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# Agenda

01

Machine learning evaluations

02

Equitable actionable evidence

03

The Gemma Story

- PRTF
- Outpatient
- Outcomes

04

Discussion

3

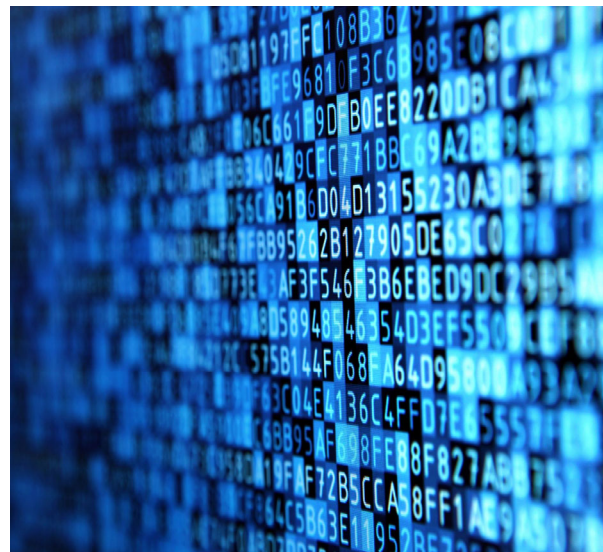
## How does AI perpetuation bias?



Documents the social bias of humans



In data science predictive modeling is correlational not causal



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# Precision Analytics

A data-driven quasi-experimental evaluation method that trains machine learning algorithms to generate actionable evidence

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# Precision Analytics

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Grounded in a rigorous data-driven research method that's been in use for over 50 years and 100,000+ peer-reviewed studies, and refined using ML for more than 10 years

<p>CHILD WELFARE</p>	<p>JUVENILE JUSTICE</p>	<p>HEALTH EQUITY</p>	<p>RACIAL ECONOMIC JUSTICE</p>	<p>SCIENCE</p>
<p>WORKFORCE DEVELOPMENT</p>	<p>HEALTH &amp; HUMAN SERVICES</p>	<p>MENTAL HEALTH</p>	<p>NONPROFIT CAPACITY</p>	

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# Recent Publications

## NEXT GENERATION EVIDENCE

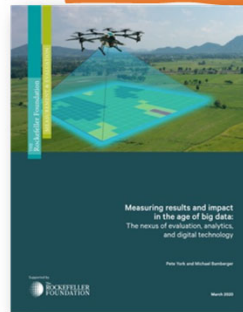
Strategies for More Equitable Social Impact



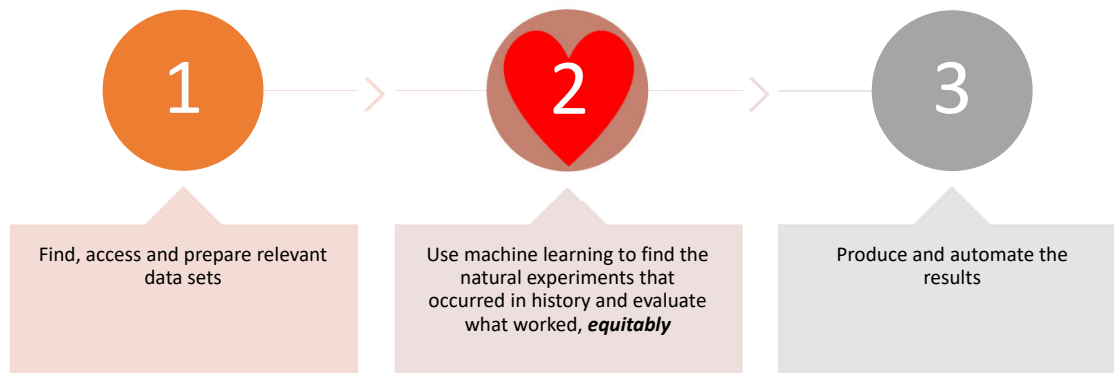
Stanford SOCIAL INNOVATION REVIEW

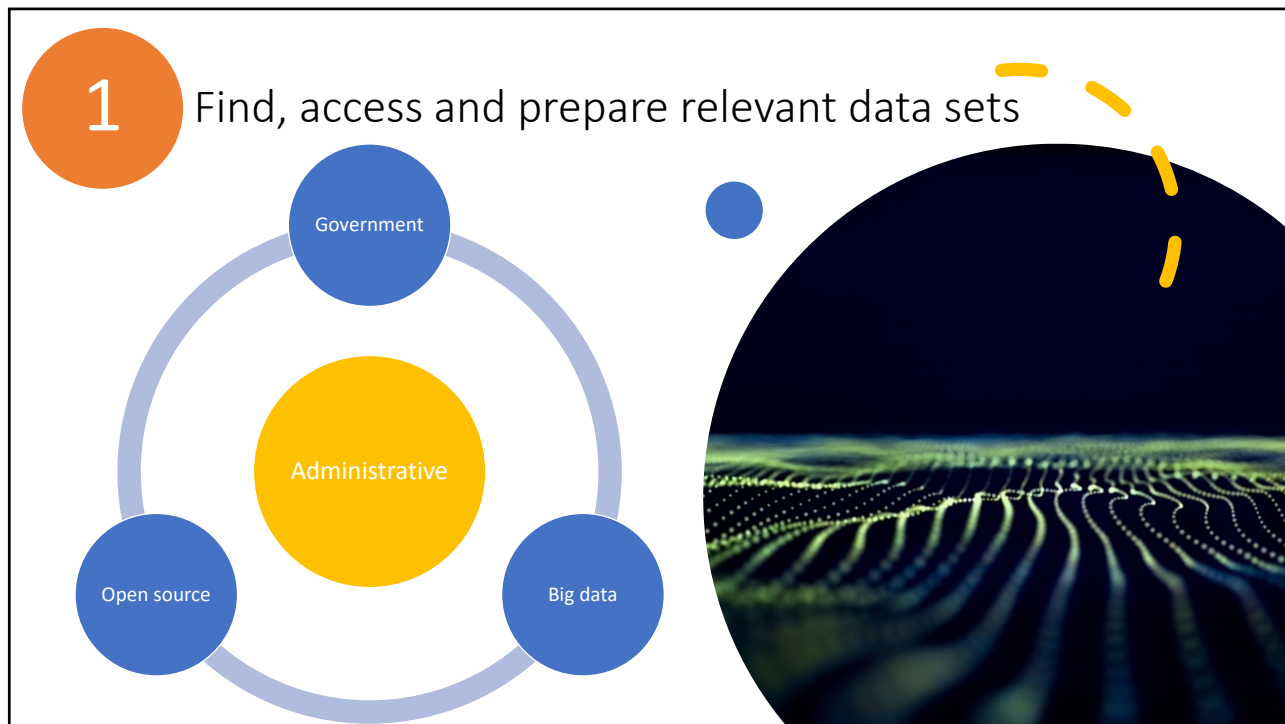
Advancing Equitable AI in the US Social Sector

