ESTIMATION OF IMMUNIZATION COVERAGE RATES IN SAN DIEGO COUNTY'S IIS 2013-18

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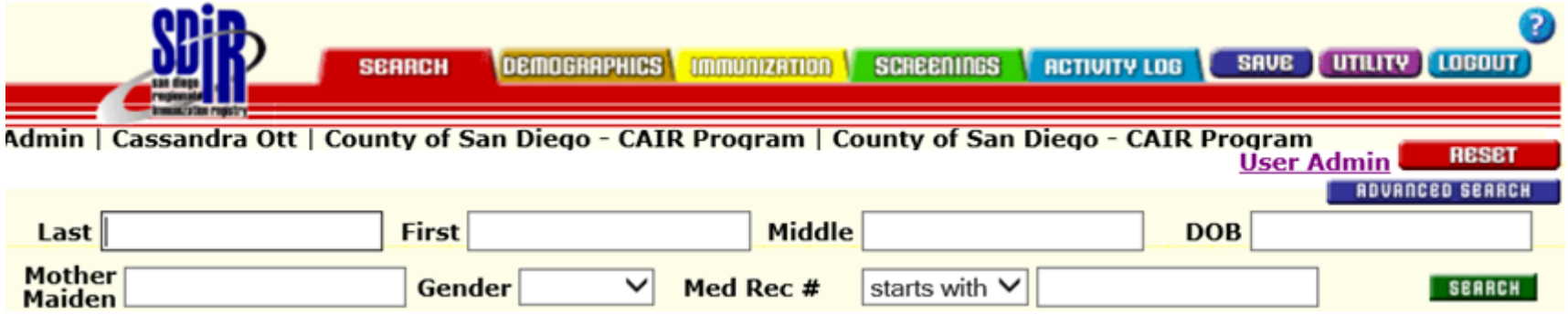
BACKGROUND

- 19 random digit dialing (RDD) telephone surveys in San Diego County since 1995 to assess immunization coverage rates
- RDD surveys are time consuming and expensive
- Proportion of children aged 4 months through 5 years with ≥ 2 IZs in San Diego's IIS increased from **72.5%** in 2013 to **96.5%** in 2016

Has increased use of the San Diego Immunization Registry (SDIR) since 2013 improved estimation of immunization coverage rates?

SAN DIEGO IMMUNIZATION REGISTRY (SDIR)



- Reporting to an immunization registry is voluntary in California
  - Mandatory for pharmacies as of August 2016
- Estimate ~75% of providers in San Diego County report to SDIR
  - Continues to increase with Meaningful Use/Promoting Interoperability
- ~ 4 million total records & ~ 36 million shots as of January 2019

METHODS OVERVIEW

- Target population: children 19-35 months of age
- Compare SDIR to last two RDD surveys
- SDIR data downloaded Jan. 2019
- Obstacles
  - → Retrospective analysis: best “snapshot”?
  - → More records in SDIR than children living in San Diego County
  - → Not capturing all immunizations

METHODS: RDD SURVEY

- Modelled after the National Immunization Survey (NIS)
- Landline and cell phone numbers
- 19-35 months, 11-17 years, ≥ 18 years of age
- Verified child and adolescent records with provider
- Survey weights

METHODS: SDIR

INCLUSION CRITERIA

- All records for children with at least one DOB in range (5/25/2010-6/1/2017)

  →DOBs corresponding to RDD survey and yearly trend assessment

- Assessment date = Dec. 31 of each year 2013-2018
- Children 19-35 months of age
- Valid, invalid, booster, and historical doses

METHODS: SDIR

EXCLUSION CRITERIA

- Children known to be living out of the county
- Demographic records entered after the assessment date
- “Fake” records (e.g., Mickey Mouse, TEST)
- Children with selected DOB out of range
- Duplicate doses by vaccine type and vaccination date

IIS CALCULATION METHODS: TWO TYPES

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All individuals

IIS usage trends (performance)

All records (demographic & immunizations) in SDIR as of the assessment date

Method **A**

Most likely target population

"True" coverage rates?

