

How Many Kids Are We Talking About?

A Journey of A Thousand Data Mistakes and Lessons

Allen Yang
allen.yang@northwestern.edu
Business Analyst

Wendi Wilkins
wendi.wilkins@northwestern.edu
Data Analyst Senior

Agenda

- Introductions
- Business Case
- Data Collection & Issues
- Reporting & Issues
- Lessons Learned
- What's Next
- Resources

Introduction – Allen Yang

Lotsa Software Jobs



Northwestern University

- DCFS Data Analysis Services
- 12+ years



University of Illinois



- BS Electrical Engineering



Northwestern University

- MS Data Science

Second City Training Center

- Improv Comedy
- Sketch Writing



Northwestern University

- Museum Studies Certificate
- Chinese Language Certificate

IL DCFS/DoIT



- PowerBI UG
- ITASC Data Stewardship



CQI Conference



- CQI PowerBI UG
- CQI Mentor Program

Introduction – Wendi Wilkins

- Master's Degrees (MA)
 - UChicago – Division of Social Sciences
 - UIC – Clinical Psychology
- Licensed Clinical Professional Counselor
- Worked in Child Welfare for 30+ years
 - Roles in Child Welfare (Therapist, Case Manager Supervisor)
 - Residential Monitor – NU's 1st initiative with Residential Monitoring
 - Training
 - Trauma Training
 - Learning Collaboratives
 - CFTMs
 - Implementation Support
 - Success Academy
 - Current Role: Residential Monitoring Data Analyst/Quality Improvement Specialist
- Published a Journal Article w/my Daughter
- Hobbies: Travel, Puzzles, and Crafting

DCFS Business Case

- Collect & aggregate residential treatment agency data
 - Monthly collection
 - 30+ agencies
 - ~700 DCFS youth in residential care
- Statewide/regional/agency concerns:
 - Staff/Youth ratios
 - Staff shortages
 - Background check delays
- Word document data collection form

Data Reporting Ingredients

- Monthly Provider Youth/Staff Census Form (MPCF)
 - Word document -> Excel worksheet
- Microsoft PowerBI
 - Data aggregation and error detection app
 - Aggregate data reporting app
 - PowerBI server – published results
- Data: Residential treatment agencies (30-40)
- Review: DCFS Residential Monitors
- Analysis: University Partner data team (NU + UIC)

Data Reporting Environment

- 30-40 residential treatment agencies across Illinois
- Large/small agencies
 - Some agencies have multiple DCFS contracts
 - Some contracts split into units (dorms, cottages)
- Monthly data collection
 - Forms due by the 10th of the following month
- No IT involvement/support
 - Microsoft Office tools – Word, Excel, PowerBI
- DCFS Residential Monitors are primary recipients
 - Each monitor covers roughly 3-5 agencies
- Data aggregation & reporting using PowerBI

