ALERT IIS
TARGETED DEDUPLICATION:
A SAGA IN DATA USAGE

Deborah Richards, ALERT IIS Analyst

Jenne McKibben, ALERT IIS Program Coordinator

Mary Beth Kurilo, ALERT IIS Director

OBJECTIVES:

➢ Provide framework of ALERT IIS automated and manual client merging algorithms

➢ Summarize results of targeted deduplication and IIS metadata trending

➢ Share outreach efforts to improve data feeds to maximize automated deduplication

ALERT IIS OVERVIEW:

- **Oregon ALERT Immunization Information System (IIS)** is a population-based, lifespan immunization registry
- Automatic client merging functionality occurs at import
  - Based on scoring using several key fields and name matching algorithms
- Out of scope: Immunizations are automatically deduped upon import, but this will not be addressed in the scope of this presentation
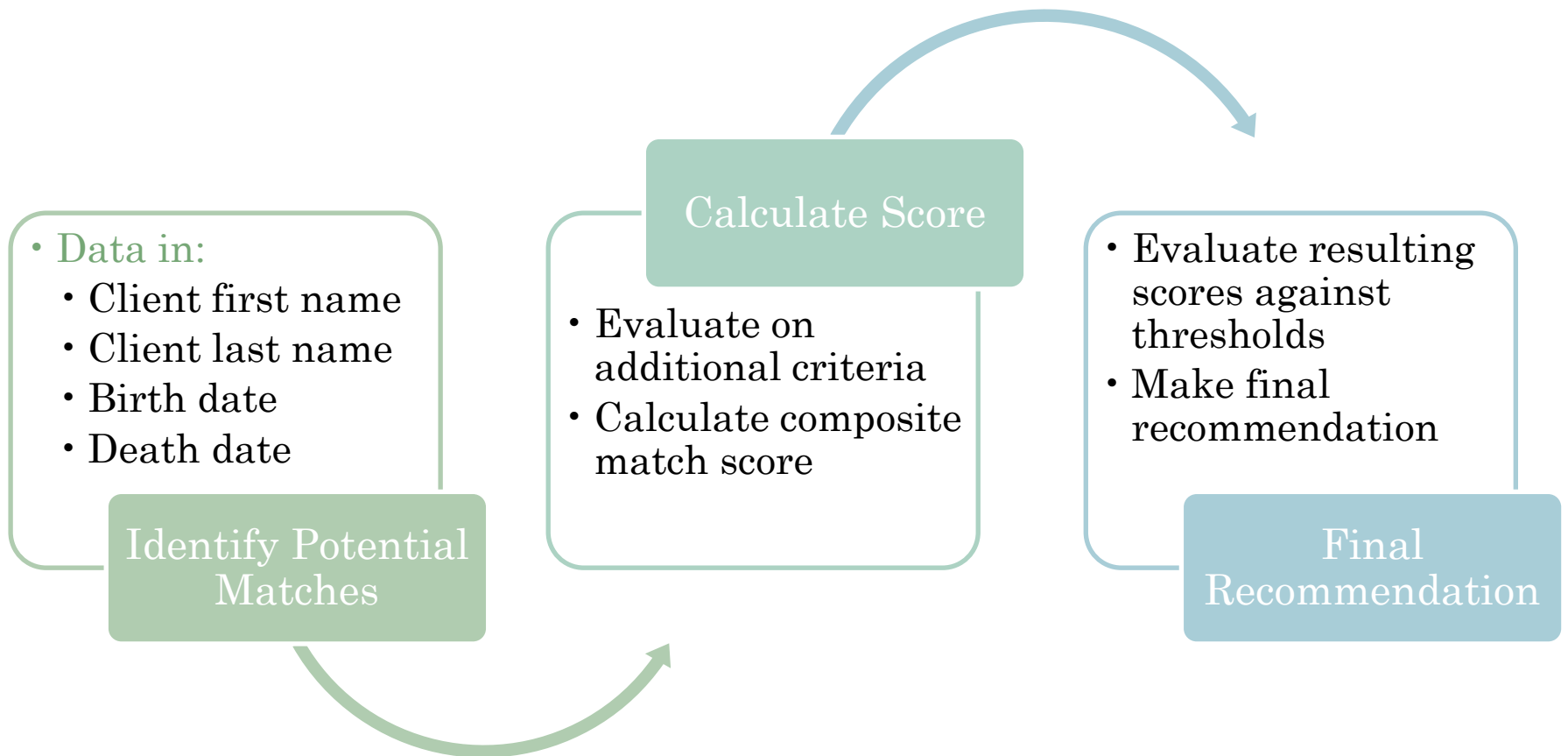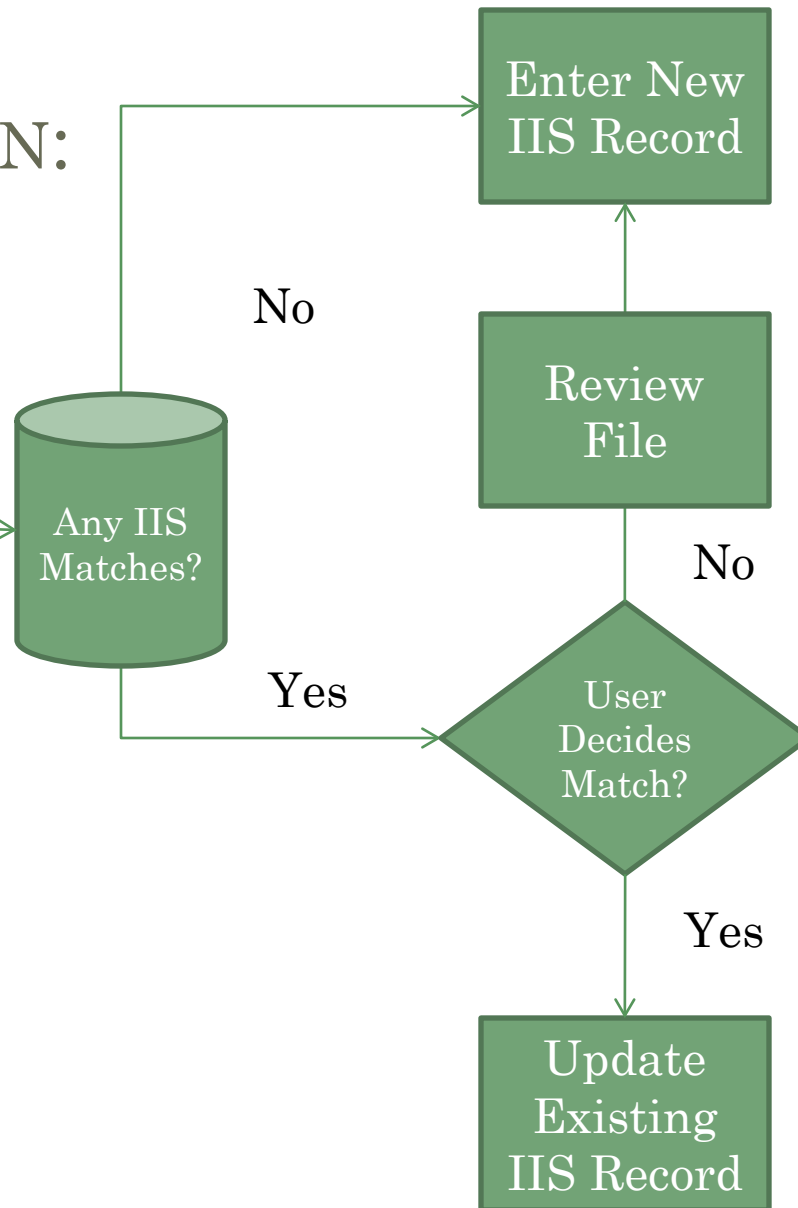
CLIENT DEDUPLICATION OVERVIEW:

➢ ALERT IIS adopted the WIR runMatch module for automated client deduplication

  ➢ Evaluates incoming demographic data against existing records

  ➢ Manual merging targets records automatically selected for human review

➢ Goal: Minimize duplicate clients in the database by proactively identifying probable matching records
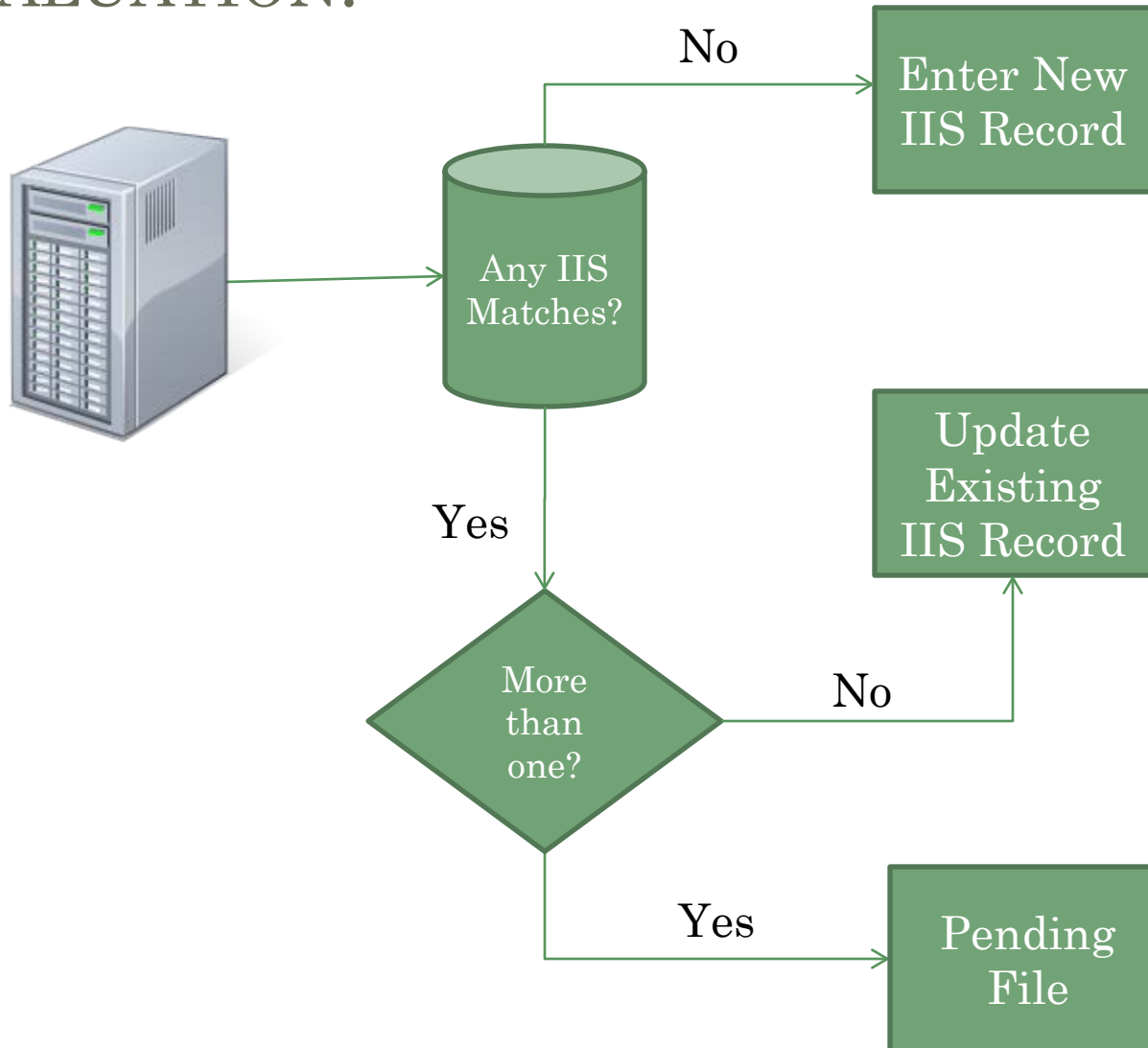
RUNMATCH OVERVIEW:

- Data in:
  - Client first name
  - Client last name
  - Birth date
  - Death date

Identify Potential Matches

Calculate Score

- Evaluate on additional criteria
- Calculate composite match score

- Evaluate resulting scores against thresholds
- Make final recommendation

Final Recommendation

RunMatch overview adapted from EDS/HP presentation, September 2009

EVALUATION:

Any IIS Matches?

No

Enter New IIS Record

Review File

No

User Decides Match?

Yes

Update Existing IIS Record

Yes

EVALUATION:

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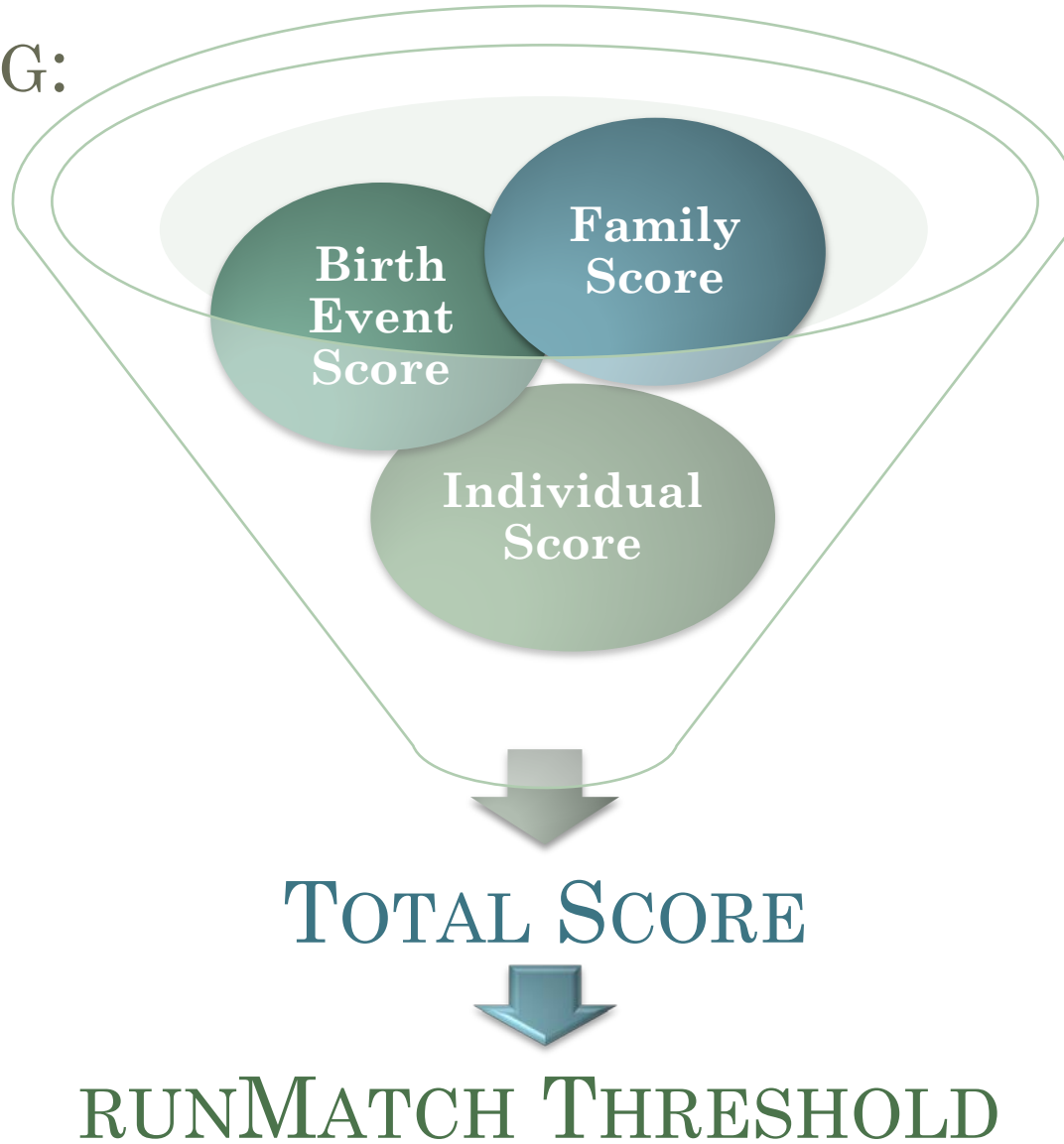
Fields Used in Matching

- Client Name (first, middle, last, suffix)
- Date of Birth
- Date of Death
- Primary Address (#,street/city/zip)
- Mother's Name (first, maiden last)
- Birth Order
- Gender

Business Rules

- Don't need all fields to match
- Don't need identical matches *(exact matches rank higher)*
- Scoring probabilistically on individual fields
- runMatch assigns a *positive*, *zero* or *negative* score to each element evaluated

Scoring:

Birth Event Score

Family Score

Individual Score

Total Score

runMatch Threshold

Manual Merge Process:

Oregon enhanced merging tool within the IIS to aid with manual merging efforts.

