


From Information to Impact

Unlocking the Power of Data Through Effective Visualization, Reporting, and Communication

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2016 CQI Conference
October 18, 2016

Objectives

- Learn key practices for effective data visualization
 - Learn techniques for compiling and creating reports
 - Become familiar with available resources for data visualization techniques
 - Share ideas for facilitating discussions that use data
- 

Introduction

- Mercy Home for Boys and Girls
 - Residential
 - AfterCare
 - Mentoring
 - Supportive Housing



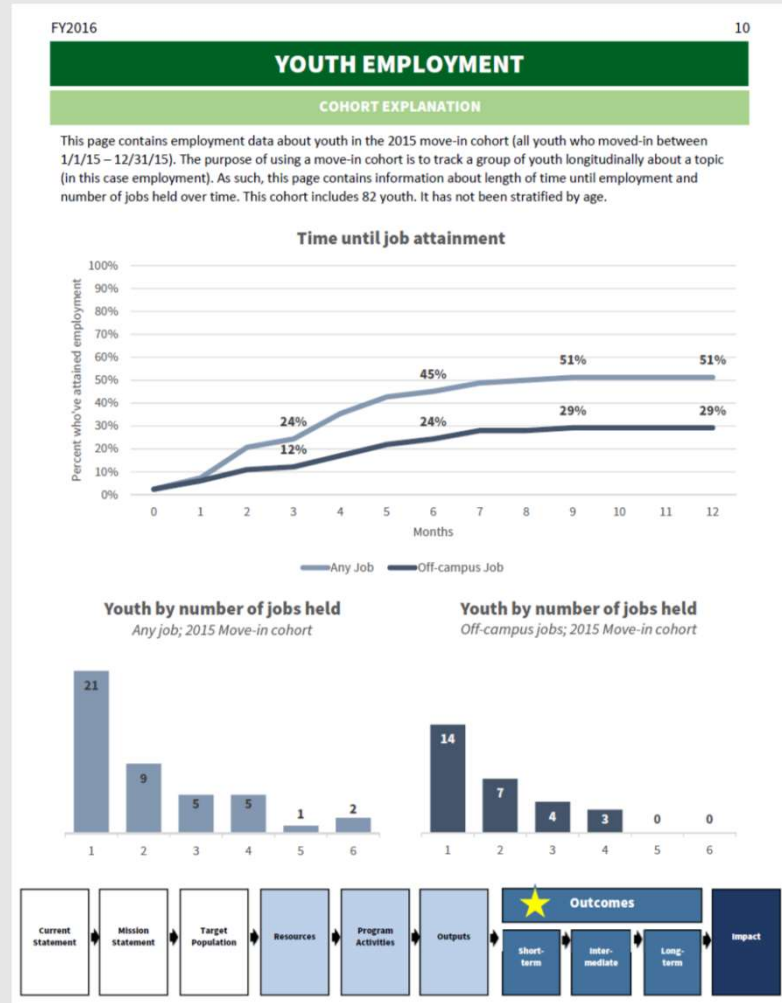
Introduction

- Old
 - Spreadsheets and Tables

Program	Last name	First name	Transition Date	Was a transition plan developed and sufficiently executed to support a smooth and successful transition to the next setting?	% of PTP Achieved	Post Transition Placement
Bosco			02-Apr-16	N	<25% Achieved	Parent/guardian home
Mahoney			27-Jun-16	N	<25% Achieved	Parent/guardian home
Kelly			01-Jun-16	N	<25% Achieved	Relative's home
Bosco			11-Apr-16	N	<25% Achieved	Parent/guardian home
Walgreen			26-Apr-16	N	<25% Achieved	Parent/guardian home
Speh			23-Jun-16	N	<25% Achieved	Parent/guardian home
Seton			13-Jun-16	N	<25% Achieved	Parent/guardian home
Speh			21-Jun-16	N	<25% Achieved	Parent/guardian home
Mahoney			09-Jun-16	N	<25% Achieved	Parent/guardian home
Noha			18-Apr-16	N	25%+ Achieved	Parent/guardian home
Noha			25-May-16	N	25%+ Achieved	Parent/guardian home
Mahoney			27-Jun-16	N	25%+ Achieved	Parent/guardian home
Seton			30-Jun-16	Y	25%+ Achieved	Walgreen
Walgreen			14-Jun-16	N	25%+ Achieved	Parent/guardian home
Speh			24-Apr-16	N	25%+ Achieved	Parent/guardian home
Speh			24-May-16	Y	50%+ Achieved	Mahoney
Quille			01-Jun-16	N	50%+ Achieved	Independence
Daley			21-Jun-16	Y	50%+ Achieved	Parent/guardian home
Couderc			26-May-16	Y	75%+ Achieved	Parent/guardian home
Noha			29-Jun-16	Y	75%+ Achieved	Parent/guardian home
Walgreen			04-Jun-16	Y	75%+ Achieved	Parent/guardian home
Walgreen			11-Jun-16	Y	75%+ Achieved	Parent/guardian home
Walgreen			21-Jun-16	Y	75%+ Achieved	Couderc
Mahoney			08-Apr-16	Y	75%+ Achieved	Parent/guardian home
Seton			23-Jun-16	Y	75%+ Achieved	Walgreen
Kelly			20-May-16	Y	75%+ Achieved	Independence
Cooke			07-Jun-16	Y	75%+ Achieved	Campbell
Sheil			29-Jun-16	Y	75%+ Achieved	Relative's home
Sheil			22-Apr-16	Y	75%+ Achieved	Other - Renting from friend's fan

