitations

- This is a viral suppression focused calculator; separate analysis is needed for linkage and retention in HIV care.

# What we gained...

## Disparities Calculator's Benefits

- Time Saving!!!
- Removes fear of data analysis by simplifying the process to identify disparities.
- Allows for more accurate data interpretation.
- Faster response to emerging trends in disparities.
- More ability to make data-driven decisions and implement focused efforts to end the HIV epidemic.

# Interested in more?

- Like and follow @PositivelyYouAZ!  
- Contact our Quality Management Team!
  - Jeremy Hyvärinen, Quality Manager, [Jeremy.Hyvarinen@maricopa.gov](mailto:Jeremy.Hyvarinen@maricopa.gov)
  - Karina Tello-Medina, Quality Management Analyst, [Karina.TelloMedina@maricopa.gov](mailto:Karina.TelloMedina@maricopa.gov)

# Questions?