Data Collection 1 – Word Doc

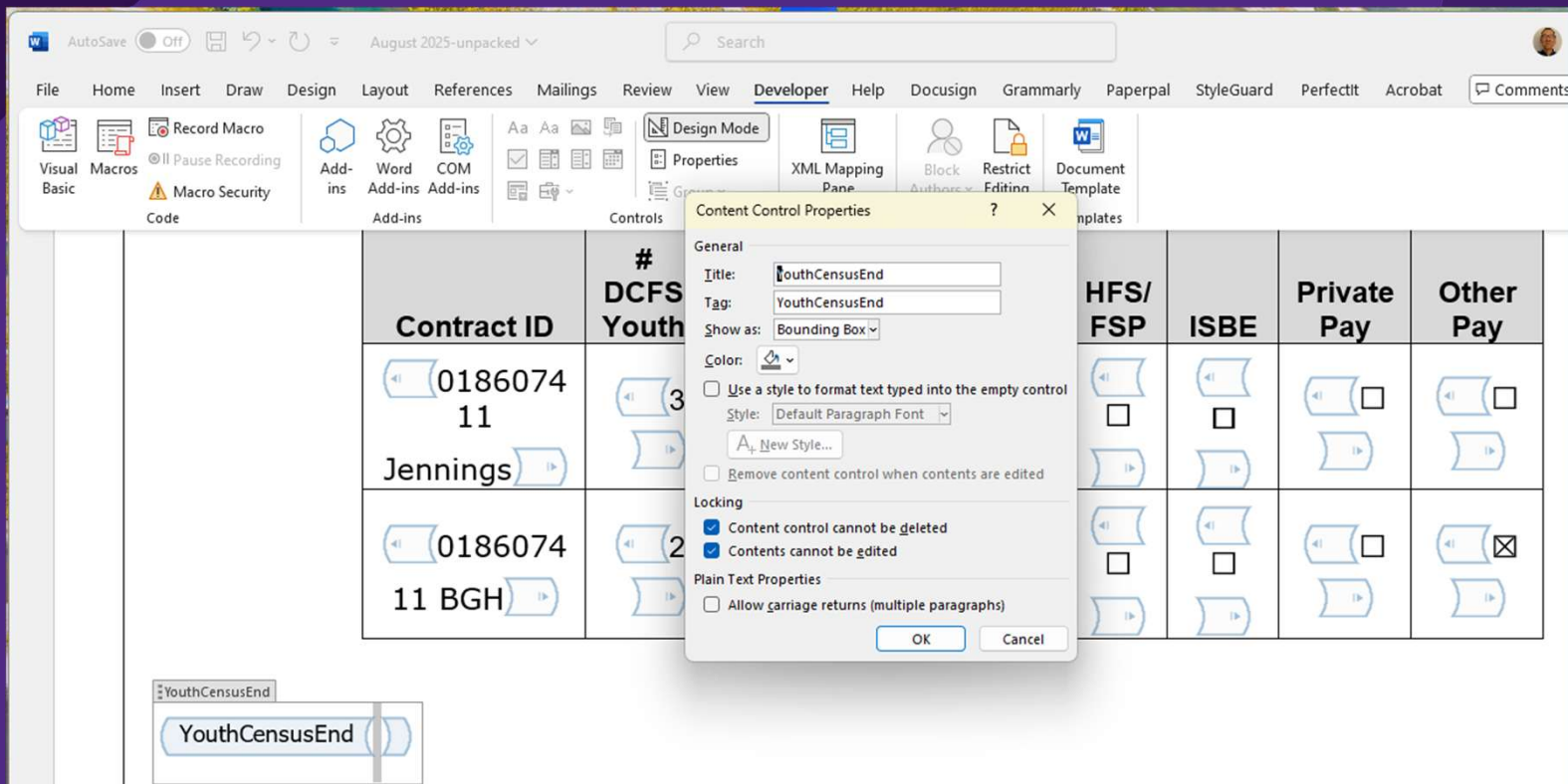
1. **Youth Census:** Enter the number of DCFS and on-DCFS youth who are in the program (including youth who are on run, hospitalized or in detention) on the **last day** of the reporting month. For non-DCFS youth, check the box(es) corresponding to their funding source. If no non-DCFS youth in program, enter 0.

Contract ID	# DCFS Youth	# Non-DCFS Youth	DJJ	DHS	HFS/ FSP	ISBE	Private Pay	Other Pay
018607411 Jennings	3	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
018607411 BGH	2	2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

- Word document data forms – customized for each agency
- Native Word text entry not readable by PowerBI for reporting, so....

