



# USE OF IMMUNIZATION INFORMATION SYSTEM (IIS) IN VACCINATING INMATES DURING HEPATITIS A OUTBREAK IN SAN DIEGO

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*San Diego Health and Human Services Agency*

*Public Health Services*



# SAN DIEGO IMMUNIZATION REGISTRY (SDIR)



LIVE WELL  
SAN DIEGO

- **ELECTRONIC IMMUNIZATION INFORMATION SYSTEM (IIS) USED TO IMPROVE IMMUNIZATION LEVELS**

Database for patient medical record retention and mobility

“Vaccine due” forecast to providers (clinical decision support)

OTHER IMMUNIZATIONS/PROPHYLAXIS RECEIVED Active immunizations/prophylaxis record			
This space is provided to record immunizations/prophylaxis that are not required for entrance into any country but have been obtained by the traveler for additional health protection (immune globulin, malaria, measles, etc.)			
Date	Vaccine/prophylactic drug vaccine/immunization prophylaxis	Dose	Physician's signature
APR 25 2008	HEPATITIS A	1.0mL	HEALTHY TRAVELER CLINIC BRIAN G. TERRY, M.D.
APR 25 2008	HEPATITIS B	1.0mL	HEALTHY TRAVELER CLINIC BRIAN G. TERRY, M.D.
APR 25 2008	TETANUS/DIPHTHERIA	0.5 mL	HEALTHY TRAVELER CLINIC BRIAN G. TERRY, M.D.
APR 25 2008	TYPHOID	ORAL	HEALTHY TRAVELER CLINIC BRIAN G. TERRY, M.D.
APR 25 2008	POLIO	0.5mL	HEALTHY TRAVELER CLINIC BRIAN G. TERRY, M.D.
MAY 17 2008	RABAVERT	1.0mL	HEALTHY TRAVELER CLINIC BRIAN G. TERRY, M.D.
MAY 17 2008	RABAVERT	1.0mL	HEALTHY TRAVELER CLINIC BRIAN G. TERRY, M.D.
JUN 26 2008	RABIES (IMOVAX)	1.0 ML	HEALTHY TRAVELER CLINIC BRIAN G. TERRY, M.D.
JUN 26 2008	HEPATITIS B	1.0 mL	BRIAN TERRY, MD



Reduces over- or under-vaccination; increases community immunization coverage rates

Confidential, secure – SDIR operates under California Health and Safety Code 120440

# SDIR CAPACITY



LIVE WELL  
SAN DIEGO



2.7 million patients  
in SDIR

3.3 million people in  
San Diego County\*

32 million  
immunizations in  
SDIR

\*Source: U.S. Census Bureau, 2016 estimates

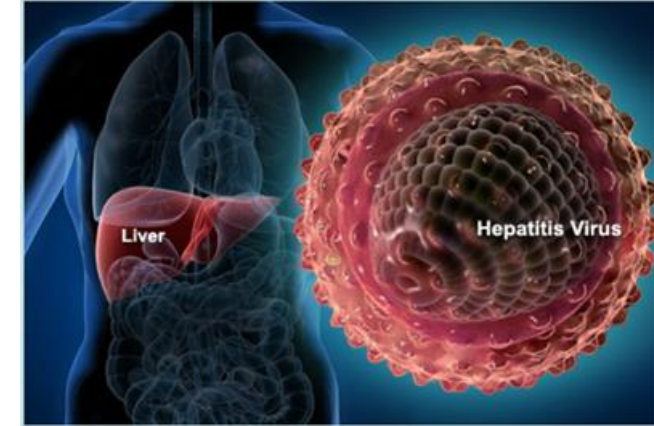
# HEPATITIS A OVERVIEW



LIVE WELL  
SAN DIEGO

## WHAT IS HEPATITIS?

- Hepatitis means inflammation of the liver
- Can be caused by alcohol, infection, toxins, medication or some medical conditions
- Can be temporary (acute) or long term (chronic) depending on whether it lasts more or less than 6 months
- Viral hepatitis can be caused by Hepatitis A, B, or C

