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Incident Data: The Power of Data-Informed Decision Making

DATA-INFORMED DECISION MAKING

- Analyzing data involves examining it in ways that reveal the relationships, patterns, trends, etc. that can be found within it.
- Accurate incident tracking and reporting coupled with a data driven mindset can greatly increase safety and accountability for both youth and staff.

DATA-INFORMED DECISION MAKING

- Data can help to distinguish systemic issues from individual ones.
- Qualities that encourage data use: meaningful; translatable; impactful.
- Formulating questions in response to your data and considering responses to these questions, often by examining additional data, can lead to a *hypothesis*, which can then be tested.

WHAT'S AN INCIDENT?

- Hostage situations, death of youth, and serious injuries
- Major rule violations by youth
- Minor rule violations by youth that result in referral to the security unit
- Parole rule violations
- Use of force and/or non-routine use of mechanical restraints
- Non-routine strip searches
- Self-referral to the security unit
- Youth arrests
- Admission to and release from security unit, isolation, or detention

COMMON INCIDENT VARIABLES USEFUL IN ANALYSIS

- Incident date & time
- Incident location
- Youth involved
- Staff involved
- Type of behavior / nature of incident
- Incident outcome (Seclusion/Loss of Privilege)
- Use of force/restraint
- Injuries
- Antecedents

TEXAS ADMINISTRATIVE CODE

§343.212

- (i) The facility administrator or chief administrative officer of a private entity under contract with a governmental unit in this state shall provide the presiding officer of the juvenile board of the county in which the facility is located with periodic updates on the operation of the facility, including the following information to be provided at least every quarter:
 - (1) facility population and capacity reports;
 - (2) number of serious incidents, by category, that occurred in the facility;
 - (3) number of resident restraints by type (i.e., personal, mechanical, and chemical);
 - (4) number of injuries to residents requiring medical treatment; and
 - (5) number of injuries to staff requiring medical treatment.
- (j) The facility administrator or chief administrative officer shall ensure the accurate and timely submission of statistical data to TJJD in an electronic format or other format as requested by TJJD.

TEXAS ADMINISTRATIVE CODE

§343.214

The facility administrator or chief administrative officer shall maintain and report to TJJJ electronically, or in the format requested, the following information:

- (1) total number of resident grievances;
- (2) total number of personal restraint incidents;
- (3) total number of mechanical restraint incidents;
- (4) total number of chemical restraint incidents;
- (5) total number of non-ambulatory restraint incidents;
- (6) total number of safety-based seclusions in each of the following categories:
 - (A) less than 90 minutes;
 - (B) 90 minutes or more but less than four hours;
 - (C) four hours or more but less than 24 hours;
 - (D) 24 hours or more but less than 48 hours;
 - (E) 48 hours or more but less than 72 hours; and
 - (F) 72 hours or more;
- (7) total number of disciplinary seclusions in each of the following categories:
 - (A) more than 90 minutes but less than 24 hours; and
 - (B) 24 hours up to 48 hours;
- (8) total number of residents placed in safety-based seclusion who have a known diagnosis of a serious mental illness;
- (9) total number of residents placed in safety-based seclusion who have a current designation as high or moderate risk for suicide;
- (10) total number of residents placed in safety-based seclusion who have a known diagnosis of severe or profound intellectual disability;
- (11) total number of residents placed in disciplinary seclusion who have a current designation as high or moderate risk for suicide; and
- (12) total number of staff injuries requiring medical treatment, as defined in §358.100 of this title, resulting from resident assault or restraint.

GETTING STARTED

- Set goals – It's easy to get lost with data, so instead of starting with what data you could or should collect, start with thinking about what you hope to achieve.
- Identify what you already collect – Identify the data you have now, and how it can help you achieve your goals.
- Identify gaps – Focus on what additional data you need to collect to achieve your goals.

TAKE IT TO THE NEXT LEVEL

- Incident data can be combined with demographic data, risk and need scores, education data, and treatment needs for a more robust analysis.

UNDERSTAND YOUR STAKEHOLDER NEEDS

- Different users have different data needs:
 - UPPER LEVEL MANAGERS (Executives/Chiefs) need HIGH-LEVEL data. What is the performance of a facility or group of facilities?
 - MID-LEVEL MANAGERS (Facility Administrators) and FRONTLINE STAFF (Direct care staff/Mid-management) need INDIVIDUAL-LEVEL data. How is a particular dorm performing? How is a particular youth performing?

IT'S ALL RELATIVE

- Knowing the absolute performance doesn't get us far...
 - Example: If we invest in a mutual fund that had an 8% return over the past year, is that good or bad?
 - The answer: It depends on the performance of our benchmark. This is called Relative Performance
- Facilities can be compared to themselves or to other, similar facilities.

CONVERTING TO RATES

- **Incidents Per Youth** = Total Incidents for Period / Average Youth Population for Period
- **Incidents Per Day Per Youth** = Total Incidents for Period / Total Days in Period \ Average Youth Population for Period
- Consider scaling your rates to make numbers meaningful. For example, per 100 youth or per 100 youth days.

PER MONTH PER 100 YOUTH

ALL FACILITIES - JUNE 2016

	Evins	Gainesville	Giddings	Mart	MRTC/PHX	Ron Jackson
INCIDENTS	Per Month Per 100 ADP					
Incidents per 100 ADP	485.23	683.47	636.64	661.05	553.60	537.23
Minor Incidents per 100 ADP	366.43	474.80	555.41	507.54	446.40	472.92
Major Incidents per 100 ADP	118.79	208.67	81.24	153.50	107.21	64.31
Use of Force per 100 ADP	98.69	59.91	49.45	54.57	91.39	71.57
Use of OC Spray per 100 ADP	18.28	9.78	13.69	7.54	0.00	1.45

PER YOUTH PER 100 DAYS

ALL FACILITIES - JUNE 2016						
	Evins	Gainesville	Giddings	Mart	MRTC/PHX	Ron Jackson
INCIDENTS	Per Month Per 100 ADP					
Incidents per Youth per 100 days	16.17	22.78	21.22	22.03	18.45	17.91
Minor Incidents per Youth per 100 days	12.21	15.83	18.51	16.92	14.88	15.76
Major Incidents per Youth per 100 days	3.96	6.96	2.71	5.12	3.57	2.14
Use of Force per Youth per 100 days	3.29	2.00	1.65	1.82	3.05	2.39
Use of OC Spray per Youth per 100 days	0.61	0.33	0.46	0.25	0.00	0.05

TREND ANALYSIS



- Use past data to observe trends
- Trend analysis can be used to project events (such as incident rates) into the future

TREND ANALYSIS

- If you're using past data to set a benchmark or to compare current performance, only use data from periods of time in which conditions were similar to what they are now.
 - If there have been significant changes to programs, policies and procedures, or population, then comparing a incidents then to incidents now will likely not be accurate.