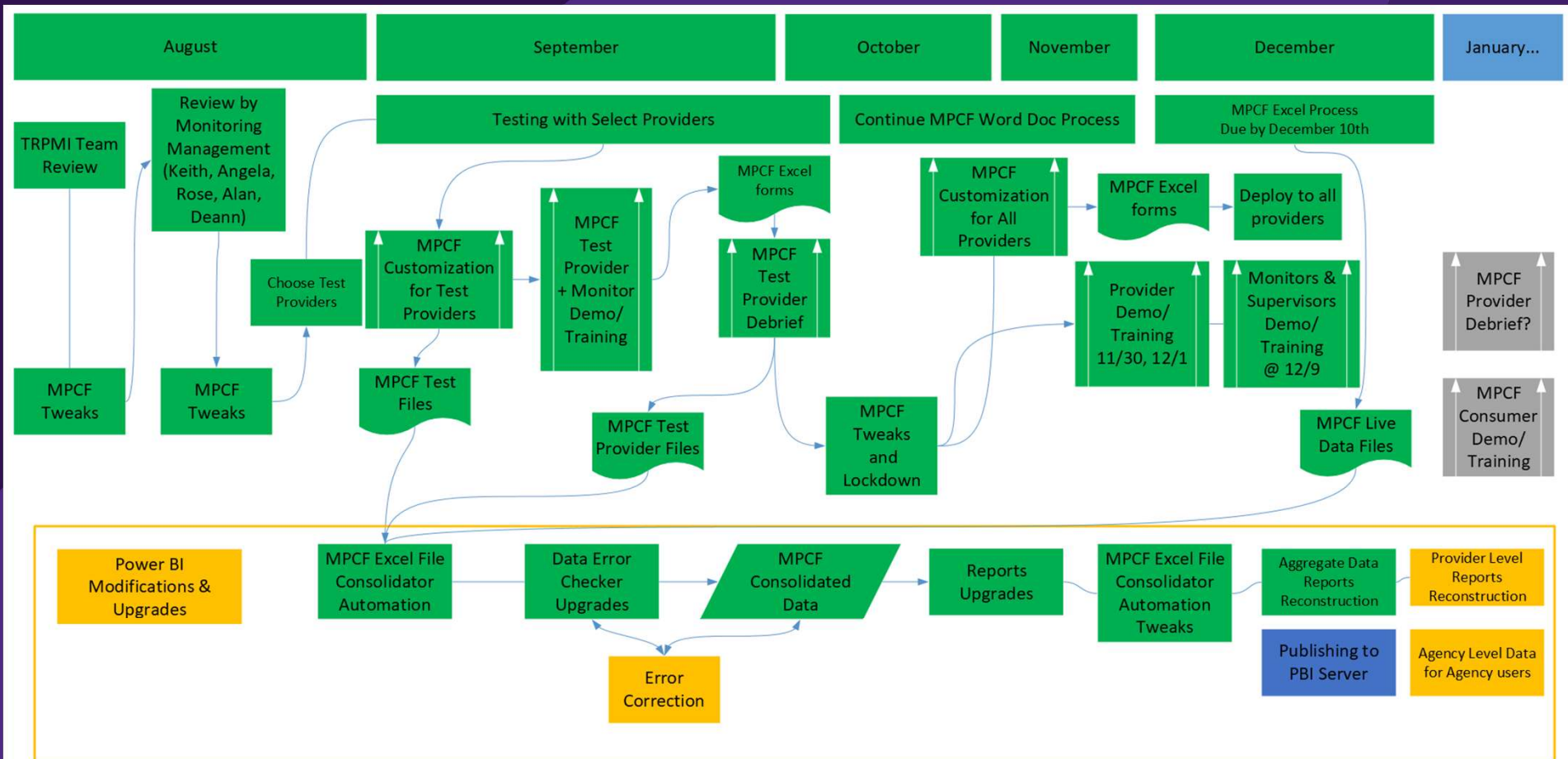
Data Collection 1.1 – Word Doc

- Data entry fields managed with Content Controls
- Really bad idea, but allows a Word document to be PowerBI readable
- Labor intensive to upgrade each of 30+ versions of the Word document



Data Collection Upgrade

Word Document to Excel – 5 months!



Data Collection 2

Excel Spreadsheet

2021.11.11-MPCF-AgencyName-RptPeriodYYYY... • Saved to this PC

File Home Insert Draw Page Layout Formulas Data Review View Automate Help Data Science TTS Turbo FRED Analytic Solver

Clipboard Font Alignment Number Conditional Formatting Styles Cells Editing Add-ins Analyze Data Copilot Document Cloud Risk Solver Excel Labs Solver

2021.11.11-MPCF-AgencyName-RptPeriodYYYY... • Saved to this PC

File Home Insert Draw Page Layout Formulas Data Review View Automate Help Data Science TTS Turbo FRED Analytic Solver

Clipboard Font Alignment Number Conditional Formatting Styles Cells Editing Add-ins Analyze Data Copilot Document Cloud Risk Solver Excel Labs Solver

2021.11.11-MPCF-AgencyName-RptPeriodYYYY... • Saved to this PC

File Home Insert Draw Page Layout Formulas Data Review View Automate Help Data Science TTS Turbo FRED Analytic Solver

Clipboard Font Alignment Number Conditional Formatting Styles Cells Editing Add-ins Analyze Data Copilot Document Cloud Risk Solver Excel Labs Solver

Additional definitions for Position titles and FTE are appended at the bottom of this page.

