California Emerging Infections Program

Data Highlights

(through 2016)

We would like to thank you, our collaborators, for your continuing support and partnership with the California Emerging Infections Program (CEIP). Your collaboration has been invaluable in allowing us to collect important public health data and conduct timely epidemiological studies. Thanks largely to your assistance, the national EIP network continues to be widely recognized as an essential component of the nation's public health surveillance system and a leader in addressing threats to the nation's health caused by emerging infectious diseases.

Please find enclosed data highlights from the past several years for key CEIP projects including Active Bacterial Core surveillance (ABCs), Foodborne Diseases Active Surveillance Network (FoodNet), Healthcare-Associated Infections Community Interface (HAIC), Influenza Hospitalization Surveillance and HPV Impact. For more information please visit www.ceip.us or www.cdc.gov/ncpdcid/deiss/eip/index.html.

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Please feel free to contact us with any questions.
360 22nd St, Suite 750 Oakland, CA 94612 | 510-451-1344 | info@ceip.us

Active Bacterial Core (ABCs)

Active Bacterial Core (ABCs) is an active, population-based surveillance effort in Alameda, Contra Costa and San Francisco counties. ABCs determines the incidence and epidemiologic characteristics of invasive disease due to Group A *Streptococcus* (GAS), Group B *Streptococcus* (GBS), *Haemophilus influenzae*, *Neisseria meningitidis*, and *Streptococcus pneumoniae*.

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Streptococcus pyogenes (GAS) and *Streptococcus agalactiae* (GBS) on the rise

We thank laboratorians for your isolate submissions!
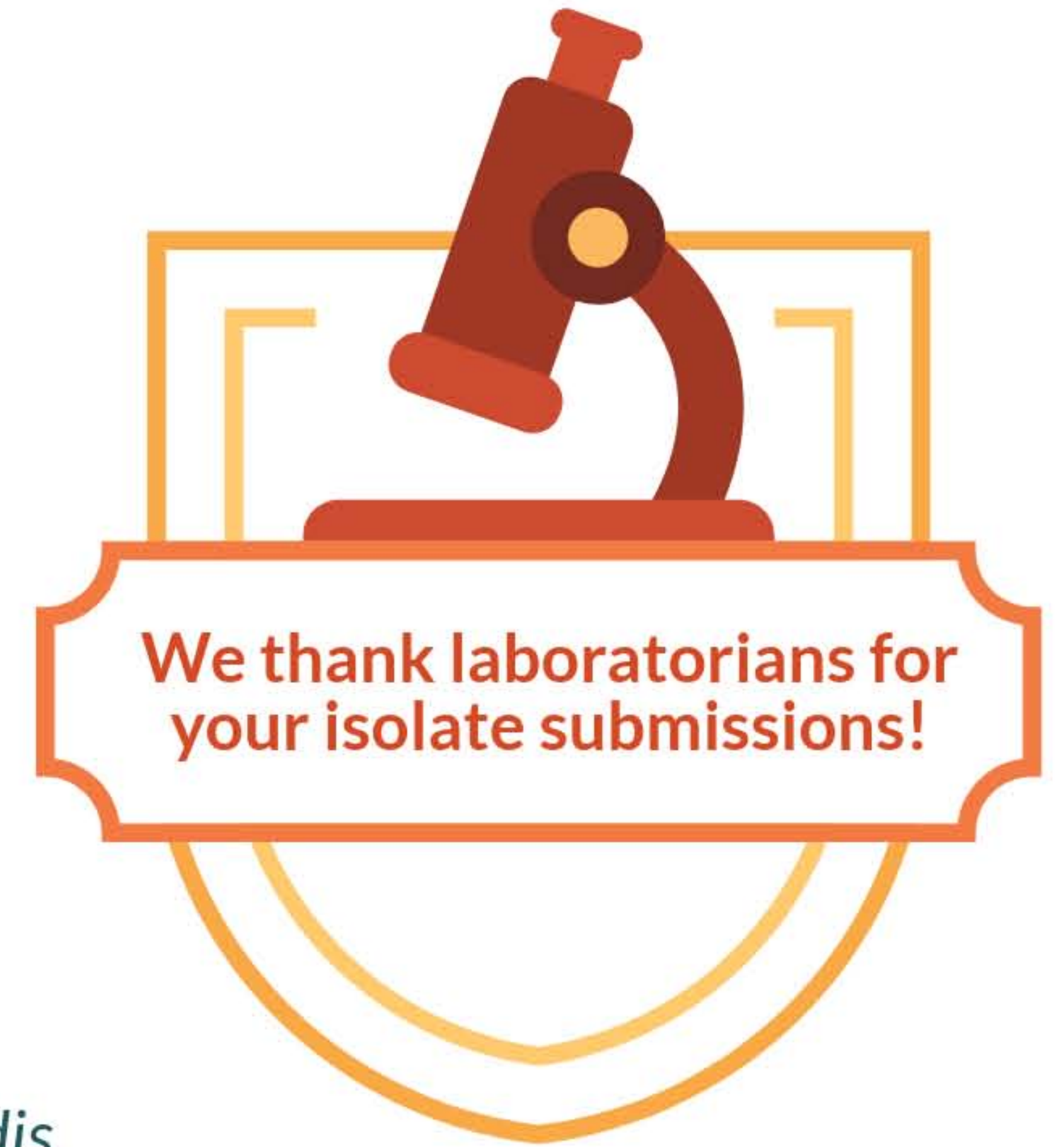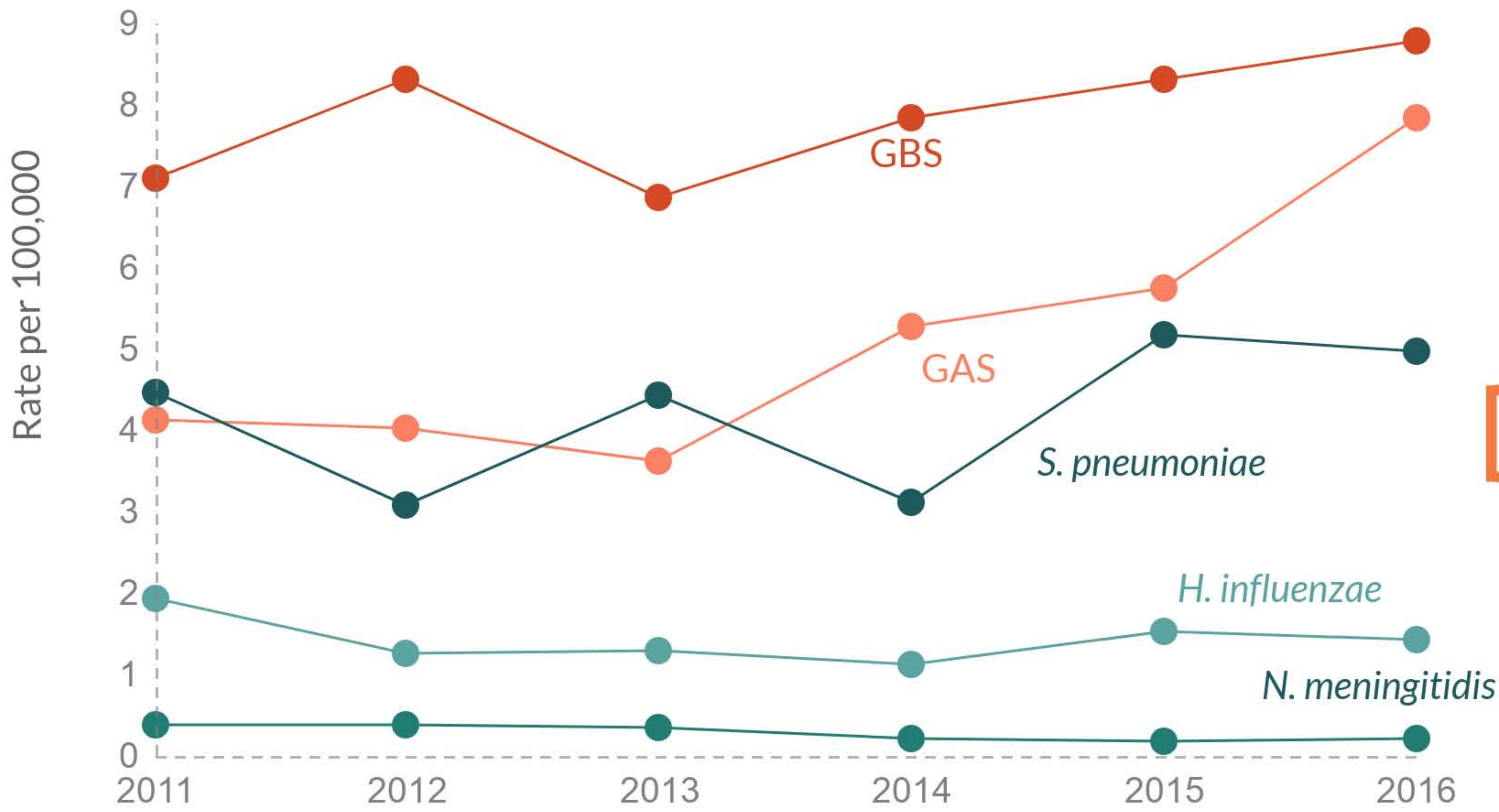
GAS strains are categorized by variation in the nucleotide sequence of the gene (emm) that encodes the M protein. A cluster of GAS **emm Type 49** cases occured in 2015 in the SF Bay Area.

