

Timeliness of communicable disease reporting in Arizona: *Does method matter?*

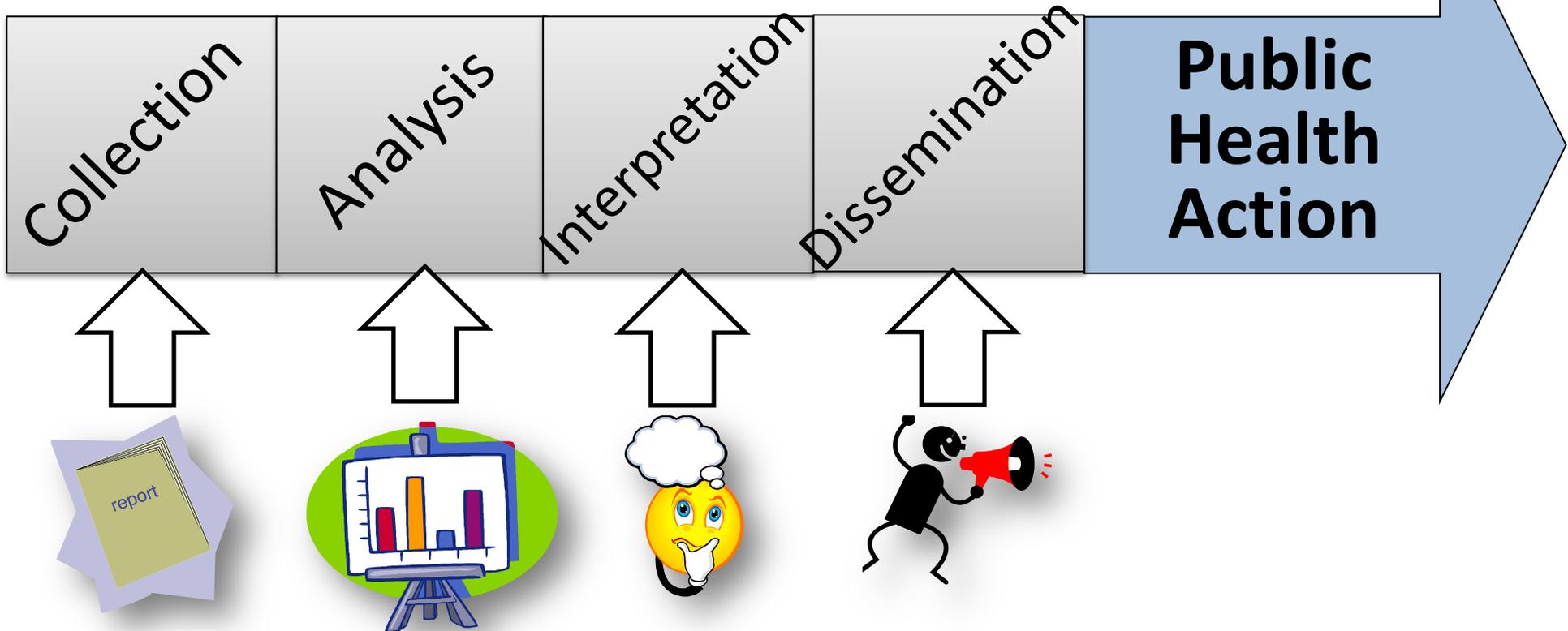
Laura M. Erhart, MPH

July 22nd, 2015

Arizona Department of Health Services



Surveillance





Where do surveillance data come from?

What

- Specific diseases/tests must be reported to PH officials
 - *Per state statute & administrative code*

Who

- Healthcare providers
- Laboratories
- Schools, childcares, other institutions

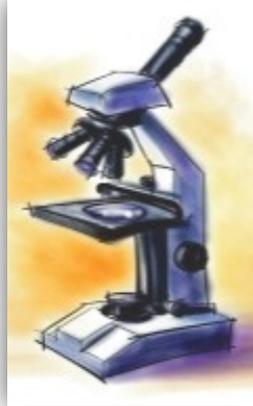
When

- Soon after diagnosis or test completion
 - *Within 24 hours or 1 working day or 5 days*

Why

- Population-level approach
 - *Comprehensive info is important for good decisions*

