

Improving Race and Ethnicity Data in Michigan's Immunization Database

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MCIR stats

as of March 2023



Michigan population: 10M



MCIR person records: 13.2M

2.6M 18 and under

10.6M over 18



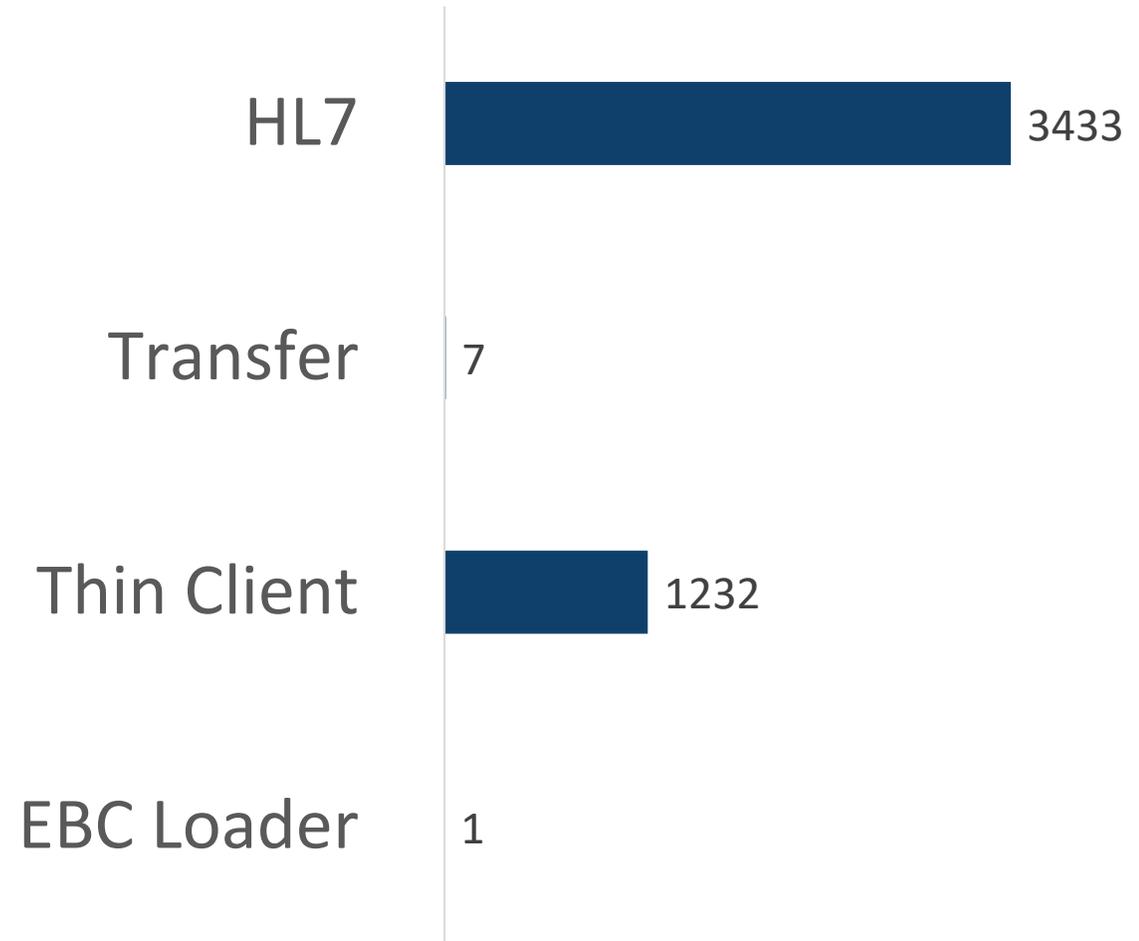
193.9M immunizations
(~10M/yr)



7,691 Providers

Michigan image by Freeimages.com

Most providers submit data via HL7



Number of providers submitting data in **March 2023**

Background



Before COVID-19, MCIR did not collect any race and ethnicity data.



This has limited the ability to identify and address disparities in health care access and outcomes.



This quality improvement project aimed to enhance the collection and reporting of race and ethnicity data in MCIR through targeted interventions at the provider level.

Timeline

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January 2021
Race and ethnicity began to be stored from incoming HL7 messages.

August 2022
Addition of North African/Middle Eastern codes.

January 2023
Federally recognized tribes.

May 2023
Survey administered to top 20 UNK for race & ethnicity.

July 2023
R/E warning.

February 2024
Email outreach surveyed providers.

March 2024
Email outreach to top 100 sites.

April 2024
Email outreach.

May 2024
Email outreach.

June 2024
Email outreach.

July 2024
Email outreach.

July 2024
Warning to soft error, multiple races.

August 2024
Email outreach.

September 2024
Email outreach.

Phase 2: survey

April 2024
Addition of PHC1175.

Phase 1: prep

Phase 3: enforcement and outreach

MCIR HL7 Race History

- January 2021
 - MCIR began storing race and ethnicity from incoming HL7 messages.
- August 2022
 - Three additional options to our race table.
- January 2023
 - MI federally recognized Tribes.