COMPARING FACILITIES

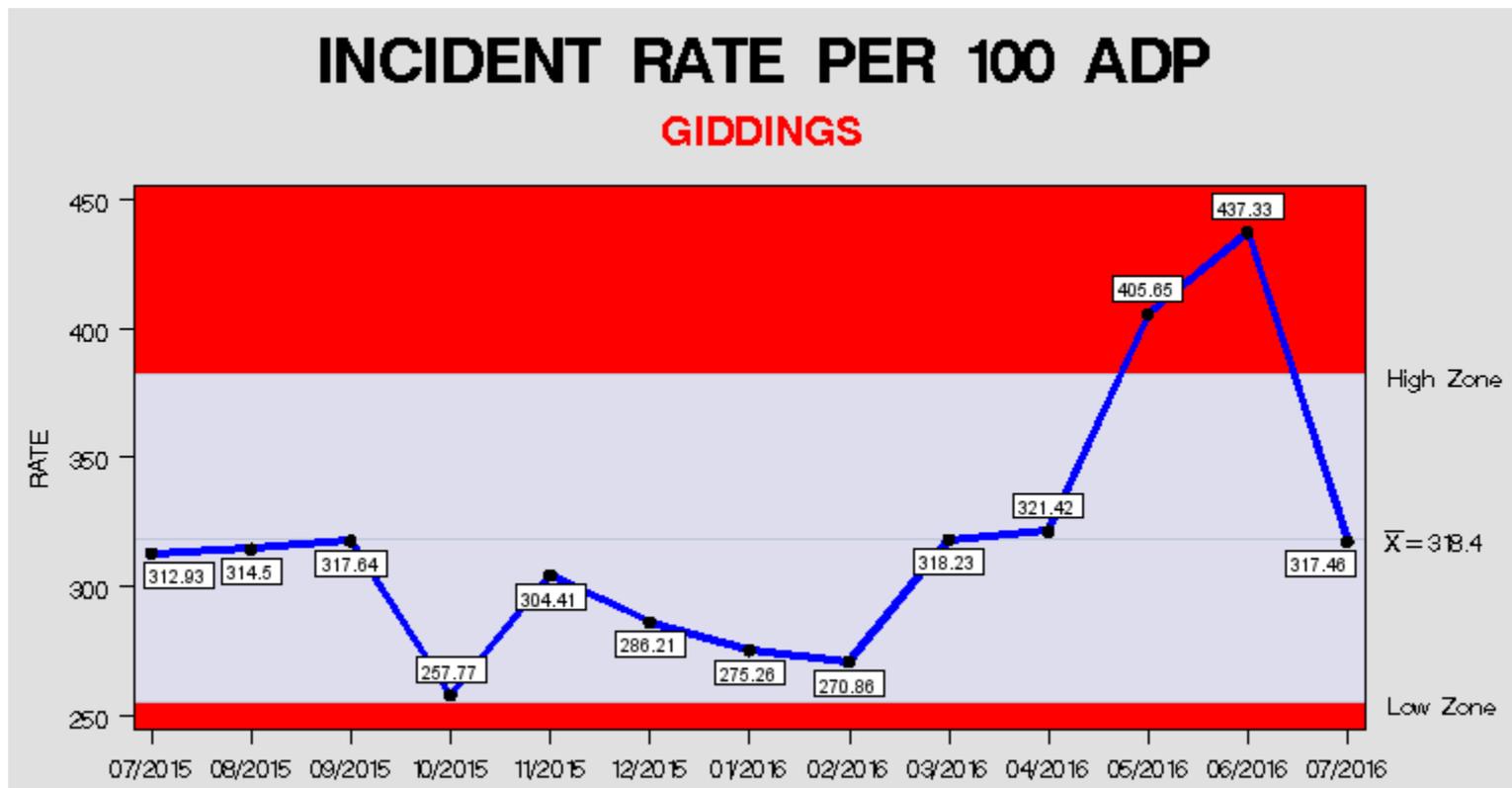
- If you want to compare facilities to one another, make sure their populations are comparable.
- Similar approach to finding a comparison group for youth programs. Make comparisons between facilities that are alike as possible.

VARIATION

Common cause versus special cause variation

- Some variation is just natural and will always exist. This is common cause variation. There's some degree of randomness in every process, especially those that involve human behavior.
- Special cause variation is completely different — it's directly caused by something special. These *special causes* are specific things you can identify and do something about.

CONTROL CHARTS



CONTROL CHARTS

- A **control chart** is a graph used to study how a process changes over time. Data are plotted in time order. A **control chart** has a central line for the mean, an upper line for the upper control limit and a lower line for the lower control limit.
- A control chart is used to detect and respond to unwanted changes in a process.

CONTROL CHARTS

- When a process is stable and in control, it displays common cause variation. A process is in control when it varies within predicted limits. If the process is unstable, the process displays special cause variation, non-random variation from external factors.

UPPER / LOWER BOUND LIMITS

- Upper and lower limits are generally set at 3 standard deviations from the mean.
- Standard Deviation is a measure of how spread out numbers are. It is the square root of the variance.
- Its symbol is σ (the Greek letter sigma)