**Clinical
Laboratory**



Symptomatic Case

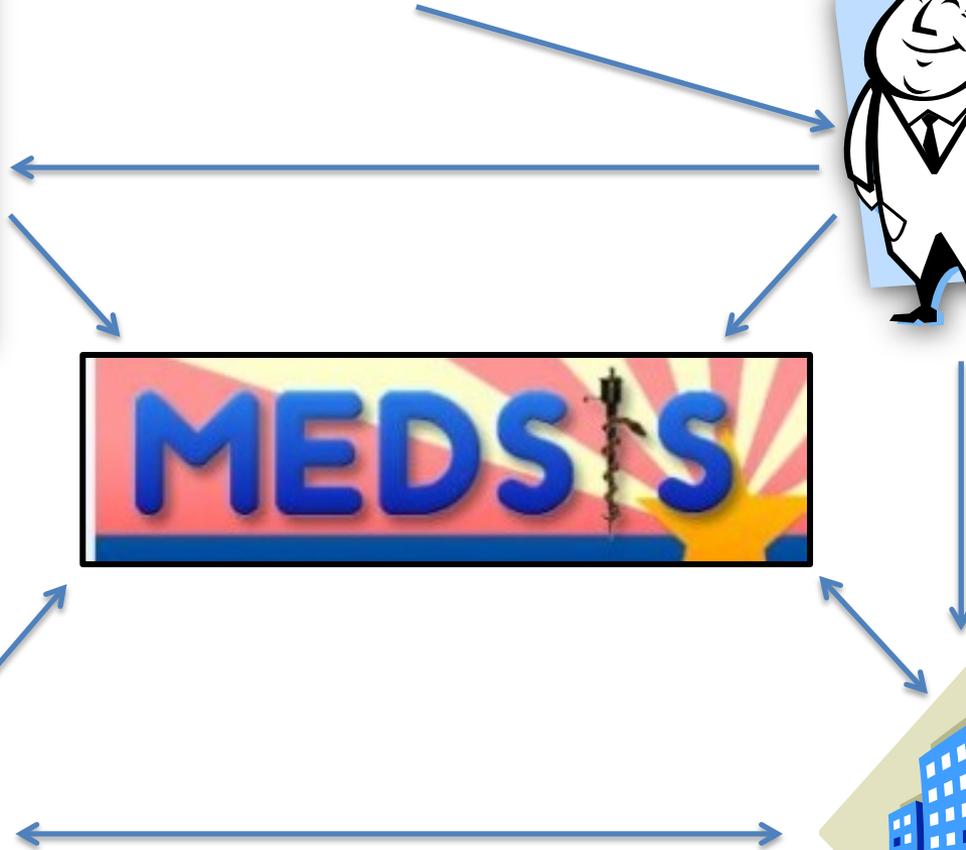
**Healthcare
Provider**



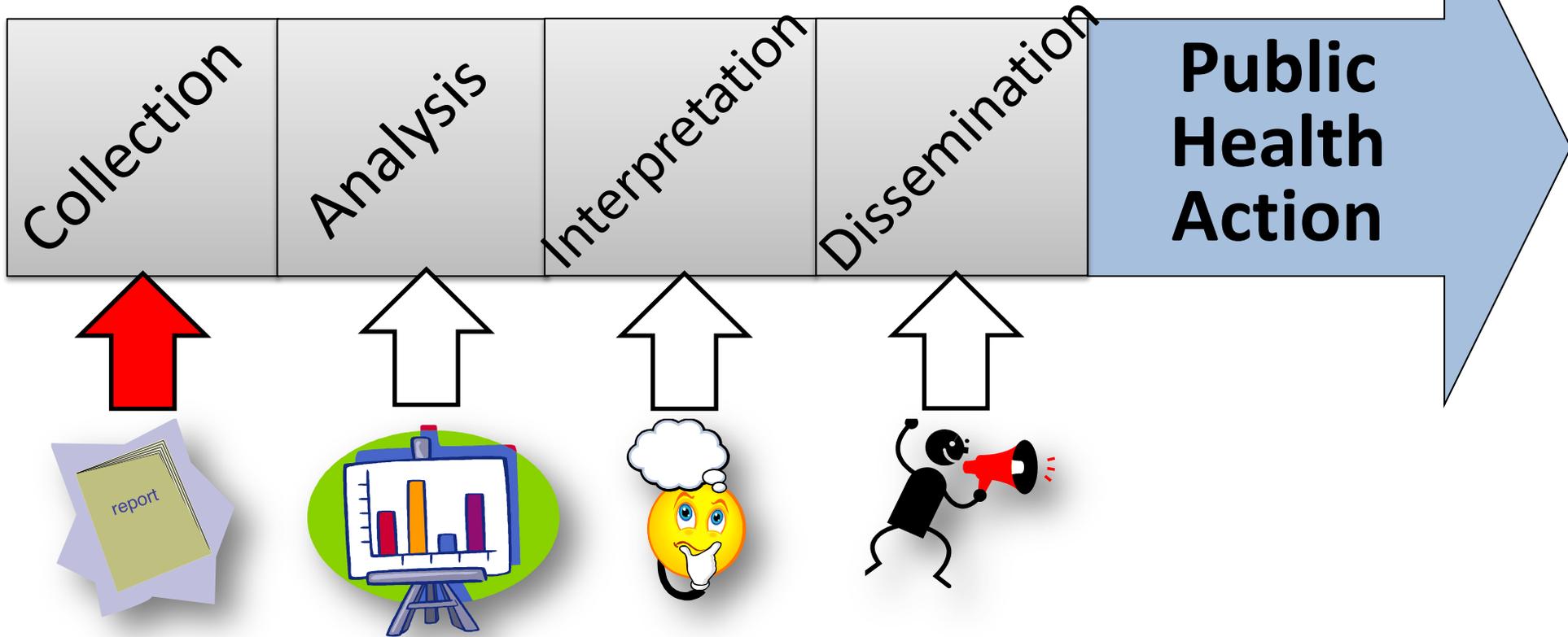
**State Public
Health**



**Local Public
Health**

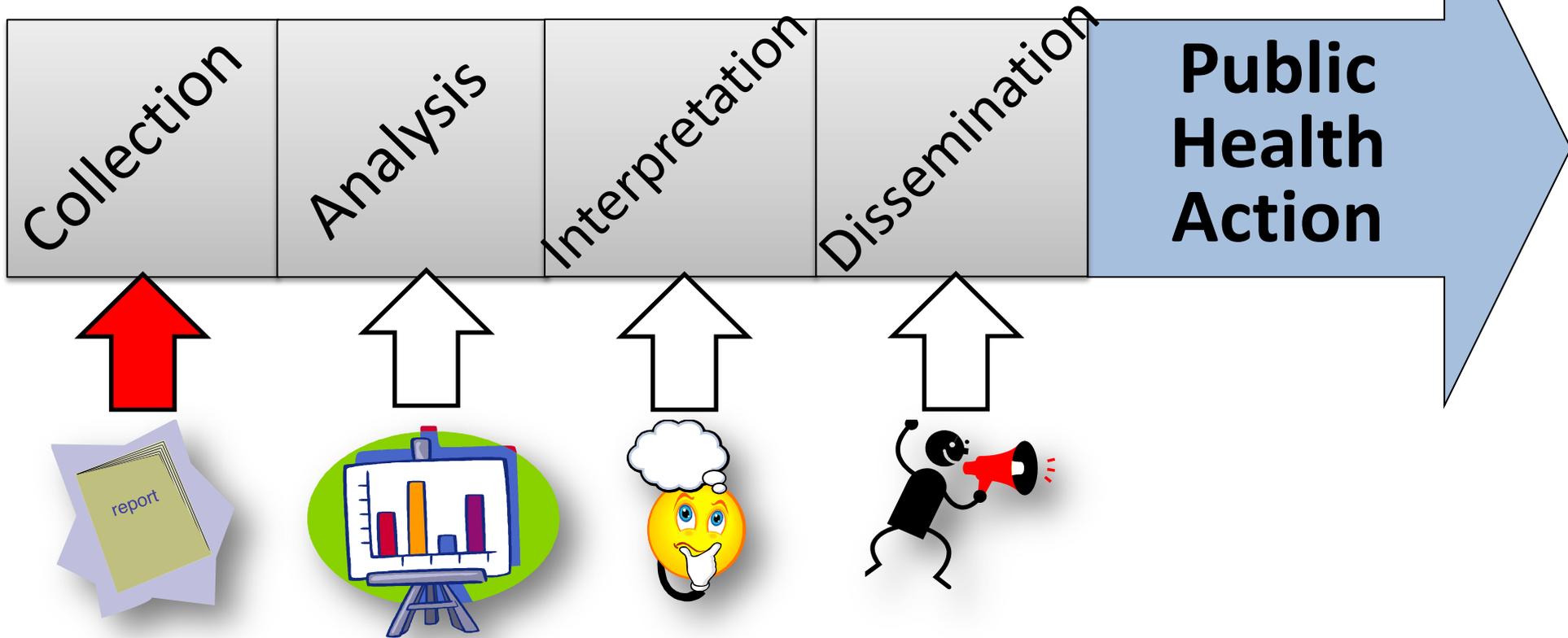


Surveillance



Timeliness is important!