PID-10: Race

The patient's race is sent in this field. While this field may repeat to indicate additional races, MCIR currently only reads the first repeat.

Position	Field	Status
1	identifier	required
2	text	optional
3	name of coding system	optional, should be HL70005

Table 0005 - Race

Value	Description	Status
1002-5	American Indian or Alaska native	accepted
2028-9	Asian	accepted
2076-8	Native Hawaiian or Other Pacific Islander	accepted
2054-5	Black or African-American	accepted
2106-3	White	accepted
2135-2	Hispanic or Latino	accepted
2186-5	not Hispanic or Latino	accepted
2131-1	Other Race	accepted
2034-7	Chinese	accepted
2039-6	Japanese	accepted
2036-2	Filipino	accepted
2076-8	Hawaiian	accepted
UNK	Unknown	accepted

PID-22: Ethnic group

The ethnicity of the patient.

Table 0189 - Ethnic group

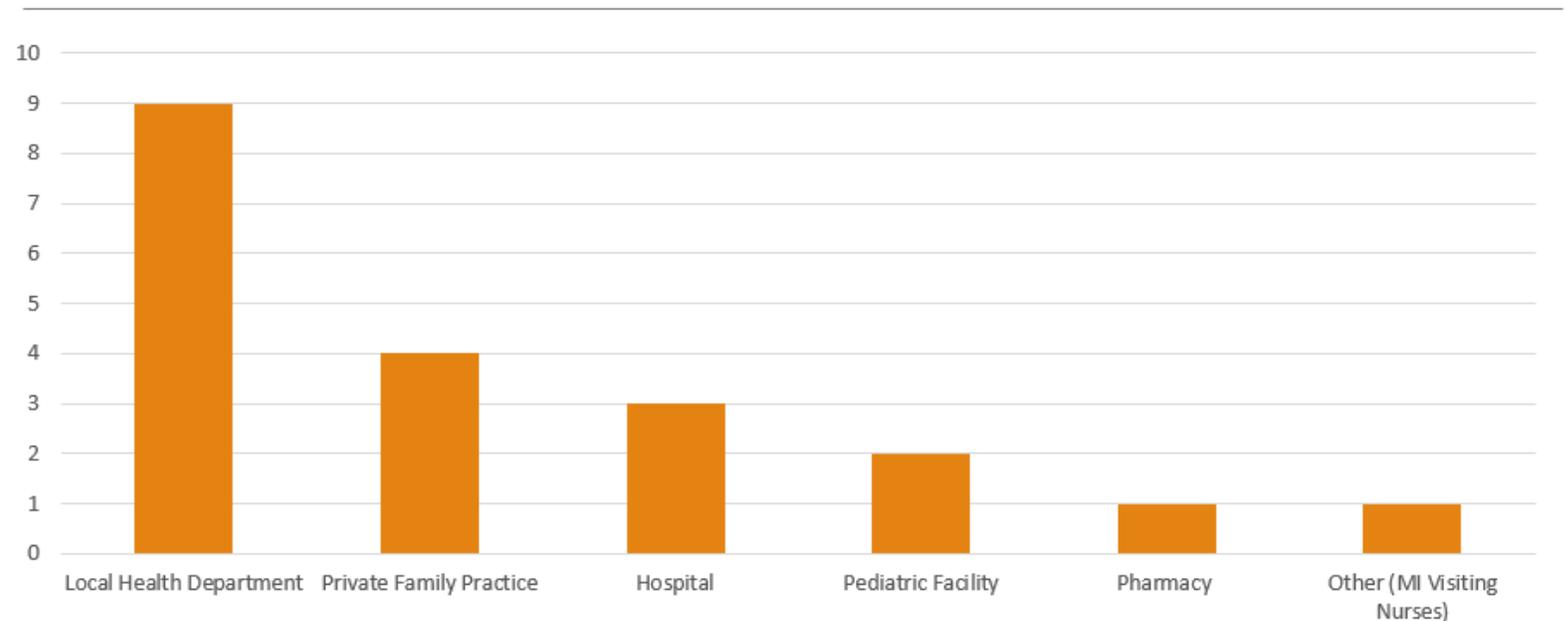
Value	Description	Status
2135-2	Hispanic or Latino	accepted
2186-5	Not Hispanic or Latino	accepted
UNK	Unknown	accepted

Survey

Survey

- May 2023
- Survey was sent out to understand how race and ethnicity data is captured at provider offices, what barriers are providers having with collecting this information and how MCIR can provide support to collecting this data.
- Target Group
 - Top 20 providers that were submitting missing or unknown race and/or ethnicity.

Surveyed providers, by type



Survey Results

- 17 out of 20 surveys were returned.
- Race and ethnicity is typically collected on paper.
 - (~90% of respondents)
- Most providers DO NOT review patient demographic form.
 - (~60% of respondents)
- Potential barriers cited by providers:
 - Patient refusal
 - Confusion about the race and ethnicity categories

HL7 Updates

MCIR System Updates

- April 2024
- MCIR added PHC1175 (prefer not to say) code.
- Multiple races allowed for one person.