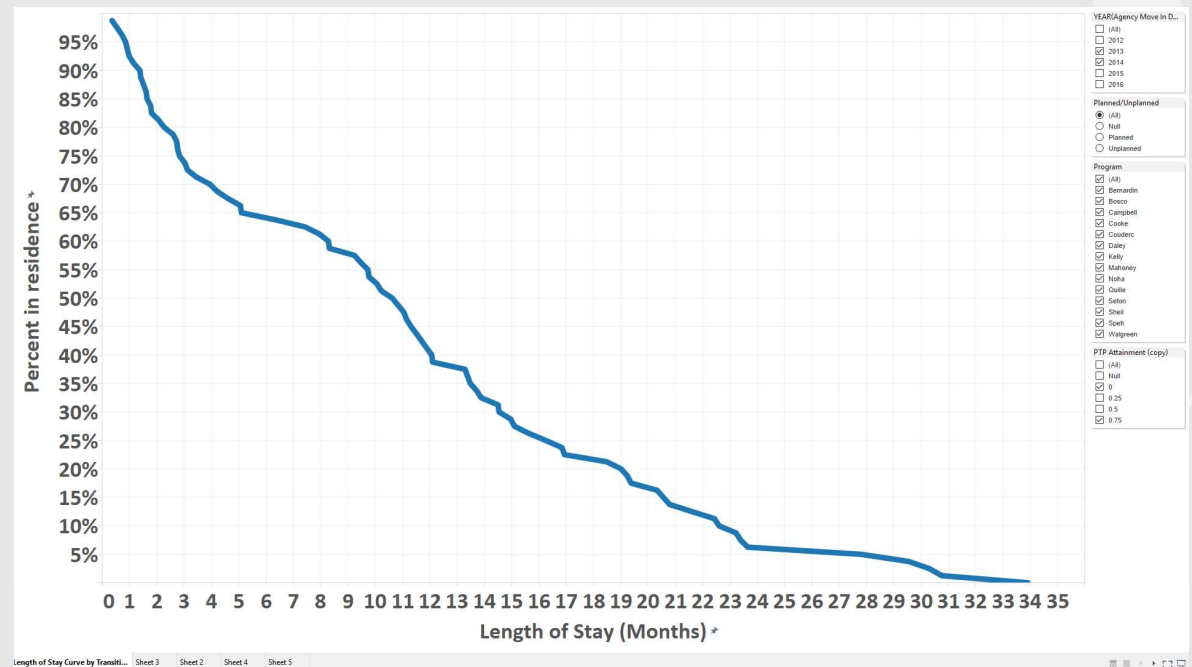
Introduction

- New
 - More visuals and designed handouts



Introduction

- Future?
 - Tableau
 - R



Introduction

- **Gather**

- Identify where your data comes from, where it's stored, and what format it's in

- **Prepare**

- Visualize data, develop reports

- **Share**

- Engage with stakeholders data, revise reports, facilitate exploration and use in decision-making

Gather

- What information do I have?
 - What is the quality of data entry?
- How did we decide what data to collect?
- Is data collected based on some sort of framework?
- What's the (big) question?

	Youth Short-Term Outcomes (Early length of stay)	Youth Intermediate Outcomes (At Discharge)	Youth Long-Term Outcomes (2 years post-program)	Indicated by	Tools	
Socio-Emotional Wellbeing	Attachment	Youth has personal routine Youth engages support network Youth can identify support network Youth can describe a healthy relationship	Youth has personal routine Youth maintains healthy relationships with: - Romantic partner - Family - Friends - Community groups	Youth maintains healthy relationships with: - Romantic partner - Family - Friends - Community groups	- Adherence results - YSR/CBCQ, Academic Competence Scale, Social Problems Syndrome Scale, ASR/ABC, Friends Scale, Spouse/Partner Scale, Family Scale	- Adherence
	Self-regulation	Youth can identify emotions in self Youth can identify emotions in others Youth understands how body responds to stress Youth can identify available coping and modulation strategies Youth can communicate needs Youth can describe healthy boundaries	Youth effectively expresses emotions to others Youth recognizes impact of external or internal factors on emotional state Youth can describe his or her unique set of resources Youth uses healthy coping and modulation strategies	Youth demonstrates self-regulation Youth experiences decrease in symptoms of psychological distress	- Adherence results - YSR/CBCQ, Symptom Scale, Problem Scale, DSM Scale, ASR/ABC, Syndrome Scale, Problem Scale, DSM Scale - UCLA PTSD Index result - (Abbreviated) Dysregulation Index - (Child) Alexithymia Measure - Observation	- Adherence - UCLA PTSD Index
	Competency	Youth identifies strengths Youth feels autonomy to make decisions Youth can identify multiple solutions to a problem Youth can control impulses and delay reactions Youth identifies elements of an identity	Youth applies strengths in life decisions Youth demonstrates decision-making skills Youth expresses own identity Youth describes self in future	Youth demonstrates age-appropriate developmental skills	- Adherence results - YSR/CBCQ, Competence Scale, Future Goals Scale, ASR/ABC, Personal Strength Scale - BSEF result	- Adherence - Behavior Setting Inventory of Executive Function
Educational Success	Engagement in Education	Youth engages in leisure/enriching experiences	Youth demonstrates acceptance of life experiences	Youth possesses comprehensive understanding of self	- UCLA PTSD Index result - CAHS result (trauma section only)	- UCLA PTSD Index
	Edutainment Success	Youth feels sense of belonging in school Youth engages in school activities Youth builds academic self-efficacy	Youth improves school performance Youth has higher educational expectations	Youth continues to maximize academically	- School behavior - School attendance - Grades - Homework completion	- Behavior records - Attendance records
	Post-secondary options	Youth knows requirements to earn credential Youth knows post-secondary options and requirements to apply Youth knows financial aid options	Youth applies for post-secondary options Youth applies for financial aid	Youth earns high school credential Youth earns post-secondary credential	- Adherence results - YSR/CBCQ, Academic Performance Scale, ASR/ABC, Education Scale - CS result (Work and Study Life, Career and Education Planning) - W/IV result - Credential or diploma - Post-secondary enrollment	- Report cards and transcripts - Adherence - Core Life Skills - W/IV - Observation
Self-Sufficiency	Independent Living	Youth can identify independent living skills Youth can identify financial literacy skills Youth can identify community resources	Youth demonstrates independent living skills Youth demonstrates financial literacy skills Youth engages community resources	Youth possesses age-appropriate independent living skills	- CS result (Personalogy, Daily Living, Self-Care) - Swift result - Asset balance - Street's house assessment	- Core Life Skills - Swift
	Vocational	Youth can identify job search skills Youth can identify job and work place skills Youth can identify potential employment	Youth demonstrates job search skills Youth demonstrates job and work place skills Youth obtains employment	Youth is stably employed	- CS result (Housing and Money Management, Work and Study Life, Career and Education Planning) - Adherence results - ASR/ABC, Job Scale - CRA Results - Employment attainment, length, type, wages	- Core Life Skills - Adherence - CRA - Observation
	Housing	Youth can describe safe, stable housing Youth understands renting and leasing principles	Youth identifies post-placement housing Youth has safe, stable housing	Youth has safe, stable housing	- CS result (Housing and Money Management) - Housing attainment	- Core Life Skills - Observation

Gather

- What format is it in? Where is it stored?
 - We have data in:
 - SQL
 - Access
 - Excel
 - Web portals
 - Testing software
 - Paper



Gather

- A quick note on terminology
 - Data = pieces of information
 - Evidence = data + analysis

Wulczyn, Alpert, Orlebeke, & Haight (2014)



Prepare

- What's the (specific) question?



Prepare

- Who is the audience?
 - Internal/external
 - Front-line staff/executives
 - Departmental/inter-disciplinary
 - Funders
 - Clients



Prepare

- What chart or visual element should I use?



Prepare

How we perceive quantitative information visually

Element	Charts this might be found in
1. Position	Scatter plot, dot plot
2. Length	Bar/column, line
3. Slope	Line, slope
4. Area	Pie, stacked line, stacked bar
5. Size	Bubble
6. Angle	Pie
7. Color	
8. Shape	

** Color and Shape can be very effective with nominal data

Mackinlay & Winslow (2016). Tableau.