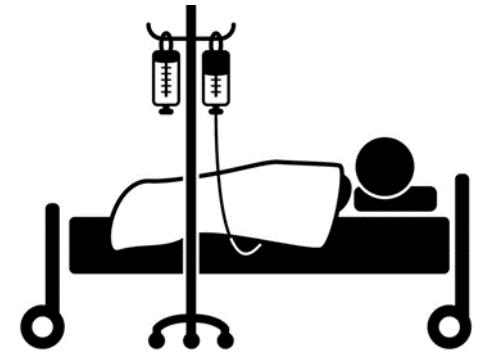


# HEPATITIS A OVERVIEW



LIVE WELL  
SAN DIEGO

- Hepatitis A virus (HAV) can easily spread from person-to-person
  - Touching objects or eating food that someone with a Hep A infection handled
  - Close person-to-person contact with an infected person
  - Use of recreational drugs, whether injected or not
  - Sexual contact with someone who has a Hep A infection
- May cause liver disease or death
- Average incubation period for HAV is 28 days (range: 15–50 days)
- HAV can live outside the body for months, depending on the environmental conditions
- Vaccination with the full, two-dose series of HAV vaccine is the best way to prevent infection



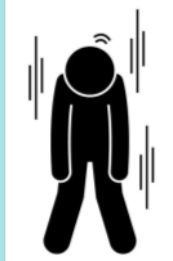
# WHAT ARE THE SYMPTOMS?