HL7 Warning Message

- Started July 2023
- MCIR system started providing a warning in the acknowledgment message if the fields are blank or don't have a valid value.
- Implementation of warnings was a new concept for MCIR.

Warnings

Field	Value	Message	Reason
RACE_CD		Warning: RACE_CD must be present to add a child and/or an immunization. This will result in message rejection February 2024	Blank value is not allowed

Response (Ack)

```
MSH|^~\&|MCIR|MCIR|OFFICEPRACTICUM11|1321-00-47|20230906100129-0400||ACK^V04^ACK|20230906100129-0400.5008|P|2.5.1|||NE|NE|||Z23^CDCPHINVS|
MSA|AE|20230906100128556|
ERR||PID^1^10^1^1^1|101^Required field missing^HL70357|W|||Warning: RACE_CD must be present to add a child and/or an immunization. This will result in message rejection February 2024|
```

HL7 Soft Error Message

- Started July 2024
- MCIR system started providing an error in the acknowledgment message if the fields are blank or don't have a valid value.
- This message was still accepted and processed even though providers saw this as an error.
- Implementation of a soft error was also a new concept for MCIR.

Errors

Field	Value	Message	Reason
RACE_CD		RACE_CD must be present to add a child and/or an immunization	Blank value is not allowed
ETHNIC_CD		ETHNIC_CD must be present to add a child and/or an immunization	Blank value is not allowed

Response (Ack)

```
MSH|^~\&|MCIR|MCIR|EPIC|1505-32-41|20250105004604-0500||ACK^V04^ACK|20250105004604-0500.82993|P|2.5.1|||NE|NE|||||Z23^CDCPHINVS|
MSA|AE|834165|
ERR||PID^1^10^1^1^1|101^Required field missing^HL70357|E|||RACE_CD must be present to add a child and/or an immunization |
ERR||PID^1^22^1^1^1|101^Required field missing^HL70357|E|||ETHNIC_CD must be present to add a child and/or an immunization |
```

Education and Outreach

- Started February 2024
- Using a report to guide outreach to providers that submit *missing* race and/or ethnicity
 - Mass emails on a monthly cadence
 - Top 100 sending no value for race/ethnicity via HL7
- Follow up on emails
 - Some providers responded
 - Some providers requested a meeting with DQ team

Initial Outreach Example

Greetings,

The MCIR Data Quality Team is currently working on an initiative to improve race and ethnicity data rates within the immunization registry. This site was identified as having a high number of HL7 messages that are receiving a warning due to missing or invalid race/ethnicity fields. It is our goal to improve data quality to better serve the people of Michigan, while helping providers understand the procedures through the data sharing process. We ask that you please review and correct the errors at least three times per week to be sure MCIR reporting requirements are maintained.

Please review the following HL7 documents for further guidance:

- [MCIR HL7 2.5 Specification](#)
- [MCIR HL7 Transfer Sites](#)
- [Defining and Generating the ESSR \(mcir.org\)](#)
- [HL7-VIEWER-User-Reference-Guide-1.pdf \(mcir.org\)](#)

If you have any questions or concerns, please reach out to MDHHS-HL7@michigan.gov.

Thank you,



MCIR Data Quality Team

Immunization Assessment and Local Support
Bureau of Infectious Disease and Prevention
Michigan Department of Health and Human Services
333 S. Grand Avenue
Lansing, MI 48933

Education & Outreach

- Once education and outreach began, we discovered other challenges that providers and EHR vendors were facing.
 - Some thought if the race and ethnicity was already in MCIR, then it wasn't needed in HL7.
 - Many providers had been in production for years and were not running HL7 error reports.
 - Some EHRs had 'unknown' populating in race/ethnicity fields as a description but had race/ethnicity codes missing (MCIR requires these codes).