Subset of records in SDIR as of the assessment date and/or additional data entry

E.g. exclude likely duplicate records and/or inactive records

Methods **B** & **C**

COVERAGE RATES: SELECTED METHODS

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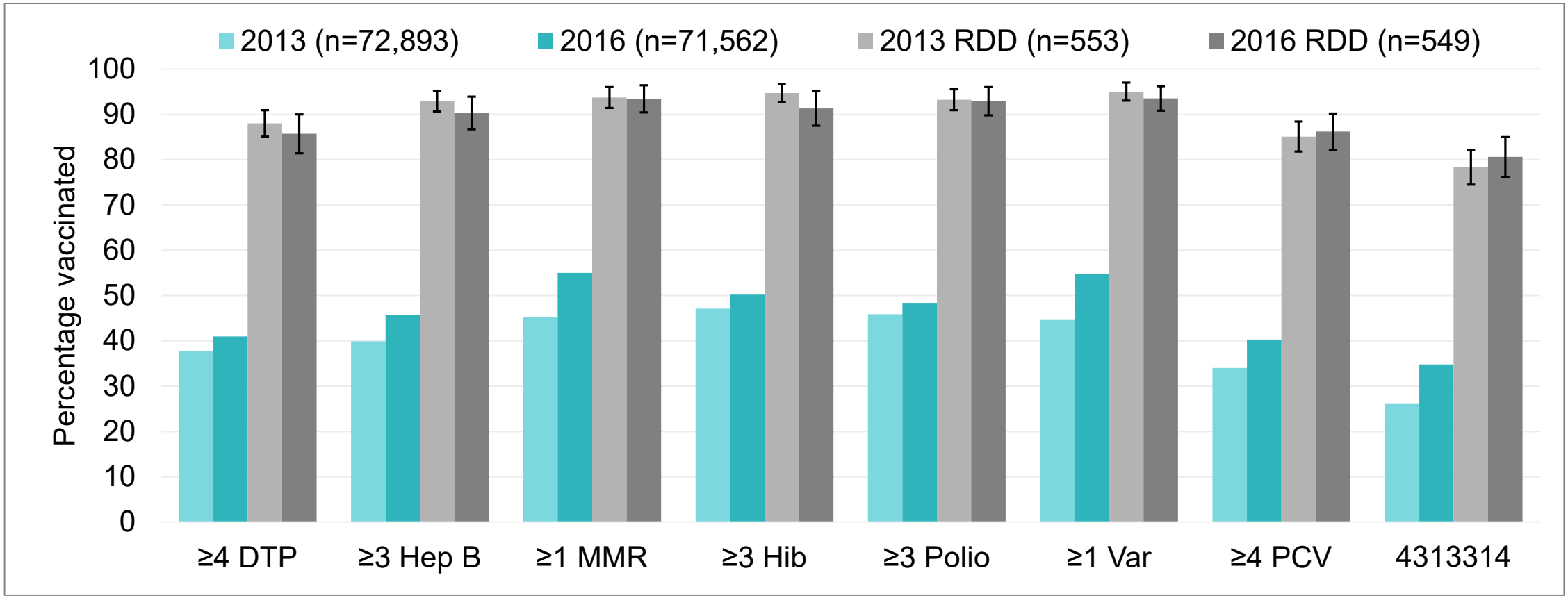
A All immunizations administered and entered in SDIR before the evaluation date

B All immunizations administered before the evaluation date irrespective of the date of entry

C Children with ≥2 immunizations, IG, or antitoxin administered before the evaluation date irrespective of the date of entry

PERFORMANCE

Method A. All immunizations administered and entered in SDIR before the evaluation date



→ **Conclusion:** increased use of SDIR since 2013

METHOD A. PROS/CONS

Method A (all children)