Prepare

- What tools should I use?
 - Excel
 - Word
 - PDF creator/editor
 - Powerpoint
 - Tableau



Prepare

- Chart design principles
 - Excel defaults = bad
 - BUT! You can make great charts in Excel



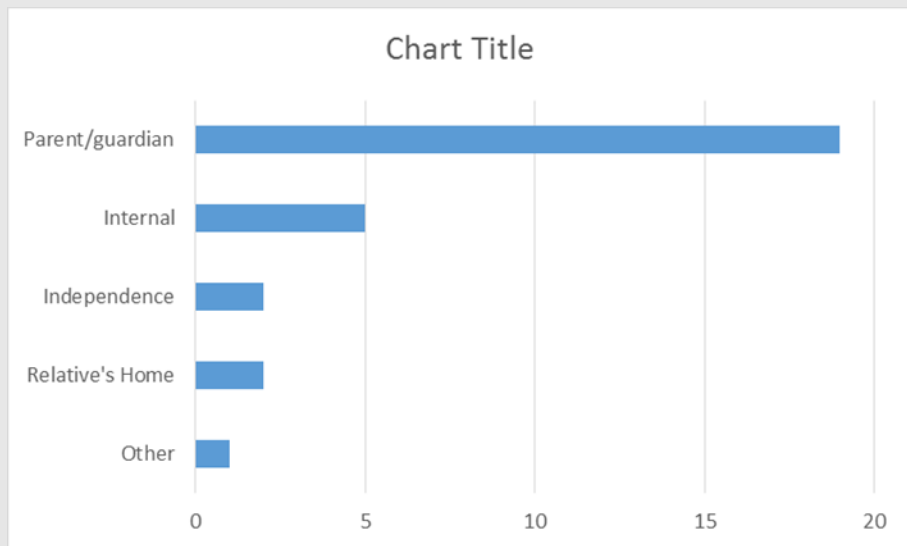
Prepare

- Chart components to consider
 - Title
 - Axes
 - Axes titles
 - Gridlines
 - Labels
 - Size/whitespace
 - Colors
 - Font

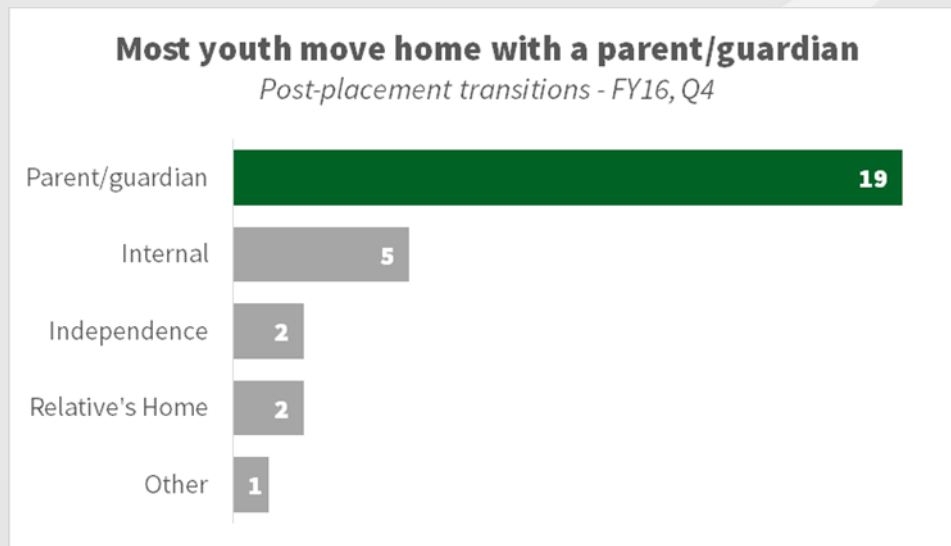


Prepare

Before

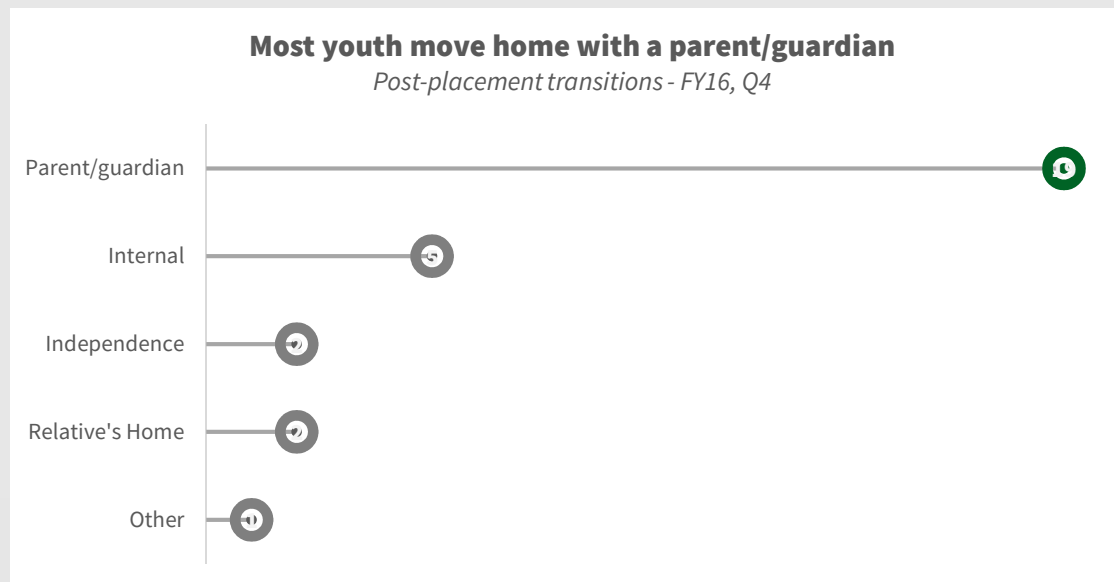


After



Prepare

...or as a dot plot



Prepare

- Create a template and use consistent formatting
 - Color scheme
 - Font
 - Branding
 - White space/clutter
 - Re-usability
 - Printing considerations

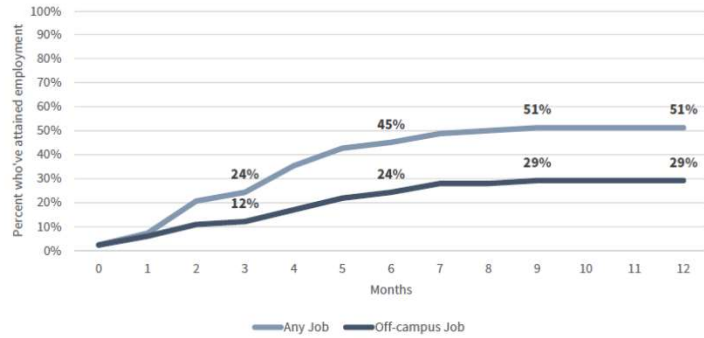


YOUTH EMPLOYMENT

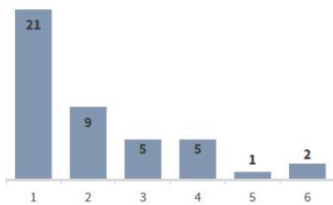
COHORT EXPLANATION

This page contains employment data about youth in the 2015 move-in cohort (all youth who moved-in between 1/1/15 – 12/31/15). The purpose of using a move-in cohort is to track a group of youth longitudinally about a topic (in this case employment). As such, this page contains information about length of time until employment and number of jobs held over time. This cohort includes 82 youth. It has not been stratified by age.