Results

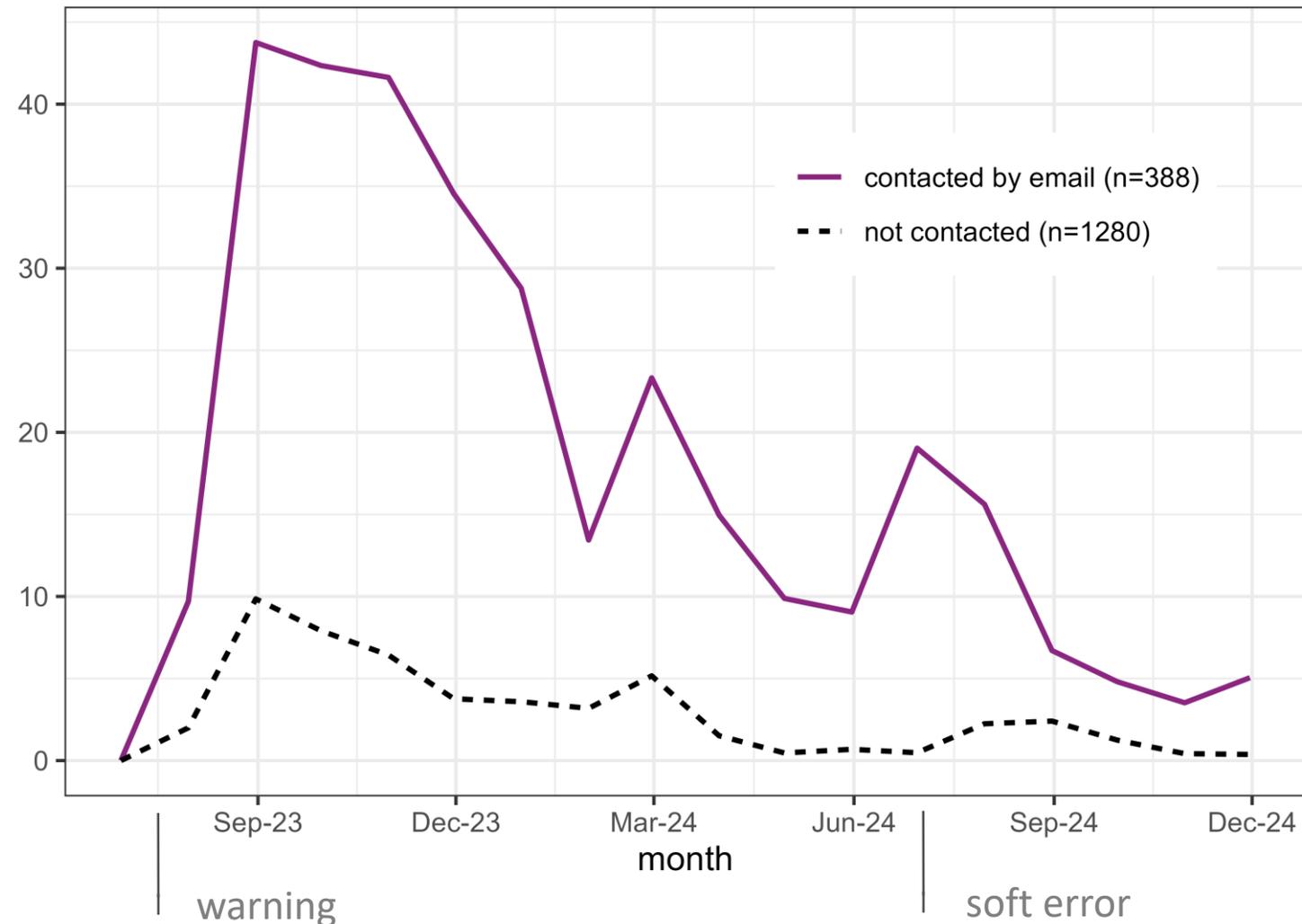
Improvements in
reporting behavior



R1. reporting changes

- The overall share of inbound messages with empty race and/or ethnicity fields peaked at 14.4% (162,416) in October 2023 and ended at 1.8% (13,555) in November.

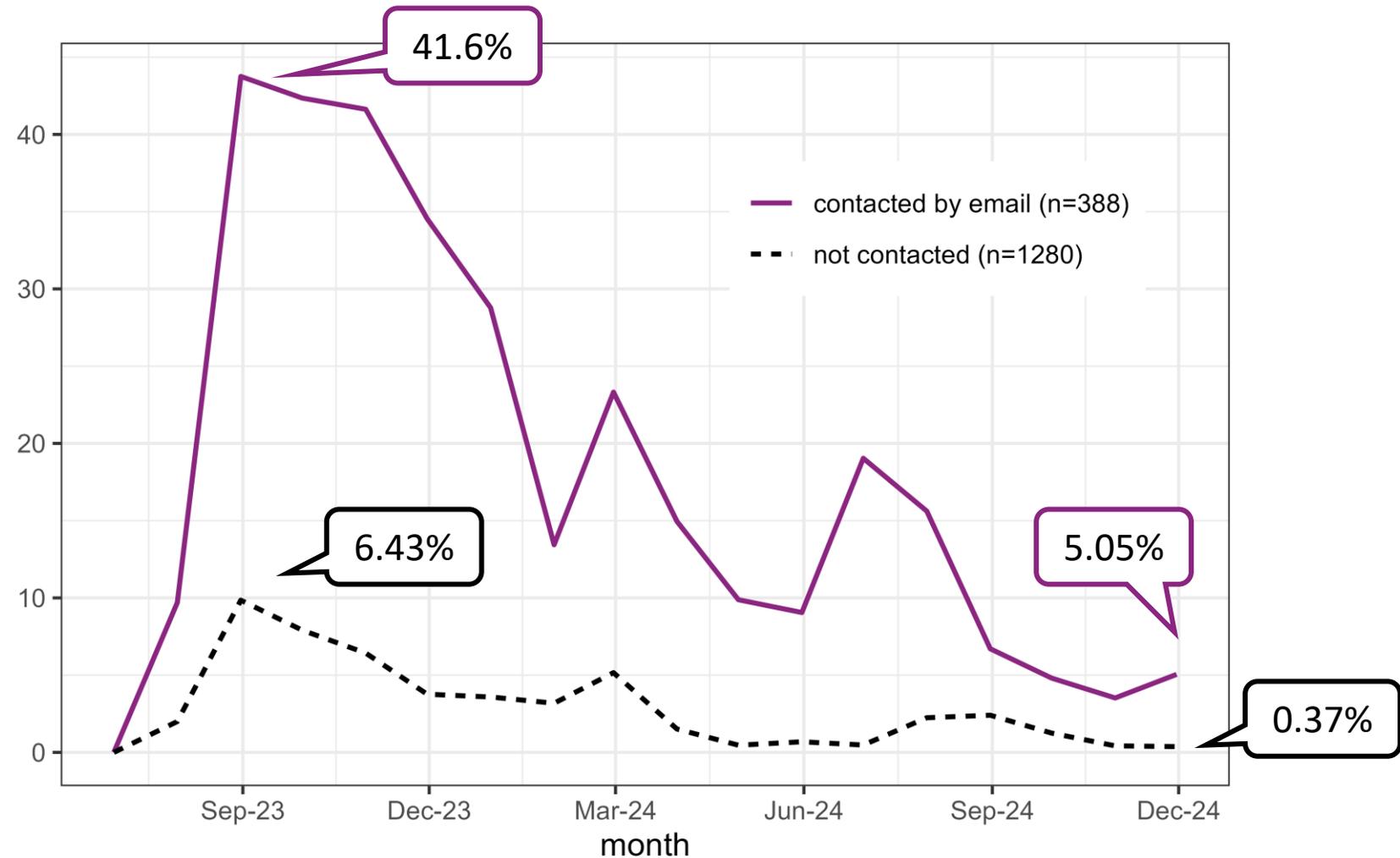
Race and/or ethnicity missingness fell **more** among providers contacted by email.