Surveillance



Faster reporting (collection of data) allows for faster public health action

....detection & control of outbreaks

....prophylaxis of susceptible persons

....removal of contaminated products

“Traditional”^(non-ELR) lab reporting process

Laboratory test completed

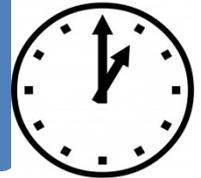
Laboratorian enters test information into Laboratory Information System (LIS)

Lab staff print reportable results from LIS (or handwrite results onto form)

Lab staff fax, mail, or phone results to state health department (ADHS)

ADHS staff manually enter lab report into surveillance system (MEDSIS)

DON'T FORGET



elr



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Cadillac ELR - Car and Driver

www.caranddriver.com Cadillac

★★★★★ Rating: 3 Review by CAR and DRIVER

Check out the Cadillac ELR review at CARandDRIVER.com. Use our Car Buying Guide to research Cadillac ELR prices, specs, photos, videos, and more.



2014 Cadillac ELR

Luxury vehicle

MPG: 85 city / 80 highway

Horsepower: 181 HP

Range: 37 mi battery-only, 340 mi total

MSRP: From \$75,000

Engine: Electric

Battery: 16.5 kWh 360 V lithium-ion

Not what we will be discussing

Electronic Lab Reporting (ELR) process

Laboratory test completed

Laboratorian enters test information into Laboratory Information System (LIS)

  Reportable lab result triggers the LIS to send an electronic message to ADHS ELR

ADHS ELR system receives & triages the message

 ADHS staff attach electronic message to MEDSIS case

Anticipated benefits of ELR

- Faster reporting from lab to public health agency



- More complete reporting



- More accurate data



**Clinical
Laboratory**



Symptomatic Case

**Healthcare
Provider**



ELR



**State Public
Health**



**Local Public
Health**

Challenges for ELR implementation



Journal of Automatic Chemistry/ Journal of Clinical Laboratory Automation, Vol. 7, No. 4 (October–December 1985), p. 169

Editorial: ‘To err is human, it takes a computer to really foul things up!’*

Current status of ELR

Denominators for ARIZONA

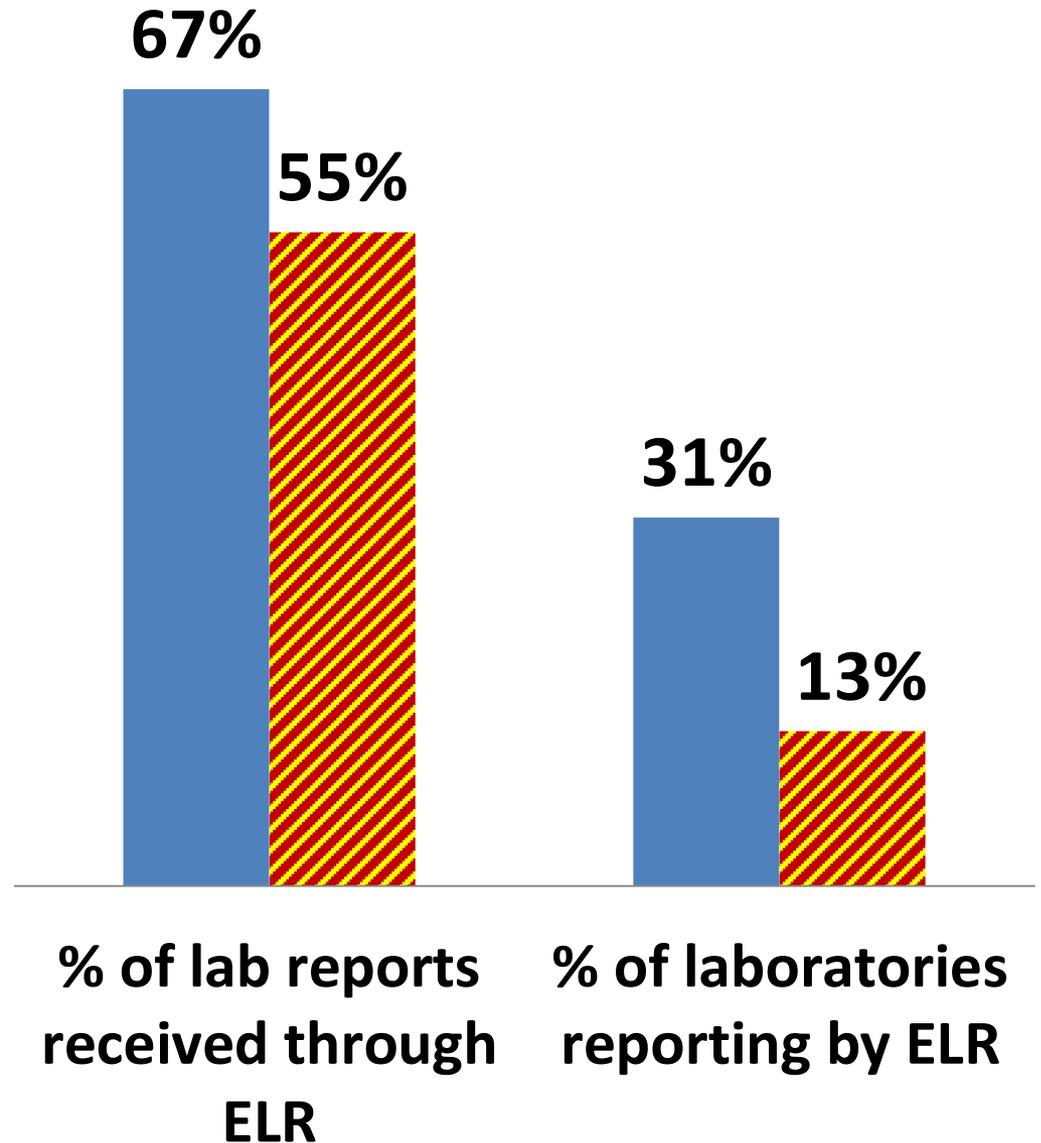


- 120,000 lab reports / year
- 75 laboratories
- As of July 2015

Denominators for U.S.