By Kelly Fitzsimmons | Mar. 12, 2024

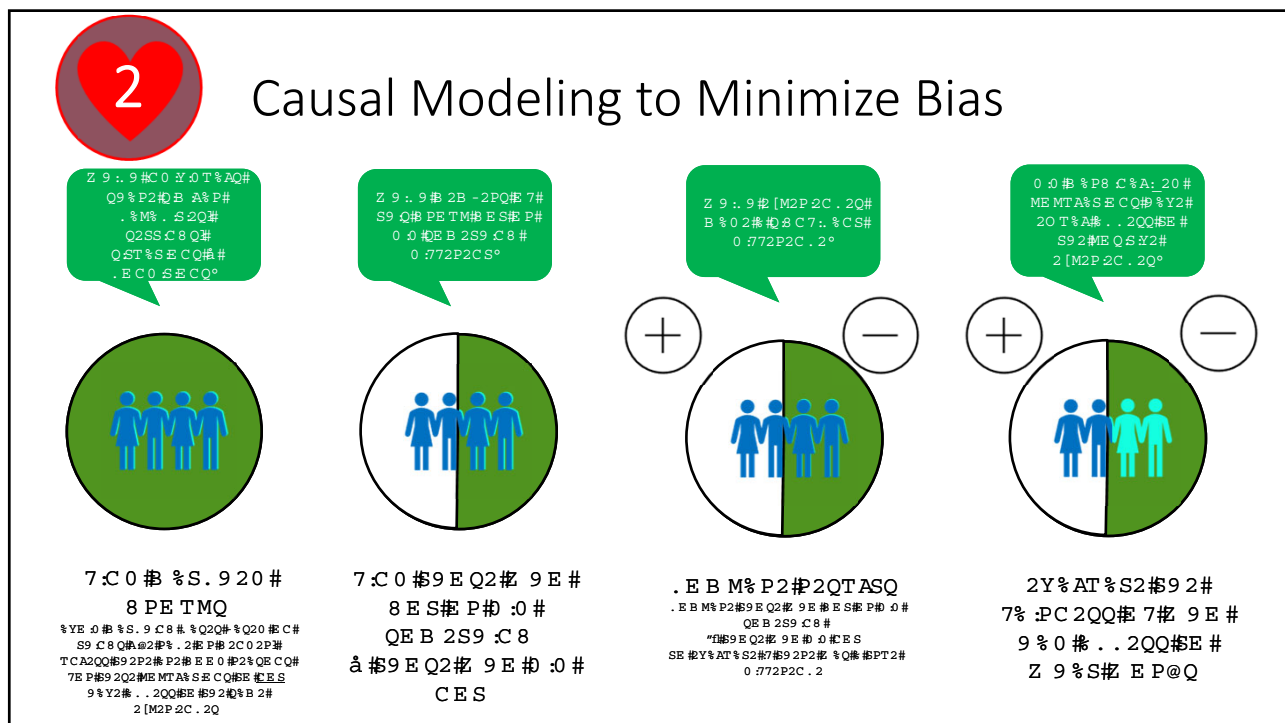


# The Precision Analytics Method

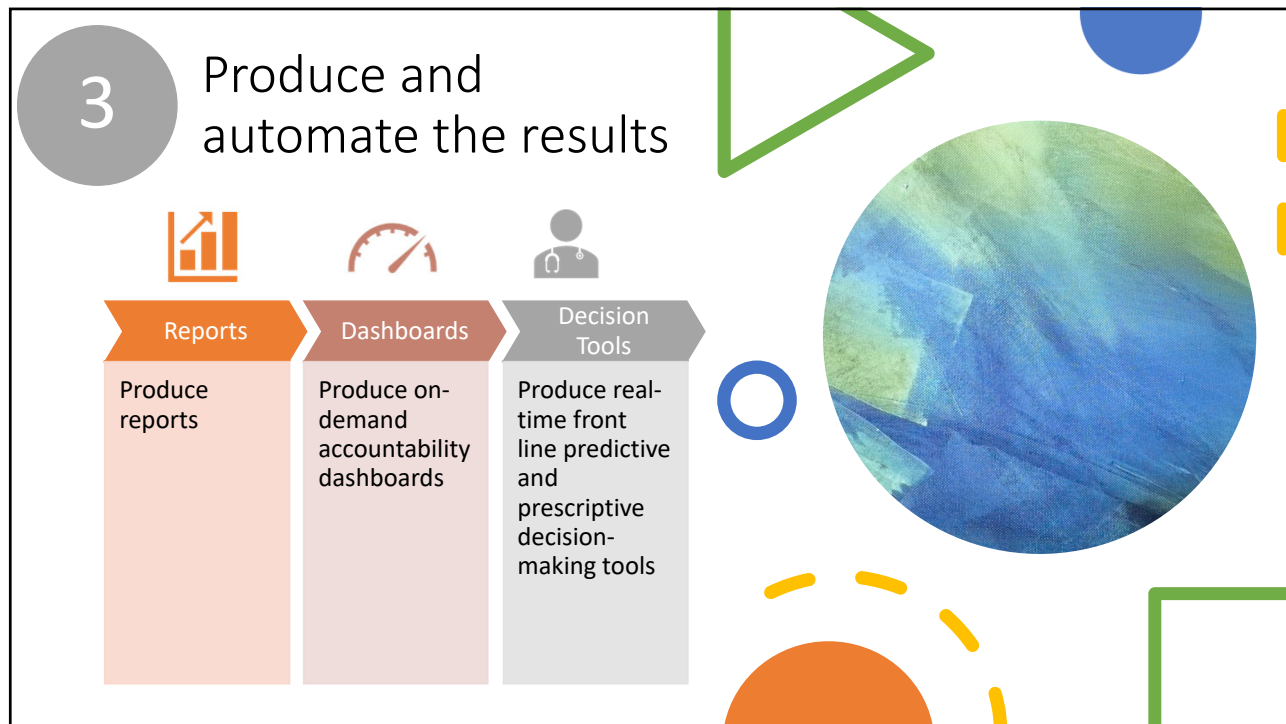




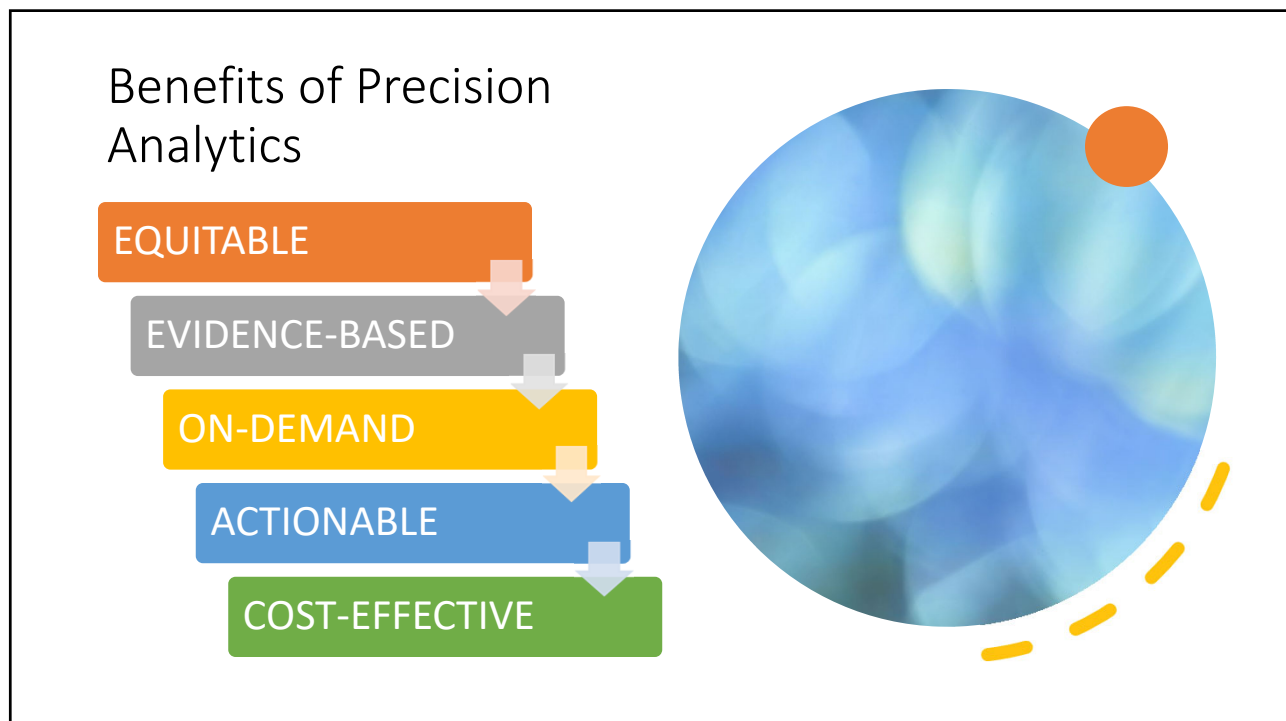