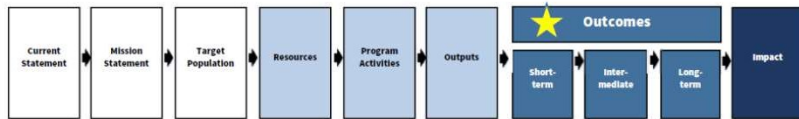
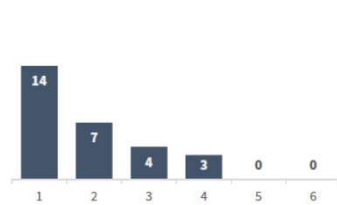
Time until job attainment



Youth by number of jobs held
Any job; 2015 Move-in cohort

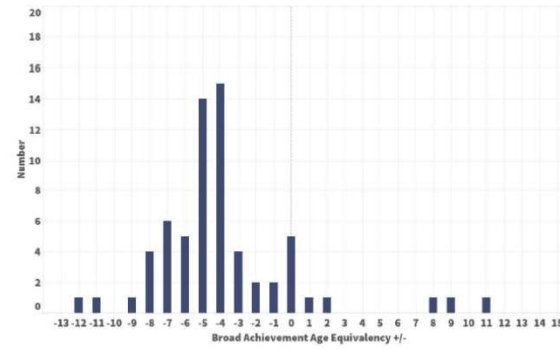


Youth by number of jobs held
Off-campus jobs; 2015 Move-in cohort



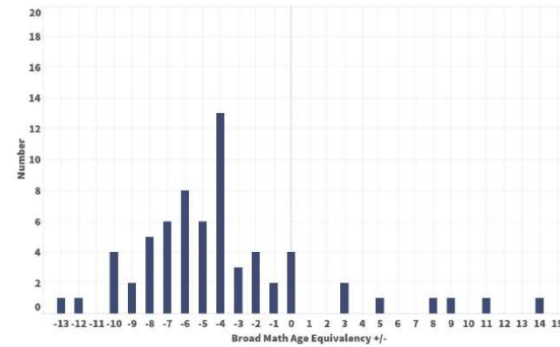
WJ-4 RESULTS

OBSERVATIONS, TRENDS & ANALYSIS



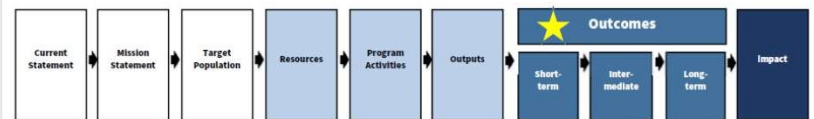
These charts show the distribution of scores on pre-tests for youth in the 2015 entry cohort.

The horizontal axis shows the age equivalency scores relative to actual age (negative values indicate youth who scored below their actual age).



The vertical axis shows how many youth fell into each score range. Mercy Home's youth fall along a relatively normal distribution (most youth clustered in the center, with fewer youth to each side).

However, Mercy Home's center is shifted from the average population on which the WJ-4 was normed. These charts show that typical Mercy Home youth are 4 to 5 years behind their actual age according to the WJ-4.



Prepare

- Technical tips
 - Using Excel and Word to create reports
 - Using a PDF program to manage and create reports at different levels

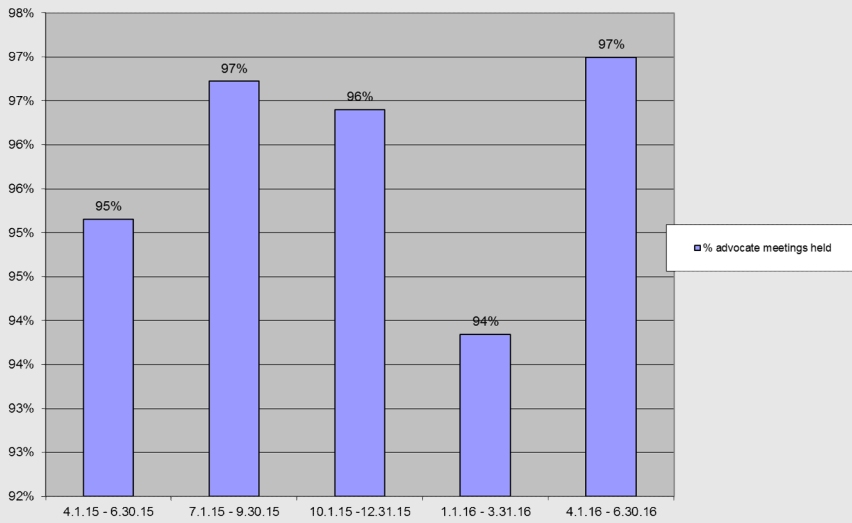


Share

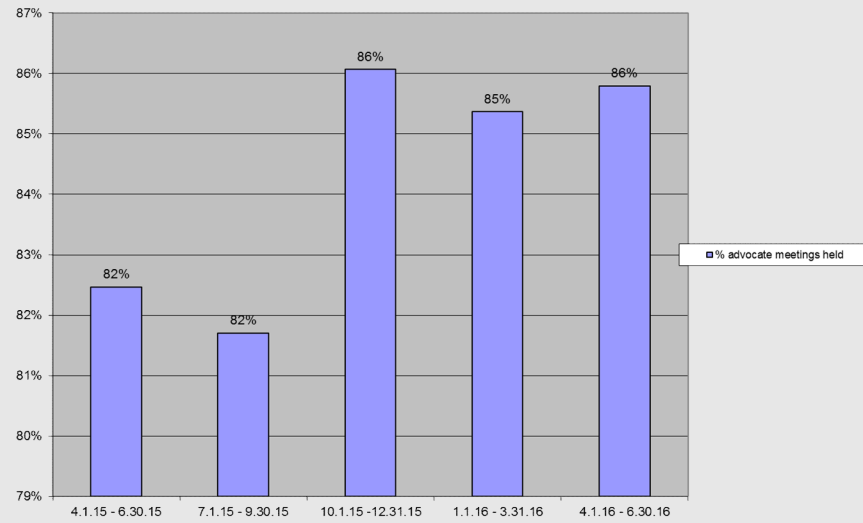
- What feedback do I have? What are staff asking for?
 - Use staff feedback to refine visualizations over time
 - Be comfortable with an iterative approach
 - Users are experts
 - “Communication is the responsibility of the sender”
- Examples
 - Attendance rates
 - “The data are not meaningful”
 - “The data are inaccurate”