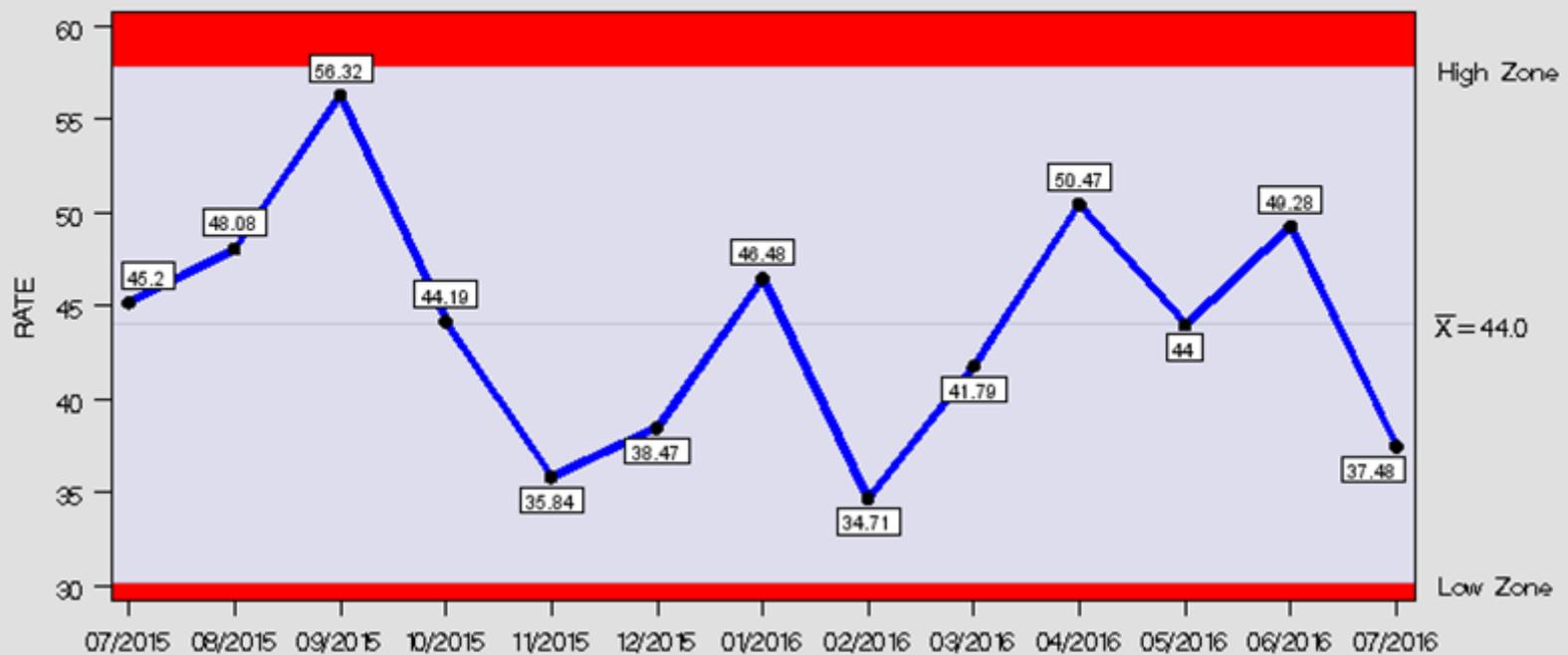
CONTROL CHARTS IN EXCEL

- Lucky for us, Excel makes control charts easy
 - In Excel, use the STDEV formula to calculate standard deviation
 - `STDEV(VALUES)` gives you the standard deviation
 - Multiply it by 3 and add it to your mean to get the upper bound control limit. Subtract it from the mean to get your lower bound control limit.

CONTROL CHARTS

PHYSICAL RESTRAINT (PF/CA/CN/RT/RS) RATE PER 100 ADP

GIDDINGS



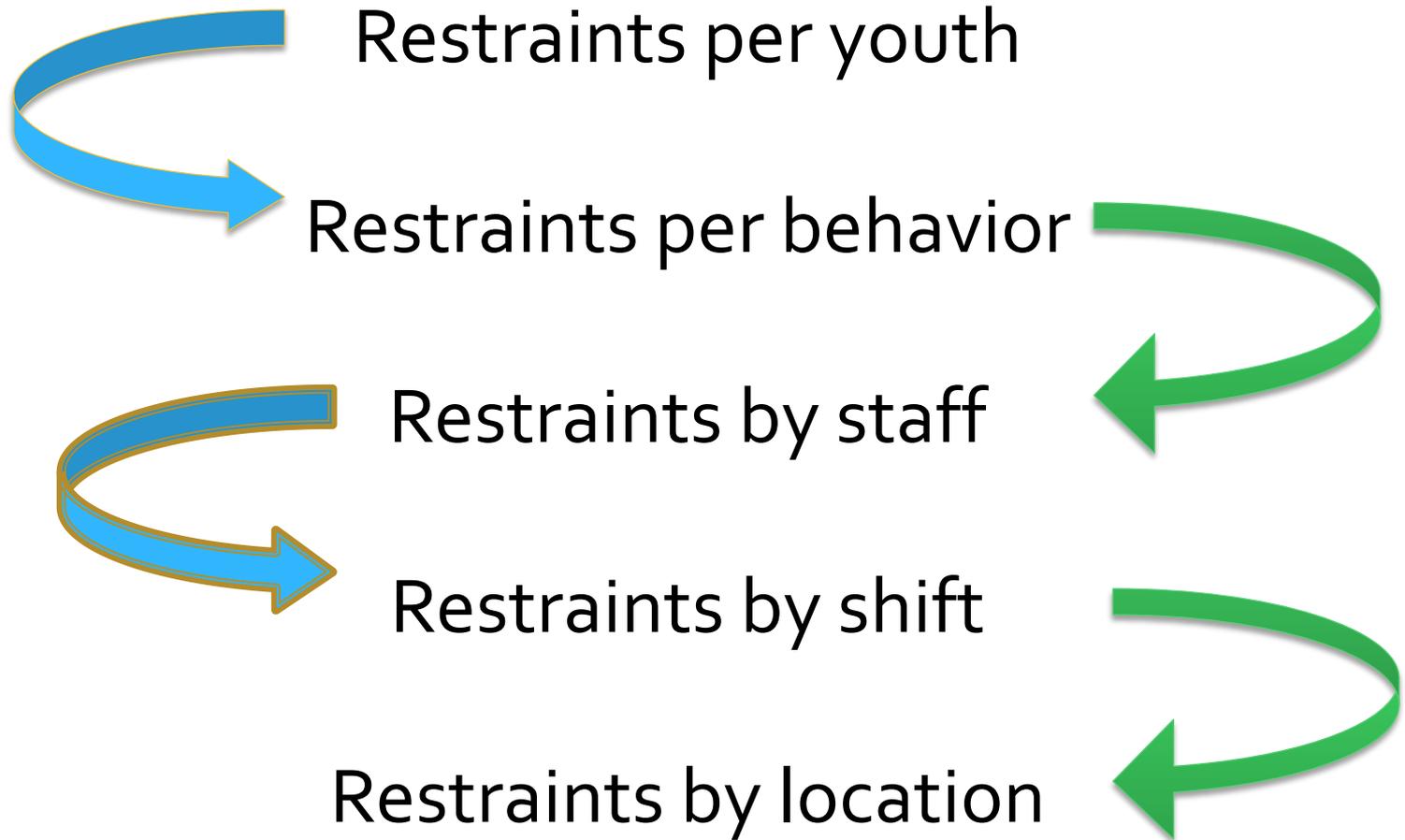
USING INCIDENT DATA TO INFORM CORRECTIVE ACTION