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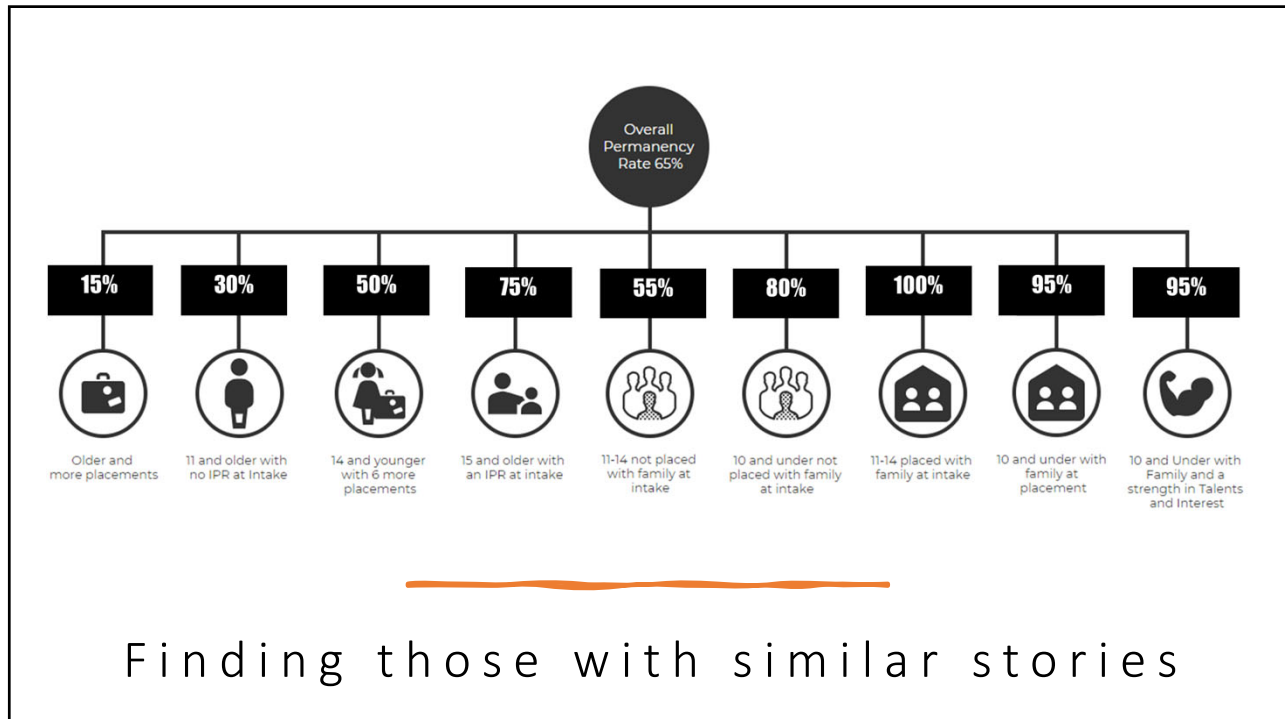
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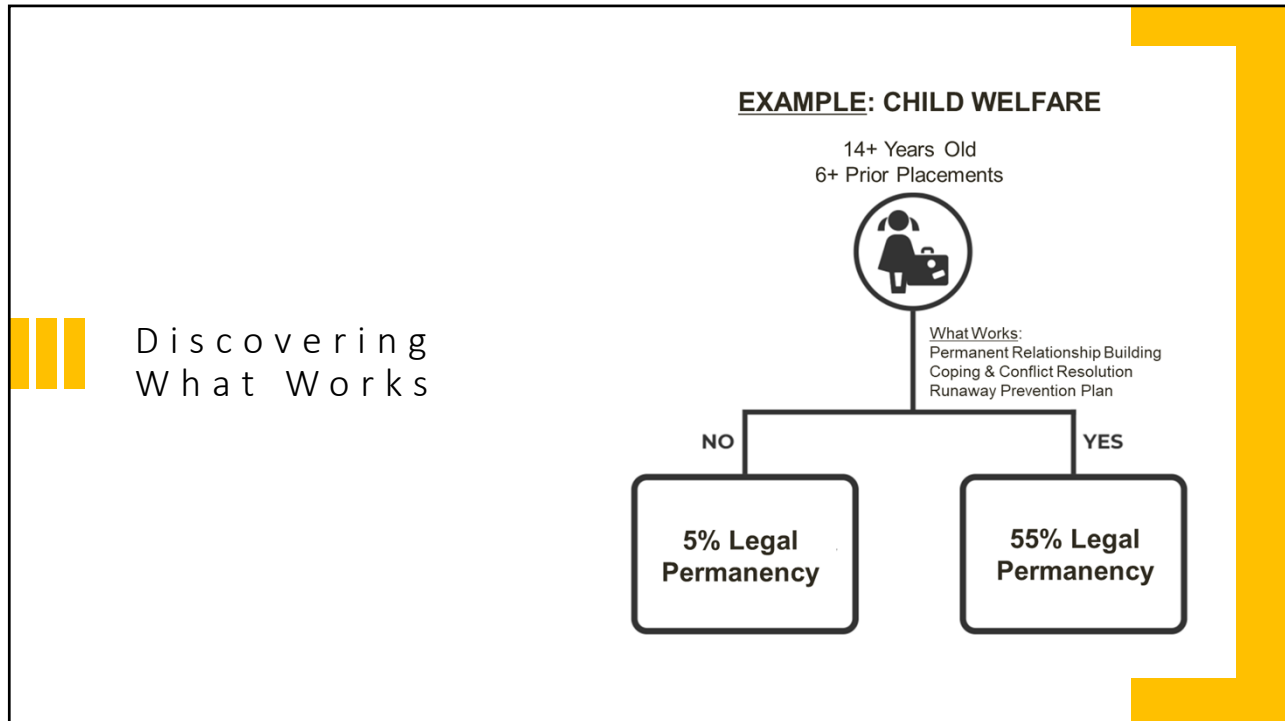