Extensive SOP with rules for acceptable merges.

MANUAL MERGE PROCESS:

Both demographic and immunization elements are reviewed during manual merge process.

Birth Country:	○ UNITED STATES	○ UNITED STATES	○ UNITED STATES
Birth State:	○	○	○
Birth County:	○	○	○
Record Locked:	No	No	No
Purge Immunizations:	No	No	No
Contact Allowed:	○ Yes	○ Yes	○ Yes
Organizations			
IR Physicians	○ Primary Patient ID = 133 Patient ID = Active Ind = A ▼	○ Primary Patient ID = 133 Patient ID = Active Ind = A ▼	○ Primary Patient ID = 133 Patient ID = Active Ind = A ▼
AKA			
No AKA Names were found...			
Insurers			
No Insurers were found...			
Responsible People			
No Responsible People were found...			
Comments			
No Comments were found...			
Notes			
No Notes were found...			
Immunizations			
11/26/2003	☐ Polio (/) - 01- IR Physicians	☐ Polio (/) - 01- IR Physicians	☐ Polio (/) - 01- IR Physicians
11/29/2003	☐ PneumoConjugate (/) - 01- IR Physicians	☐ PneumoConjugate (/) - 01- IR Physicians	☐ PneumoConjugate (/) - 01- IR Physicians
12/05/2003	☐ Hib (/) - 01- IR Physicians	☐ Hib (/) - 01- IR Physicians	☐ Hib (/) - 01- IR Physicians
01/03/2004	☐ DTP/aP (/) - 01- IR Physicians	☐ DTP/aP (/) - 01- IR Physicians	☐ DTP/aP (/) - 01- IR Physicians
01/04/2004	☐ HepB (/) - 01- IR Physicians	☐ HepB (/) - 01- IR Physicians	☐ HepB (/) - 01- IR Physicians

MANUAL MERGE PROCESS:

organization **Oregon Immunization Program** • user **Jenne Mckibben** • role **ALERT Developer**

Select Patients to Merge...

View by Patient ID...

Patient ID 1	Patient ID 2	Patient ID 3	
12345	67892		View / Cancel

Possible Duplicates, Filter by...

Organization: [▼]

Date: [   ] 📅

or   [Refresh]

Job ID: [   ]

Possible Duplicate Patients...

Job ID	Exchange Date	Patient ID	Last Name	First Name	Middle	Birth Date	

No Patients matching your criteria were found...

State staff can also select patients to review using Client ID values.

TIME TO CATCH-UP:

- Pendings small percentage (0.24%) of total client records
- Significant body of work: Over 20k pending records with initial data loading (at least 60k in pending file)

Data Conversion & Migration (DCM) Q4 2010:
Total Patients Processed

Legend:
- New
- Updated
- Duplicate
- Pending
- Rejected

Values shown: 20,564 · 8,014 · 127,400 · 3,719,516 · 4,566,677
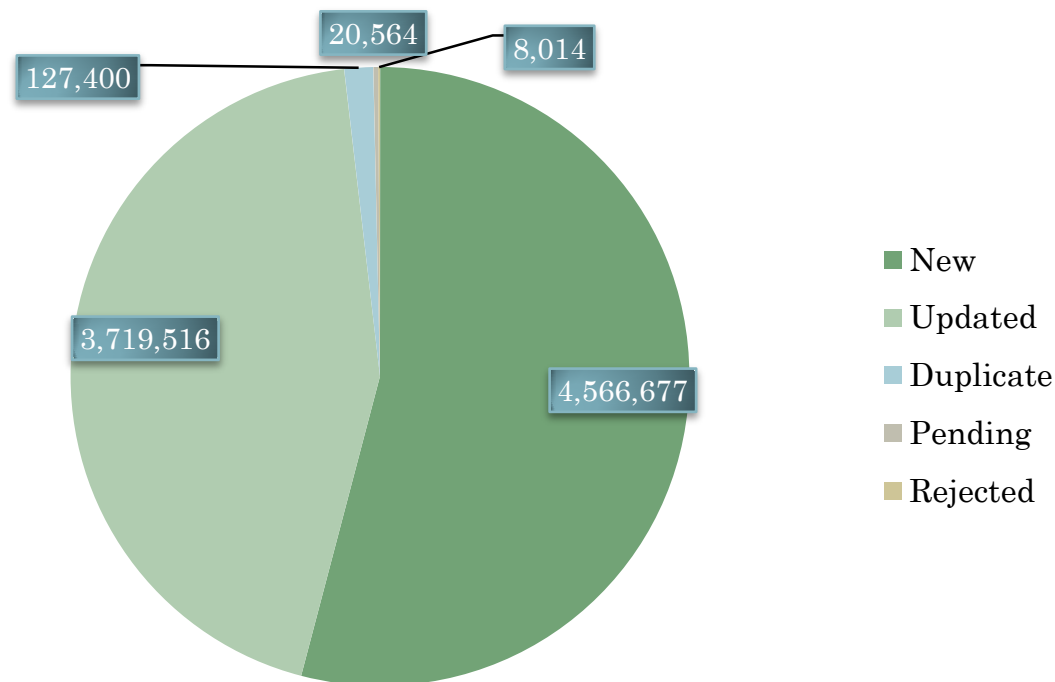
TIME TO CATCH-UP:

Pendings

Merges

DCM

Delays

Staff

Staff

Targets

ALERT IIS TARGETED DEDUPLICATION:

May 2013 MMR 3.3

Feb 2013 VTrckS 3.2

Nov 2012 DX Improvement Project (DEIP) 3.1

Aug 2012 Release 3.0

May 2012 Release 2.0
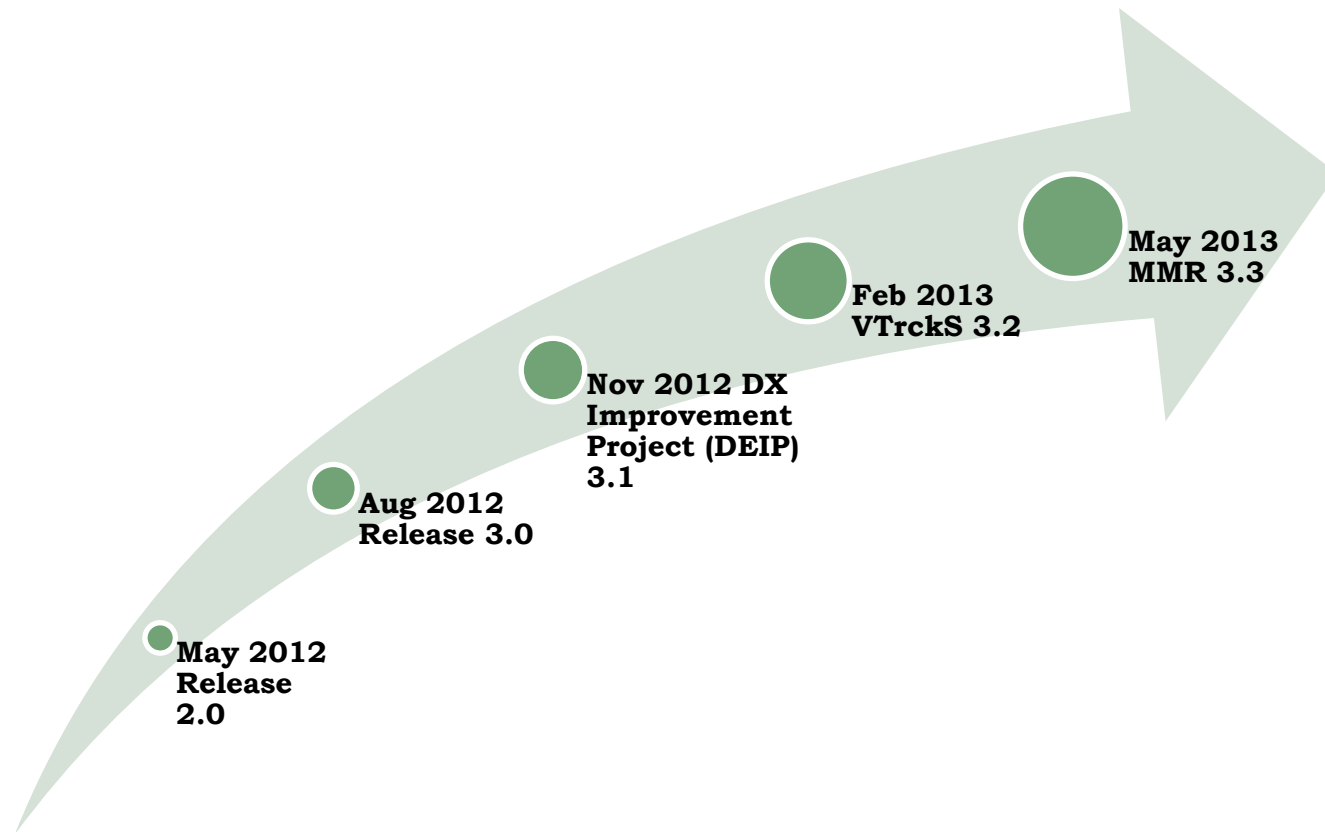
Post-Release 2.0: Total Merges Performed
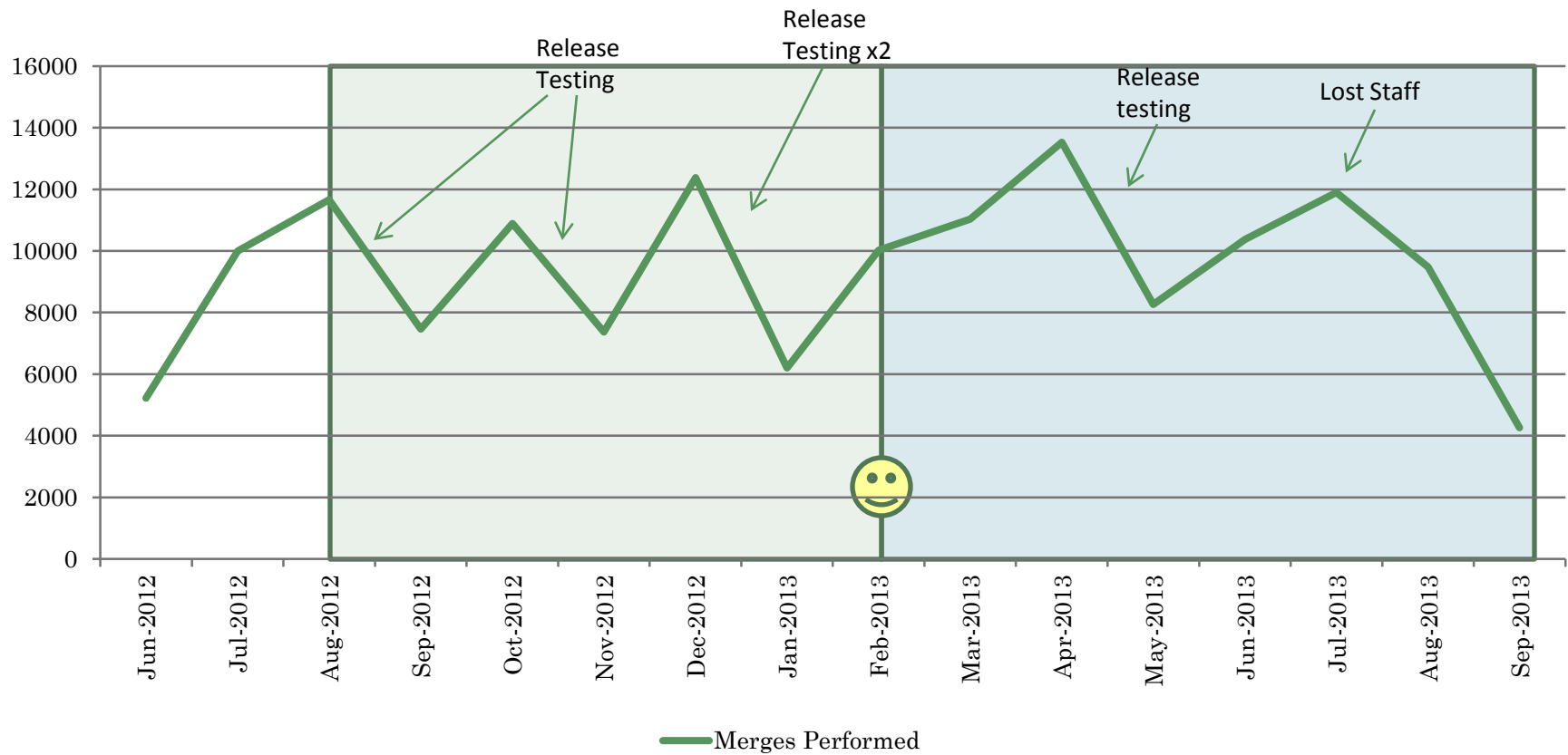
TARGETS:

Pending Records Over Time

> DCM largest area of need

Targets:

Pending Transactions by Organization Type
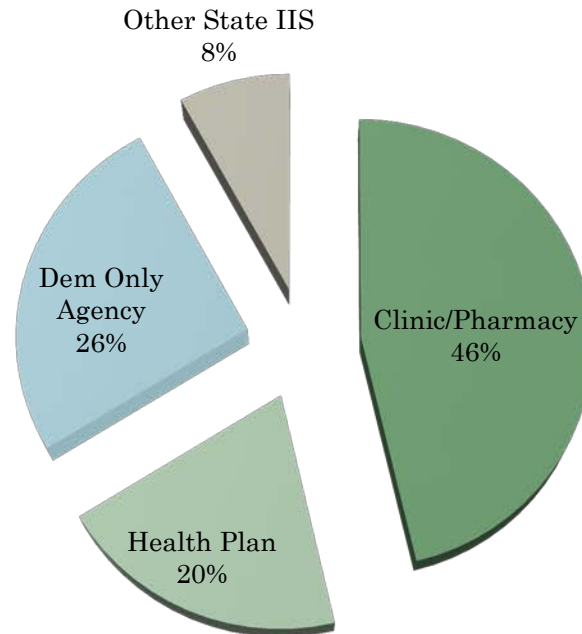
- Demographic only & Health Plans
- New clinic data coming into IIS

ALERT IIS TARGETED DEDUPLICATION:

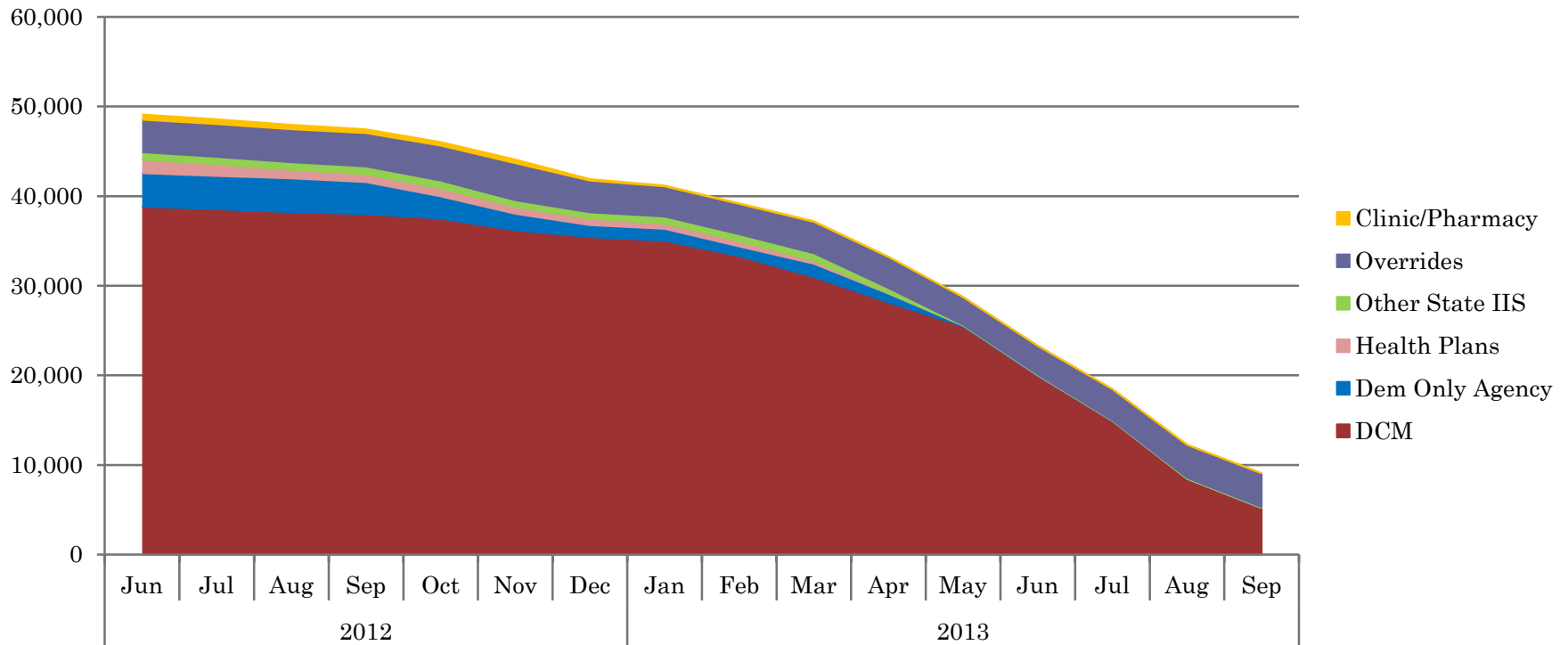- From June 2012 – September 16, 2013:
- OHA performed **153,395** merges; **366,100** patients were merged and **114,622** new records were created as a result of merging efforts

	Avg/Week	Min	Max
Merges Performed	2,223	616	3,704
Patients Merged	5,306	1,501	8,604
New Patients	1,661	318	2,969

OTHER CONSIDERATIONS:

➢ Prevent pendings at import
➢ Duplicate records: Score too low for pending file
  o Improve data feeds
➢ Pilot with small site:
  o Demographic only agency
  o Daily feed of entire population
    ➢ Receive Client Name, DOB, SSN, Sex, Race & Ethnicity
   ➢ No address or mother's information

PILOT SITE:

- Typical day of imports: 128 pending records; 70 duplicate records
- May not seem like much: 3,589 pending records to date – more than one week of full-time merging!
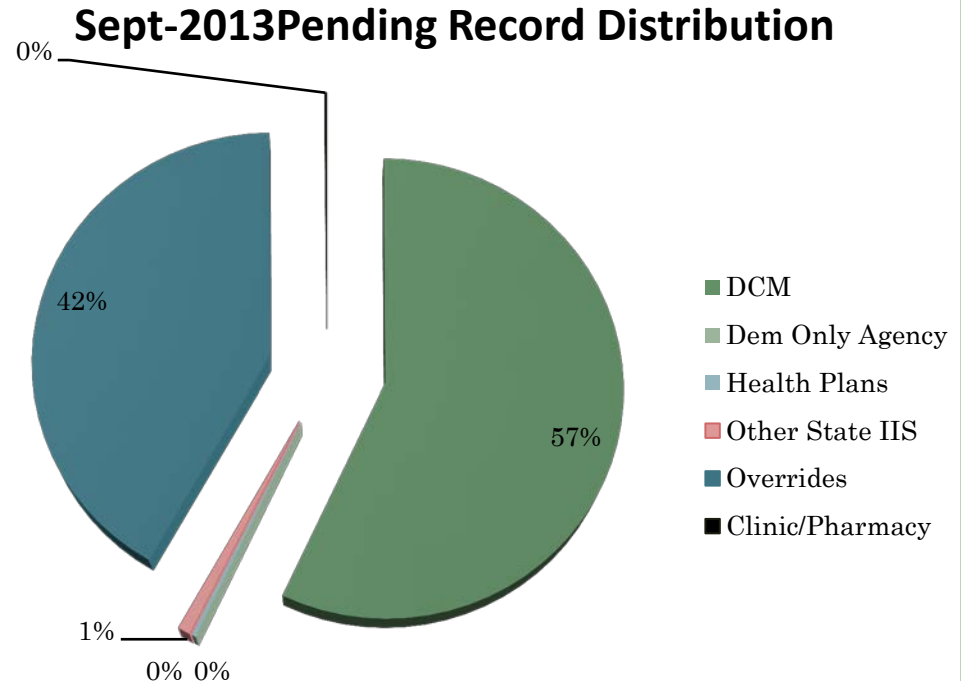- Estimated 1,400 duplicate records per month!