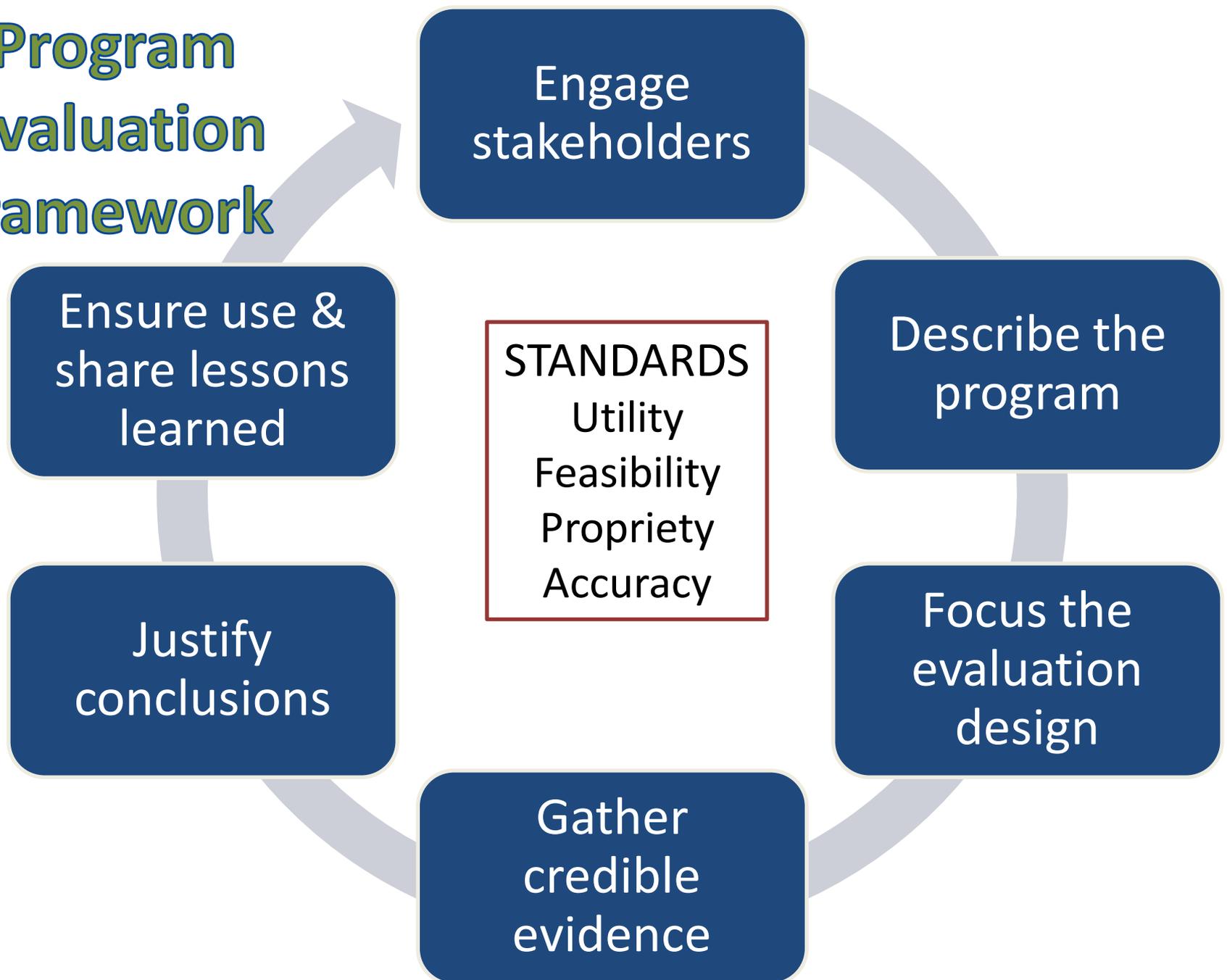


- 20 mill. lab reports / year
- 10,600 laboratories
- As of July 2014

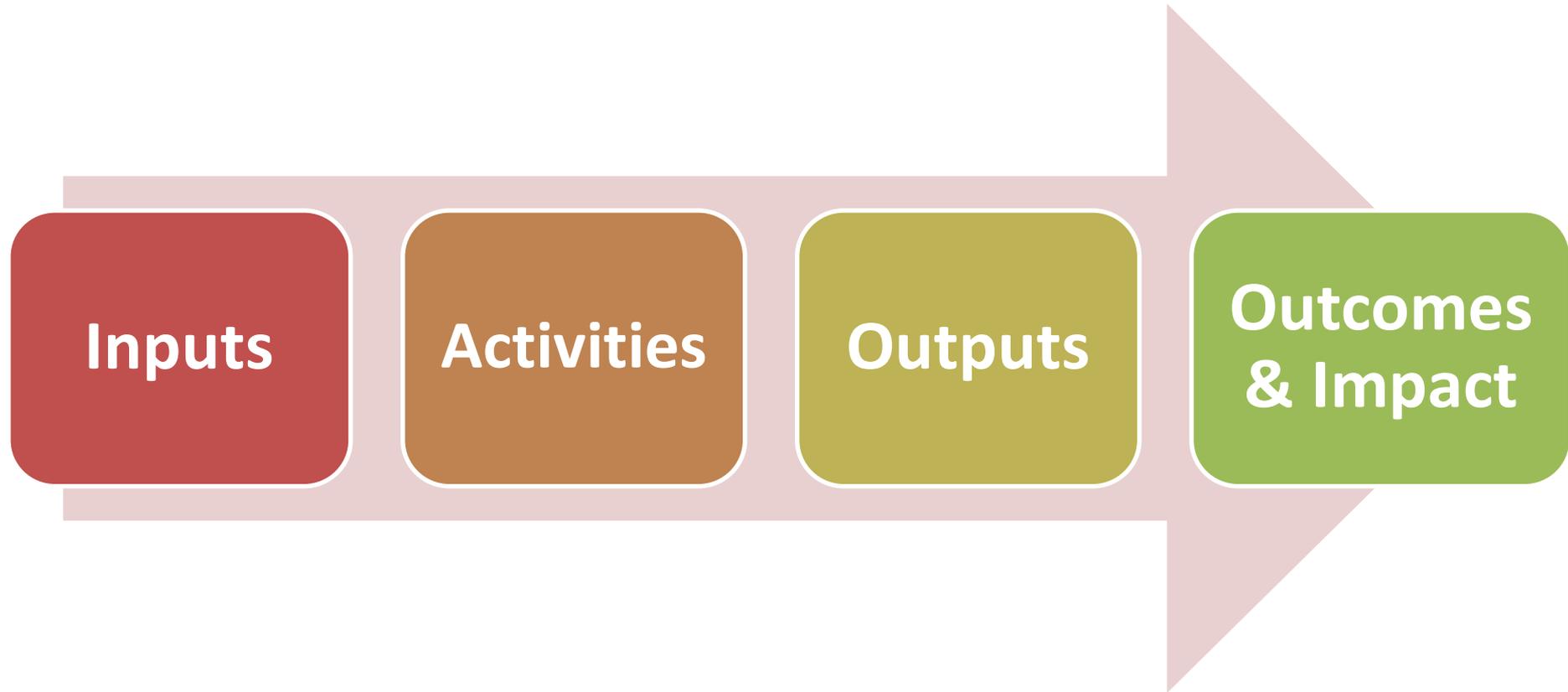


***Progress –
but we still have
work to do!***

Program evaluation framework



Creating a Logic Model



Are the activities we are undertaking helping us to meet our outcomes?

Logic Model for ADHS Health Information Systems Programs

Activities

- Analyze ELR needs
- Develop training materials, policies & resources
- Provide technical expertise
- Develop standardized onboarding processes & documentation

Outcomes & Impact

- Decreased timeliness for lab reporting
- More timely detection of infectious diseases

Is ELR helping achieve more timely communicable disease reporting within Arizona?



Project methodology

- Used MEDSIS data from 2014 to examine our evaluation question.
- Analyzed urgent and non-urgent conditions separately.

Project methodology

- Outcome measurements:
 - Compare the “time to report”, in days, between cases first received by ELR and non-ELR.
 - Compare the proportion of cases received within the required timeframes.
- Applied appropriate statistical tests for all measurements.

Urgent Conditions

- Conditions that should be reported within 24 hours or 1 working day are categorized as urgent.
 - Ex.: meningococcal, Shiga-toxin producing *E. coli*

Non-Urgent Conditions

- Conditions that should be reported within 5 working days are categorized as non-urgent.
 - Ex.: hepatitis A, influenza

Method of First Report

- A case is considered “first received by ELR” if the earliest-received lab report in the case came through the ELR system.

Time to Report



**Lab Result
Date**



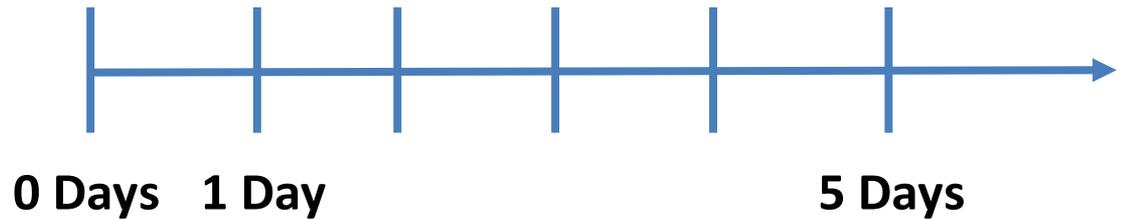
**Received by
PH Agency**



Timeframes for “1 working day” or “5 working days” conditions were adjusted for weekends.

Received
within
Required
Time-
frames

If TIME TO REPORT = ...