R1. reporting changes

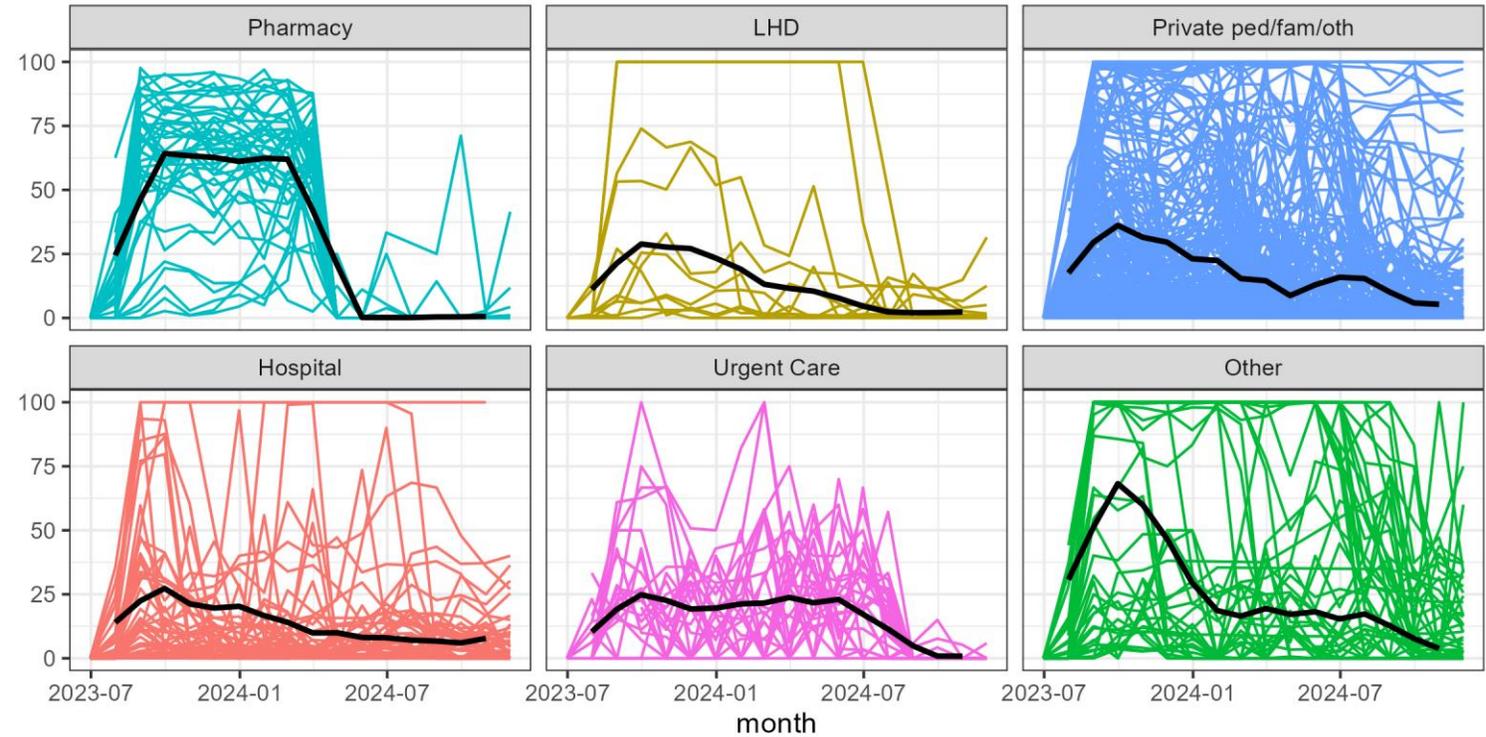
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R1. reporting changes

Some provider types demonstrated a clearer change in reporting practices.