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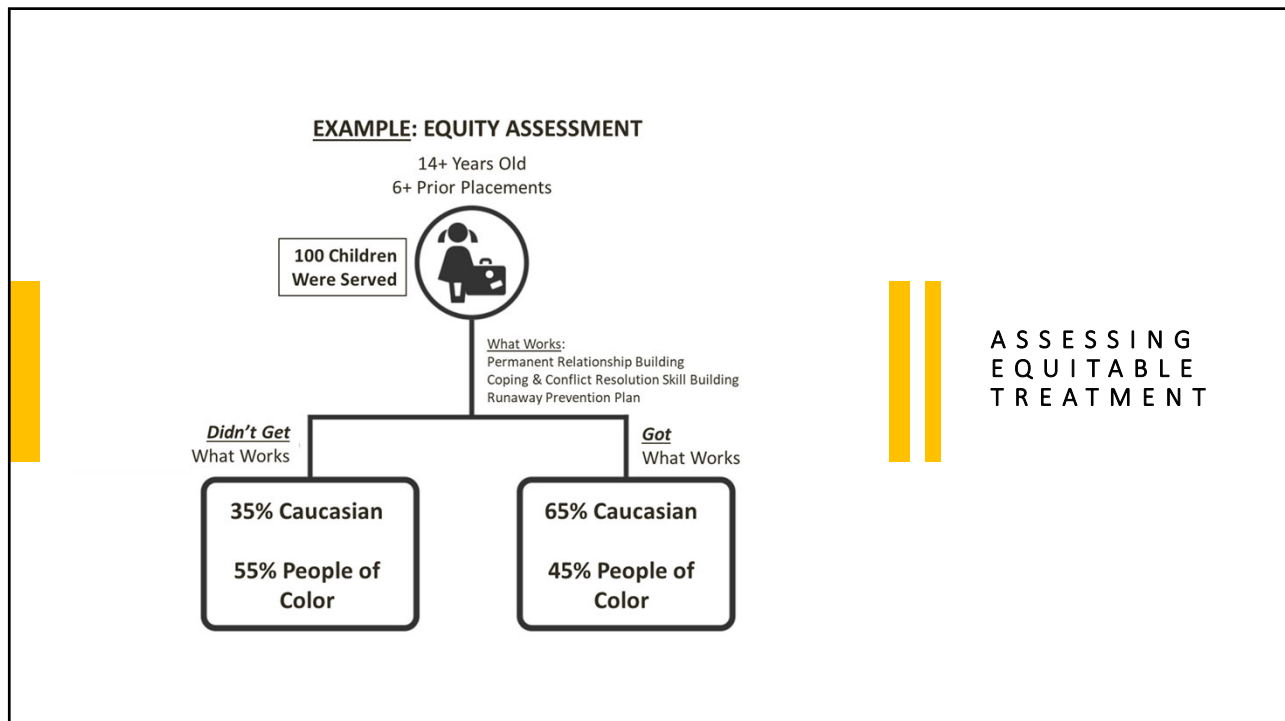
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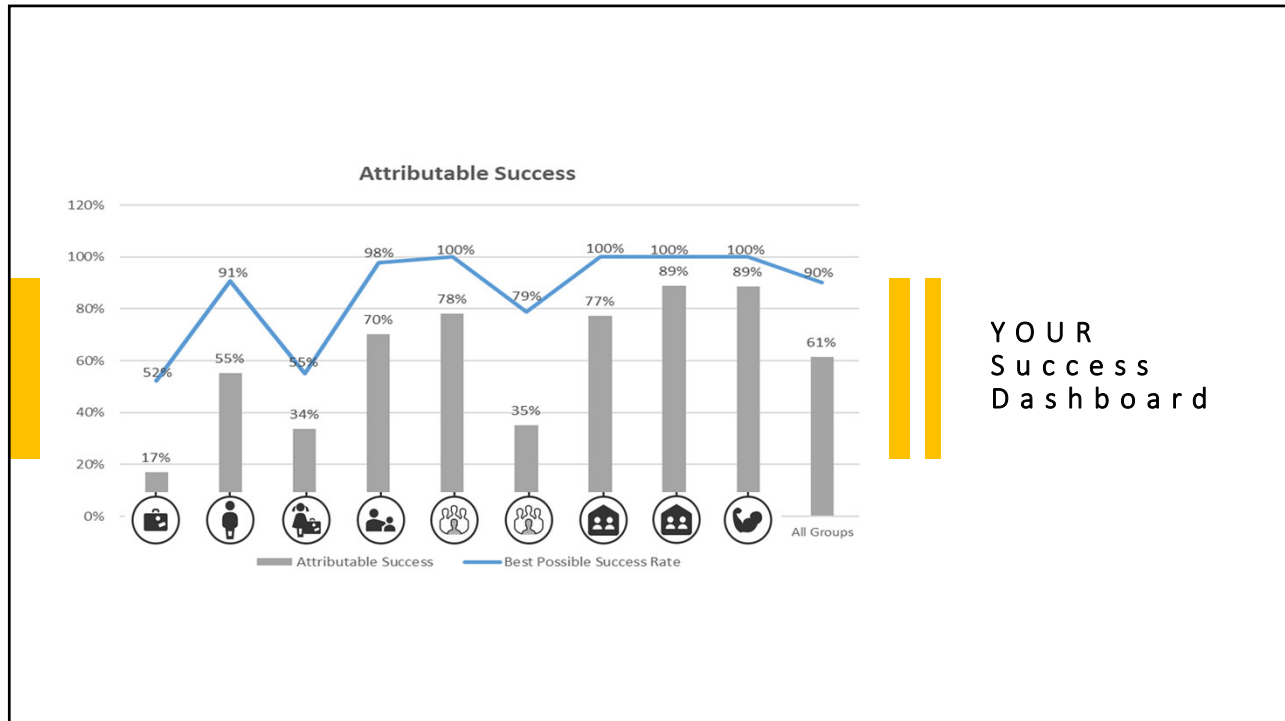