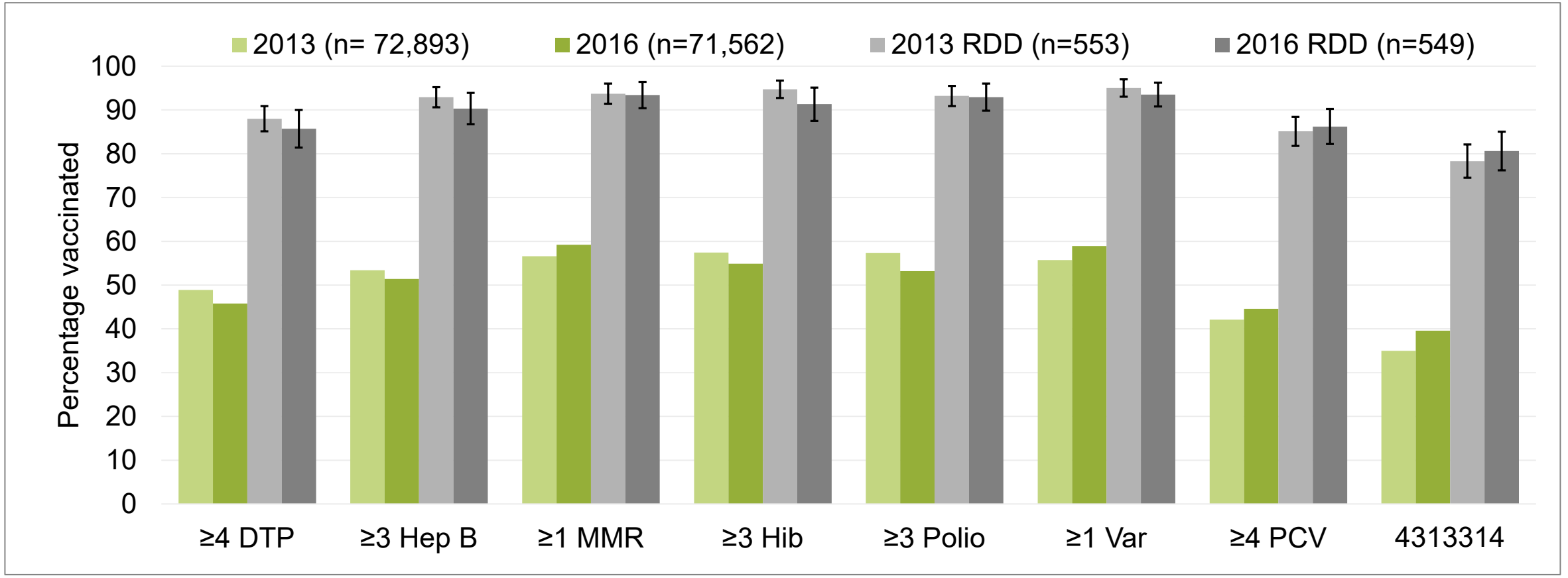
Pro: increased rates over time = IIS improving

Cons:

- Overestimate denominator
- Severely underestimate rates

“TRUE” COVERAGE RATES?

Method B. All immunizations administered before the evaluation date irrespective of the date of entry



→ **Conclusion:** increased coverage, but still underestimating true rates

METHOD B. PROS/CONS

Method B (A + irrespective of IZ data entry)

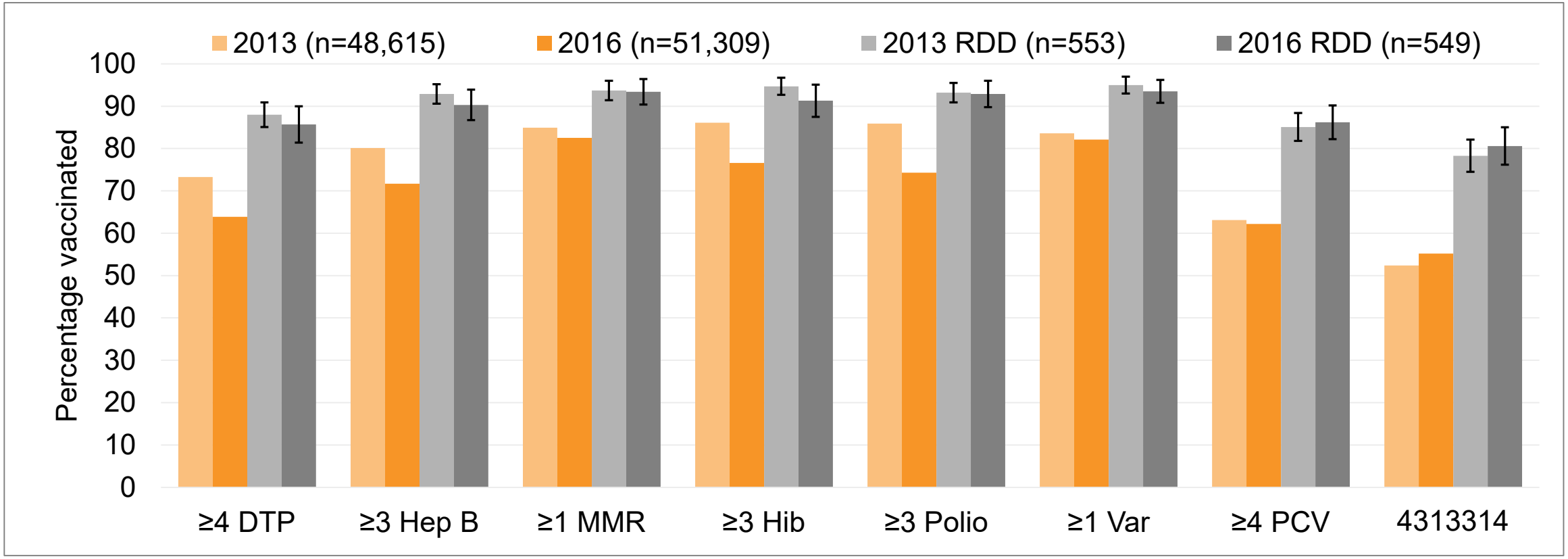
Pro: capturing more vaccines than were actually received