- **Scenario:** Data from a control chart reveals that incidents have been on the rise for 3 months, with the last 2 months being “out of control.”
- Further data analysis has indicated that a majority of incidents occur during school hours. Observing only incidents that occur during school hours, we see that the location of most of the incidents is the hallway. Thus we have a hypothesis

USING INCIDENT DATA TO INFORM CORRECTIVE ACTION

“The school currently uses two directional walkways through common areas. Hallways become congested and often students antagonize one another when passing in hallways, sometimes escalating to become dangerous situations resulting in major incidents. After considering the pattern of incidents, the school will implement a one way traffic flow through all hallways that involve exiting the right side of the building, walking around outside and entering the left side in order to move to the left side of the building.”

SHIFTING YOUR PERSPECTIVE



PBIS – POSITIVE BEHAVIOR INTERVENTIONS AND SUPPORTS

Tier 3 long-term supports are typically designed to address youth needs at the most intensive level. These supports include the delivery of highly specialized treatment. If Tier 1 and Tier 2 practices and interventions are effective, only 5-10% of youth may need these services.

Mentoring (volunteer services), MRTCC Placement, Executive MDT, Capstone, CSU, TDCJ Continuum of Care, Safety Plan, PAWS, Student Employment, Individualized Therapy, Prison

Pastoral Care, Redirect Program, Security, Behavior Contract, Responsibility Center, Change of Placement, Unscheduled Behavior Group, Phoenix, Dorm Shutdowns & Restrictions, Aggression Replacement Therapy (ART), Capitol/Serious/Violent Offender Treatment (CSVOTP), Alcohol and Other Drug (AOD) Treatment, Sexual Behavior Treatment (SBTP).

Tier 2 interventions and programs are designed to address the needs of 10-15% of our youth for whom Tier 1 practices alone are ineffective.

Posting, Reviewing, & Teaching the 5 Expectations, Visual Reminders, Acknowledging Expected Behavior, Thinking Reports, Multi-Disciplinary Teams (MDT), Individualized Case Planning (ICP), Scheduled Behavior Groups, Core Groups, Redirects, Role Modeling, Skills Groups, Huddle Ups & Check Ins, Phone Calls, Religious Services, Youth Handbook, Youth Rights, Grievance Hotline, Time-Outs, Situational Training, Orientation/Re-entry Planning, DSO Orientation, Special Services Committee, Exit Reviews, Student Counseling, Stage Promotions & Privileges, Medical & Mental Health Services & Prevention, Motivational Interviewing Techniques, Weekly Dorm Data Reviews, Monthly Data Reviews

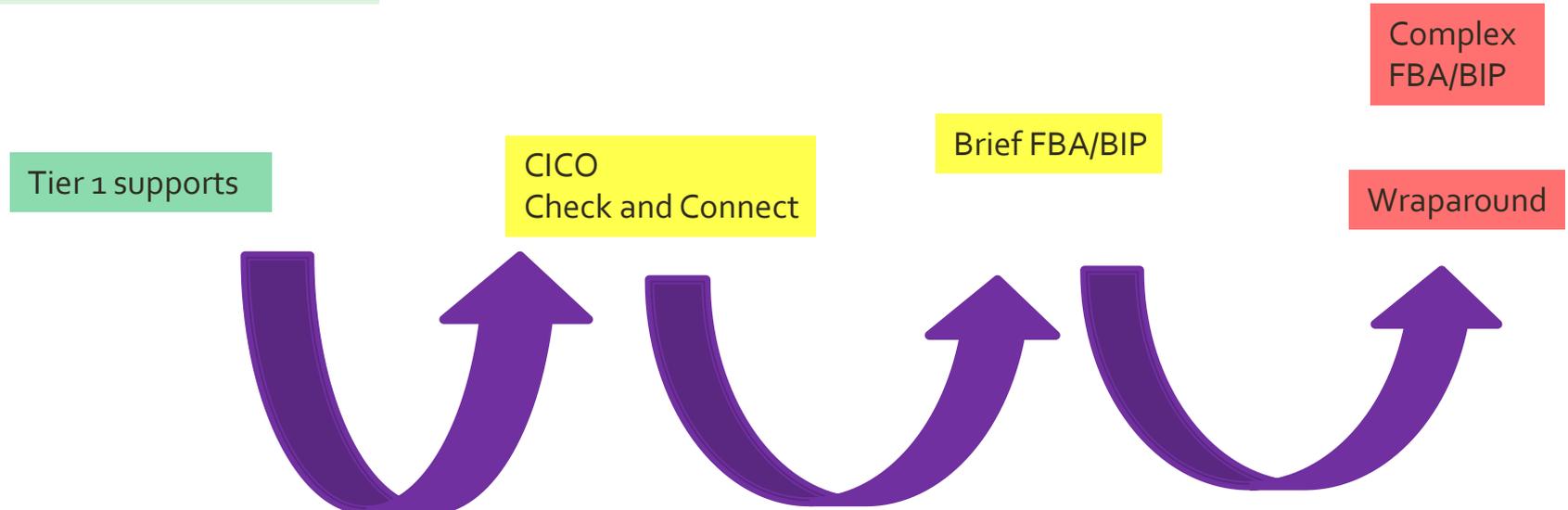
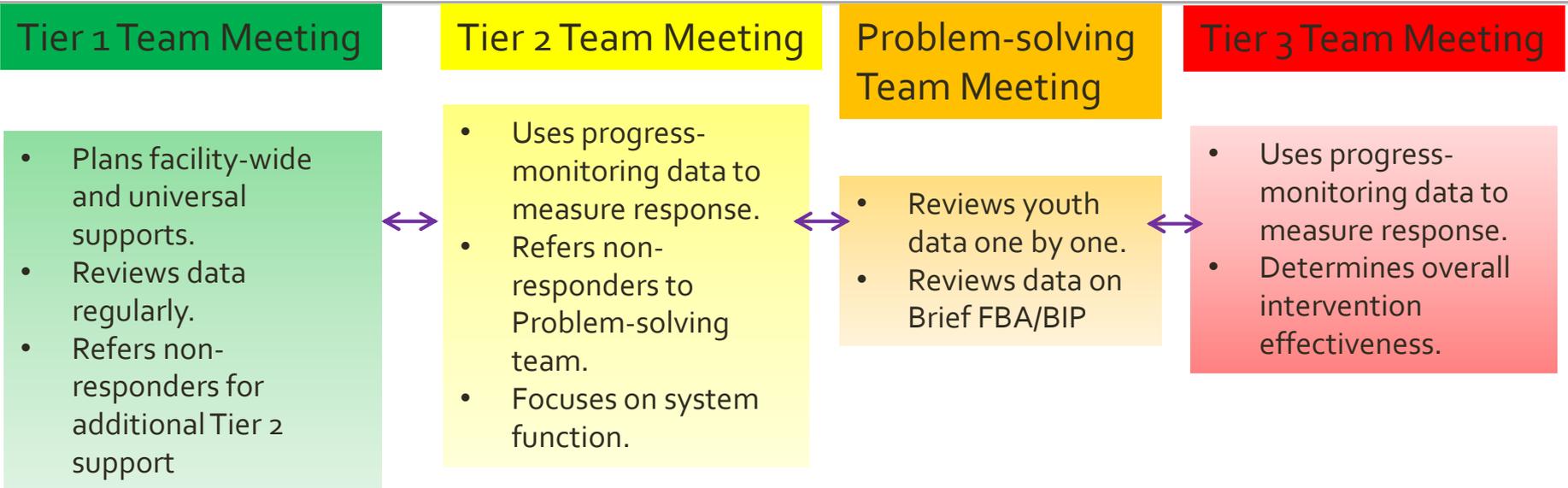
Tier 1 supports are universal preventative supports designed to address the needs of 80-90% of youth in our care.