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*Mount Airy*  
7301 Germantown Ave



*SW Philadelphia*  
6517 Chester Ave



*Plymouth Meeting*  
512 W. Township Line Rd



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### SERVING YOUTH AGES 6 TO 14

The program serves all genders ages 6 to 14 who have experienced loss, unexpected challenges, and/or significant trauma, and whose behaviors are presently too unsafe for them to live in a home or community setting. Our skilled and caring staff members are dedicated to helping children feel valued. We embrace a trauma-informed approach. Each child's family and/or guardians are respected and included as full partners in the care and treatment of their children. Successful treatment is achieved when children can return to their own family, a new family, or to a supportive living setting in the community. And every day, we want each child to experience the joy and happiness of childhood.

### Residential Treatment Program

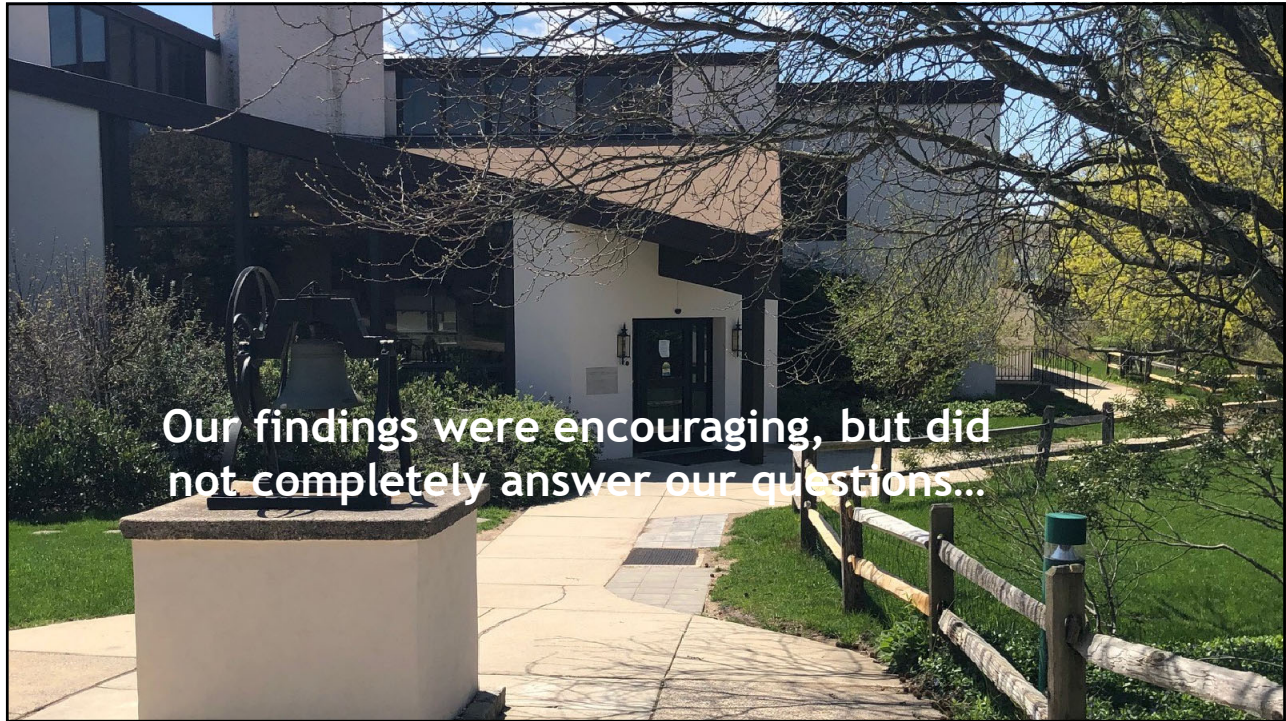
*A place for hope and transformative healing through holistic care*