Prepopulated Agency Name H Sep-21

Contract	Unit	Position	FTEs Budgeted	FTEs Vacant (open positions that are not hired)
999999999	ABC	Direct Care		
999999999	DEF	Direct Care		
999999999	GHI	Direct Care		
999999999	JKL	Direct Care		
999999999	MNO	Direct Care		
999999999	All units	Unit Supervisor/Coordinator		(includes Team Leader and other alt
999999999	All units	Clinical Therapist/Counselor		
999999999	All units	Case Manager		
999999999	All units	Nurse (RN, LPN)		
999999999	All units	Administration		
999999999		Enter Other Roles Here		
999999999		Enter Other Roles Here		
999999999		Enter Other Roles Here		
888888888	PQR	Direct Care		
888888888	STU	Direct Care		
888888888	VWX	Direct Care		
888888888	WZA	Direct Care		
888888888	BCD	Direct Care		
888888888	All units	Unit Supervisor/Coordinator		(includes Team Leader and other alt
888888888	All units	Clinical Therapist/Counselor		
888888888	All units	Case Manager		
888888888	All units	Nurse (RN, LPN)		

Enter Number of Direct Care Staff Who Were:

Injured Due to	Injured Due to	Of those injured in the	Not working to
Plant	Other Causes:	reporting period, how many	planned le:
Due to		were unable to perform their	(e.g. FMLA
causes:		duties?	

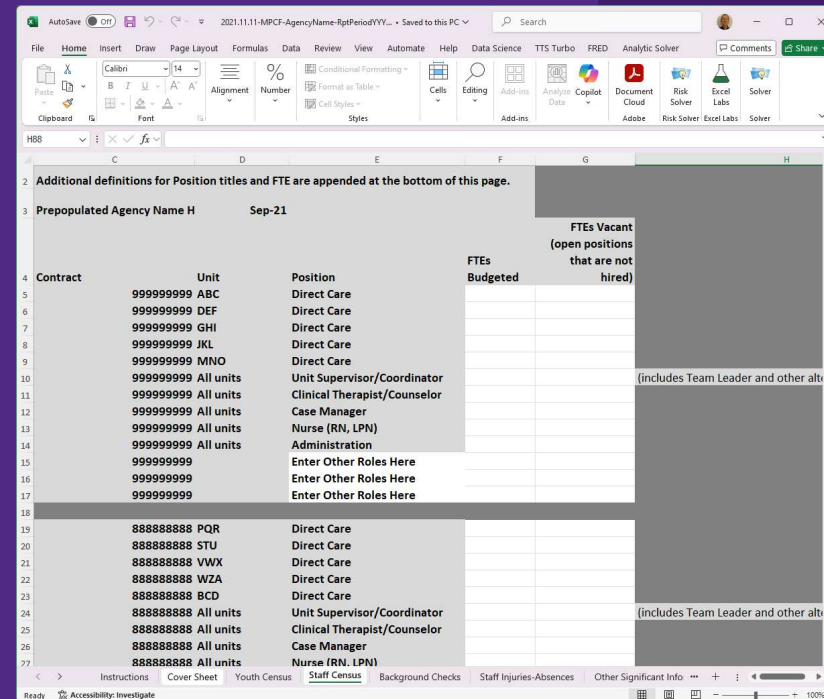
Instructions Cover Sheet Youth Census Staff Census Background Checks Staff Injuries-Absences Other Significant Info

Ready Accessibility: Investigate

Data Collection 2

Excel Spreadsheet

- Customized for 30+ agencies
- Tabs
 - Youth headcount
 - Staff budgeted/vacant
 - Background checks
 - Staff injuries/absences
- Contracts & units & staff, oh my!
- What's an FTE?
- End of month, anytime during the month, by agency or by contract



Data Collection Issues

- Data Error Detection/Correction
- Who is the right person to provide the data?
- Definition of Terms – example
- Timeliness of Report Submission
- Reporting Errors
- Time Travel Reporting
- Upgrades to Data Collection Tool

Data Collection Issues

- Users type the darndest things!