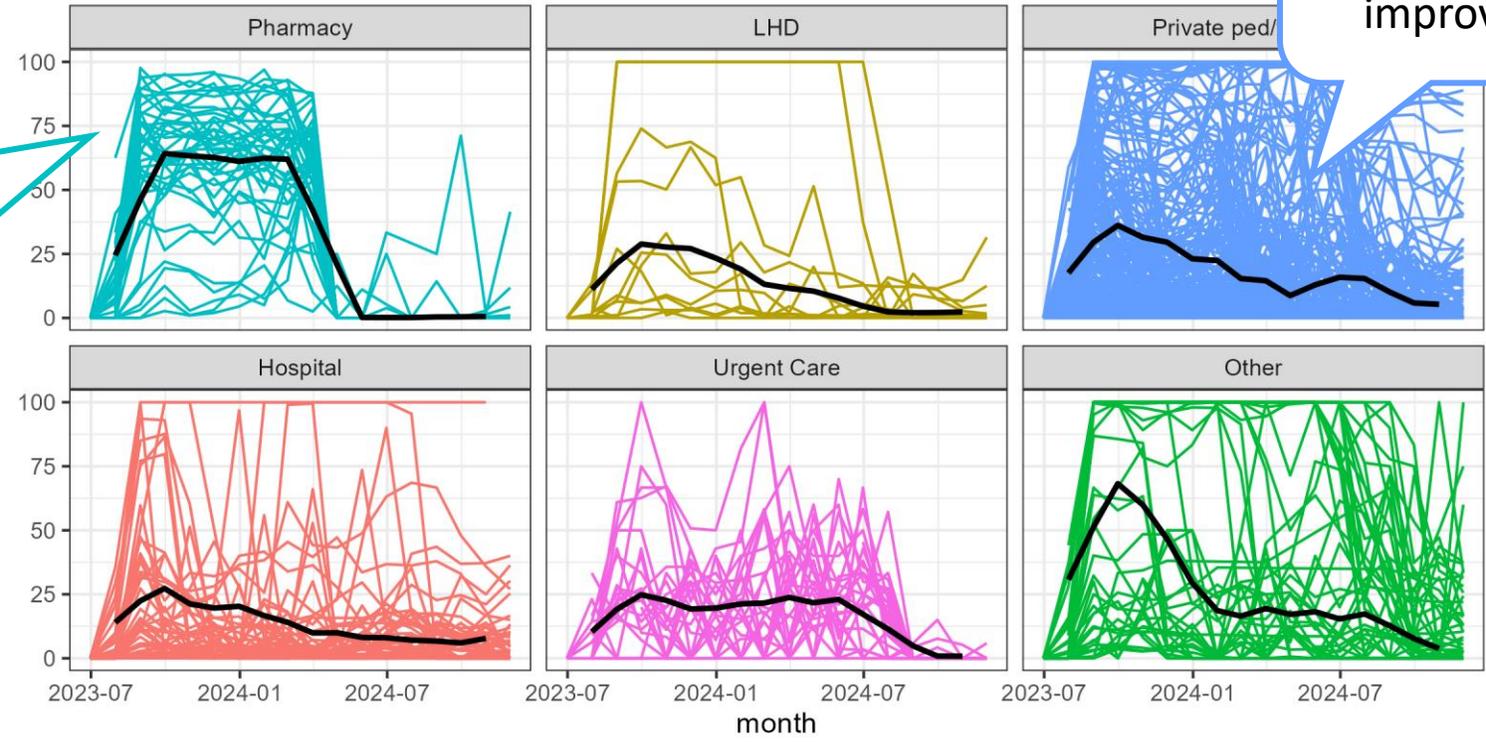


R1. reporting changes

Some provider types demonstrated a clearer change in reporting practices.

Pharmacies are managed by corporate offices.

Not all private offices improved.



R1. reporting changes

- Takeaway: Follow-up emails did seem to encourage better reporting behavior.
- Caveat: Not all providers improved (N = 80 sites >10% missingness despite follow-up).