Most common GAS *emm* types in the SF Bay Area, 2010-2015

Legend: 1, 49, 82, 89, 92
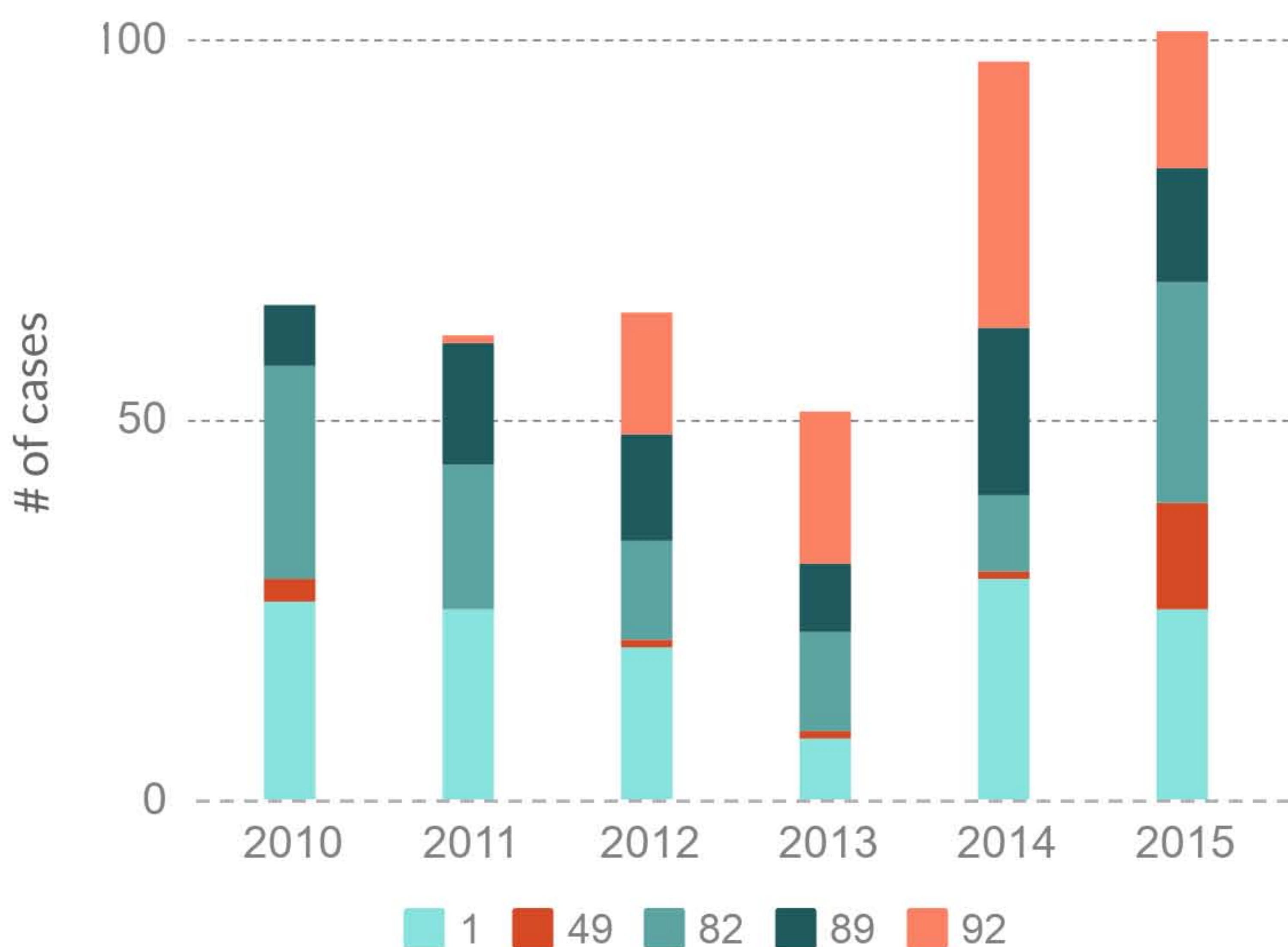
Invasive pneumococcal disease caused by PCV13 serotypes declines for all ages in SF County

ABCs also provides infrastructure for **research**, such as identifying risk factors for disease, post-licensure evaluation of vaccine efficacy, and evaluation of prevention efforts.

Foodborne Diseases Active Surveillance Network (FoodNet)

FoodNet conducts active, population-based surveillance in Alameda, Contra Costa, and San Francisco counties for pathogens commonly transmitted through food including *Salmonella*, *Shigella*, *Campylobacter*, Shiga toxin-producing *Escherichia coli* (STEC) O157 and non-O157, *Listeria monocytogenes*, *Yersinia*, *Vibrio*, *Cryptosporidium*, and *Cyclospora*.

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In Sept 2014, a large regional lab began using a PCR panel, a type of **culture independent diagnostic test (CIDT),** to diagnose *Salmonella*, *Shigella*, *Campylobacter*, and STEC infections