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**Fever**



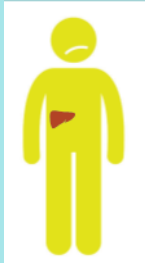
**Fatigue**



**Nausea**



**Loss of Appetite**



**Jaundice**



**Stomach Pain**



**Vomiting**

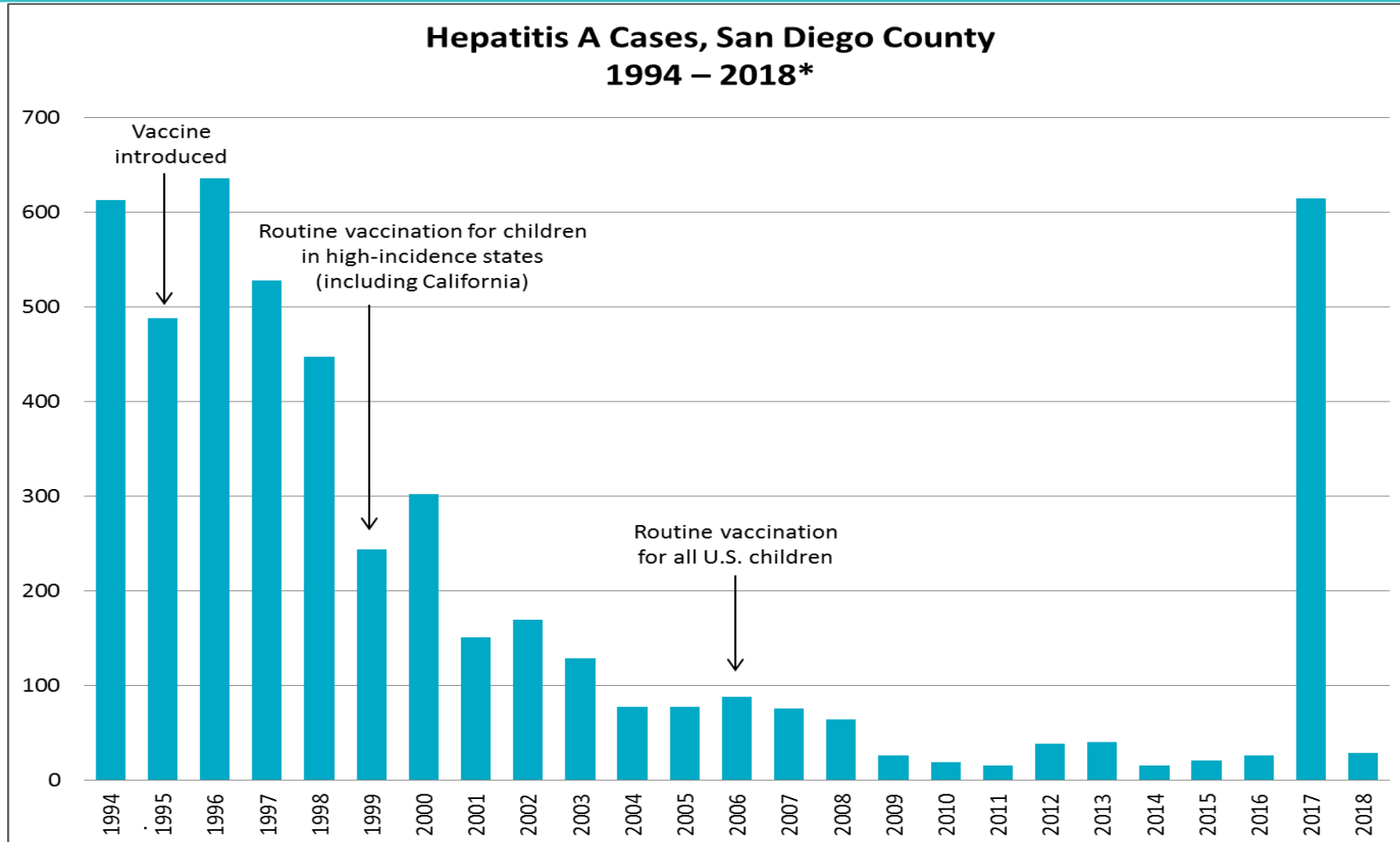


**Dark Urine, Pale  
Stools, and  
Diarrhea**

# HEPATITIS A IN SAN DIEGO



LIVE WELL  
SAN DIEGO



\*Year to date. Prepared by County of San Diego, Health & Human Services Agency, Public Health Services, Epidemiology & Immunization Services, 08/10/2018

Note: Graph includes CSTE-confirmed AND outbreak related cases.

# HEPATITIS A IN SAN DIEGO



LIVE WELL  
SAN DIEGO

- Large increase in monthly cases starting March 2017
- Cases included persons with substance use problems, homeless; few were travelers
- No common sources of infection identified
- Investigations continued
- County outreach to vulnerable populations
- Local health emergency on September 1, 2017



# HEPATITIS A IN SAN DIEGO



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SAN DIEGO

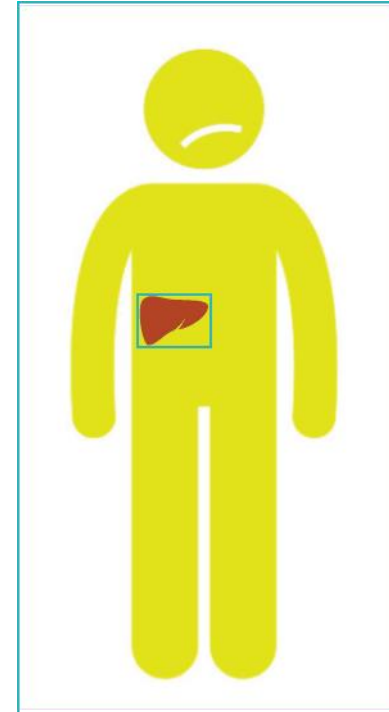
**591 confirmed or probable outbreak cases (504 confirmed)**

**From 11/22/2016 thru 7/19/2018**

- 406 (69%) hospitalizations, 20 (3%) deaths
- 403 (68%) male, 188 (32%) female
- Age range 5-87 (mean/average 44)

## **Suspected Exposure Type**

- 201 (34%) homeless and illicit drug use
- 91 (15%) homeless only
- 78 (13%) illicit drug use only
- 167 (28%) neither (suspected exposures not found upon interview)
- 54 (9%) unknown