Results

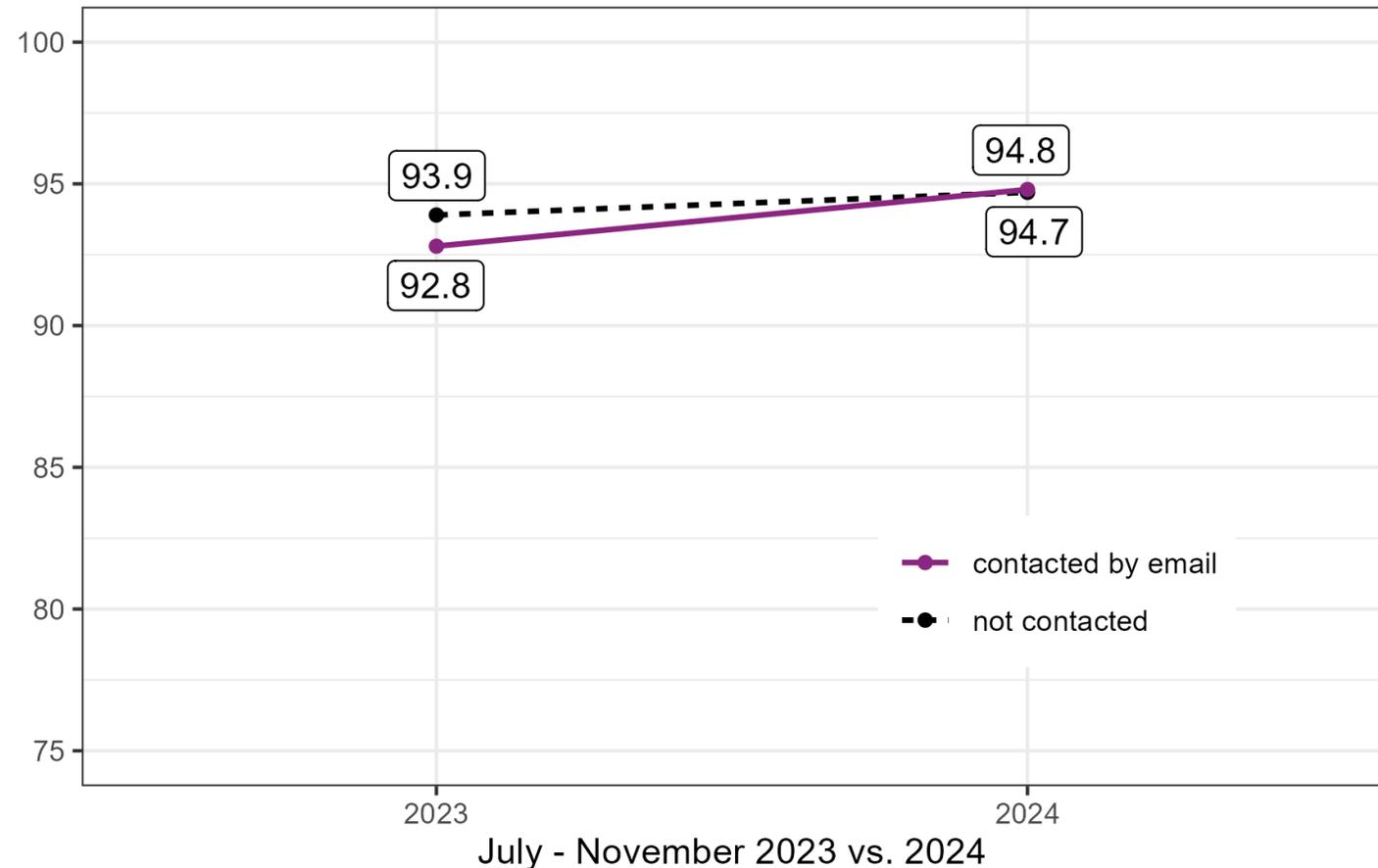
Improvements in data capture



R2. data capture

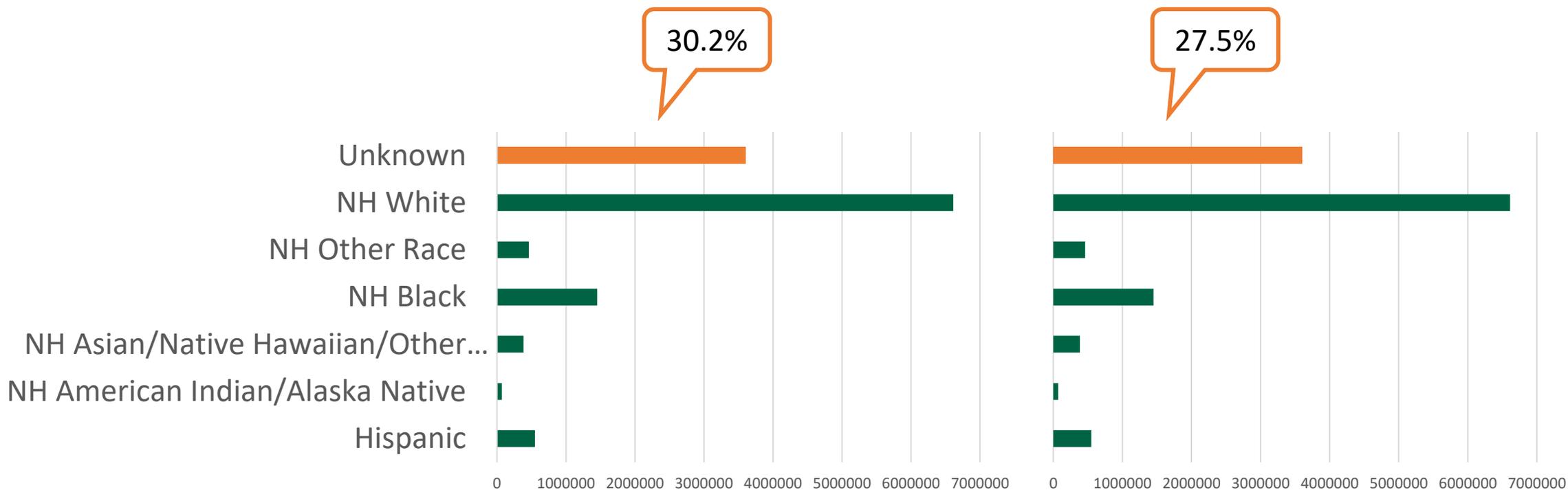
- >90% of vaccine recipients had at least one known race reported
- Completeness improved over time (93.7 → 94.7%)
- Slightly greater improvement among patients of providers contacted for follow-up