PILOT:

- Added Medicaid ID, Mother's First & Maiden Name and DOB & DOD precision indicators
- Rolled to production 07/29/13

	Pending Records	% Pending Patients
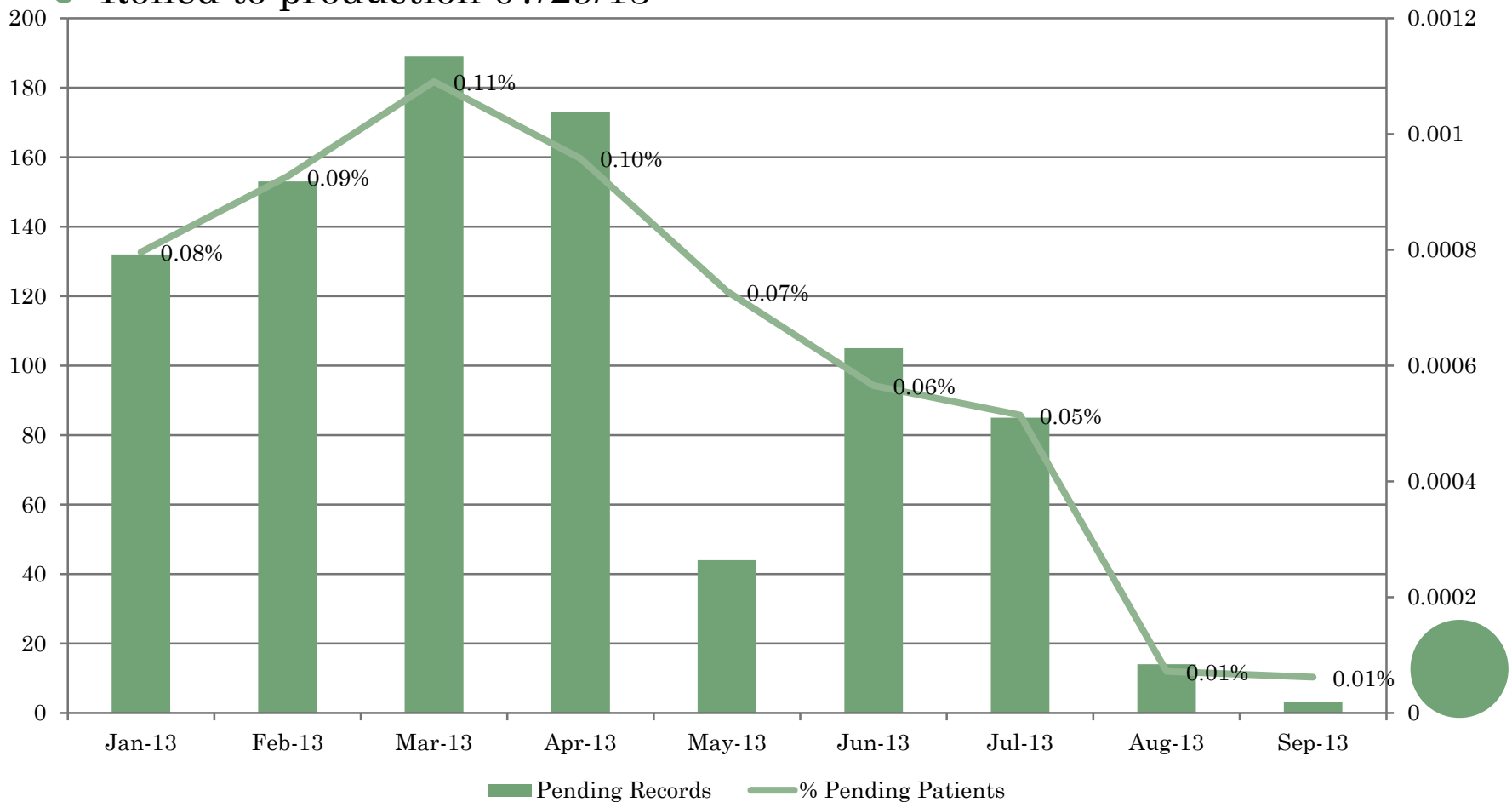
ALERT IIS NEXT UP:

Continue to keep up with new pending groups

Less than 10k records in pending: 57% DCM & 42% Overrides

Sept-2013Pending Record Distribution

0%

42%

57%

1%

0% 0%

- DCM
- Dem Only Agency
- Health Plans
- Other State IIS
- Overrides
- Clinic/Pharmacy

- DCM records are largely record pairs that need to be unpended
- Overrides are pending groups created when UI entry finds potential match(es) and user determines clients are different
- Need system update to modify unpend functionality

FUTURE WORK:

- Continue working with sites on Real Time Data Exchange
  - Data comes in at POS
  - ALERT onboarding staff leverage HL7 standards for better data feeds
- Continue targeting areas of need
- Discussed leveraging one or more additional fields to improve automated matching:
  - Medicaid ID, SSN, Phone Number, Patient ID
  - Modifying runMatch may not be possible
- Standards for import business rules (e.g., demographic only sends, etc.)

QUESTIONS/COMMENTS?

Deborah Richards
Oregon ALERT IIS Analyst
deborah.l.richards@state.or.us
971-673-1000

Jenne McKibben
Oregon ALERT IIS Program Coordinator
jenne.mckibben@state.or.us
971-673-0280

Mary Beth Kurilo
Oregon ALERT IIS Director
mary.beth.kurilo@state.or.us
971-673-0294