## Impact of **CIDTs** on **culture-confirmed** case counts of *Salmonella*, *Shigella*, and *Campylobacter*

Legend: ■ Culture-confirmed ■ CIDT

Salmonella

Shigella
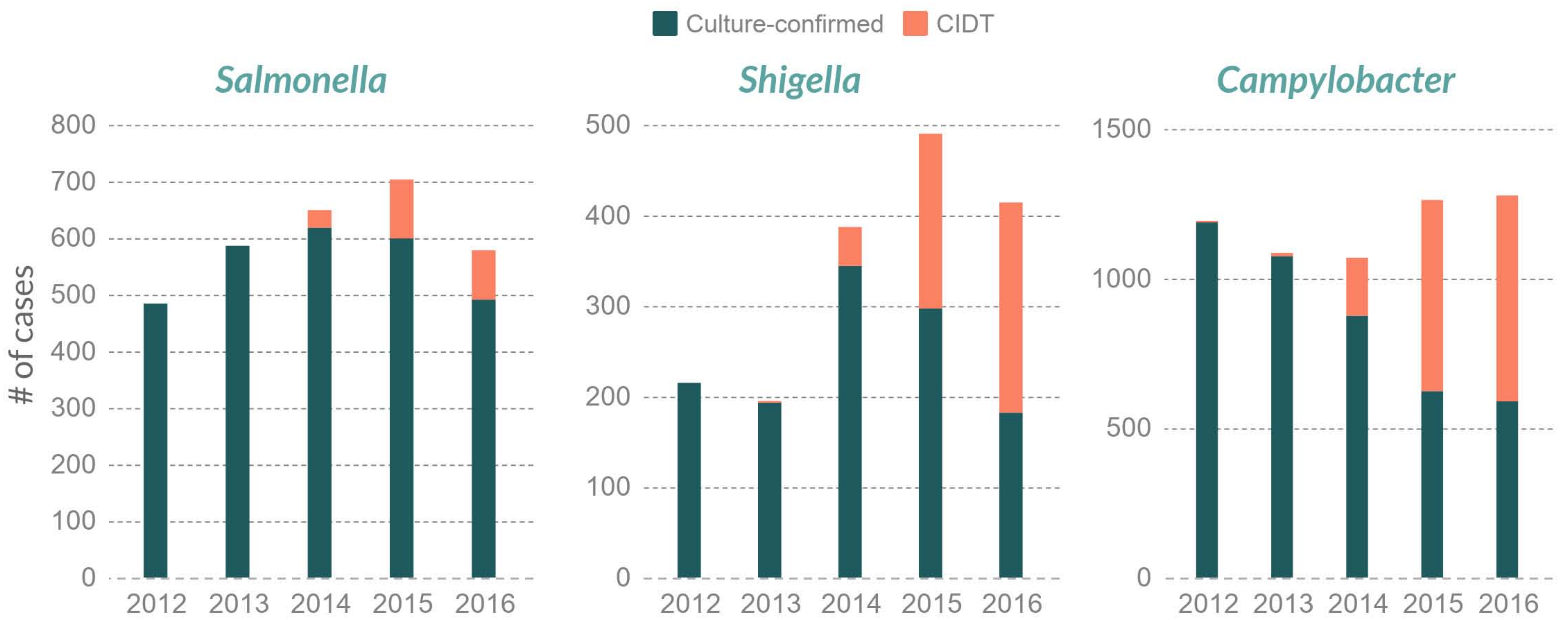
Campylobacter

Detections of STEC non-O157 are on the rise

Legend: ■ STEC O157 ■ STEC non-O157 ■ Shiga toxin positive specimen
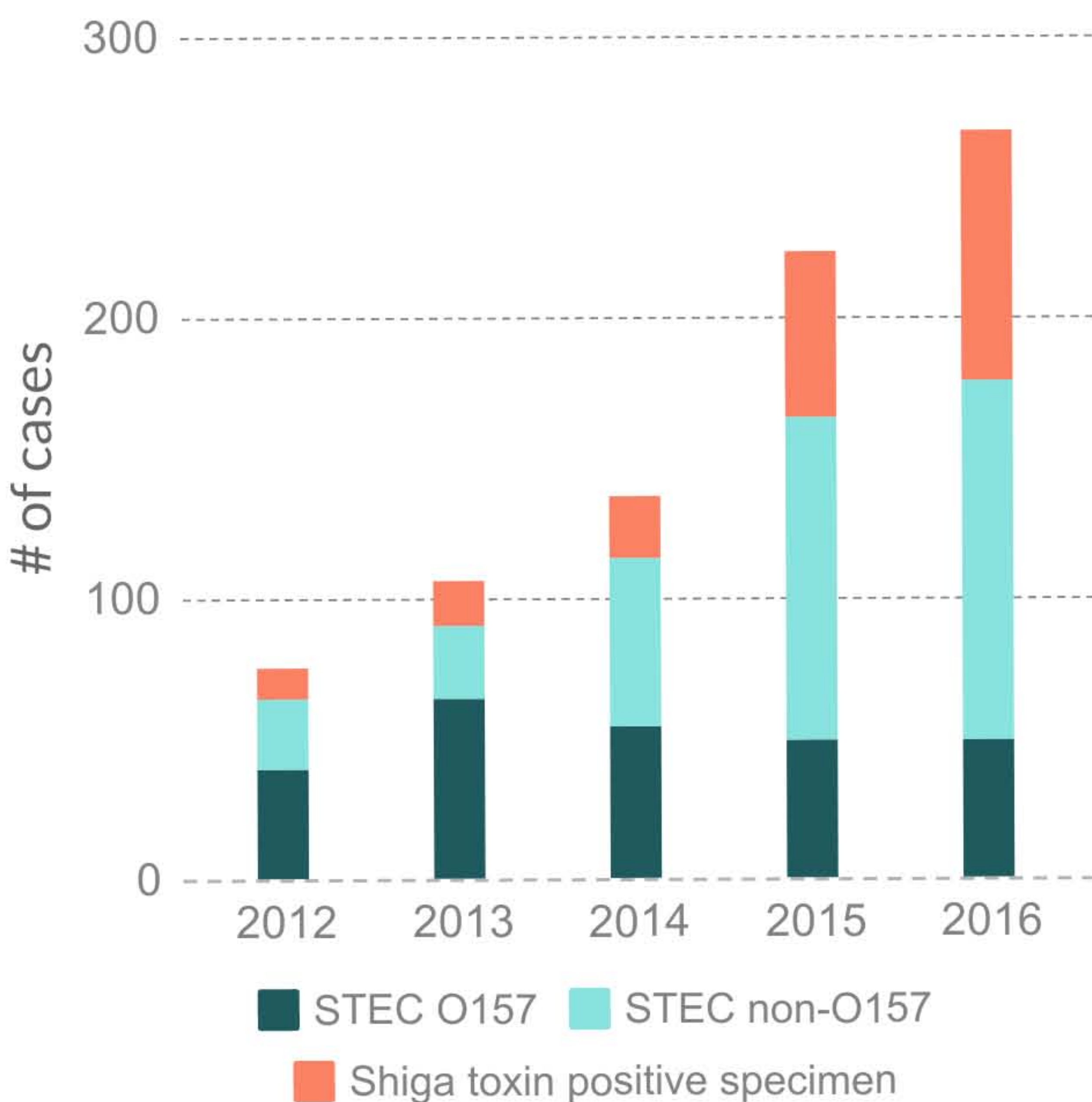
Campylobacter cases are not routinely interviewed by local health departments. In January 2016, CEIP staff began interviewing cases to ascertain high-risk exposures.

The proportion of interviewed cases reporting **international travel** during their incubation period varies by pathogen and county of residence, 2016

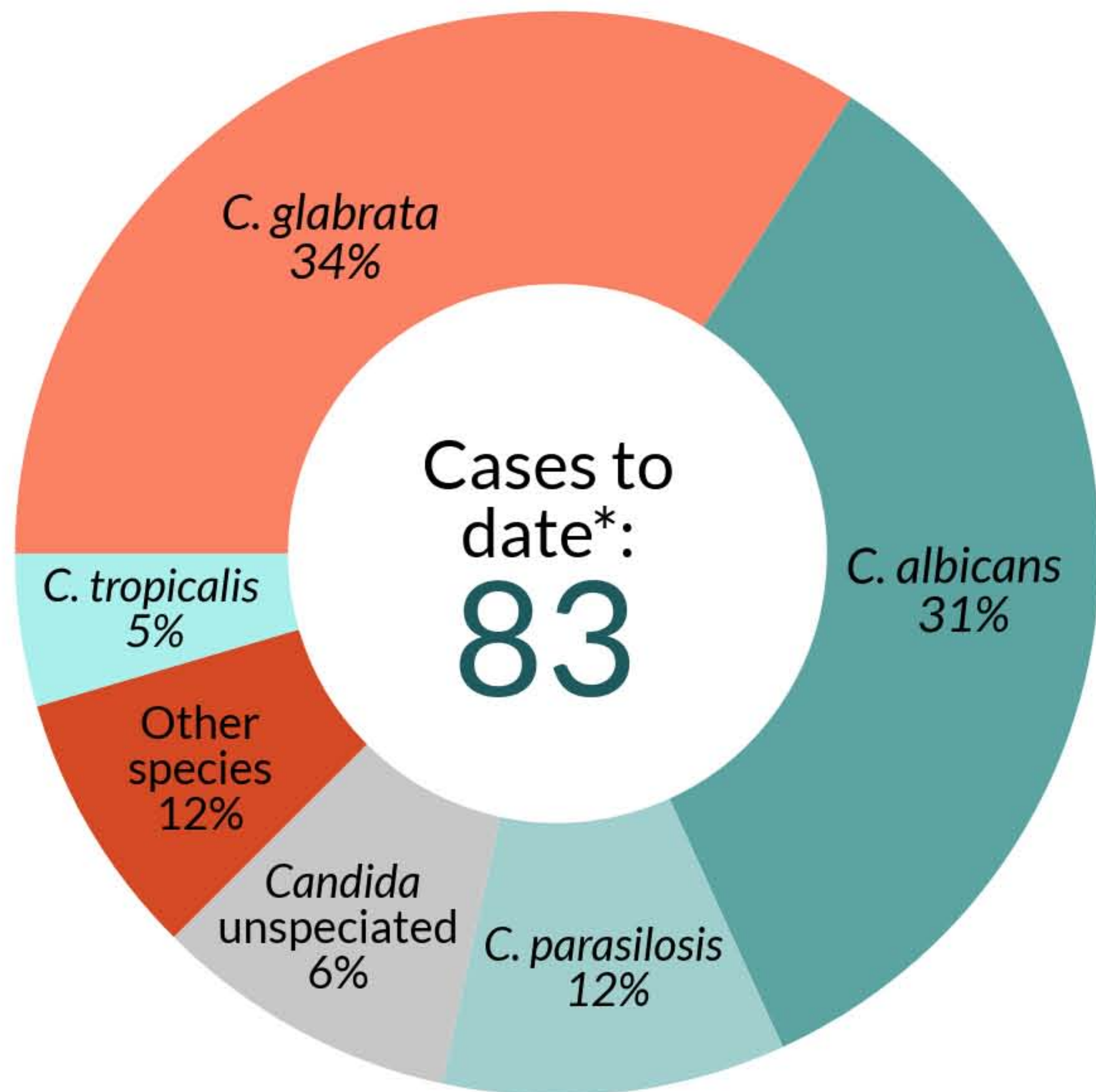Legend: ■ Alameda ■ Contra Costa ■ San Francisco
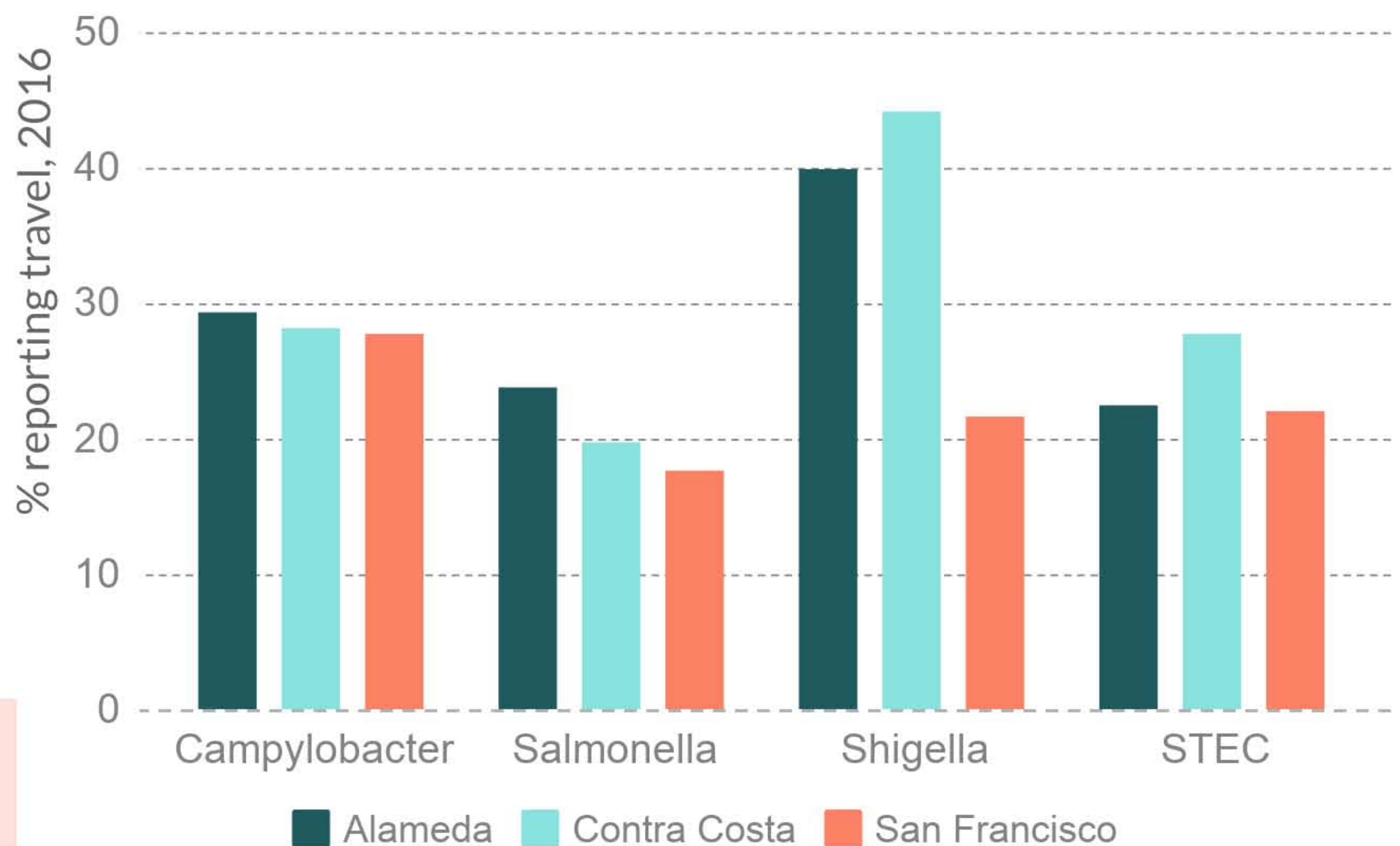
New! View data from all ten FoodNet sites using CDC's interactive data tool at www.cdc.gov/FoodNetFast

Healthcare-Associated Infections-Community Interface (HAIC)

HAIC conducts active, population-based surveillance for invasive methicillin-resistant *Staphylococcus aureus* (iMRSA) and methicillin-sensitive *Staphylococcus aureus* (iMSSA), *Candida spp.* and *Clostridium difficile.* Surveillance aims to help answer critical questions about emerging hospital-associated infections and antibiotic resistance, as well as to advance infection tracking methods.