	DCFS	Non-DCFS			HFS		Private	Other
Contract ID	Youth	Youth	DJJ	DHS	FSP	ISBE	Pay	Pay
[redacted]		3	6 babies				X	

Staff Name	Initial Background Check Submission Date	Initial Driver's Clearance Submission Date
[redacted]	9/2/2004	

Data Collection Issues

- Data Definitions – what's an FTE?
 - Did they see it?
 - Do they understand it?

What's an FTE?

Staff Census and Vacancy information should be obtained from the Residential Program Director, Program Budget/Finance Personnel, or Program Human Resources Personnel. Please identify the appropriate person who has information about staff census and vacancies calculated in Full Time Equivalents (FTE) to complete this section of the Monthly Provider Report.

Number of staff budgeted, number of staff vacancies, and number of staff on leave are calculated in Full Time Equivalents (FTE). An FTE is a calculation of equivalent employees working full time; the hours worked by one employee on a full-time basis. The calculation of FTE is (employee's weekly scheduled hours) / (employer's hours for a full-time employee). See the examples below:

- An employee who works 40 hours a week has a Full Time Equivalent (FTE) = $40\text{hrs.} / 40\text{hrs.} = 1$
- An employee who work 20 hours a week has a Full Time Equivalent (FTE) = $20\text{hrs.} / 40\text{hrs.} = .5$
- An employee who works 10 hours a week has a Full Time Equivalent (FTE) = $10\text{hrs.} / 40\text{hrs.} = .25$

There are times when staff are budgeted to more than one contract, meaning that their work time is spent in more than one contract. Often, staff time is allocated evenly across contracts.

- For example, a full-time staff who spends equal time in two contracts or whose time is allocated evenly across two contracts would have a Full Time Equivalent (FTE) of .5 in one contract and .5 in the second contract.

However, sometimes staff are budgeted to more than one contract and their time is not allocated evenly across the contracts. This can happen when providers have both larger contracts (i.e. contracted bed capacity) and smaller contracts (i.e. contracted bed capacity) serving youth.

- For example, a full-time staff working in two contracts who spends $\frac{3}{4}$ of their time in a larger program contract or whose time is allocated at 75% in one contract would have a Full Time Equivalent (FTE) of .75 in one contract. [$.75 \times 1$ (staff) = .75]
- The same full-time employee spends $\frac{1}{4}$ of their time in the smaller program contract or whose time is allocated at 25% in the second contract would have a Full Time Equivalent (FTE) of .25 in the second contract. [$.25 \times 1$ (staff) = .25]

Data Collection Game Show

- Pair up and answer the following:

Data Collection Game Show

- Pair up and answer the following:
 1. What year was Allen born?
 2. How many hair colors are in this room?
 3. What is your team's favorite cookie?
 4. What is the air speed of an unladen swallow?
 5. What's the best Tom Hanks movie?