Cons:

- Can't compare trend over time
  - → Differences could be due to unequal time for data entry
  - → Can't say it's a change in vaccination practices
- Overestimate denominator
- Currently underestimating true coverage rate

“TRUE” COVERAGE RATES?

Method C. Children with ≥2 immunizations, IG, or antitoxin administered before the evaluation date irrespective of the date of entry



→ **Conclusion:** best coverage, but still underestimating true rates

METHOD C. PROS/CONS

Method C (B + only children with ≥ 2 IZ, IG, or antitoxin)

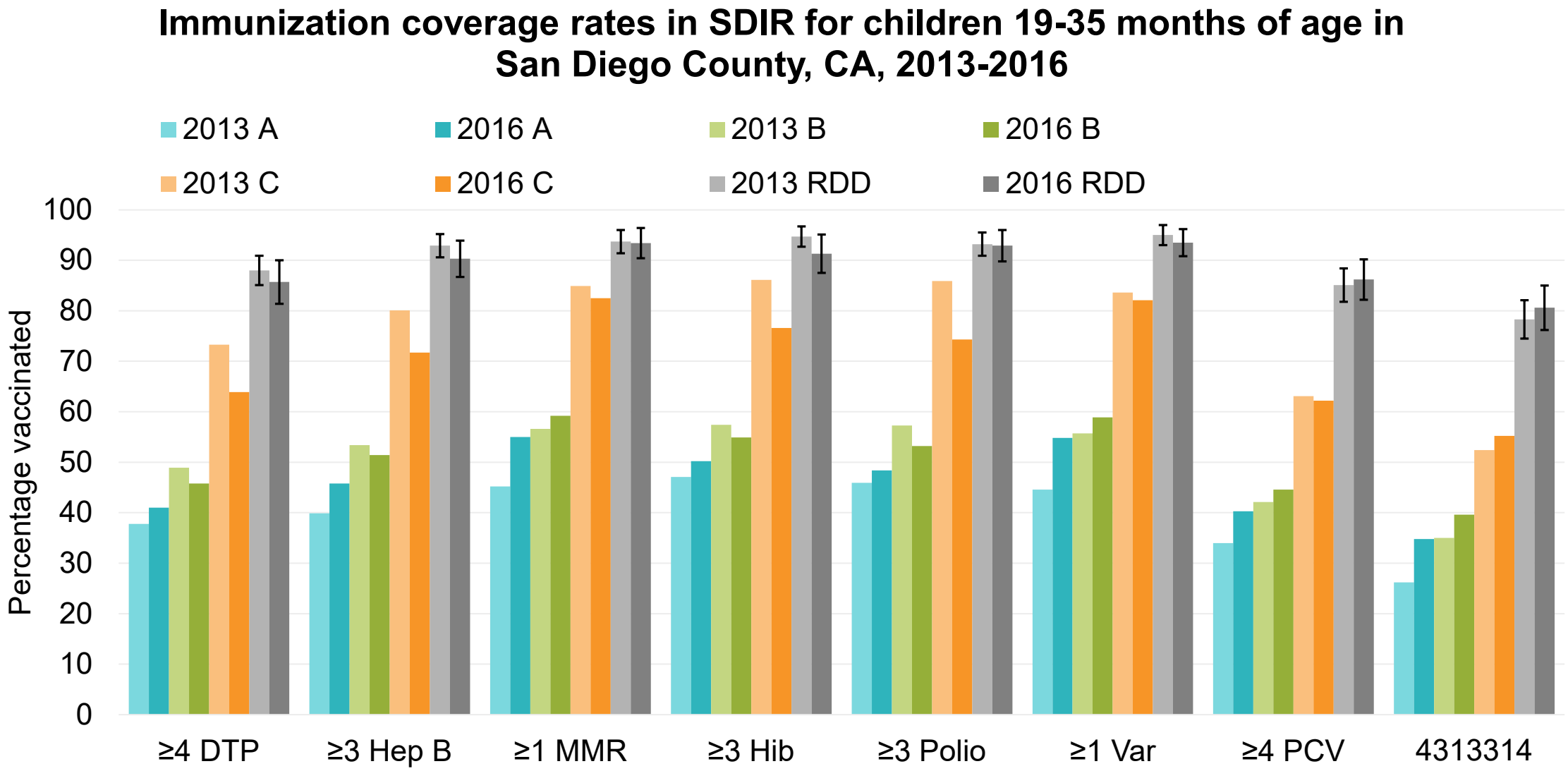
Pros:

- Excludes likely inactive records
- Closest to “true” cross-sectional estimates

Cons:

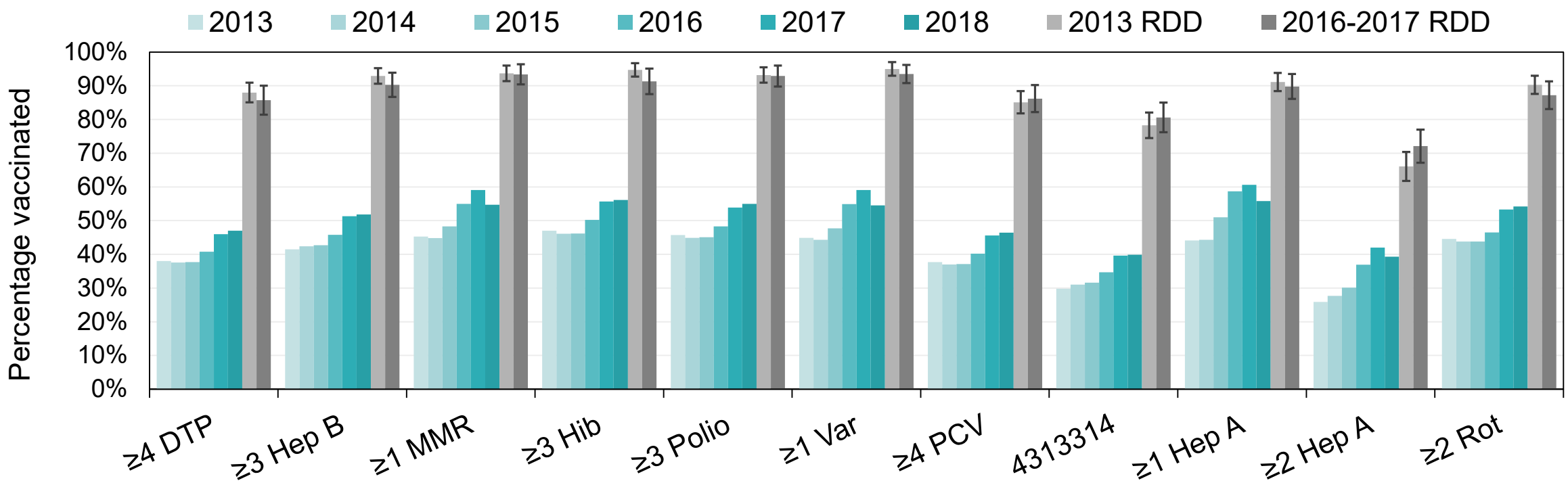
- Can’t compare trend over time
- Doesn’t include residents without immunizations
- Assumes % without shots (incorrectly excluded) = % unidentified non-residents and duplicate records (incorrectly included)
- Potential to overestimate rate as IIS matures?

COVERAGE RATES: ALL METHODS



ADDITIONAL ANALYSIS

Method A: all children 19-35 months of age, only demo and IZ records entered in SDIR on or before Dec. 31 of each year 2013-2018



→ **Increased use of SDIR since 2013!**

→ **Not shown:** over 30 alternate methods of calculating rates

→ None produced estimates same as RDD survey

AREAS FOR IMPROVEMENT

- Exclude deceased at time of assessment
- Exclude inactive records at geographic level
  - Currently SDIR has inactive at provider level
- Better identification & exclusion of inactive and duplicate records
- Characteristics of records with <2 IZs
- Coverage rates by provider and region
- Under/over representation of regions or demo groups in SDIR

CONCLUSIONS

- Estimating population level immunization coverage rates in IIS's with voluntary reporting is difficult
- All methods currently underestimate coverage rates in San Diego County
- Increased coverage rates since 2013 reflect increased use of SDIR
- We anticipate the trend of better estimates to continue as data quality and completeness increases

THANK YOU

SDIZ.ORG

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On May 17, 2016, the County of San Diego Health and Human Services Agency Division of Public Health Services received accreditation from the Public Health Accreditation Board.