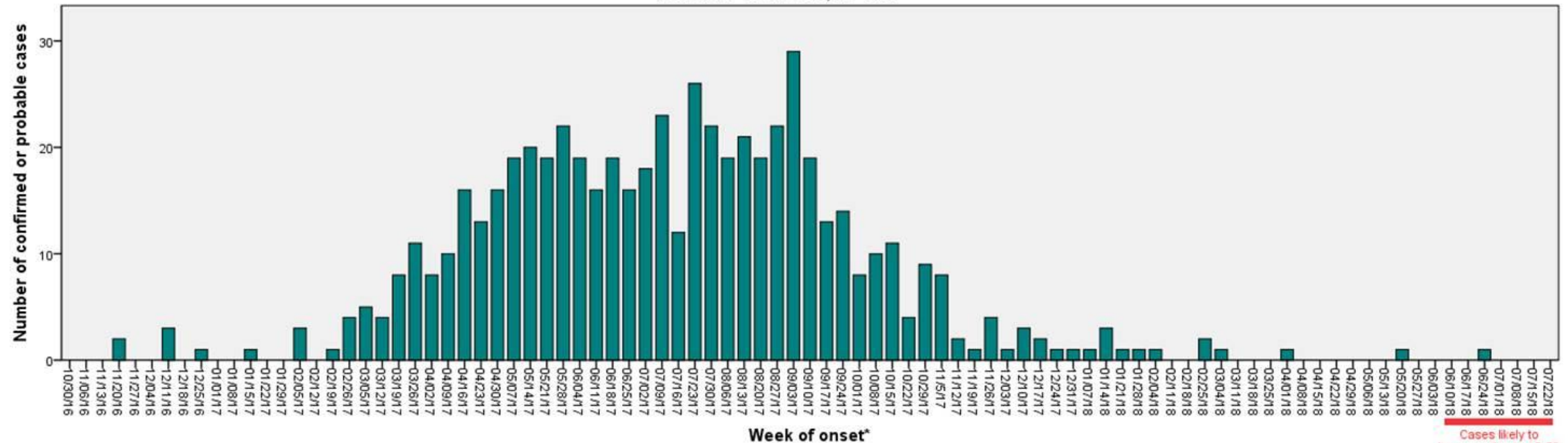
# EPIDEMIOLOGY CURVE



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## Outbreak-associated Hepatitis A cases by onset week

11/1/2016–7/27/2018, N = 591\*



\*Date of specimen collection or report used if onset date unknown; dates may change as information becomes available

Cases likely to increase due to 15-50 day incubation period and reporting delays

# PREVENT HEPATITIS A FROM SPREADING



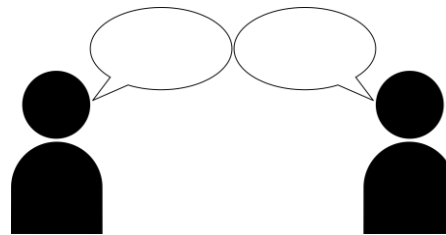
LIVE WELL  
SAN DIEGO

## ■ CALL TO ACTION

1. IMMUNIZATION

2. SANITATION

3. EDUCATION

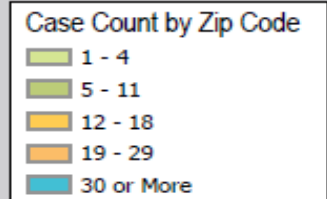


# IMMUNIZATION



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Number of Hepatitis A Outbreak  
Associated Cases with Available  
Location Data by Zip Code(s)



These data reflect the patient's reported Zip Code and may not necessarily reflect the Zip Codes where the hepatitis A case exposure occurred.

Zip Codes with a population of less than 5,000 residents are combined with neighboring Zip Codes.

Of the 591 total cases, 91 cases are not mapped due to incomplete location information.

Data is preliminary and subject to change based on new information.