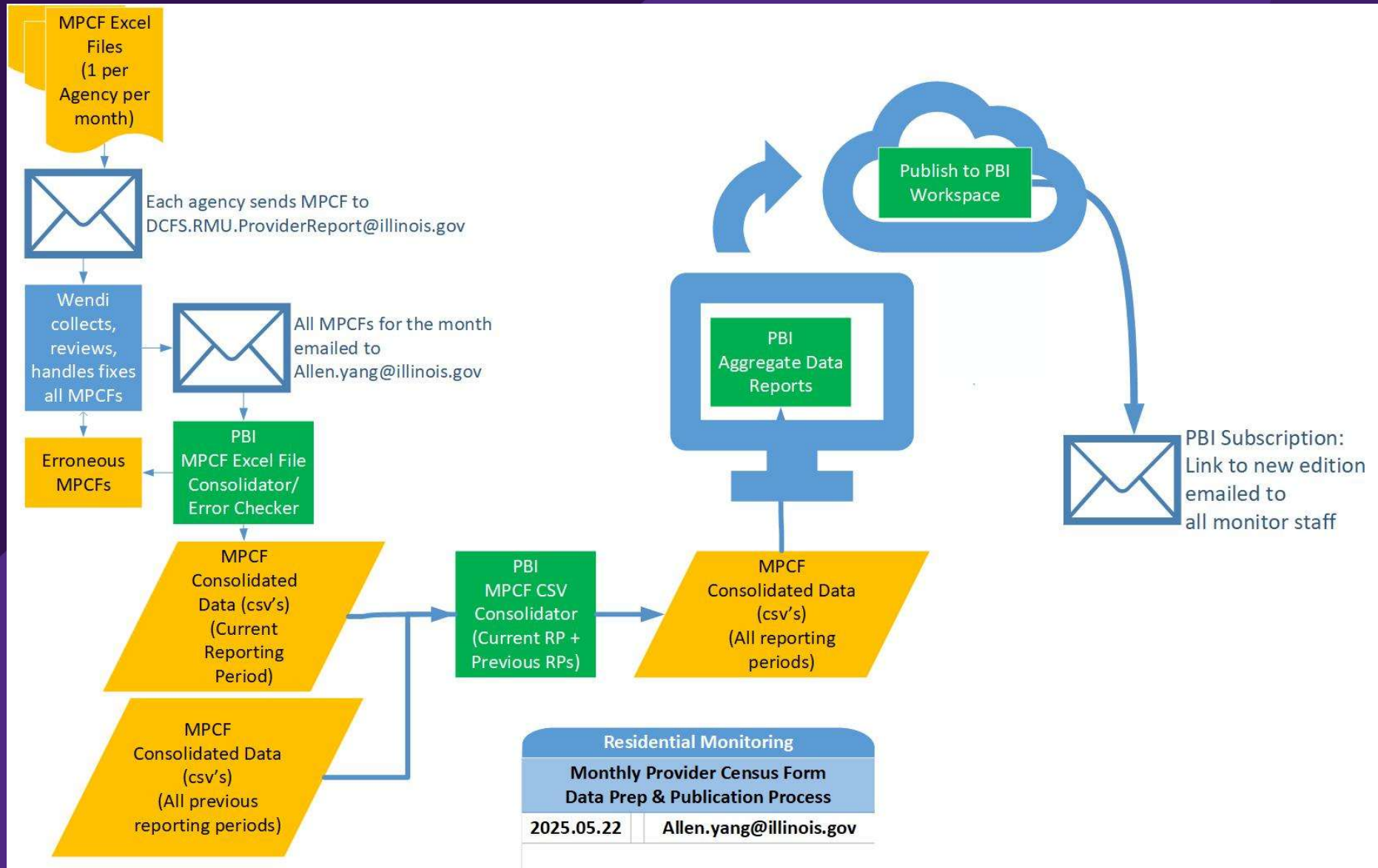
Data Collection Issues

- Unintended consequences of a new data field – BG/DL Completion Date

Agency XYZ	Mar-25				
	Dates of Background Check or Driver's Clearance Application		Dates Occurring in this Reporting Period		
	Background Check Submission Date	Driver's Clearance Submission Date	Background Check Acceptance Date	Driver's Clearance Acceptance Date	Candidate No Longer Available
Staff Name					

- Acceptance date from previous reporting period
- Missing, old or conflicting date issues
- Result: BG/DL aggregate reporting offline for a year

Data Processing Operations



Reporting

PowerBI Dashboard (Reports)

Quarterly Summary Report

- QRTP/GH Providers
- DCFS Monitoring Administration
- Monitors/Supervisors
- DCFS Budget and Finance
- Other necessary stakeholders

Aggregate statewide analysis of each metric
(Quarterly and 6-month Trends)

Shared challenges/solutions

Lessons Learned

Recovering from a permanently missing MPCF

No Fixing or Changing the Past

Definitions and Training

Data Quality Transparency

Quarterly Summary Report - Appendix and Addenda

Lessons Not Quite Learned

- Multiple Constituencies
- Training
- Data Definitions – what are we asking?
- MS Office for Data Collection/Processing
- Scalability
- Trying to do IT without IT support
- Using the data to inform further redesign

What's Next?

How to measure staff retention?

How to track required staff training?

How do we get DCFS data that's already collected?

What data should we STOP collecting?

What other data sources can we use to reduce redundancy?

How to migrate to an integrated data collection system?

Resources

This PPT

- Check the CQI Conference file site, or
- Email me
 - allen.yang@northwestern.edu

M Northwestern Medicine®
Feinberg School of Medicine

Questions?
Requests?

Thank you!

Allen Yang
allen.yang@northwestern.edu
Business Analyst

Wendi Wilkins
wendi.wilkins@northwestern.edu
Data Analyst Senior



CQI (Continuous Quality Improvement) Conference 2025

Wednesday, October 29, 2025 / 11-12:30