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Distribution of *Candida* species causing blood stream infections in Alameda County, 2017

Cases to date*:
83

- C. glabrata 34%
- C. albicans 31%
- C. tropicalis 5%
- Other species 12%
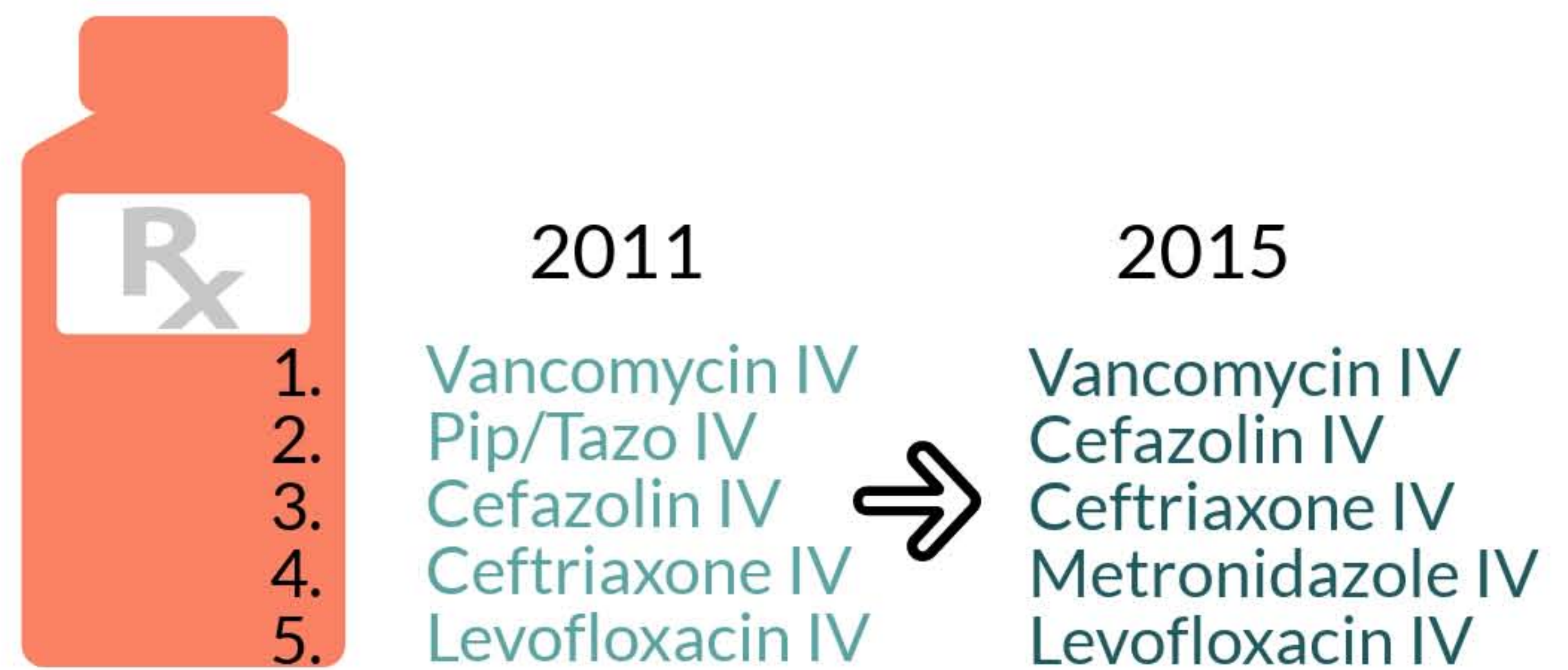- Candida unspeciated 6%
- C. parasilosis 12%

*cases from January 1-December 31, 2017

CEIP conducted the HAI and Appropriate Antimicrobial Use Prevalence Surveys in 2011 and 2015. The aim was to describe antimicrobial use in a large sample of U.S. acute care inpatients.
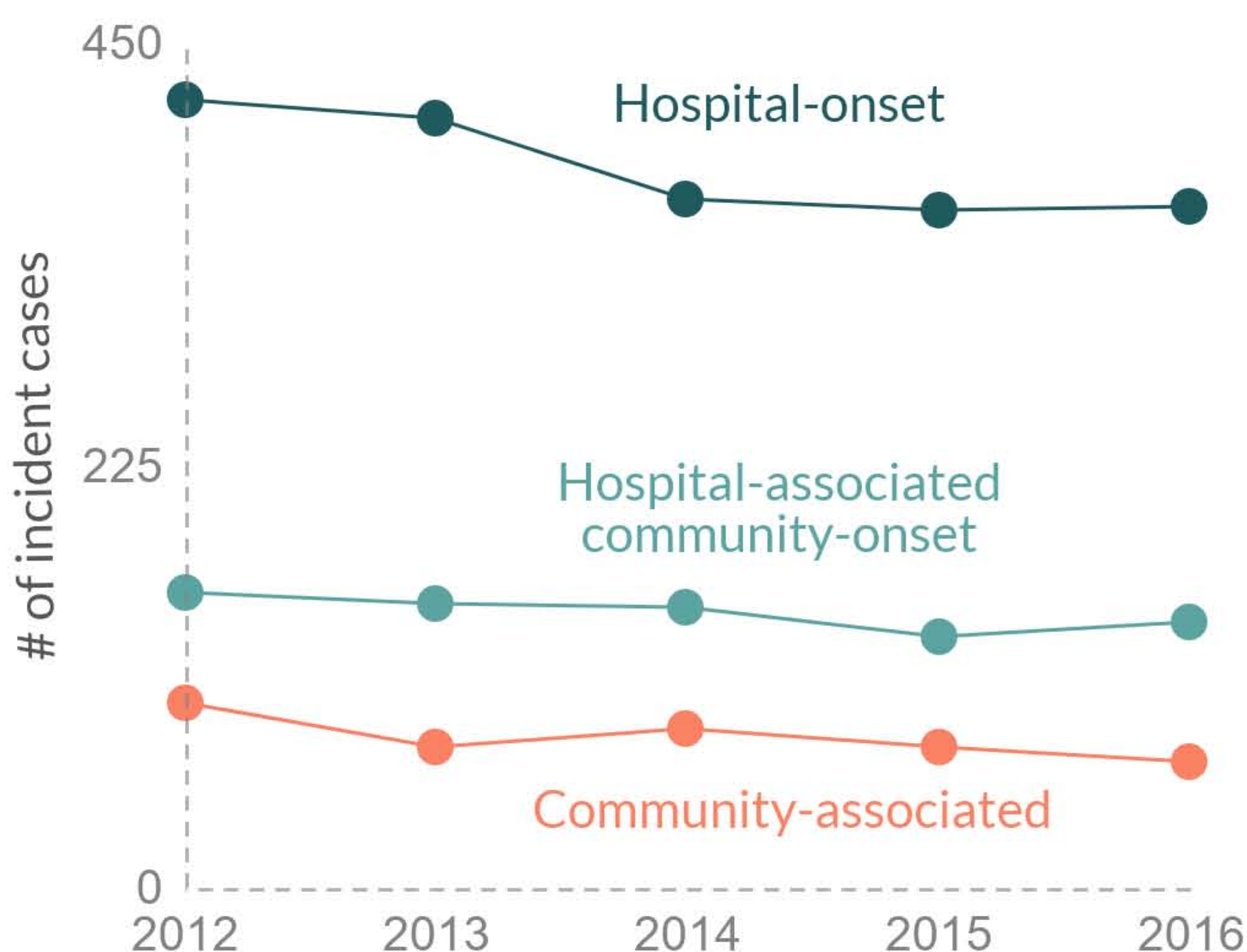
Changes in the top five antimicrobials prescribed in a sample of Bay Area hospitals