Girl's Campus Advocate Meetings Held

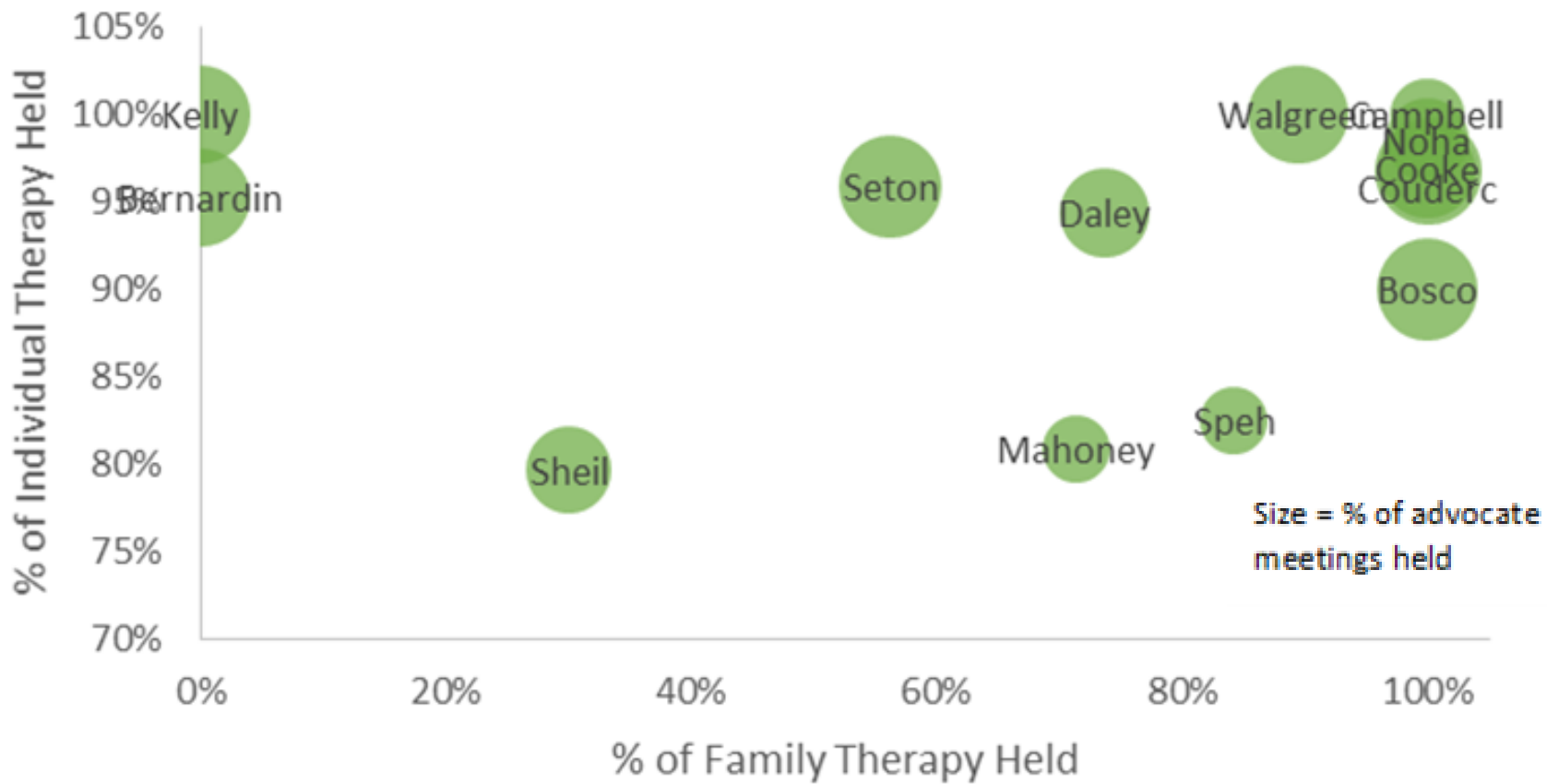


Hay Campus Advocate Meetings Held



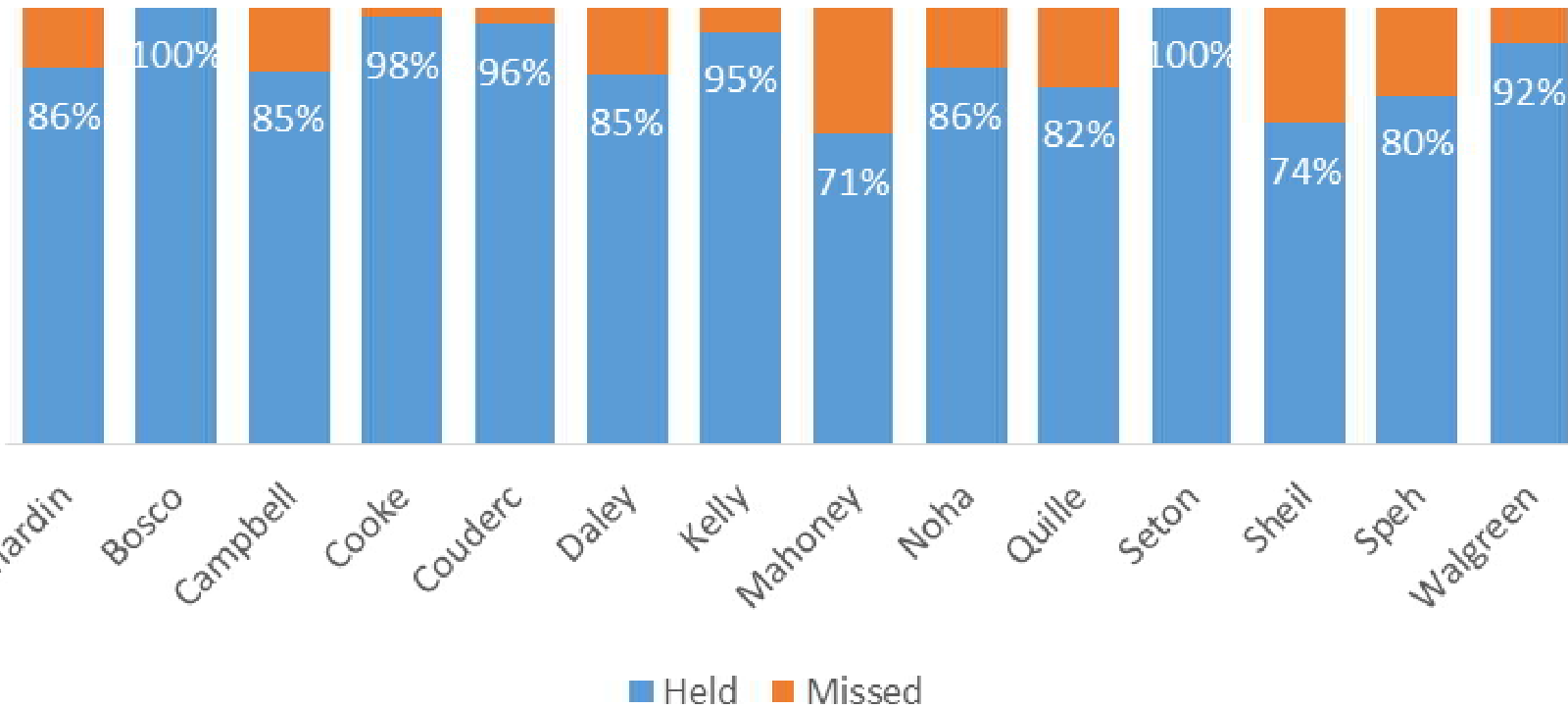
**Old
Version**

Youth Quarterly Data - Percent Held



First Try

% Advocate Meetings Held



**Second
try**

Advocate Meetings

Bernardin	100%	78/78
Bosco	96%	74/77
Campbell	94%	73/78
Cooke	89%	123/138
Couderc	99%	137/138
Daley	89%	95/107
Kelly	92%	93/101
Mahoney	75%	83/111
Noha	82%	80/97
Quille	93%	94/101
Seton	100%	92/92
Sheil	69%	78/113
Speh	85%	95/112
Walgreen	90%	113/125