Improved capture of race data among vaccine recipients



R2. data capture

Improved capture of **system-wide** race and ethnicity data



All persons in MCIR as of:

Jan. 1, 2023

Feb. 2, 2025

Discussion

- Outreach efforts were quite successful in changing provider behavior and somewhat successful in improving the system.
- Having all stakeholders on the same page is crucial.
- Contacting providers led to a host of additional helpful changes (clarifying roles and responsibilities, updating contact info, meaning of other HL7 errors, etc.).

Thank you!

Wendy Nye

Taylor Olsabeck

Abigail Cheney

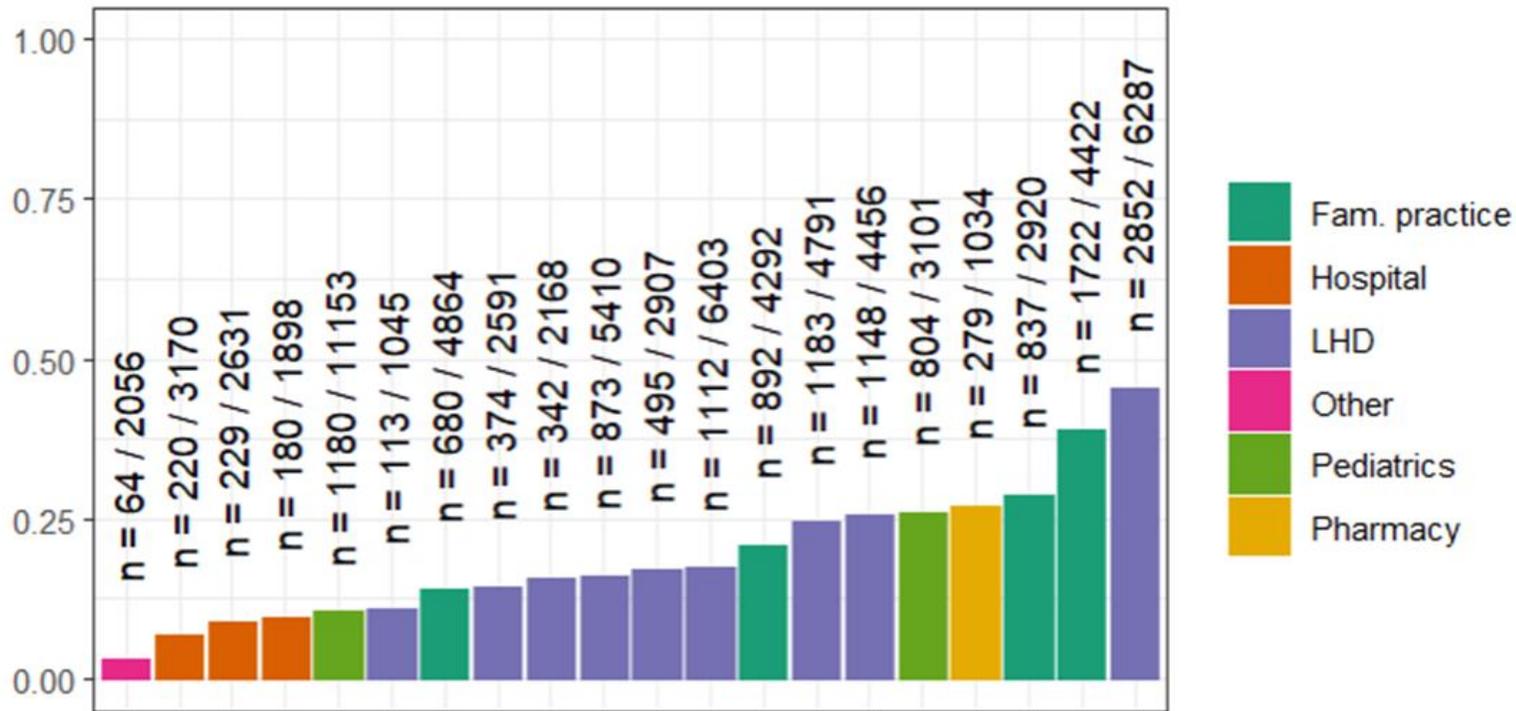
Tania de Castilhos

Supplemental materials

Survey

Proportion of shots with unknown race: Jan 2023-present

Top 20 sites identified in 2022 as largest contributors to missing/unknown race and ethnicity



- Sent emails to HL7 providers that have a high number of warnings for missing race and ethnicity to invite them for a discussion

- % Missingness did decrease

R2. data capture

we hope for better data capture

we encourage better reporting