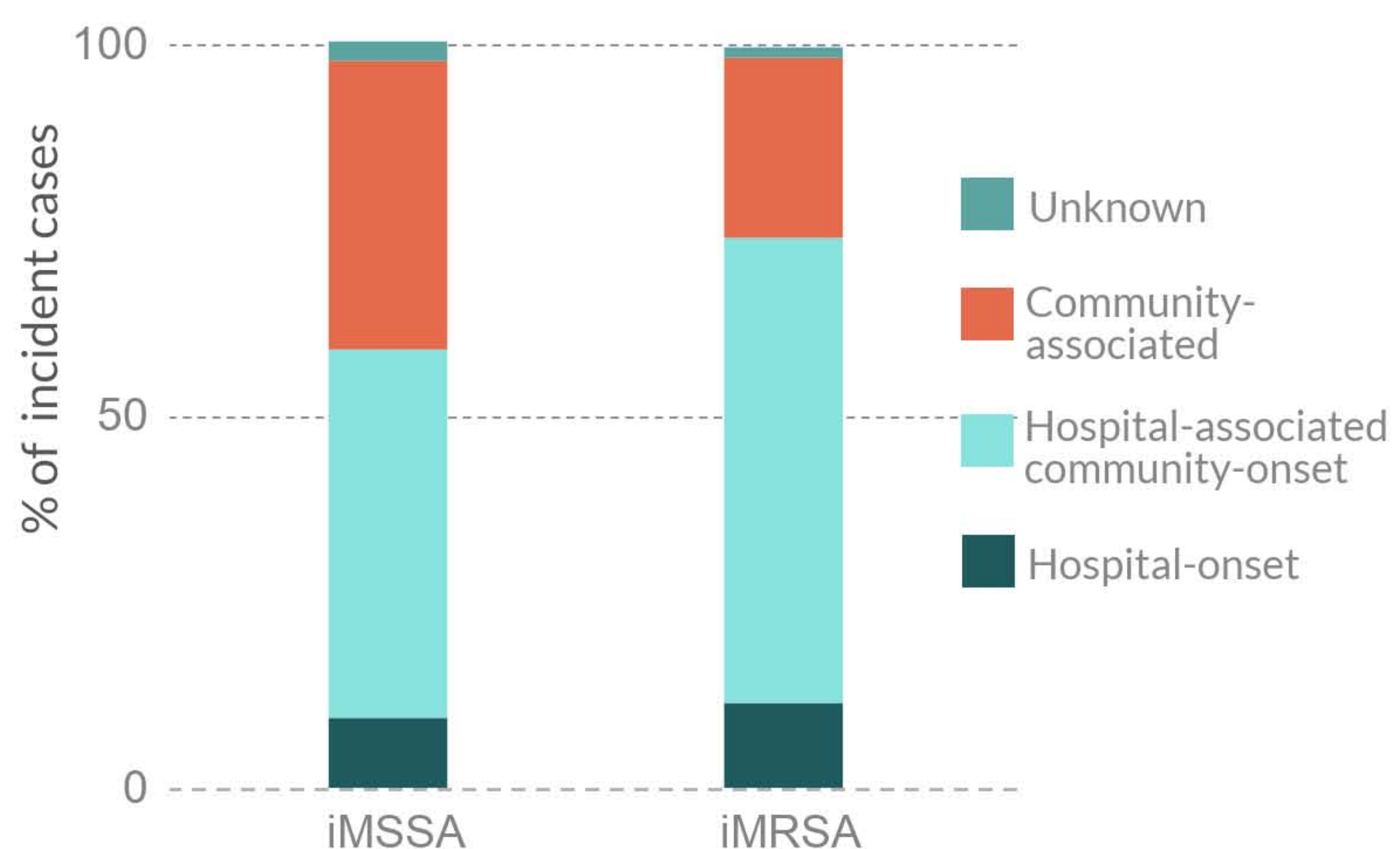|	2011	2015
1.	Vancomycin IV	Vancomycin IV
2.	Pip/Tazo IV	Cefazolin IV
3.	Cefazolin IV	Ceftriaxone IV
4.	Ceftriaxone IV	Metronidazole IV
5.	Levofloxacin IV	Levofloxacin IV

CEIP started iMSSA surveillance from isolated sterile sites on January 1, 2016. In 2016, there were 1183 iMSSA incident cases, almost **double** that of 579 iMRSA incident cases.

iMRSA epidemiologic class proportions remain consistent, 2012-2016

Hospital-onset

Hospital-associated community-onset

Community-associated

# of incident cases: 450, 225, 0

2012 2013 2014 2015 2016

A greater proportion of iMSSA cases are community-onset compared to iMRSA, 2016

% of incident cases: 100, 50, 0

- Unknown
- Community-associated
- Hospital-associated community-onset
- Hospital-onset

iMSSA   iMRSA

Epidemiologic classes:
Hospital onset: (+) culture as an inpatient on or after hospital day 3
Health care-associated community-onset : (+) culture as an outpatient or inpatient on or before hospital day 3 with documented health care risk factor
Community-associated: (+) culture as an outpatient or inpatient on or before hospital day 3 without documented health care risk factor

Clostridium difficile Infections (CDI)

As part of the HAIC, CDI surveillance captures stool specimens positive for *C. difficile* toxin from all healthcare facility-based and outpatient diagnostic clinical laboratories serving San Francisco County residents.

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Healthcare-associated CDI **declines by 15%**, 2010-2016
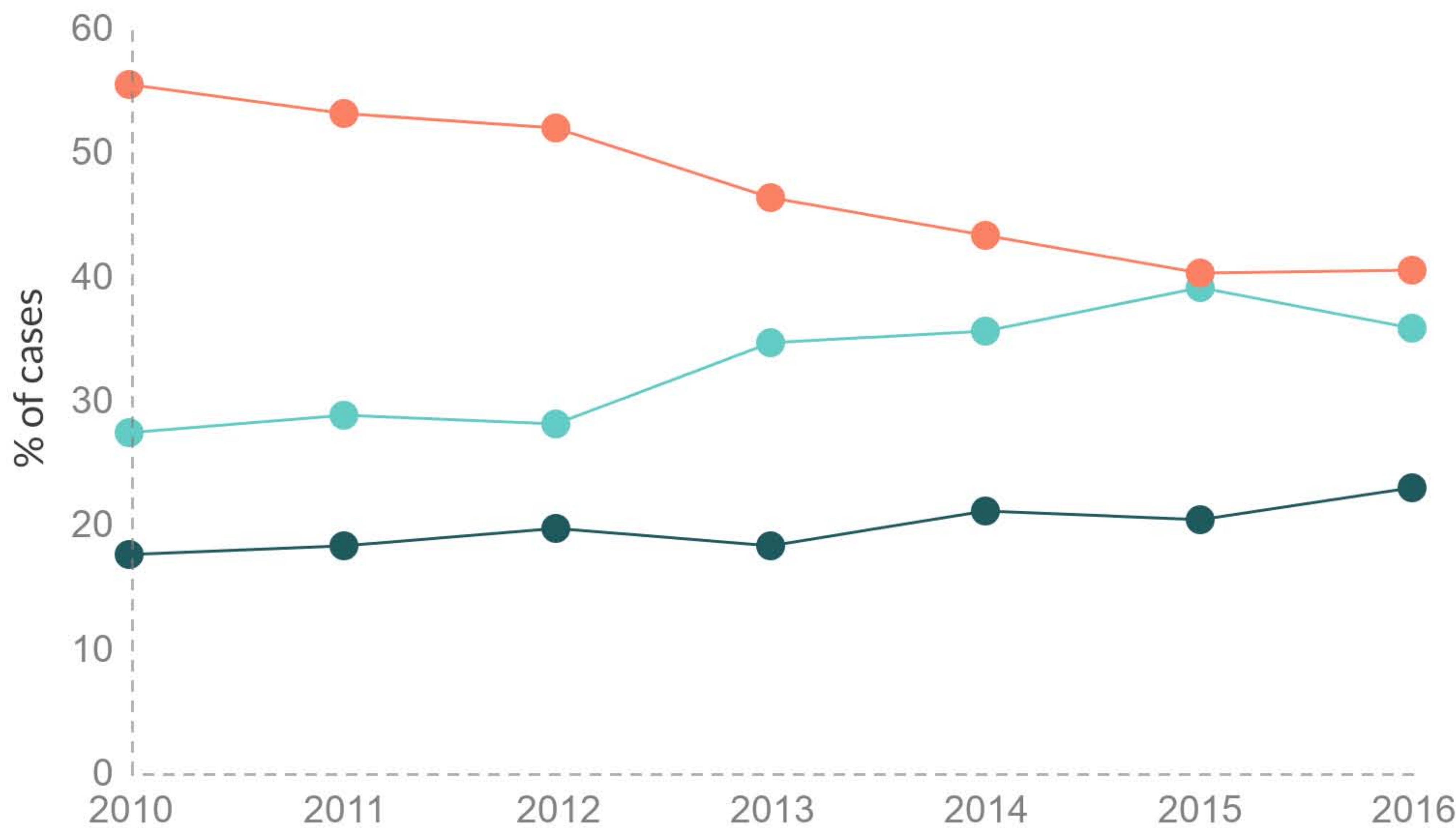
Healthcare facility-onset: (+) specimen greater than 3 days after admission OR admitted from, or stool collected at, a long term care facility
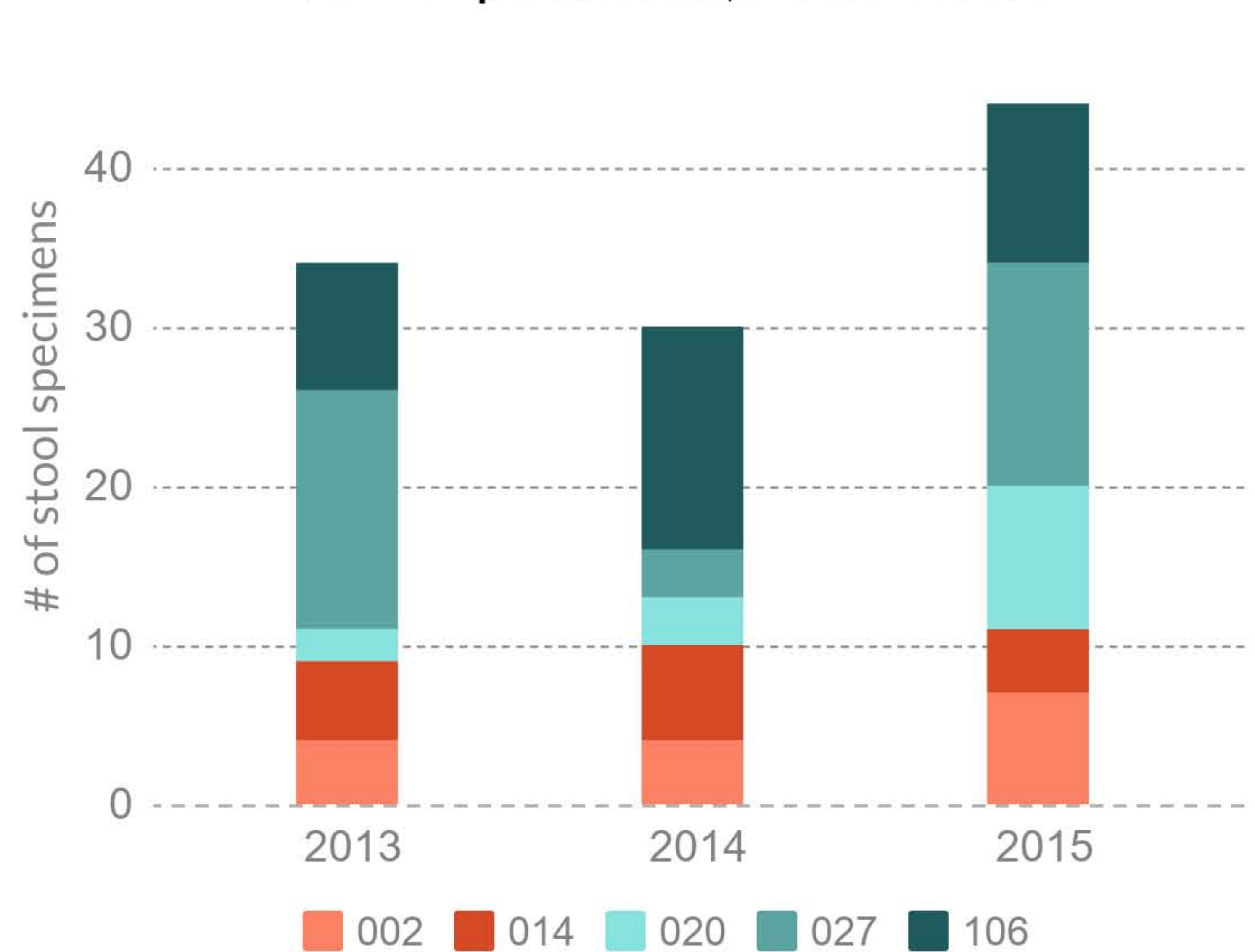
Community-associated: (+) specimen within 3 days of admission without healthcare exposures 12 weeks prior