Third try

Executive Functions Attendance Rate by Program



**Fourth
Try
(Current)**

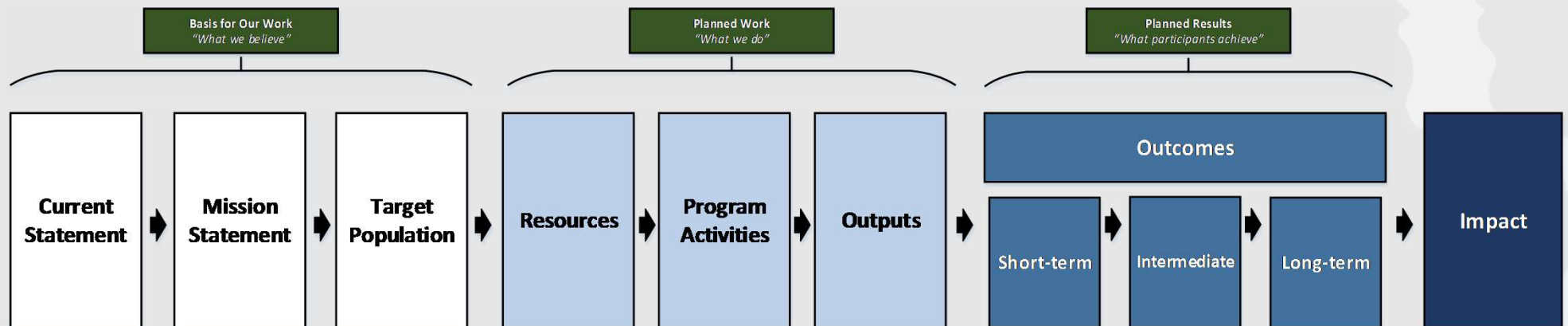
Share

- How do we give this meaning? How do we make decisions?



Share

- Logic Model
 - Helps us understand the design of our program and how things fit together



SEARS

JCPenney

★ macy's

PLAYTIME

Ashley's
Beer
& Grill
OP03

Longhorn
Steakhouse
OP01

Panera
Bread
OP02

Lower Level

KOHL'S

701
702
704
707

716
719
722
725
731
734

639
633
630
627
624
621
619
616
613
610
634
636
607
604
601

K-4
K-7
K-8
3502
3512

534
531
528
522
519
516
510
507
504
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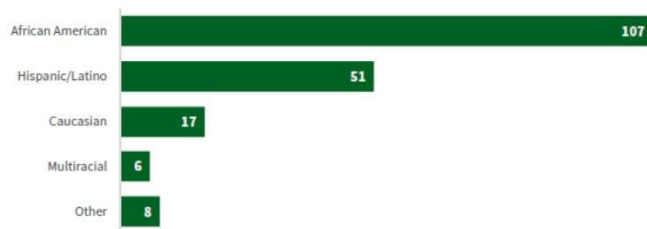
301
310
316
317
322
318
325
328
334
337
3508
3515
3503
3504
3506
Lower Level
K-10
E
G
S

WC1
WC10
S
E

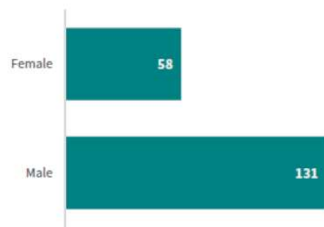


YOUTH DEMOGRAPHICS

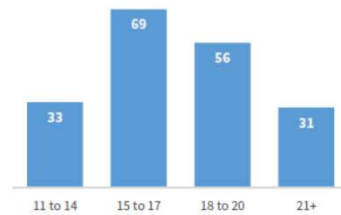
Race/Ethnicity of youth served



Gender of youth served

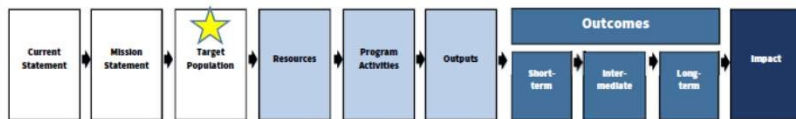


Ages of youth served



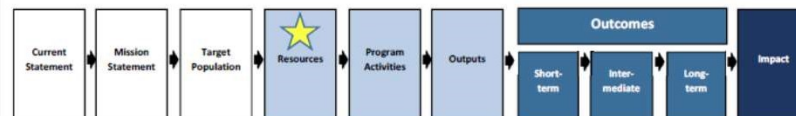
HOUSEHOLD INFORMATION

Mean Household Income	\$20,453	% of families whose household income is less than \$20,000	65%	80 families
Median Household Income	\$11,000			
Average Household Size	3.32	% of families whose household income is less than \$10,000	45%	55 families
Median Household Size	3			
Range of Household Size	1 to 10			



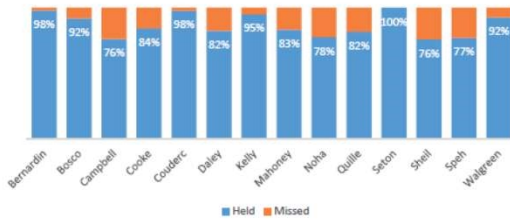
ARC IMPLEMENTATION (PART 1)

Question (Scale 0 to 3)	January 2015	October 2015	Trend
Working to engage parents or other caregivers in the treatment process	How much do you address this? 2.07	2.19	0.12
	How comfortable are you addressing this? 2.33	2.43	0.10
Helping parents or other caregivers manage their own emotions	How much do you address this? 1.63	1.85	0.22
	How comfortable are you addressing this? 2.09	2.17	0.08
Building parent/caregiver understanding of their child's behaviors	How much do you address this? 1.87	2.06	0.19
	How comfortable are you addressing this? 2.26	2.40	0.14
Building parent/caregiver understanding of trauma and its impact	How much do you address this? 1.53	1.75	0.22
	How comfortable are you addressing this? 2.07	2.18	0.11
Building in-session routines	How much do you address this? 1.48	1.79	0.31
	How comfortable are you addressing this? 1.93	2.30	0.37
Incorporating modulation strategies into treatment sessions	How much do you address this? 1.33	1.94	0.61
	How comfortable are you addressing this? 1.70	2.26	0.56
Helping youth identify and understand emotions	How much do you address this? 2.48	2.58	0.10
	How comfortable are you addressing this? 2.64	2.73	0.09
Building youth understanding of trauma and its impact	How much do you address this? 1.98	2.14	0.16
	How comfortable are you addressing this? 2.28	2.37	0.09
Supporting youth in sharing internal experience with others	How much do you address this? 2.23	2.36	0.13
	How comfortable are you addressing this? 2.46	2.50	0.04
Building youth problem solving skills	How much do you address this? 2.55	2.61	0.06
	How comfortable are you addressing this? 2.73	2.77	0.04
Helping youth build an understanding of self and identity	How much do you address this? 2.43	2.44	0.01
	How comfortable are you addressing this? 2.63	2.64	0.01
Using standardized assessment to measure baseline functioning and/or gauge treatment progress	How much do you address this? 1.49	1.62	0.13
	How comfortable are you addressing this? 1.94	1.90	-0.04
Overall clinical skills to assess, treat, and achieve positive outcomes for youth who have experienced trauma and their families	How much do you address this? 1.80	2.05	0.25
	How comfortable are you addressing this? 1.94	2.18	0.24