**591**

Cases

as of 7/27/2018

**3,707**

Vaccination Field Events

4/7/2017 - 8/1/2018

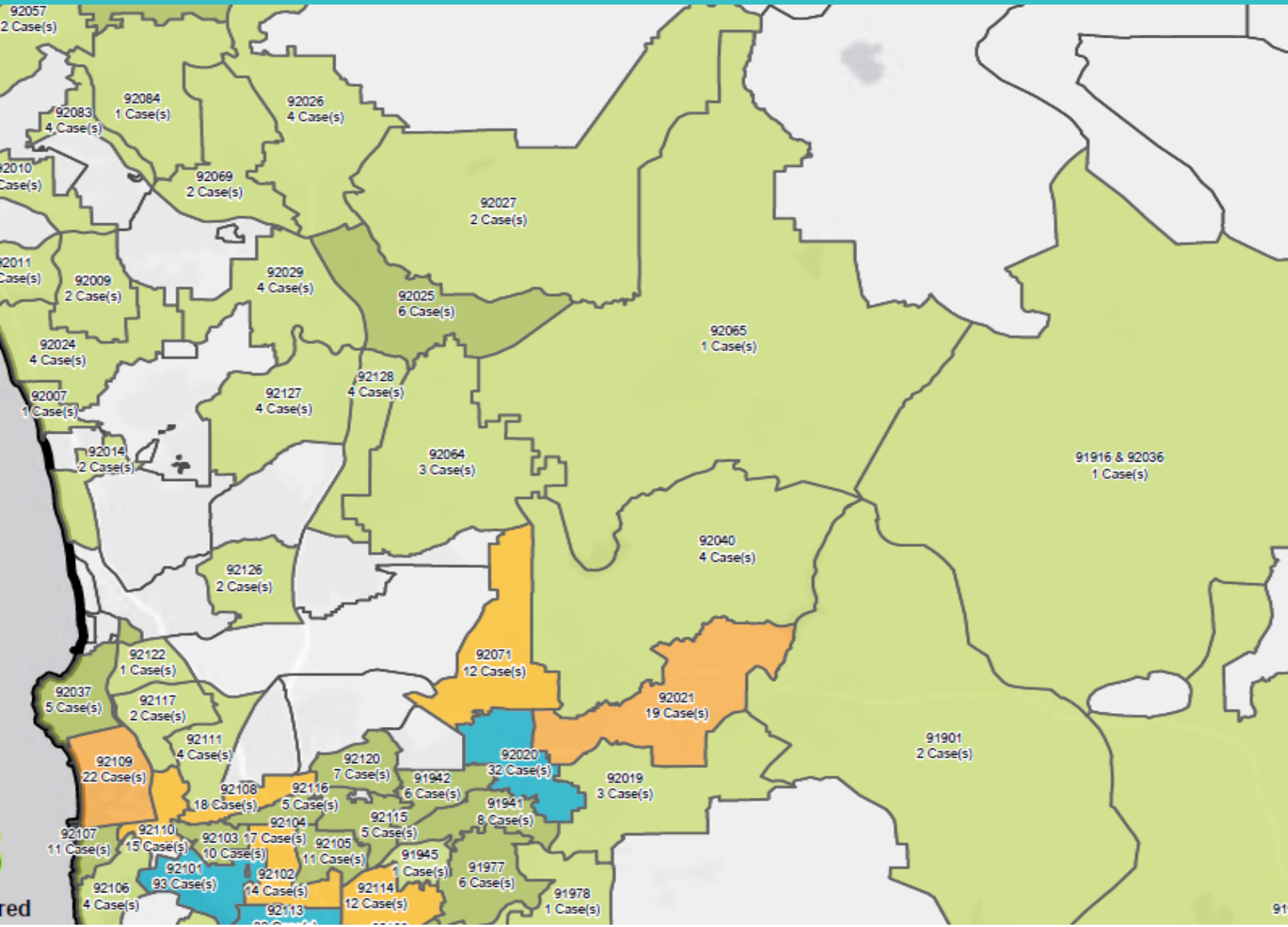
**32,731**

Field Vaccinations

3/5/2017 - 8/1/2018

**194,038**

Total Vaccinations Administered



# JAILS & DETENTION CENTERS CASES



LIVE WELL  
SAN DIEGO

- 49\* cases (8%) with jail/detention facility exposure reported
  - George Bailey – 18 cases with onset/episode dates: 3/12/17-11/10/17
  - Central Jail – 31 cases with onset/episode dates: 3/12/17-11/21/17
  - Vista Detention – 4 case with onset/episode date: 4/11/17-3/2/18
  - Las Colinas – 7 cases with onset/episode dates: 3/21/17-3/2/18
  - East Mesa Detention – 2 cases with onset/episode date: 4/11/17-7/21/17