RESPONSE TO INTERVENTION (RTI)

What is an RTI system?

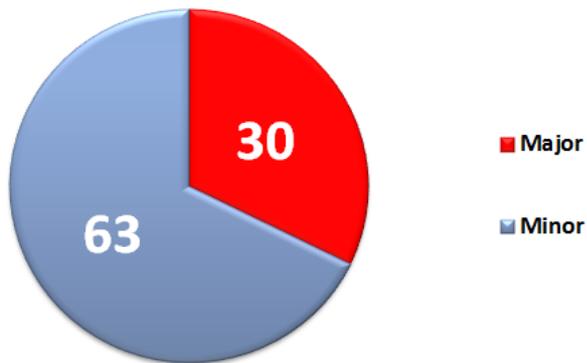
- Generally speaking, we have a universal set of interventions applicable to all youth designed to increase desired behavior and decrease undesired behavior. By nature, it's a preventative approach. Our use of data observes who and how different youth respond to those universal interventions.
- For youth who fail to respond well, we can offer a set of "Tier 2" interventions aimed at small groups of youth who are targeted to receive additional supports and interventions.
- For youth who fail to respond well, we can offer a set of more intensive, highly individualized supports that may be long term in nature.

TEAMING MODEL BY TIERS

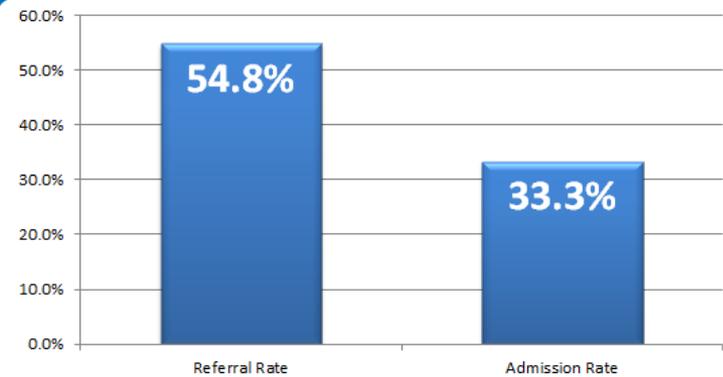


PBIS DASHBOARD – DORM OVERVIEW