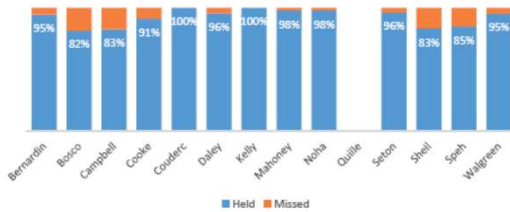


TREATMENT ACTIVITIES

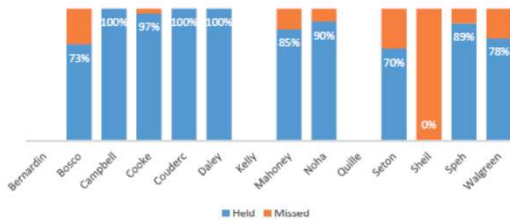
% Advocate Meetings Held



% Individual Therapy Held



% Family Therapy Held



OBSERVATIONS, TRENDS & ANALYSIS

Each chart represents the percentage of treatment activities that were held compared to the total number that were planned.

Some programs are higher than 100% in a few cases where the program completed more sessions than were originally planned.

Some programs are blank in cases where the treatment activity does not apply to their programming (ie, family therapy in Quille Home).

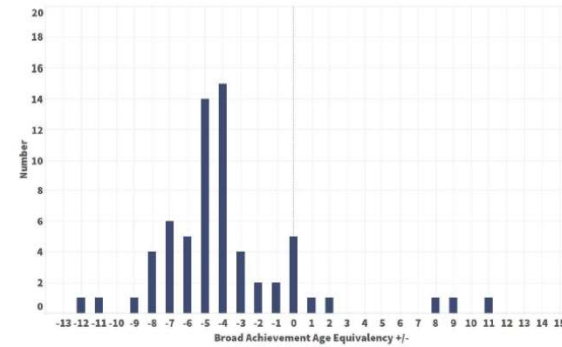
Shell Home's 0% in Family Therapy is accounted for by 0 out of 5.

	Youth Quarterly Data - Percent Held		
	Adv. Mtgs	Ind. Tx	Fam. Tx
Walsh Campus	95%	97%	82%
Hay Campus	82%	89%	86%
Agency	87%	92%	85%



WJ-4 RESULTS

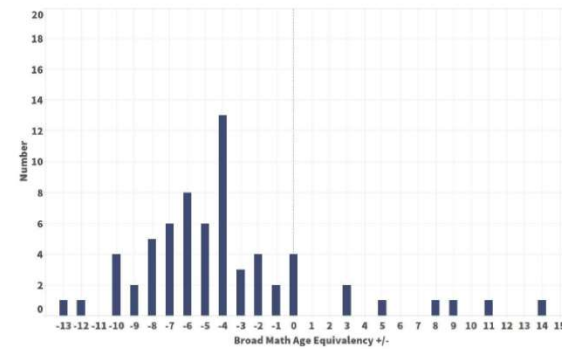
OBSERVATIONS, TRENDS & ANALYSIS



These charts show the **distribution of scores** on pre-tests for youth in the 2015 entry cohort.

The horizontal axis shows the **age equivalency scores relative to actual age** (negative values indicate youth who scored below their actual age).

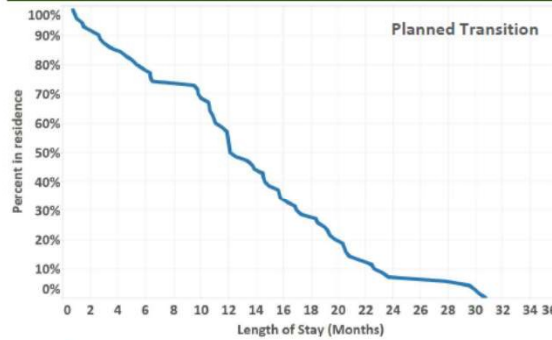
The vertical axis shows **how many youth fell into each score range**. Mercy Home's youth fall along a relatively normal distribution (most youth clustered in the center, with fewer youth to each side).



However, Mercy Home's center is shifted from the average population on which the WJ-4 was normed. These charts show that **typical Mercy Home youth are 4 to 5 years behind their actual age** according to the WJ-4.



LENGTH OF STAY BY TRANSITION AND PTP FACTORS

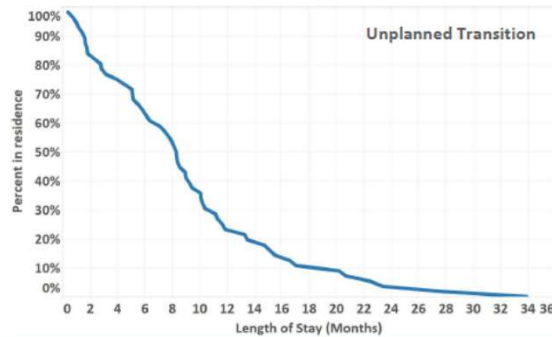


COHORT

This analysis is based on a combined entry cohort of 2013 and 2014.

This cohort includes 143 youth. Of those 143, 126 have completed their lengths of stay and 17 were still in residence as of June 30, 2016.

This means that 12% of the youth in this analysis are censored, or have lengths of stay that may continue to increase. However, a 12% censor rate is considered low for this type of analysis. Additionally, medians (the 50th percentile) are stable and can be used reliably.



OBSERVATIONS, TRENDS & ANALYSIS

This page and the next analyze whether there are correlations between transition type and PTP attainment and length of stay.

These charts show that planned transitions correlate with longer lengths of stay (or vice versa). The median length of stay for planned transitions is 12.1 months, while the median length of stay for unplanned transitions is 8.3 months.