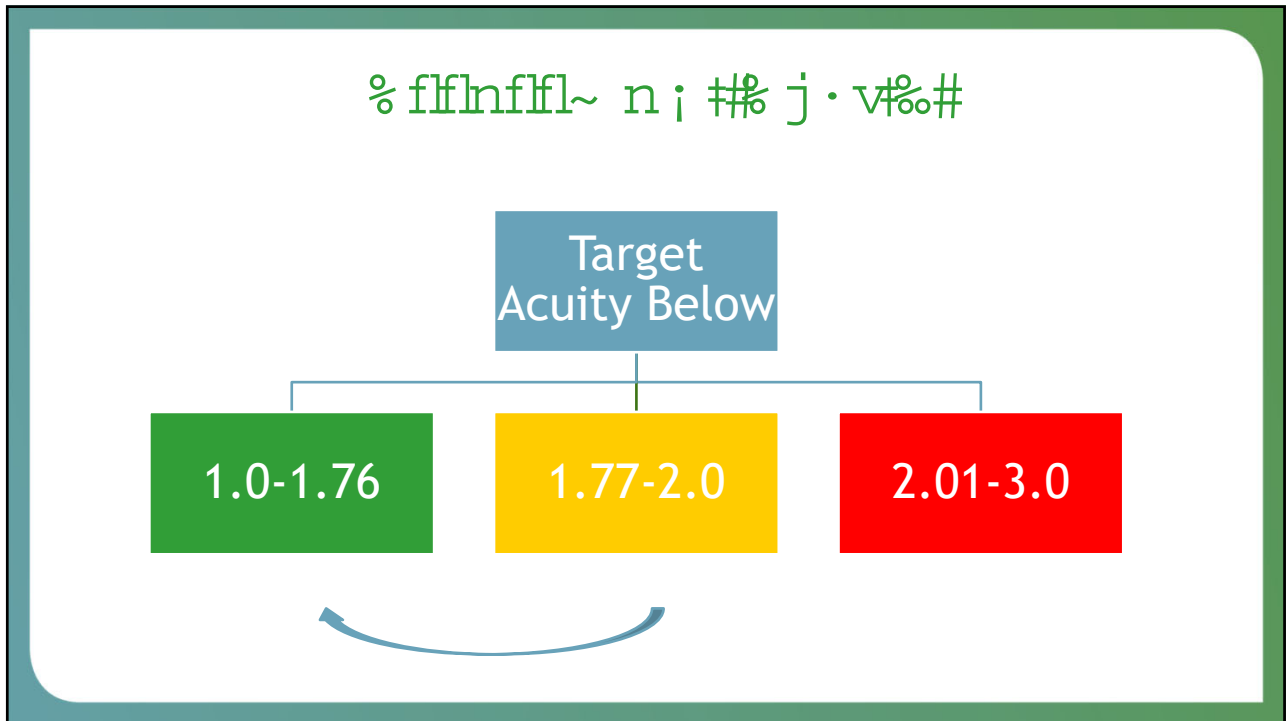
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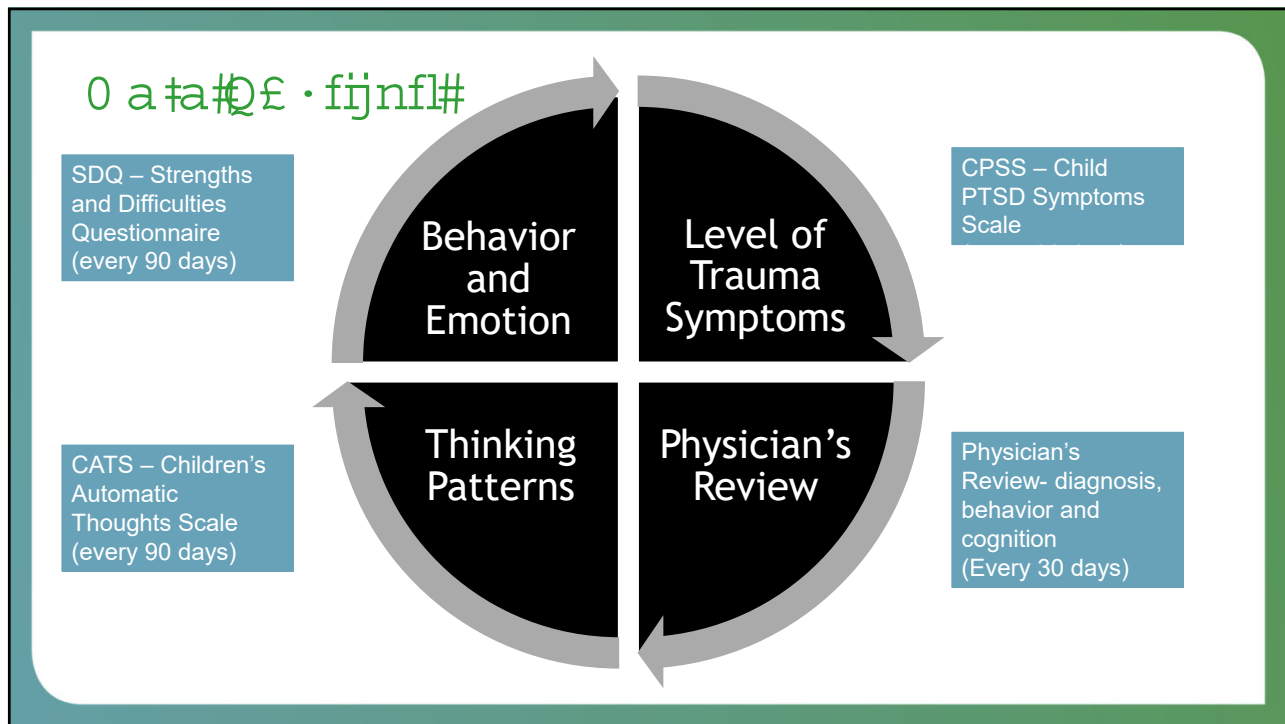
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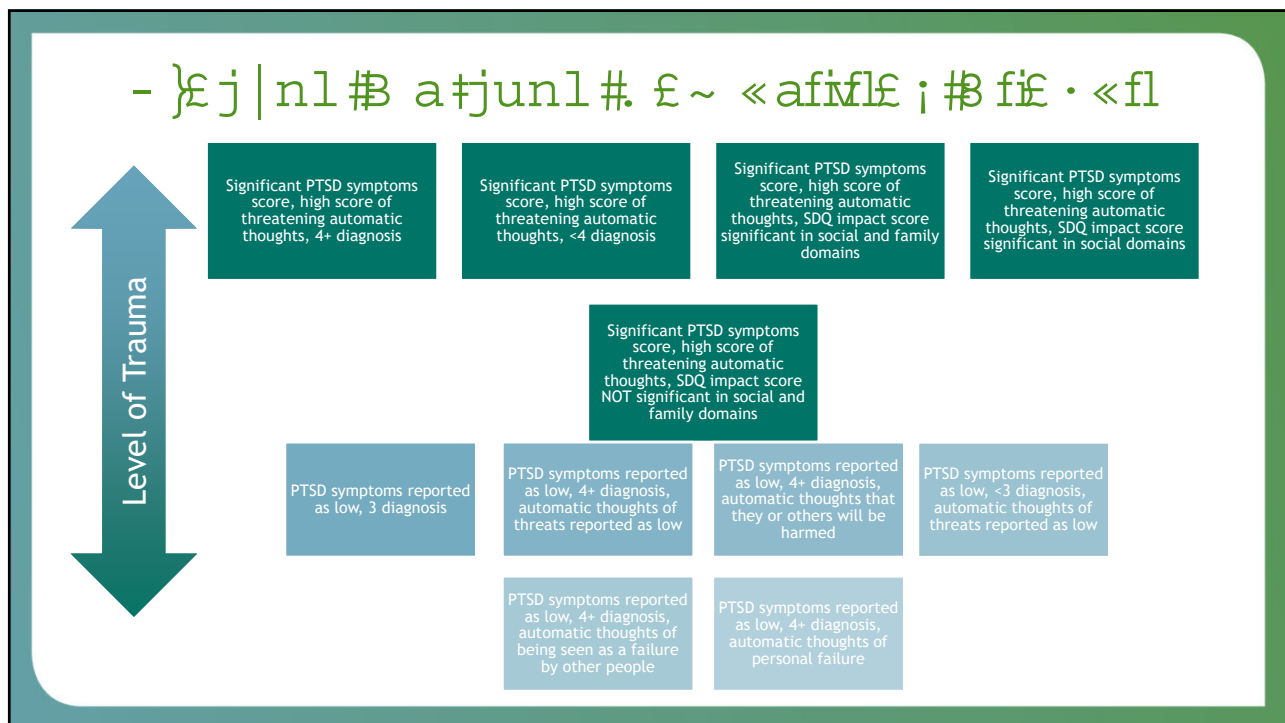
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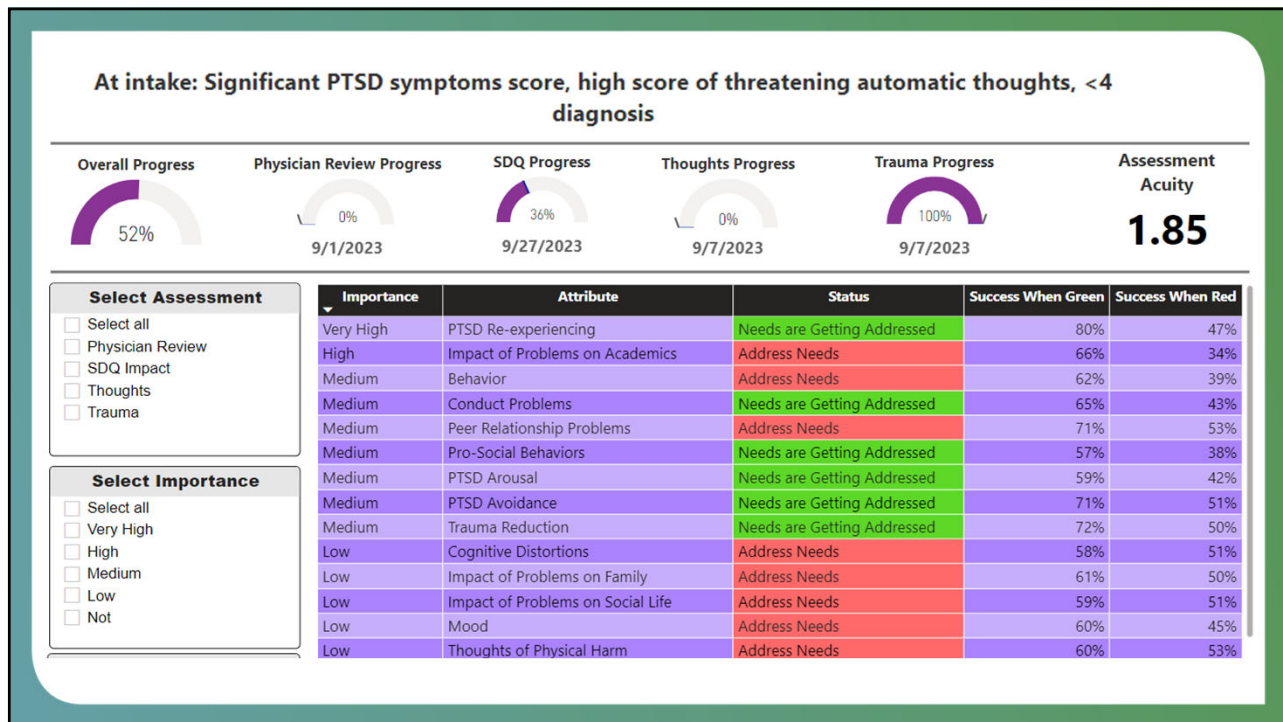
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## The Insight Generator in Action


\*\*Name and images are changed for privacy\*\*



because you matter

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# First Reports (30 Days)

Assessment  
Acuity

## 2.46

**Cluster:** Significant PTSD symptoms score, high score of threatening automatic thoughts, SDQ impact score significant in social and family domains


Importance	Attribute	Status	Success When Green	Success When Red
Very High	PTSD Arousal	Address Needs	100%	64%
Very High	PTSD Re-experiencing	Address Needs	92%	61%
Very High	Thoughts of Failure	Address Needs	100%	63%
Very High	Thoughts of Hostility	Address Needs	95%	63%
Very High	Thoughts of Physical Harm	Address Needs	95%	63%
Very High	Thoughts of Social Rejections	Address Needs	96%	60%
Very High	Trauma Reduction	Address Needs	92%	61%

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Importance	Attribute
Low	Core belief of inadequacy triggered

### Core Beliefs of Inadequacy Triggered

- Tell the child that they are loveable and that they matter.
- Tell the child that you don't see them as bad, and you want to help them feel better.
- Ask questions to prompt Catch, Check and Changing unhelpful or untrue thoughts.
- Provide behavior specific praise so that they know exactly what they did that was being praised.