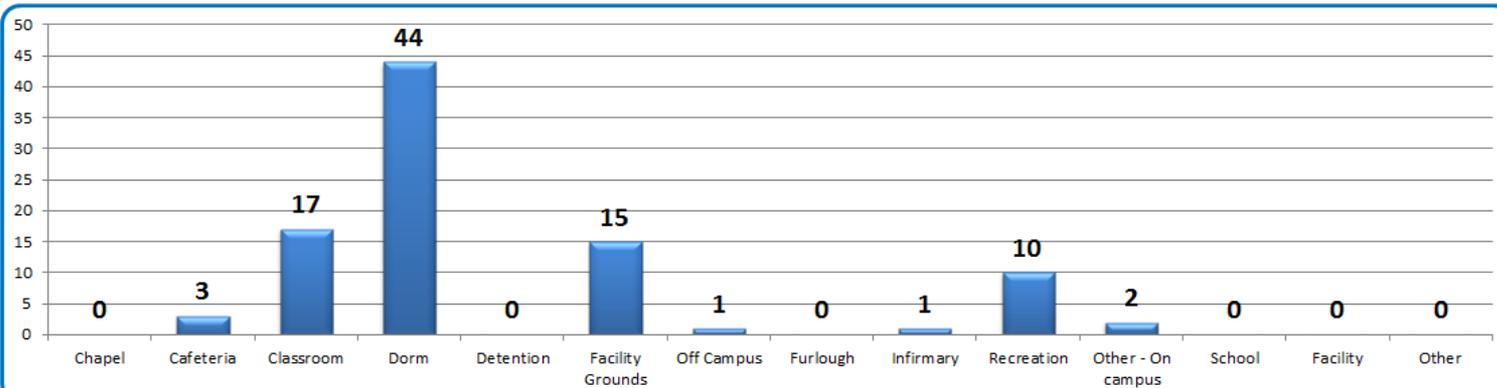
Incident Category



Referral Rate/Admission Rate

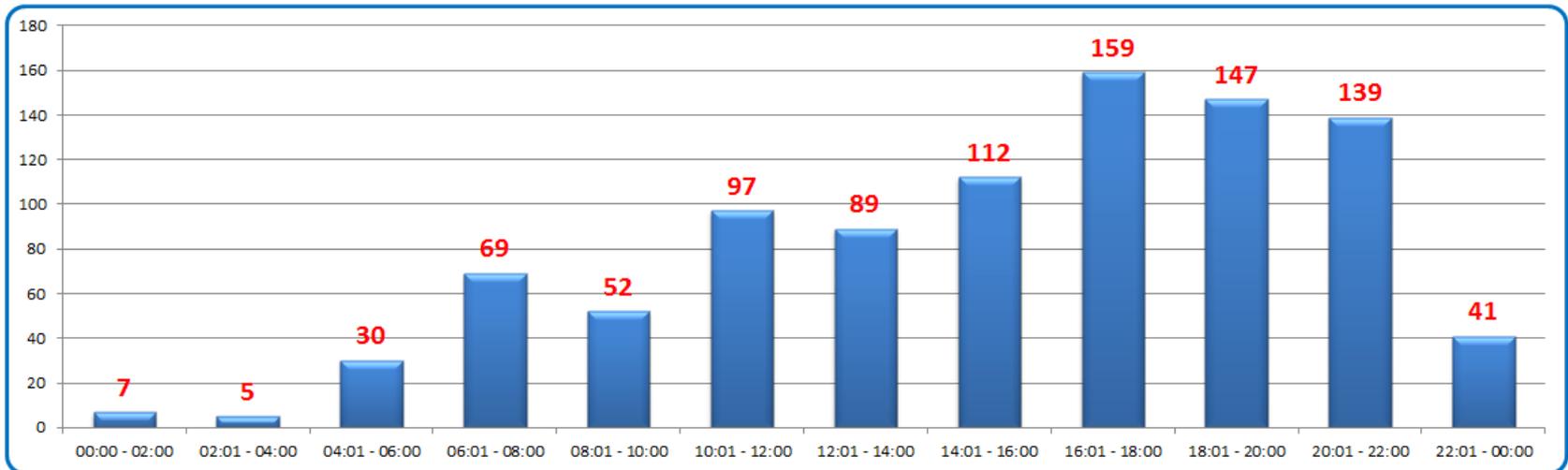


Incident Location



PBIS DASHBOARD – LOCATION OVERVIEW

Incident Time

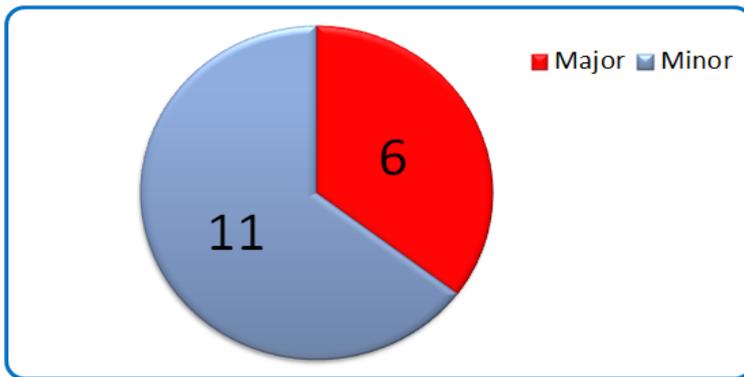


Incident Day

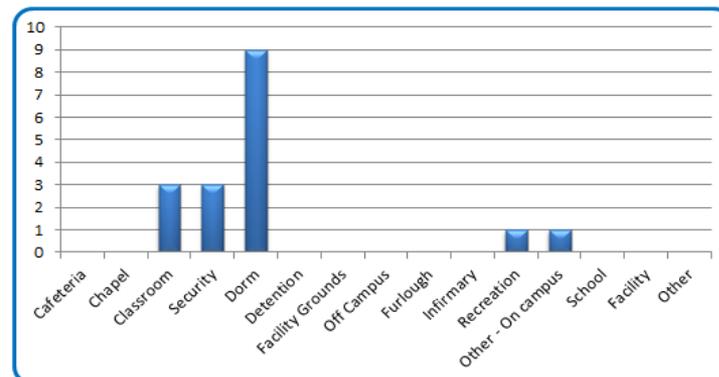


PBIS DASHBOARD – YOUTH OVERVIEW

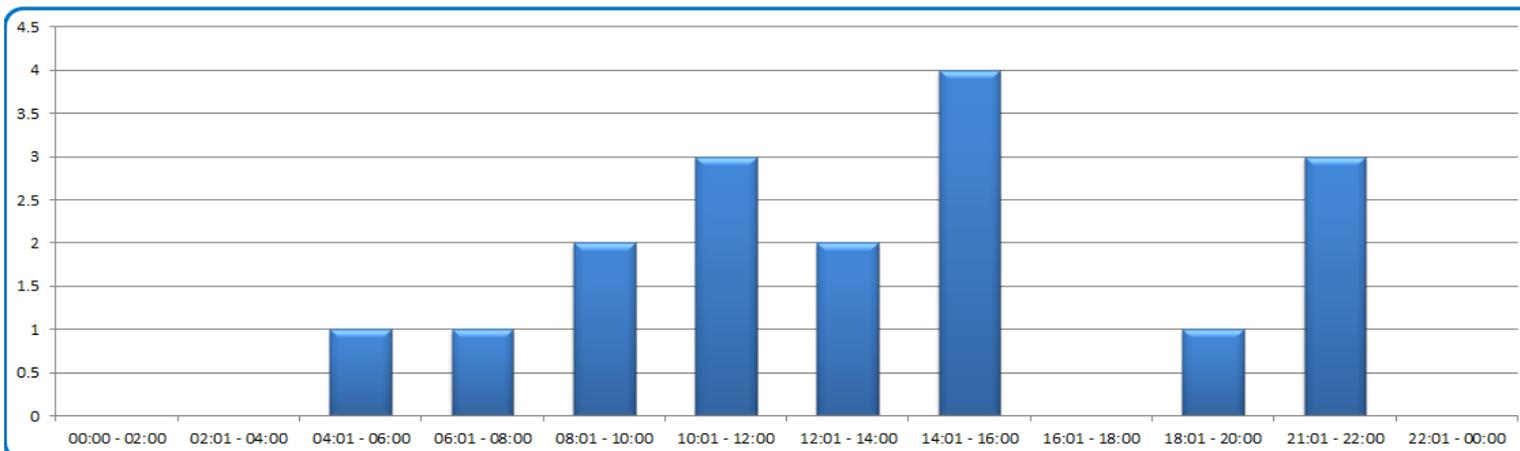
Incident Category



Incident Location



Incident Time



QUESTIONS TO ASK

- What is associated with spikes (location, a single youth, a time of day, etc.)?
- How much variance is normal/expected?
 - Consider context and population
- What system variables (routines, schedule changes, blind spots, staff activity/supervision) could contribute?
- What youth variables (population changes, conflicts between groups) could contribute?