Community-onset, healthcare facility-associated: (+) specimen within 3 days of admission with certain healthcare exposures 12 weeks prior
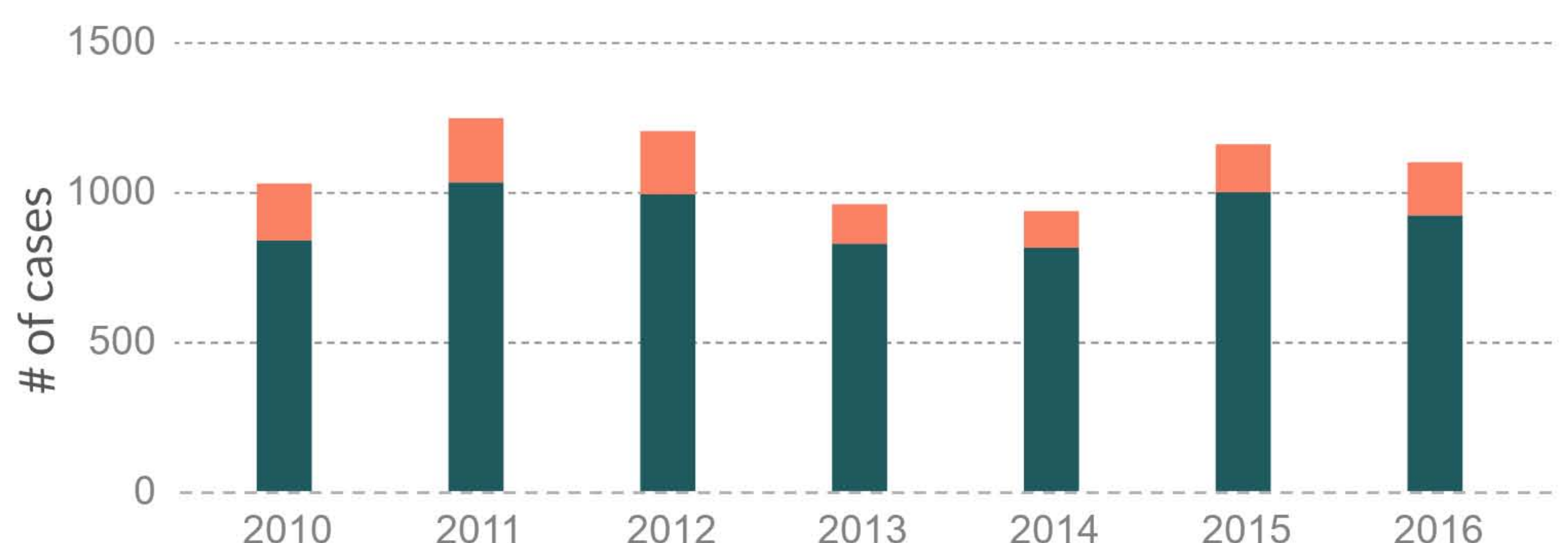
Shifts in **CDI antibiotic treatment**, 2013-2015

Metronidazole alone ↓14%

Vancomycin alone ↑6%

Metro/Vanco combo ↑9%
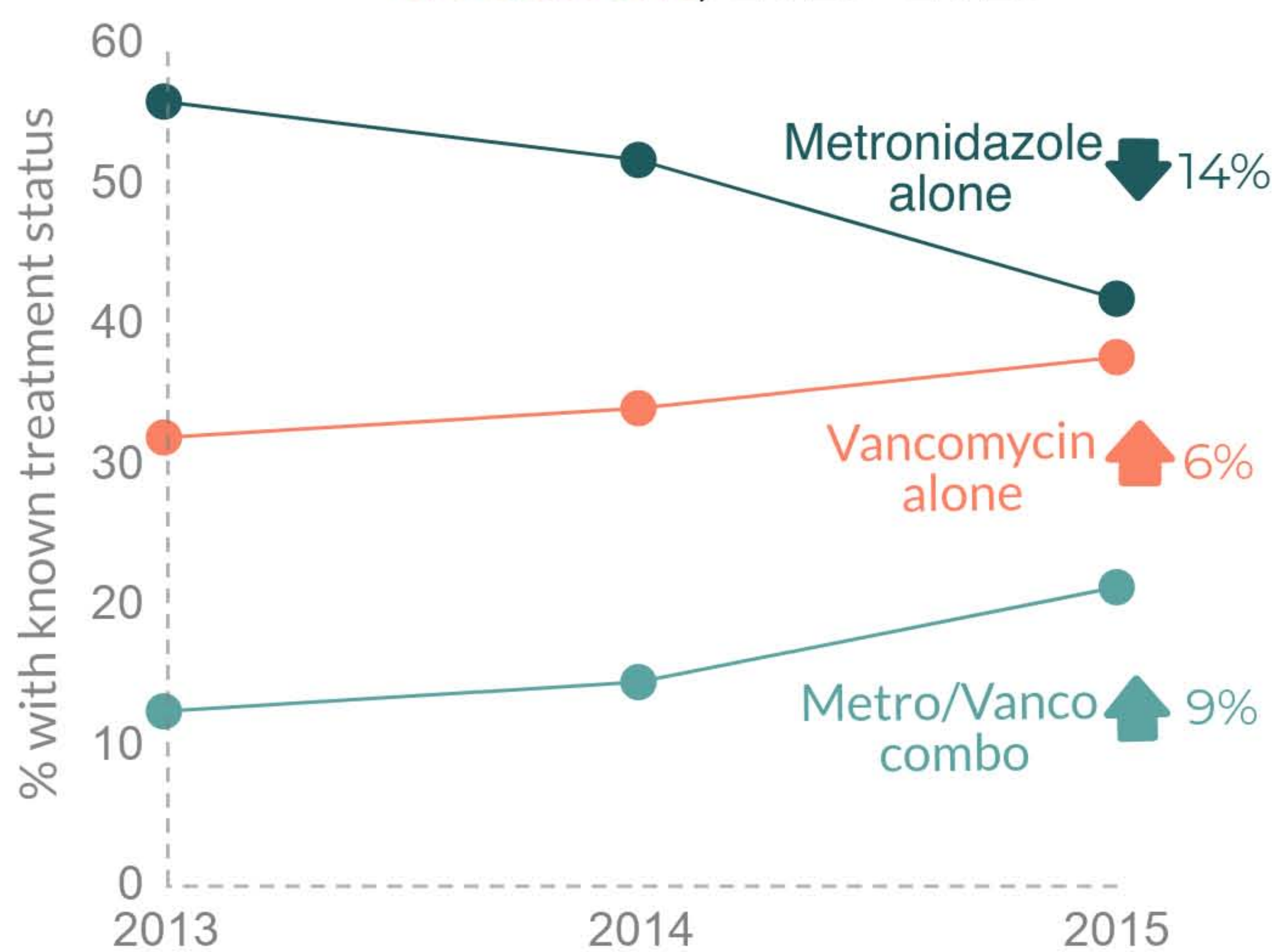
Top five ribotypes from collected stool specimens, 2013-2015

Legend: 002 | 014 | 020 | 027 | 106

Proportion of incident and recurrent CDI remains consistent, 2010-2016

Total CDI stool specimens collected from 2010-2016:

658

<u>Incident:</u> (+) stool specimen and no (+) stool test in prior 8 weeks

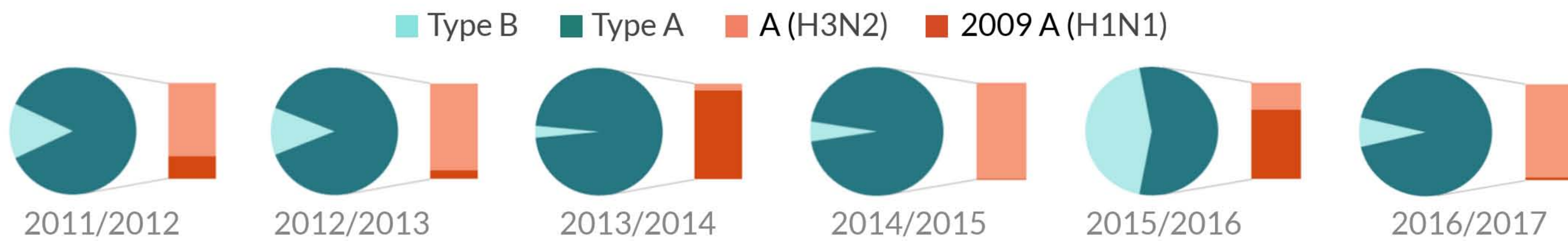<u>Recurrent:</u> (+) stool specimen between 2 and 8 weeks after incident

Influenza

The Influenza Hospitalization Surveillance Network (FluSurv-NET) conducts all age population-based surveillance for laboratory-confirmed influenza related hospitalizations in Alameda, Contra Costa, and San Francisco counties.

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There were **2,588** influenza hospitalizations in the 2016/2017 season, **almost triple** the number from the prior year


Legend: 2011/12 · 2012/13 · 13/14 · 14/15 · 15/16 · 16/17
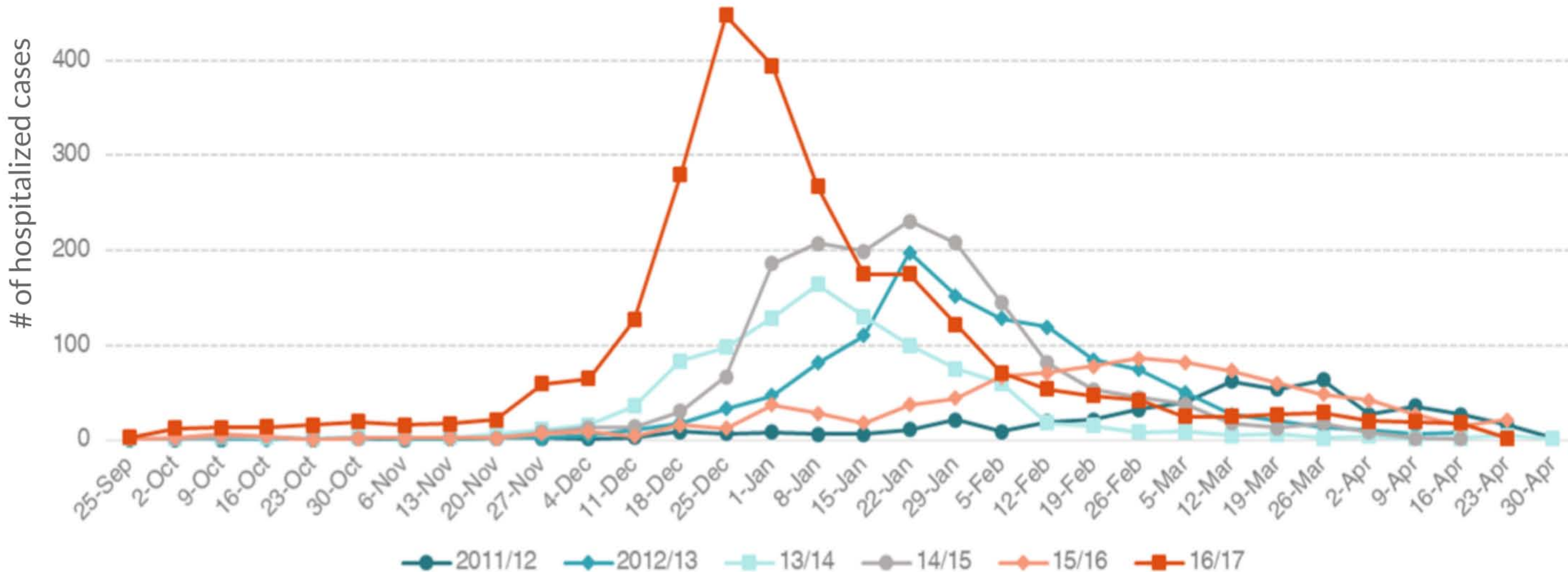
Predominant Influenza type and A subtype* among hospitalized cases varies by season

Legend: Type B · Type A · A (H3N2) · 2009 A (H1N1)

2011/2012   2012/2013   2013/2014   2014/2015   2015/2016   2016/2017

*among those with subtyping performed

The greatest number of influenza hospitalizations occur among persons **over 64 years** of age

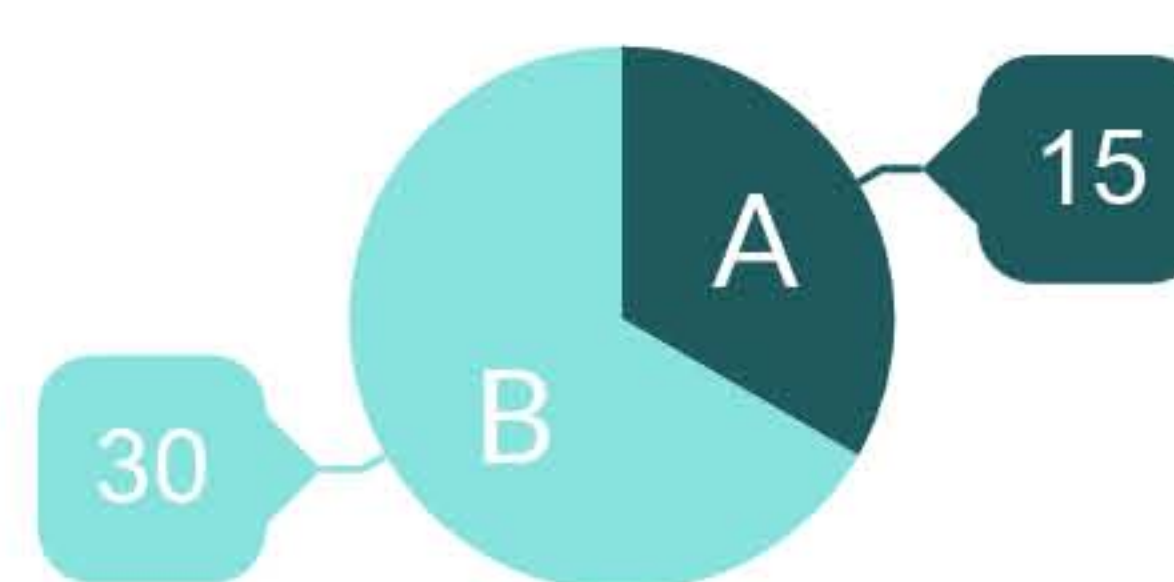Legend: <18 · 18-49 · 50-64 · 65+
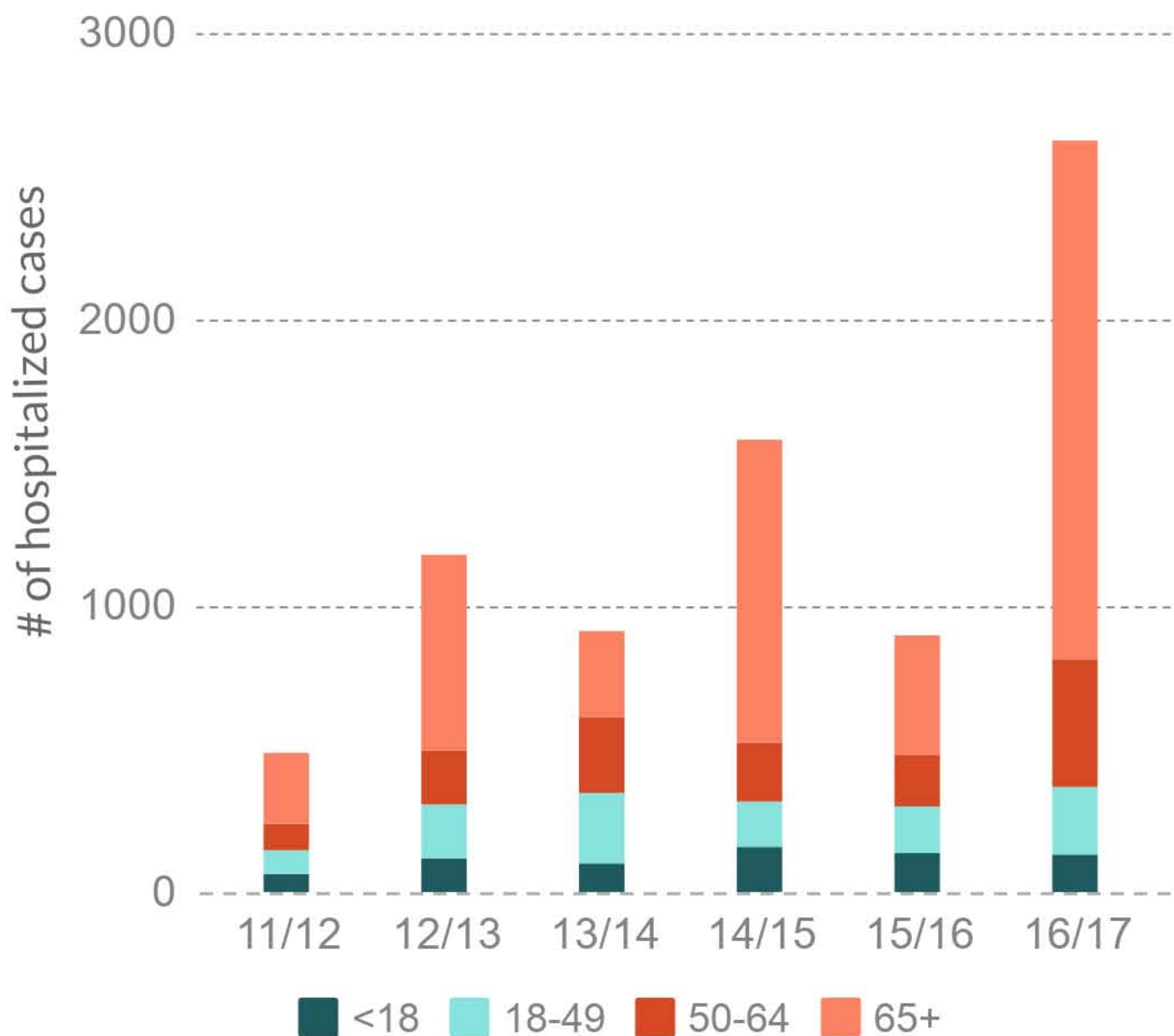
RSV