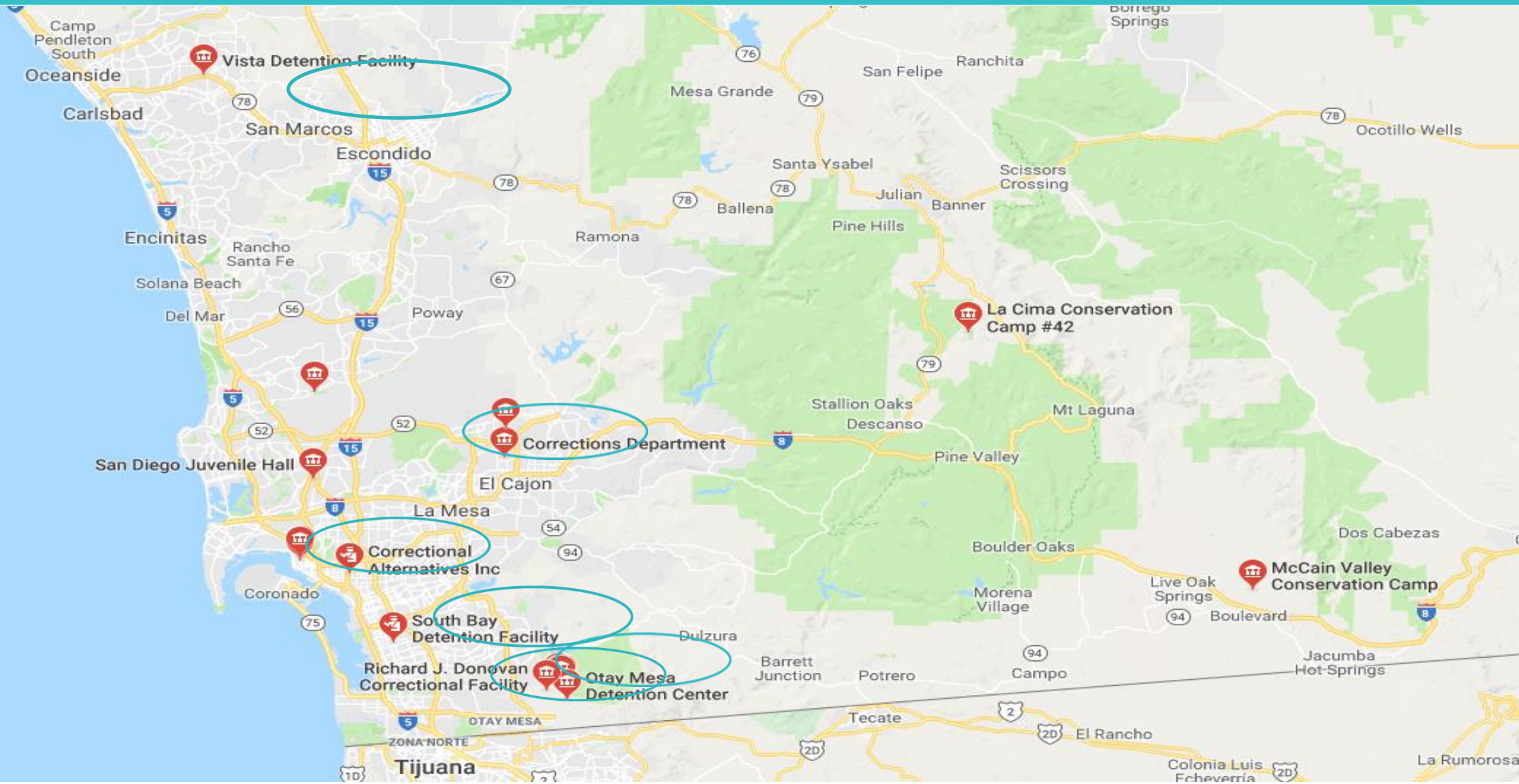
\*Total is less than the sum of above due to cases located at more than one detention facility



# JAILS & DETENTION CENTERS IN SAN DIEGO



LIVE WELL  
SAN DIEGO



# JAILS & DETENTION CENTERS IN SAN DIEGO



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- Push to immunize in jails started in April 2017
  - HHSA worked with the jail administrators to conduct mass vaccinations in the adult jails/detention center facilities.
- Immunization initiatives
  - Central Jail: Monday-Wednesday and Friday
    - Began 7/3/17 and continued through 9/29/17, paused for an all-inmate/multi-facility vaccination initiative 10/2/17-10/17/17, and resumed 10/20/17.
  - Vista Detention Facility: Monday, Wednesday, and Friday began 12/6/17

# IMMUNIZING IN THE JAILS/DETENTION FACILITIES



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- Lists of inmates were electronically queried against SDIR to assess individual vaccination status.
- After an initial comparison of inmates in September 2017, lists were sent weekly to SDIR staff for update prior to immunization events.
- In addition, upon inmate intake processing, immunization status was also checked in SDIR daily.



# PROCESS TIMELINE



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- After an initial match at the end of September, lists of inmates were sent to SDIR for Hepatitis A immunization matching checks for two facilities: San Diego Central Jail and Vista Detention Facility