Share

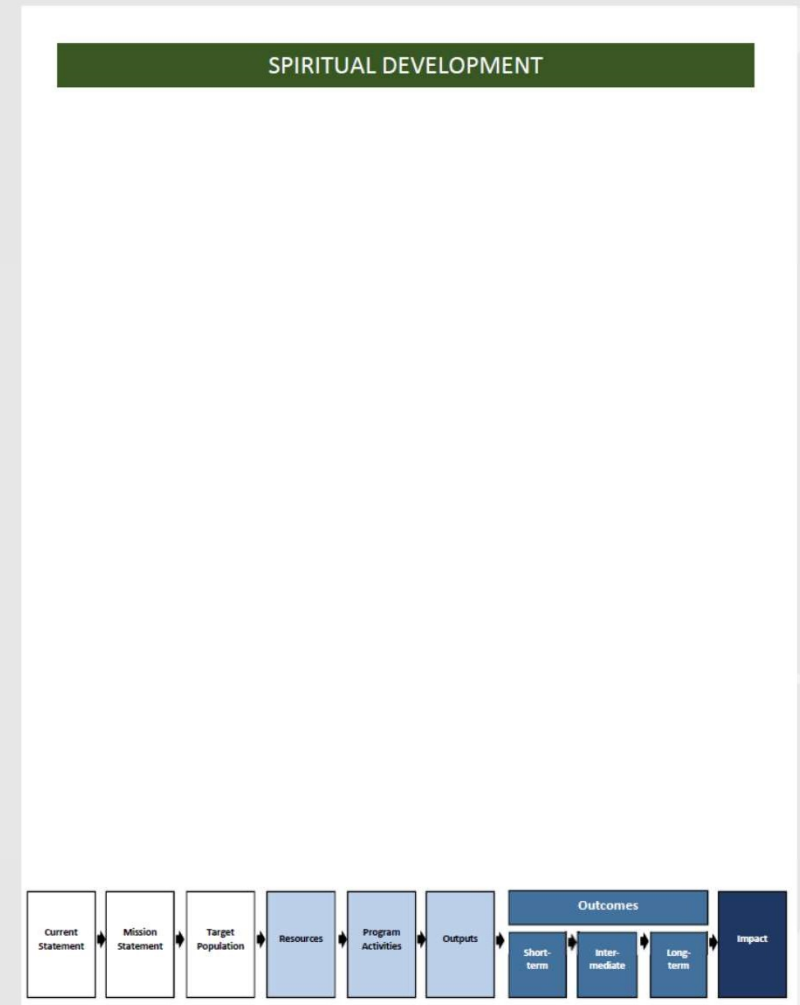
- Involve staff in selecting meaningful data points and designing reports



Current Statement	Mission Statement	Target Pop.	Resources	Activities	Outputs	Outcomes	Impact
			Physical space (MHBG) Outings/tickets/event opp. Diverse group of volunteers Staff Trainings (staff and mentor) Referral sources (partners) (in and out) Activity update Assessment tools Existing research Internal resources (Emily, etc) MSR Toolbook Wingspan/Blueprint Caseload	Match outings Group outings Site-based sessions Mentor supervision	# of matches # of hours that matches meet # of outings gender: mentors and mentees diversity: mentors/mentees Paperwork/wingspan Screening mentors matching mentors Referrals Intake meeting Match intro Ratifications File reviews Ad hoc troubleshooting Length of matches Length on waitlist Length of matching process Recruitment activities Early-ending matches Reasons for early ending matches # of people on waitlist # of people turned away Mentor attrition Info session attendance Flowchart data % of matches that re-up Mentor recruitment trends (time of year) Referral source tracking # of assessment conducted Report writing (timeliness, quality) Weekly phone calls (medium) % of supervisions	YMOS Goal accomplishment Satisfaction surveys Match quality	N/A for now

Share

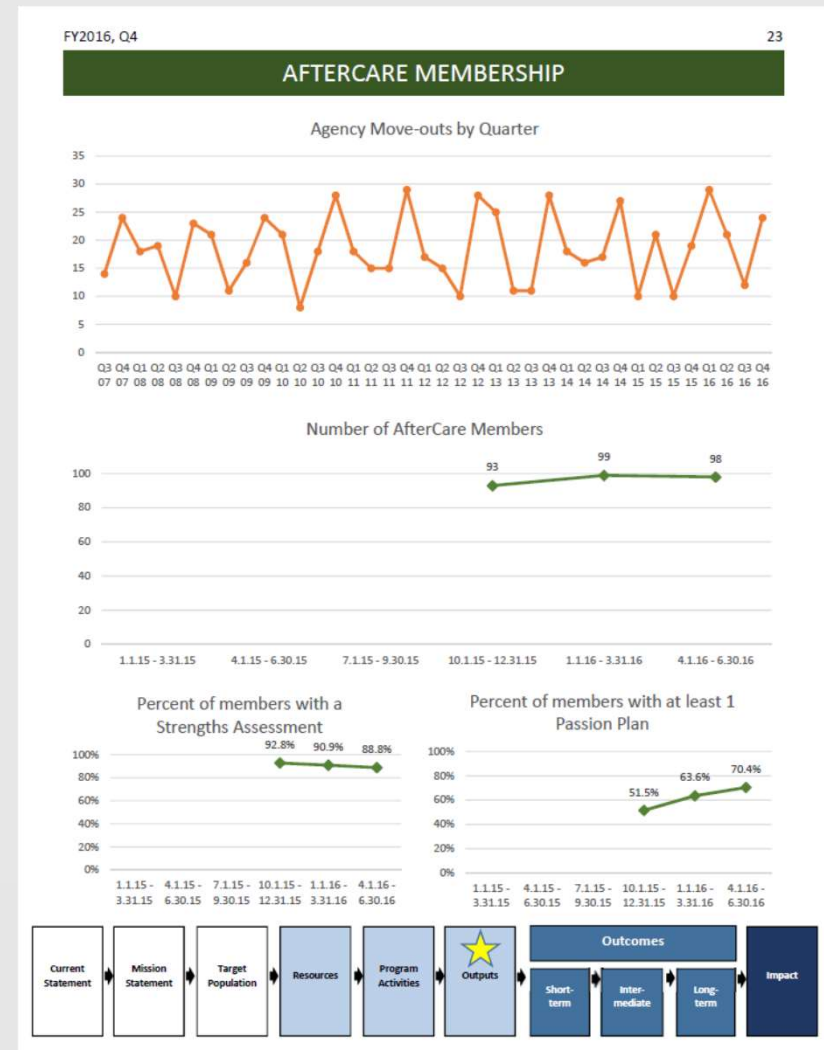
- Blank sheet brainstorm



Share

- “What, if you knew now, would change your behavior?”¹
- “What information do you need to better do your job for clients?”²
- In other words, what is the core of the program? What do you need to know before you can do anything else?

1. Means & Breslin (2016)
2. Natenshon (2016)



Share

- **Other arenas for data sharing and application**
 - Program development
 - Improvement projects
 - Strategic planning
 - Evidence-based decision-making



Share

- evidence types
 1. Internal data and evaluation
 2. Research and industry knowledge
 3. Strong anecdotal evidence
 4. Practice wisdom, institutional knowledge



Evidence-based decision making worksheet

Clearly state the decision needed:

	Idea A: Rank []	Idea B: Rank []	Idea C: Rank []	Idea D: Rank []
Evidence Type 1 <i>Internal data and evaluation</i>				
Evidence Type 2 <i>Research and industry best practice</i>				
Evidence Type 3 <i>Strong qualitative or anecdotal evidence</i>				
Evidence Type 4 <i>Practice wisdom, institutional knowledge, and good faith</i>				

What's next

- Dashboards and BI thoughts
 - Tableau
 - Pros: Intuitive, fast, explorative, knowledge base
 - Cons: Cost, implementation, user base, not for formal reporting
 - Other options
 - Qlik
 - PowerBI
 - Automated reports

What's next

- Learn to code
 - R
 - Python
- More data
 - Organizational
 - Team
 - Staff



Resources

- Stephanie Evergreen
 - stephanieevergreen.com
- Ann K Emery
 - annkemery.com
- Tableau
 - community.tableau.com
- www.google.com



Let's Practice!