URGENT

WITH
-IN

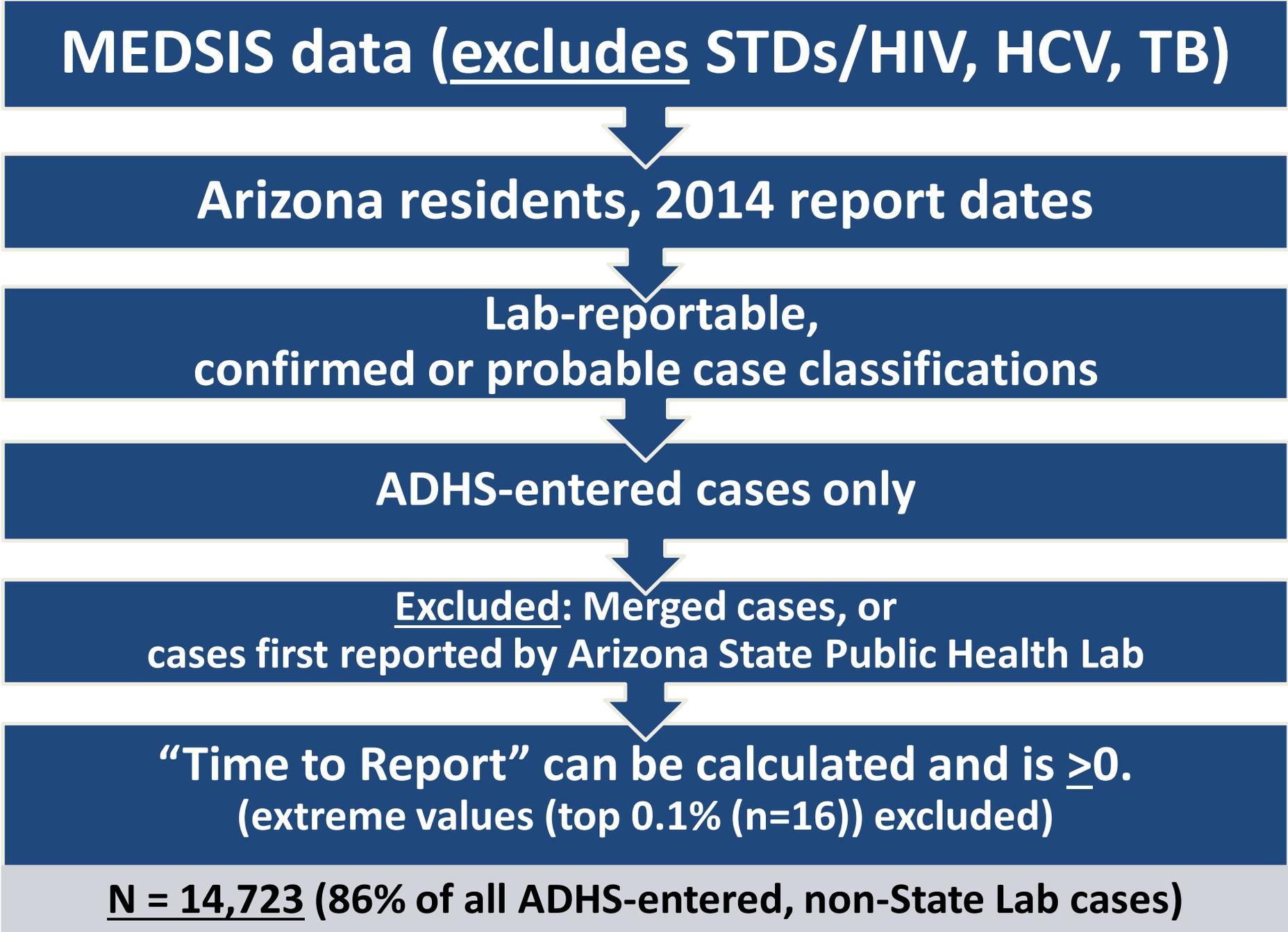
OUTSIDE required
timeframes

**NON-
URGENT**

WITHIN required
timeframes

OUT
SIDE

MEDSIS data (excludes STDs/HIV, HCV, TB)



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graph TD; A[MEDSIS data (excludes STDs/HIV, HCV, TB)] --> B[Arizona residents, 2014 report dates]; B --> C[Lab-reportable, confirmed or probable case classifications]; C --> D[ADHS-entered cases only]; D --> E[Excluded: Merged cases, or cases first reported by Arizona State Public Health Lab]; E --> F["Time to Report" can be calculated and is ≥ 0. (extreme values (top 0.1% (n=16)) excluded)]; F --> G[N = 14,723 (86% of all ADHS-entered, non-State Lab cases)];
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Arizona residents, 2014 report dates

**Lab-reportable,
confirmed or probable case classifications**

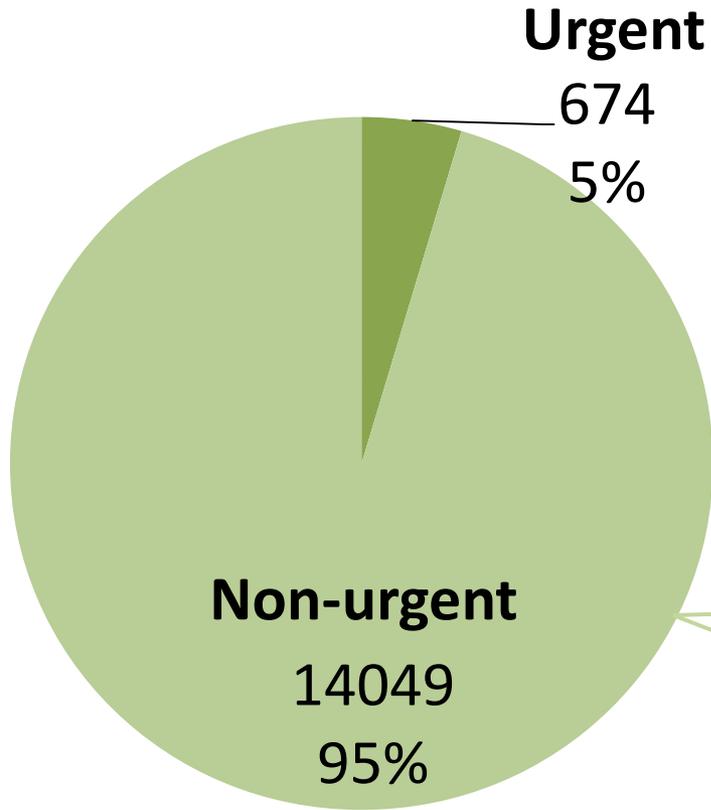
ADHS-entered cases only

**Excluded: Merged cases, or
cases first reported by Arizona State Public Health Lab**

**“Time to Report” can be calculated and is ≥ 0 .
(extreme values (top 0.1% (n=16)) excluded)**

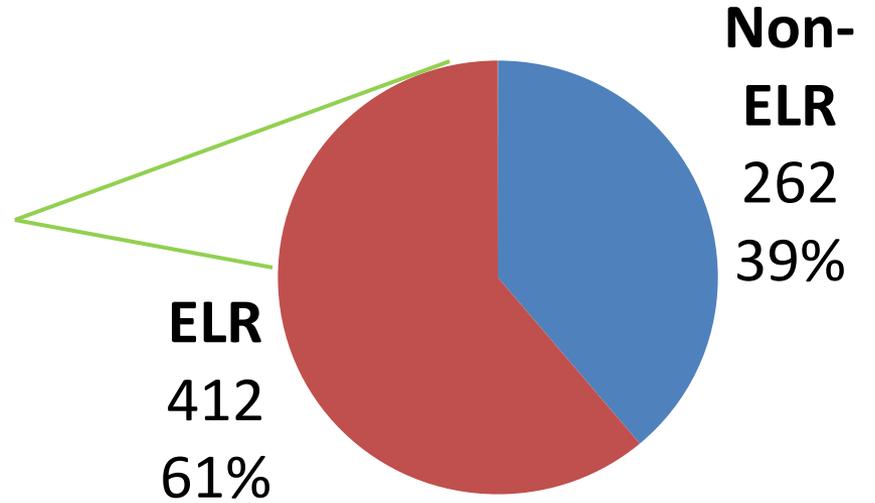
N = 14,723 (86% of all ADHS-entered, non-State Lab cases)