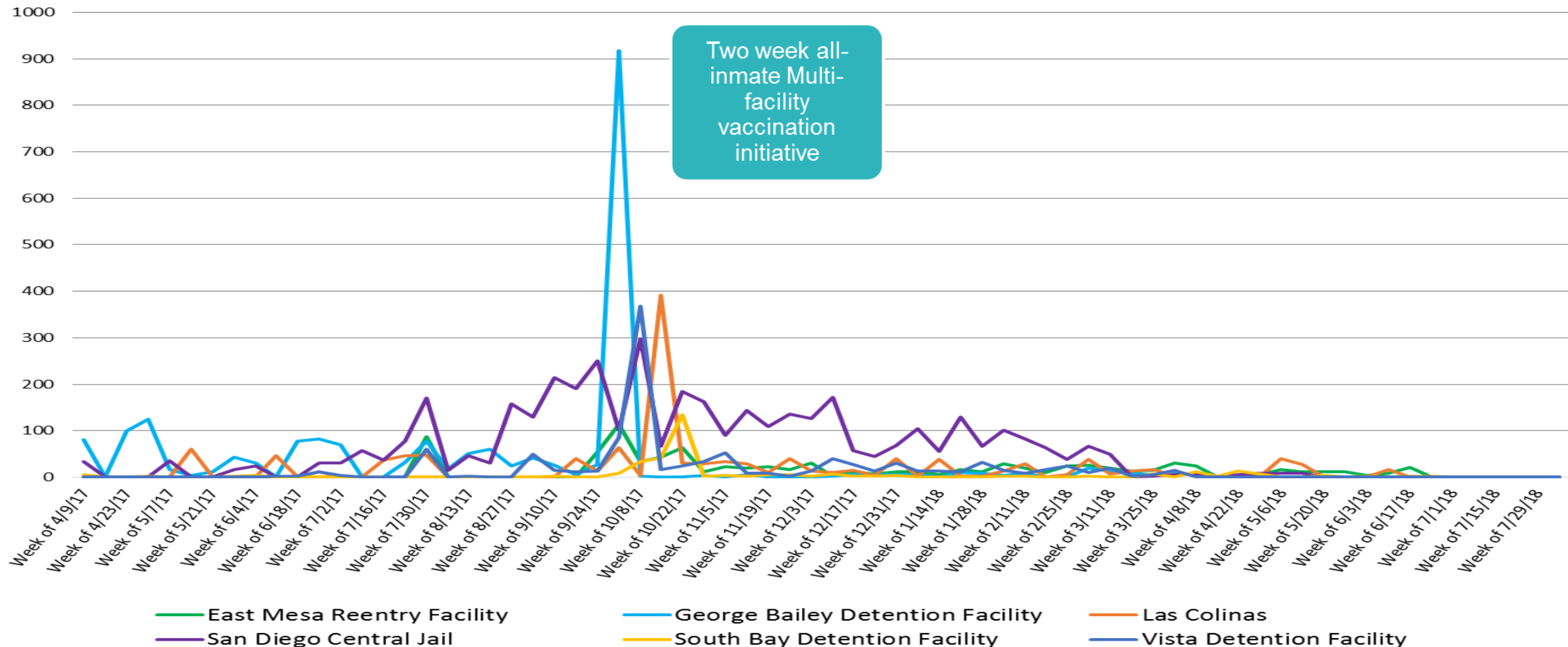


# VACCINATIONS OVER TIME



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## Number of Hepatitis A Vaccinations Given Per Week at Jails/Detention Facilities: April 2017 - August 2018