In 2015, CEIP began active, laboratory-based surveillance for adult hospitalizations of Respiratory Syncytial Virus (RSV)

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The majority of adult cases occur in persons **over 64 years** of age

Legend: 18-49 · 50-64 · 65+
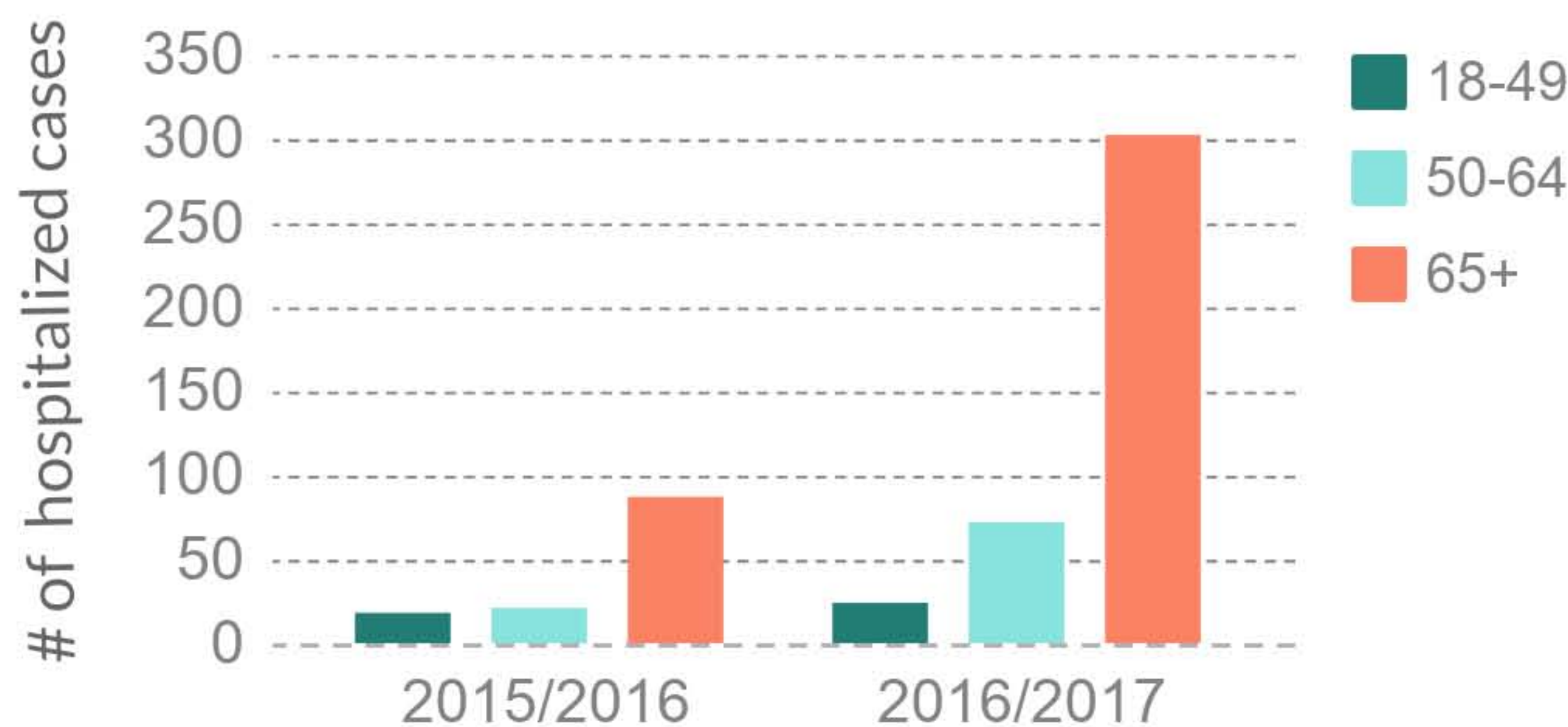
Two-thirds of RSV isolates were **type B**

A 15
B 30

One clinical laboratory conducts RSV subtyping

HPV-Impact

Population-based surveillance of human papillomavirus (HPV)-related cancer is important to monitor long-term efficacy of the HPV vaccines in the population. While it would take decades to evaluate the vaccine's impact on cervical cancer, the shorter term impact can be assessed through surveillance of cervical pre-cancer lesions.

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CERVICAL PRE-CANCER IN ALAMEDA COUNTY

🔍 6,278 cases reported from 2008-2015

Rates of new cervical pre-cancers decline in women 18-24 years old

25-29 years old

30-39 years old

18-24 years old (77% decrease in cervical pre-cancer)
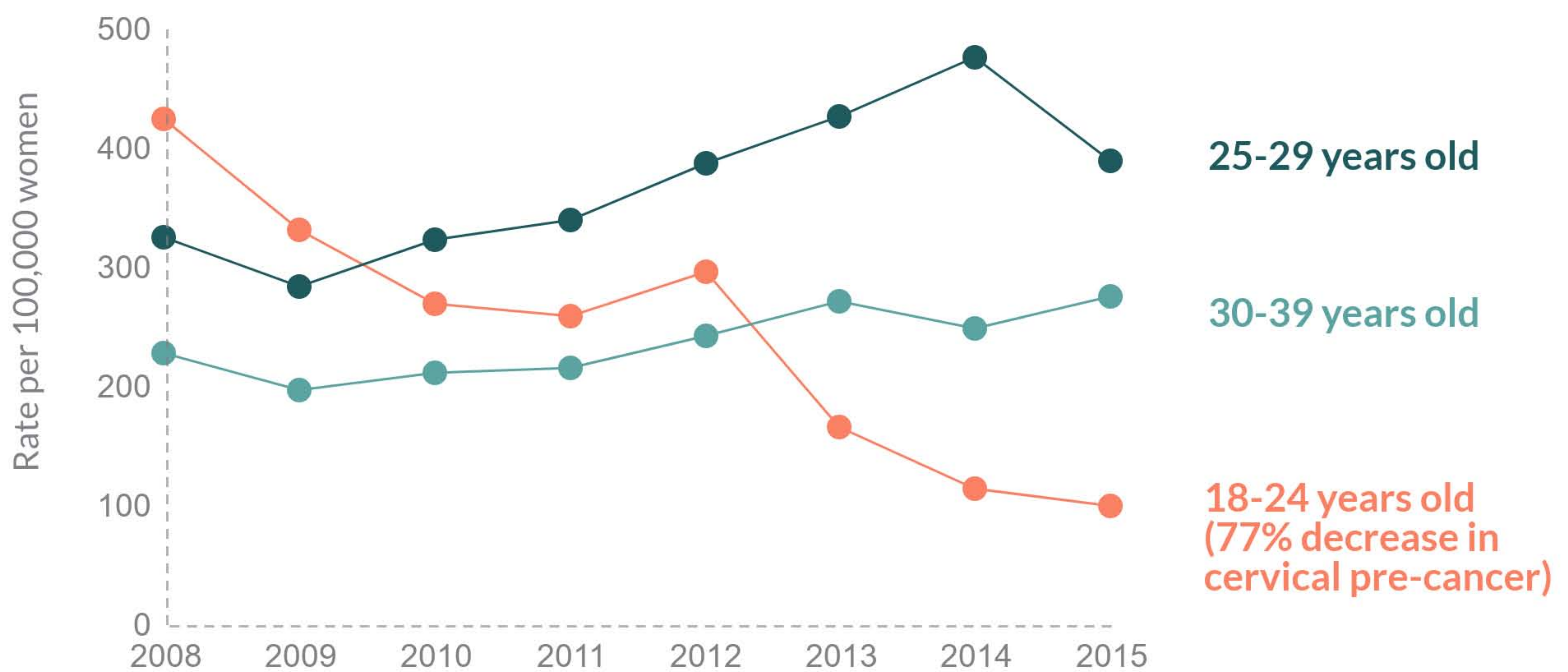
PREVENTION IS POSSIBLE   when the vaccine is given as recommended

69% of Alameda County pre-cancer specimens contained only HPV types 16, 18, 31, 33, 45, 52 and/or 58, which are covered by the currently available 9-valent vaccine

Type 16 45%	18 5%	Type 31 11%	33 4%	45 2%	52 10%	58 8%	Other Types: 37%

Distribution of HPV types are based on 1,841 cervical pre-cancer specimens from Alameda County, 2008-2014