MORE QUESTIONS TO ASK

- Is it a skill deficit issue?
 - Either youth or staff aren't familiar with routine or behavior required
 - Requires training follow up
- OR a performance deficit issue?
 - Youth/staff can perform the skill/behavior under other circumstances, but don't do it here
 - Requires adjustments to system/environment

ISSUES WITH IMPLEMENTATION

- If implemented without fidelity, Tier 1 practices will not help us “locate” youth needing Tier 2 interventions accurately
- Local context determines the level of response that is “allowable” – what percentage of minor/major incidents will always happen?
- Trust (O and A dorm) example

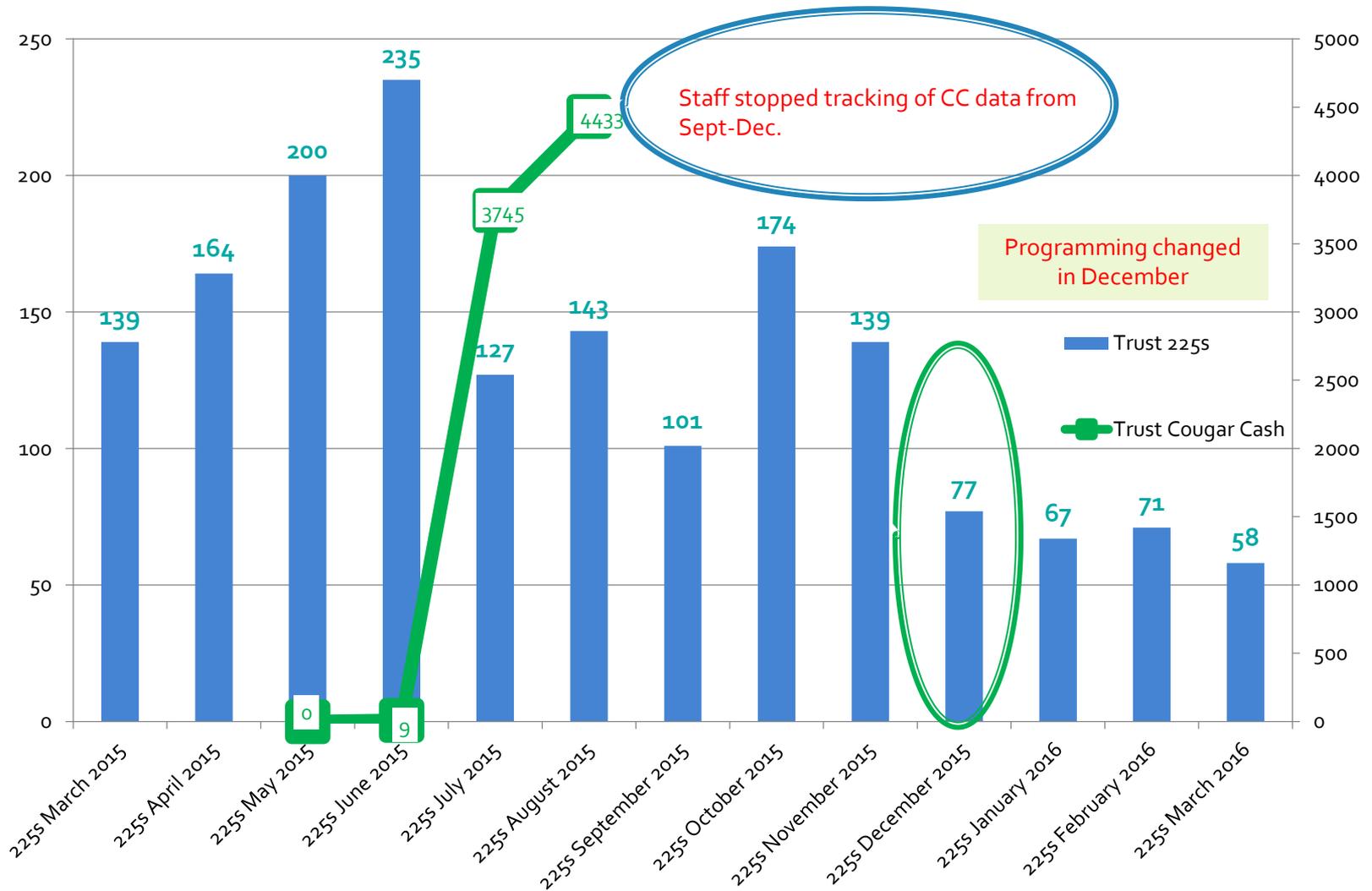
LIMITATIONS IN OUR DATA

- We need to transition to a more effective descriptions and analyses of antecedents to behavioral errors (10 minutes prior to acting out), objective behavioral descriptions, and consequences (10 minutes after acting out).