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Name

Caregiver report

[View Individual Report](#)

**Areas of identified needs that are currently getting addressed by the interventions in place**

Importance	Attribute	Status
Very High	PTSD Re-experiencing	Needs are Getting Addressed
Medium	Behavior	Needs are Getting Addressed
Medium	Conduct Problems	Needs are Getting Addressed
Medium	Pro-Social Behaviors	Needs are Getting Addressed
Medium	PTSD Arousal	Needs are Getting Addressed
Low	Cognitive Distortions	Needs are Getting Addressed
Low	Mood	Needs are Getting Addressed
Low	Thoughts of Physical Harm	Needs are Getting Addressed

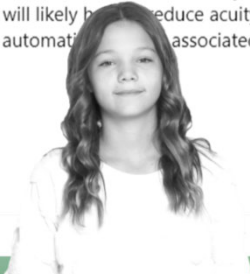
**Areas of identified needs that still need to be worked on (areas of need)**

Importance	Attribute	Status
High	Impact of Problems on Academics	Address Needs


**Core beliefs that are likely triggered during a behavior incident**

Importance	Attribute
Medium	Unhelpful or untrue thoughts
Low	Triggered core belief of I am inherently bad

*The above information comes from an analysis of the incidents that have occurred over the entire stay and it shows us core beliefs that will likely be triggered if we can help to change the automatic thoughts associated with the core beliefs.*



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Enrollment Status

Multiple selections

Name

Multiple selections

Current Acuity

Overall Progress

45%

Youth Name	Current Acuity	Remaining High Needs
Ardell Bengé	1.96	3
Florida Peterson	1.74	8
Goebel Saxton	1.64	3
Jeanetta Estrada	2.34	2
Maria Cutwright	1.73	1
Tabatha Flint	1.79	4
Thad Hughes	2.42	2
Thyra Smith	1.94	3
Verena Nelson	1.88	4
Vertie Carter	2.27	2

**Physician Review Progress**

46%

**Thoughts Progress**

36%

**SDQ Progress**

41%

**Trauma Progress**

47%

**Youth Count by Acuity**

Acuity ● Acuity <= 2 ● Acuity > 2

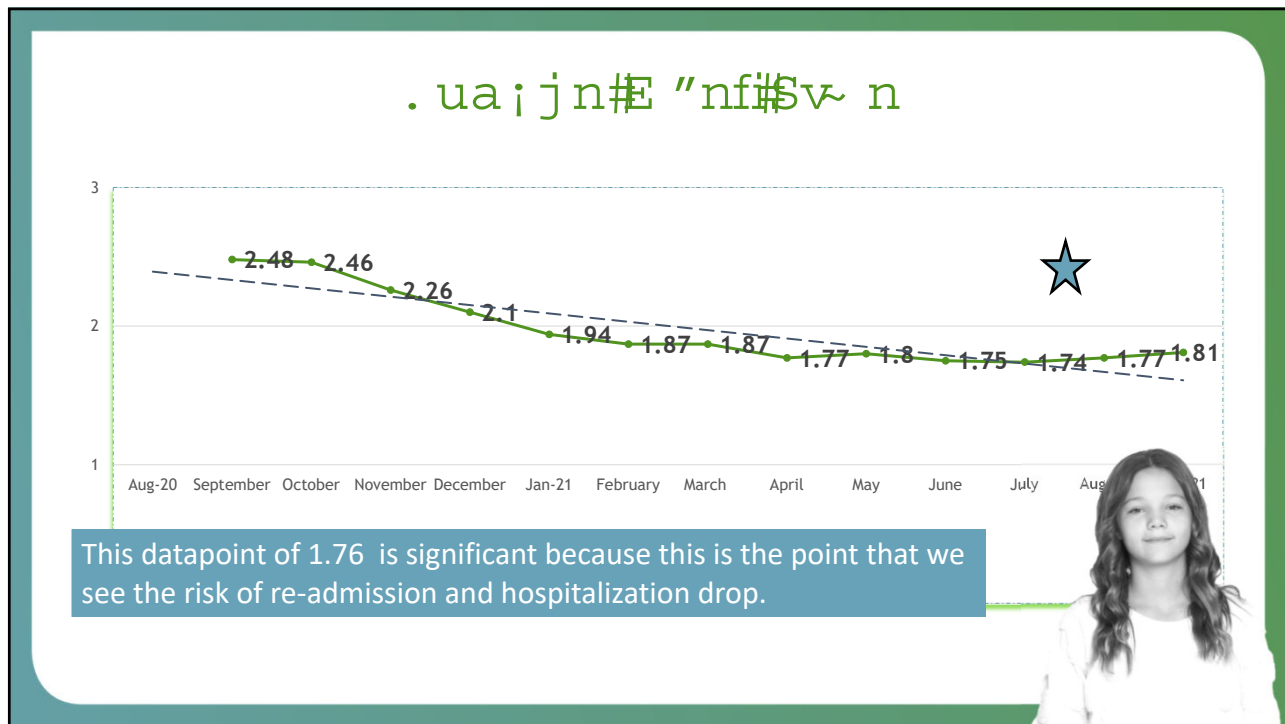


**Remaining High Needs For Caseload**

Cognitive Distortions	5
Impact of Problems on Academics	4
Thoughts of Hostility	4
Thoughts of Physical Harm	4
PTSD Re-experiencing	3
Behavior	2
Thoughts of Social Rejections	2
Conduct Problems	1
Impact of Problems on Social Life	1
Mood	1
Peer Relationship Problems	1
PTSD Arousal	1
PTSD Avoidance	1
Thoughts of Failure	1
Trauma Reduction	1
Thoughts of Hostility	1
Thoughts of Physical Harm	1
Unhelpful or untrue thoughts	1
Triggered core belief of I am inherently bad	1



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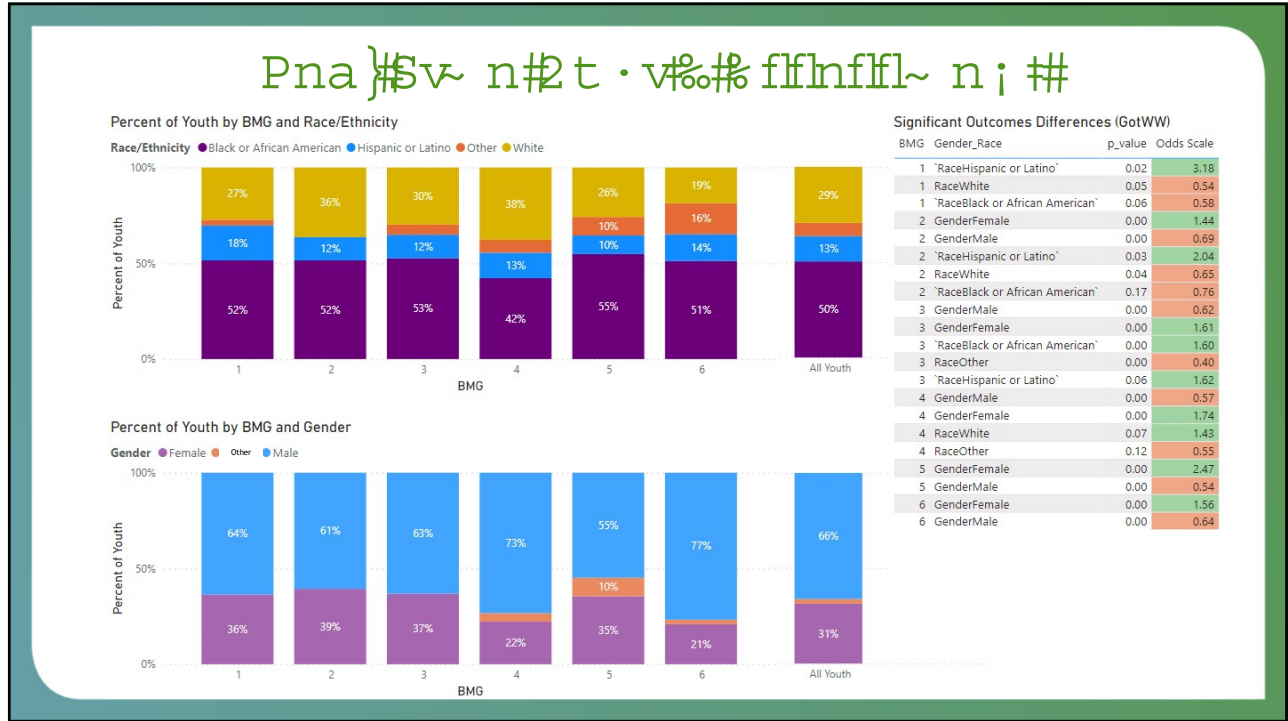