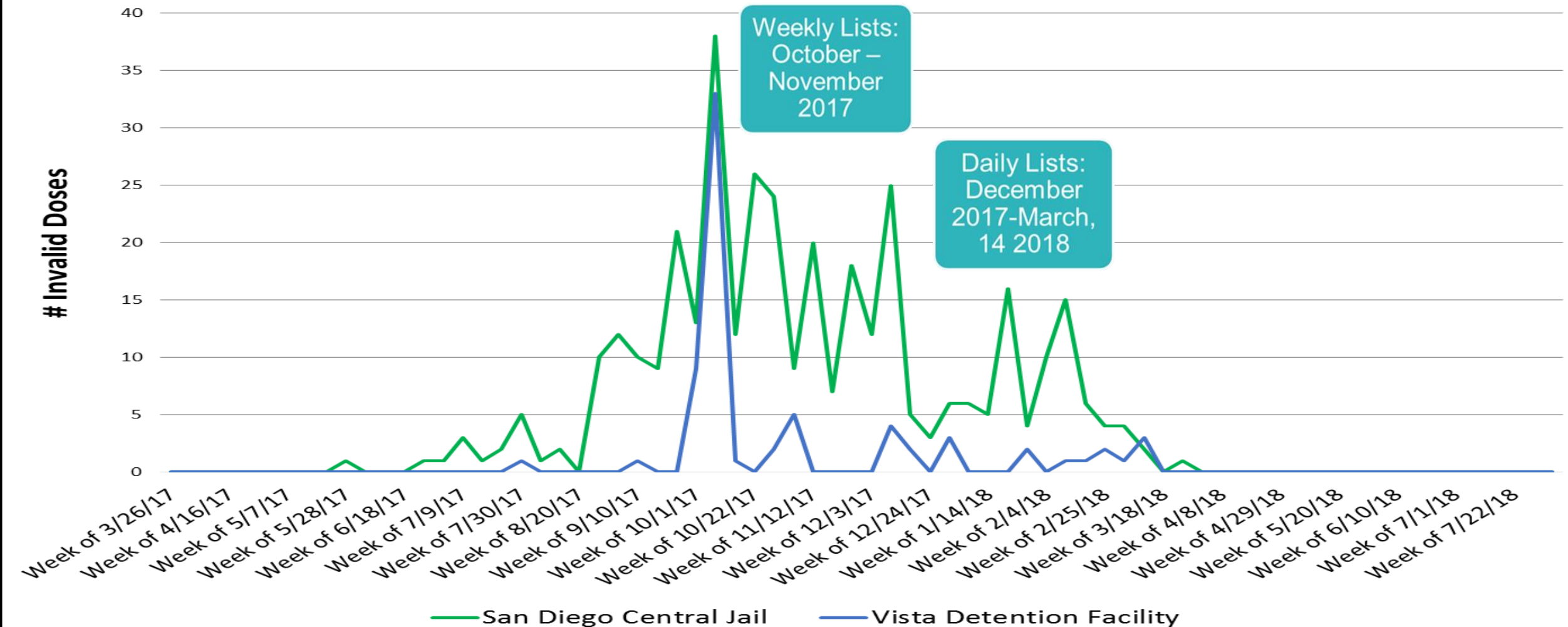


# INVALID VACCINATIONS OVER TIME



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## Invalid Hepatitis A Doses Given by Jails/Detention Facilities: 2017-2018



# RESULTS



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- Of the initial 6,069 list of inmates sent to SDIR for matching in September 2017, 3,237 (53%) were found to have Hepatitis A vaccination records.
- The remaining 2,832 (47%), as well as incoming inmates, were offered the vaccination.
- From April 2017 through mid-August 2018, there were 9,768 Hepatitis A vaccinations administered in the jails/detentions facilities.

Jail/Detention Facility	# HAV Vaccines Administered	% of Total
East Mesa Reentry Facility	893	9.1%
George Bailey Detention Facility	2052	21.0%
Las Colinas	1282	13.1%
San Diego Central Jail	4114	42.1%
South Bay Detention Facility	339	3.5%
Vista Detention Facility	1088	11.1%

# RESULTS (CONT.)



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- Decreased invalid vaccinations after implementation of weekly and daily lists queried against SDIR
  - San Diego Central Jail: Invalid dose rate/1000 doses administered decreased from 125 to 91 (down 27%)
  - Vista Detention Facility: Invalid dose rate/1000 doses administered decreased from 81 to 59 (down 27%)



# LIMITATIONS



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- Matching algorithms in SDIR cannot find individuals if names are spelled incorrectly, transposed, or if aliases were used
- Connectivity issues in the jails made computer work challenging
  - No cell phones allowed
  - Daily lists as opposed to real-time query of SDIR

# CONCLUSIONS



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- Immunization Information Systems (IIS) may be used in Public Health emergencies to assist with mass vaccination campaigns in targeting at-risk individuals.
- Immunization Information Systems (IIS) may be used in Public Health emergencies to prevent unnecessary vaccinations.
- SDIR can be a powerful tool in monitoring immunization status in the community

# CONCLUSIONS



LIVE WELL  
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- The use of SDIR during the Hepatitis A outbreak of 2017/2018 in San Diego County has shown its effectiveness in tracking vaccines
- County planning groups have used vaccination data to target geographical areas.
- Increased monitoring and feedback to providers who give invalid doses offers QI opportunities.



# THANK YOU!



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- Staff at jails/detention facilities
- PHN Supervising Nurses: Melissa Thun and Catherine Blaser
- PH Admin: Drs. Wilma Wooten and Sayone Thihalolipavan
- Senior Epidemiologist: Jeff Johnson
- EISB Chief: Karen Waters-Montijo
- SDIR Staff