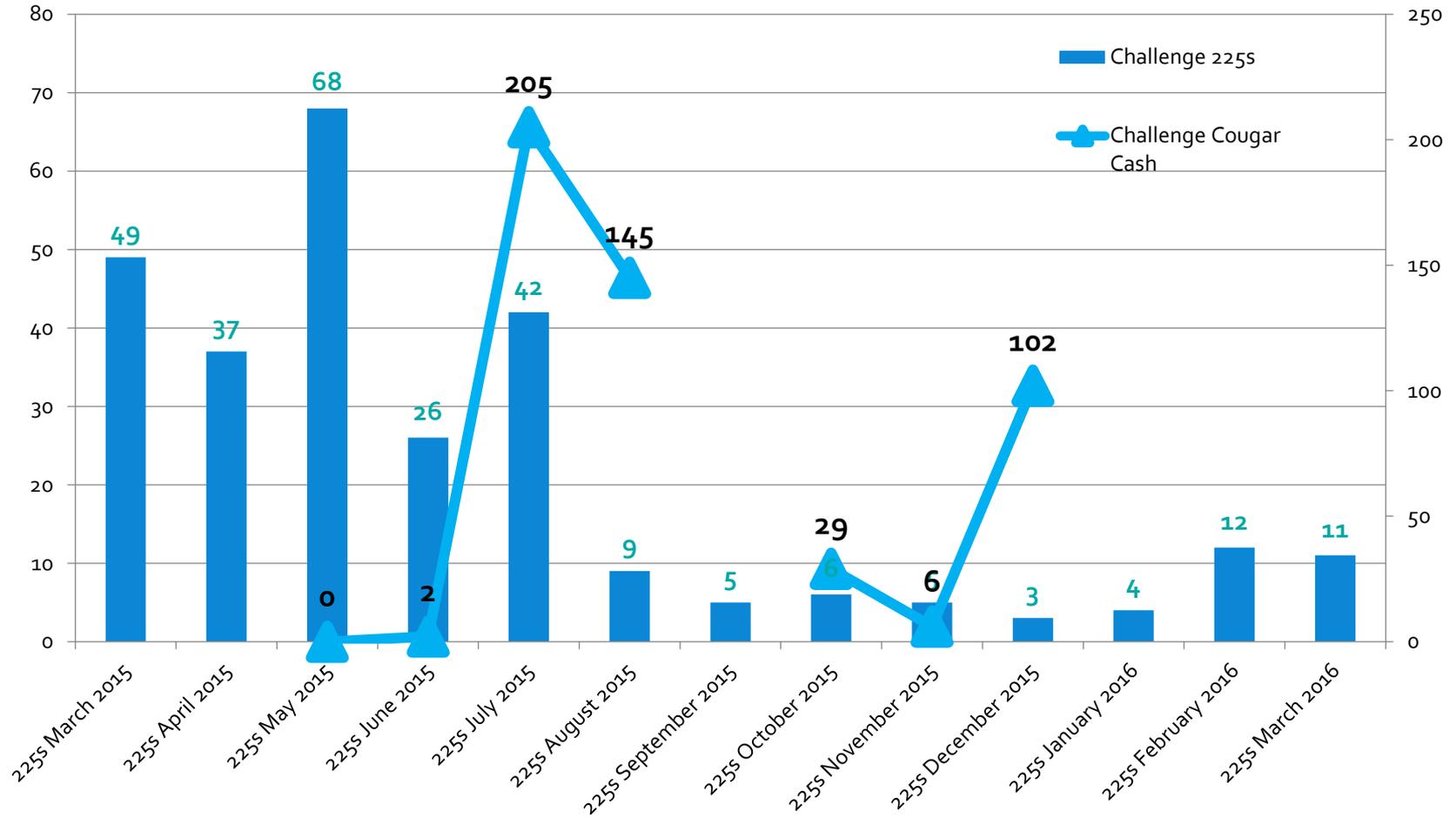
Reinforcement schedule changes in response to incident data

- Began implementing token economy in March 2015
- Data on token economy revealed little change in incidents
- Changed approach to group incentives (activity-based)

TRENDS SHOULD HAVE REFLECTED SUCCESS



ON THE PAWS DORM...



Trust Dorm Incentives

Sunday

- A wing and B wing side 2 receive one blue phone call on AM or PM (Unless they are in security at the time calls are offered) – *All youth*

Monday

- A wing side 1 will get a 10 minute phone call (Blue Phone Only) -*7 Days no Security Referrals*

Tuesday

- B wing side 1 will get a 10 minute phone call (Blue Phone Only) -*7 Days no Security Referrals*
- 1 hour of recreation in the gym (Basketball, pool tables, TV, etc.) -*7 Days no Security Referrals*

Wednesday

- A wing side 2 will get a 10 minute phone call (Blue Phone Only) -*7 Days no Security Referrals*

A PREDICTIVE APPROACH

- Oregon Youth Authority (OYA) currently uses predictive modeling to anticipate youth behavior problems and reduce the likelihood that they will occur.
 - **OYA Nuisance Incident Risk Assessment (O-NIRA)**
 - **OYA Violent Incident Risk Assessment (O-VIRA)**

O-VIRA and O-NIRA

- O-VIRA is used to predict the likelihood that a youth will engage in a violent incident within the first six months in close custody settings.
- O-NIRA is used to predict the likelihood that a youth will engage in multiple incidents within the first six months in close custody settings.

O-NIRA – PREDICTOR VARIABLES

Logistic Regression: Variables in the Equation				
PREDICTOR VARIABLES	VALUES	PARAMETER ESTIMATE (β)	ODDS RATIO	SIGNIFICANCE LEVEL
Age at Admission	Age at admission	-.321	.726	.000
SED	No = 0, Yes = 1	.871	2.389	.000
RNA Prescreen Social Score	Sum (maximum = 18)	-.116	.890	.007
Mental Health Risk Score	Sum (maximum = 11)	.248	1.281	.000
Aggression Protective Score	Sum (maximum = 8)	-.248	.781	.000
Parental Authority and Control	Sum (maximum = 2)	.404	1.497	.009
Sex Offender	No = 1, Yes = 0	-.677	.508	.012
ORRA	4 Decimals between 0 & 1	2.583	13.237	.010
ORRA-V	4 Decimals between 0 & 1	-3.015	.049	.034
Intercept	Constant	3.359	28.750	.003

WHAT THE FUTURE HOLDS

- An RTI model measures a youth's response to intervention, but what if we can integrate an RTI model with assessments that predict behavior?
- For example: We develop a tool to predict how likely a youth is to engage in violent behavior in an institutional setting, then deliver an intervention *before* the behavior occurs

REFERENCES

- Control Chart – Statistical Process Control Charts | ASQ. <http://asq.org/learn-about-quality/data-collection-analysis-tools/overview/control-chart.html>
- DeCarlo, C., Gygi, C., & Williams, B. (2005). *Six Sigma for Dummies*. Hoboken, NJ: Wiley Publishing Inc.
- Oregon Youth Authority. OYA Violent Incident Risk Assessment (O-VIRA) Research Summary. Retrieved from <https://www.oregon.gov/oya/research/o-virasummary071411.pdf>
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QUESTIONS