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## Therapist Feedback

“I have always struggled with giving families strategies in a way they can understand and link to their own behavior. This gives me the tools to talk about it in a very direct way”

“I really like having a place to turn when I am not sure what the next step should be”

“As a new therapist this really helps me to prioritize my interactions”





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SERVICES

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August 2020 start use of Insight Generator

64 completed cases (entered and exited) in that time

Pre and Post Groups of Youth over 2-year time span

- 8/2018-7/31/2020 and 8/1/2020 -7/31/2022



35

35

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Years 1 & 2

- Reduced Average Length of Stay by 29 Days
- Increased Prevention of Return to Out-of-Home Care, One Year Post-Discharge

Year 3

- Reduction in length of stay for non-child welfare discharge resources

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## Outpatient Behavioral Health Services

### Serving Children, Youth, and Families

#### IN THEIR COMMUNITIES

Outpatient Behavioral Health Services include individual therapy, family therapy, and medication management for children and teens, ages 2 to 18. Credentialed therapists use evidence-based practices including Trauma Focused Cognitive Behavioral Therapy (TF-CBT) and Parent Child Interaction Therapy (PCIT) in working with children and teens.



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### Blocked Matching/ Clustering



Cluster 1: Experienced unwanted touching and intercourse



Cluster 2: Cognition intact, young, separation from caregiver



Cluster 3: Young, male, inattentive/impulsive or hyperactive



Cluster 4: Tween, makes friends easily, experienced trauma, grief and loss



Cluster 5: Young, developmental delays, experienced neglect




Cluster 6: Teenagers who have experiences multiple traumas

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## Individual Report



Full Name



Multi-trauma teens

	<p><b>Current Progress</b></p> <p><b>Blossoming</b></p> <p>Consider options to keep youth engaged in ongoing treatment.</p>	<p><b>Time in Program</b> 8 Months 12 Days</p> <div style="display: flex; align-items: center;"> <div style="width: 100%; height: 15px; background: linear-gradient(to right, #ccc, #999, #666, #333);"></div> <div style="margin-left: 5px;"> <p>0 200 400 600 800</p> <p style="font-size: small;">Ideal Range (Length of Stay)</p> </div> </div>	<p><b>Current Age</b></p> <p style="font-size: 2em; font-weight: bold;">16</p>	<p><b>Importance</b></p> <p><input type="checkbox"/> Very High</p> <p><input checked="" type="checkbox"/> High</p> <p><input type="checkbox"/> Medium</p>	<p><b>Assessment</b></p> <p><input checked="" type="checkbox"/> CPS</p> <p><input type="checkbox"/> SDQ</p>
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**Top 5 Service Recommendations**


NewLabel	Recommendation
Family Therapy with Client	More than Enough
Family Therapy without Client	Do More
Individual Therapy	More than Enough
Psych Eval	Stay at current level
TF-CBT Caregiver Only	Stay at current level

**Top 7 Assessment Items**


Importance	Item	Recommendation	Success when Green	Success when Red	Intervention
High	Trauma Interference: Family Relationships	Addressing Need	50%	0%	Continue Psychoeducation and Gradual Exposure
High	PTSD: REEXPERIENCING - Bad Thoughts	Addressing Need	58%	5%	Continue Coping Skills and Gradual Exposure
High	PTSD: Trouble Paying Attention	Addressing Need	59%	6%	Continue Psychoeducation and Gradual Exposure

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40



Full Name



**Multi-trauma teens**

**Top 5 Needs Currently Being Addressed**


Importance	Item	Recommendation	Intervention
High	Emotions: Unhappiness or Depression	Addressing Need	Continue plan that addresses handling the triggers for sadness and depression effectively and safely
High	PTSD: REEXPERIENCING - Bad Thoughts	Addressing Need	Continue Coping Skills and Gradual Exposure
Very High	PTSD: Trouble Falling or Staying Asleep	Addressing Need	Continue Relaxation and Gradual Exposure
High	PTSD: Trouble Paying Attention	Addressing Need	Continue Psychoeducation and Gradual Exposure
High	Trauma Interference: Family Relationships	Addressing Need	Continue Psychoeducation and Gradual Exposure

**Top 5 Needs that Need Attention**

Importance	Item	Recommendation	Intervention
Medium	Hyperactivity: Good Attention Span	Needed	1.) Get more information about where this occurs and if it impairs functioning 2.) Teach strategies for focus 3.) Involve caregiver for support

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Full Name

All

Enrollment Status

Active

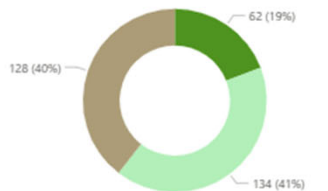
  

Cluster	Youth Name	Current Progress	Probability	Remaining High Needs	Time in Program
6		Growing Strong	51%	13	1 Months 21 Days
2		Growing Strong	38%	10	35 Months 6 Days
6		Taking Root	26%	13	34 Months 18 Days
6		Taking Root	25%	13	11 Months 21 Days
6		Taking Root	22%	13	21 Months 2 Days
1		Blossoming	84%	9	2 Months 14 Days
6		Growing Strong	40%	13	31 Months 24 Days
6		Blossoming	76%	13	1 Months 27 Days
5		Growing Strong	45%	5	6 Months 9 Days

Attribute	Remaining High Needs
Trouble Falling Or Staying Asleep	196
Bad Thoughts	189
Avoidance	171
Lack Of Interest	166
Bad Dreams Or Nightmares	165
Past Month Problems Getting In The Way Of Life Relationships With Your Family	165
Past Month Problems Getting In The Way Of Life Relationships With Your Friends	165
Trouble Paying Attention	165
Getting Angry Easily	135
Hyperactivity Score Parent - Good Attention Span Sees Work Through To The End	135
Being Easily Scared	111

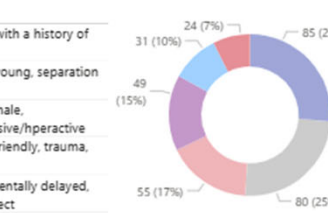
**Youth Count by Progress**



Progress	Count	Percentage
Blossoming	62	19%
Growing Strong	134	41%
Taking Root	128	40%





**Youth Count by Cluster**



Cluster	Count	Percentage
1	31	10%
2	24	7%
3	49	15%
4	85	26%
5	55	17%
6	80	25%

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2024 Q2 #8 C: YPE MB

-  Gemma has a small data-set by ourselves
-  Collaboration among providers for research and use
-  Data Sharing (de-identified)
-  Impact, do tools like this improve outcomes

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## Common Questions?

- What kind of data do I need to do this?
- Do we need to enter data into another system?
- Will staff use this?

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