Reports included in the analysis

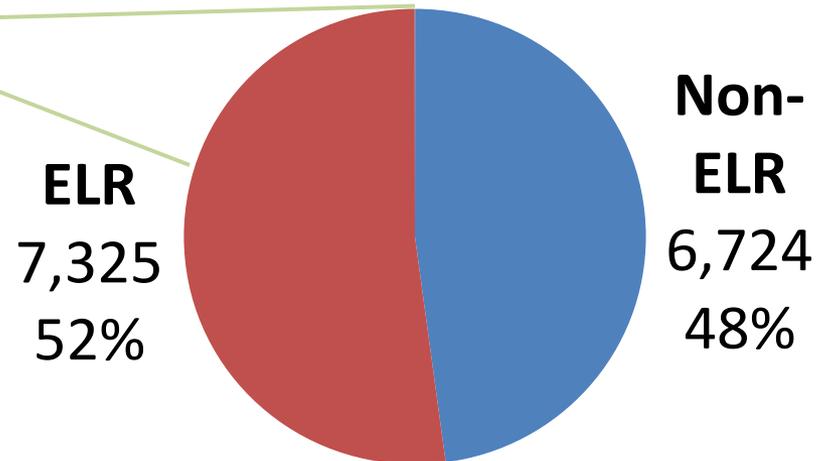


N = 14,723

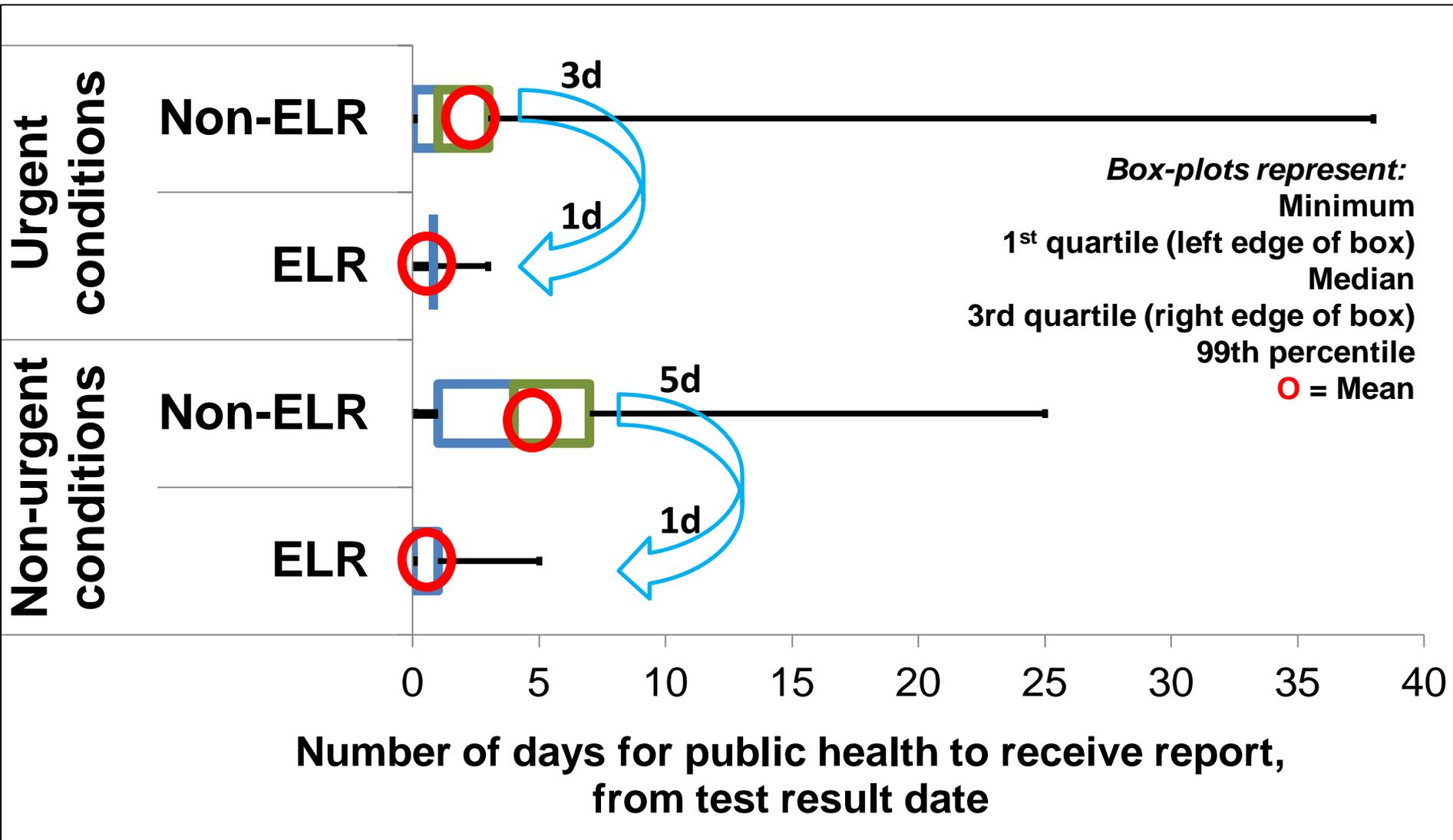
Urgent



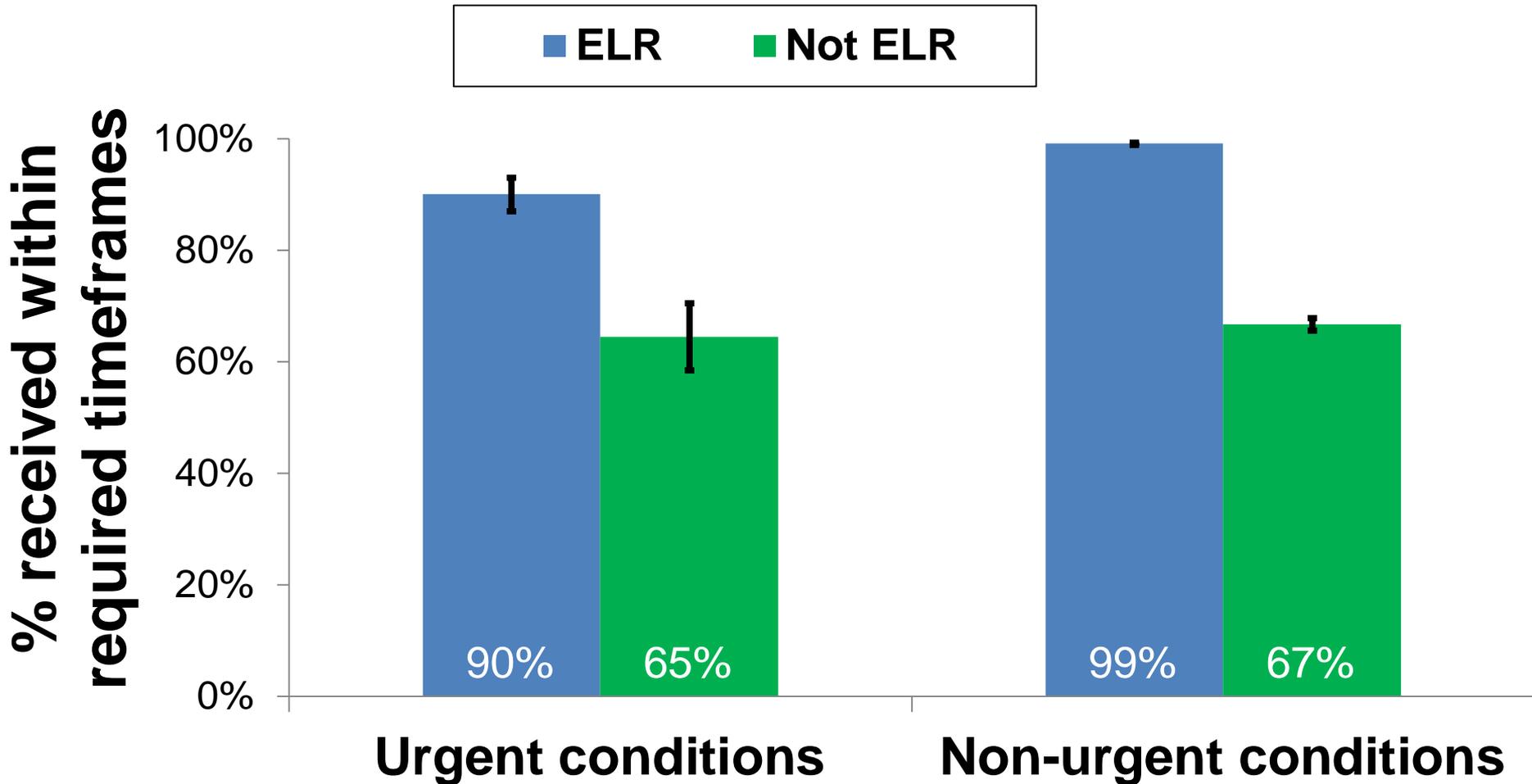
Non-urgent



ELR reporting is significantly faster than non-ELR reporting, and less variable



ELR reports are more likely to be received within required timeframes



Error bars represent the 95% confidence interval for the proportion

Our evidence demonstrates...

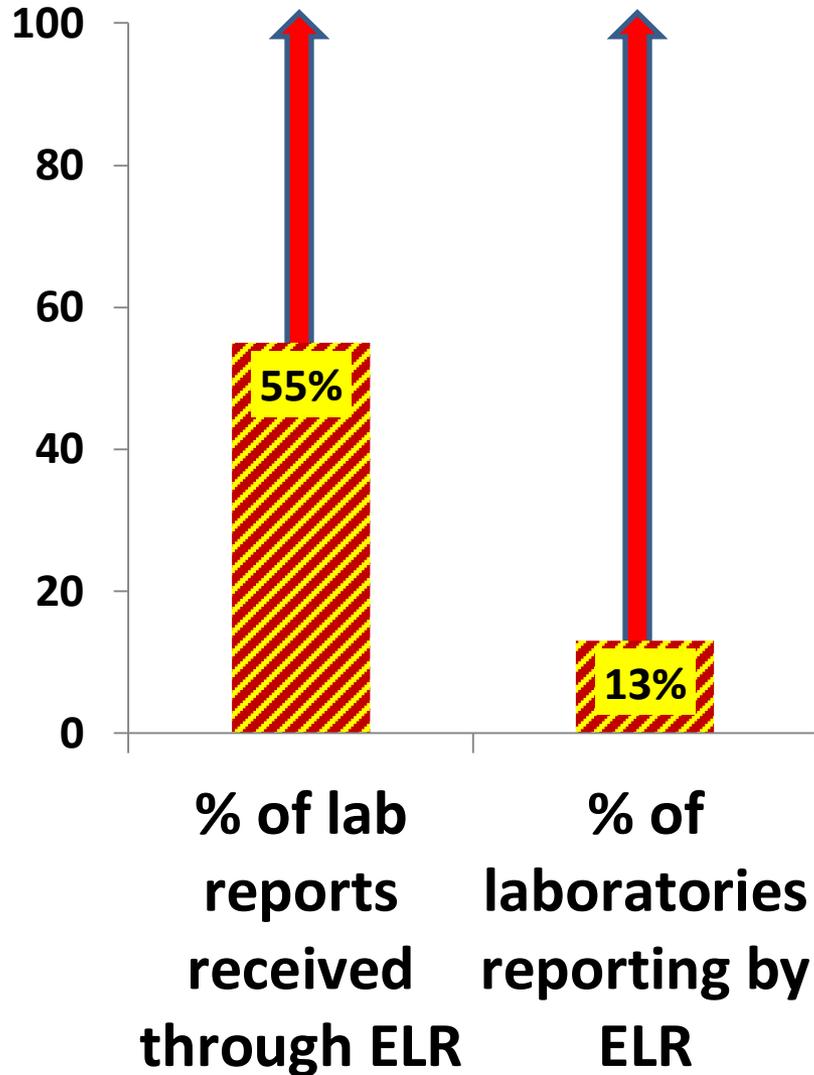
- Significantly faster reporting from laboratories via ELR than by traditional methods, for both urgent and non-urgent communicable diseases
- A much higher proportion of ELR reports received within the required timeframes
- Less overall variability in reporting timeframes for reports received by ELR

...YES, ELR is helping achieve more timely communicable disease reporting within Arizona!



Where do we go from here?

Keep adding to ELR!



- Continue to gather data prospectively through our surveillance system that can be used for evaluation.
- Regular repetition of this analysis:
 - Do these outcomes continue to be achieved?
 - Does reporting timeliness improve even more, with additional labs on ELR?

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<http://www.azdhs.gov/meaningful-use/electronic-lab-reporting/>

Contributors:

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Sonja Radovanovic

*Check out our handout for
more details about the
evaluation!*

ELR vs. Non-ELR

Paper, Fax, & Mail

Electronic Laboratory Reporting

Evaluation Question

Is ELR helping achieve more timely communicable disease reporting within Arizona?

YES!

Significantly faster reporting from ELR compared to traditional methods

Average number of days for public health to receive report

Report Type	Reporting Requirement	Non-ELR (Days)	ELR (Days)
Urgent Reports	* 24 Hour & 1 Day Reporting Requirement	3	1
		3	1
Non-Urgent Reports	* 5 Day Reporting Requirement	5	1
		5	1

For more information about electronic laboratory reporting, please visit www.azdhs.gov/Meaningful-Use/ELR

Arizona Department of Health Services