Beyond Surveys: Using Electronic Health Records to Study Immigrant Populations in Primary Care Research

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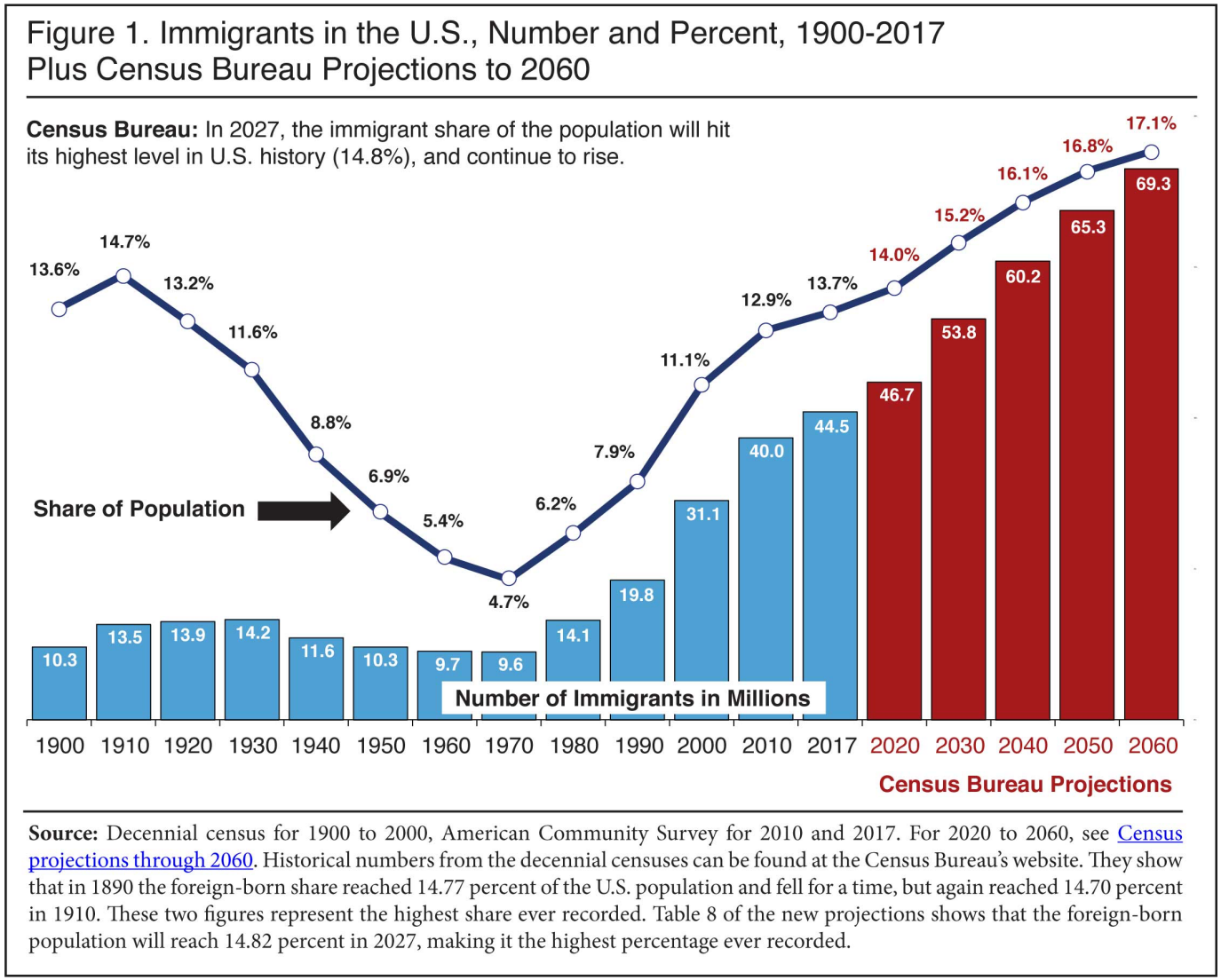
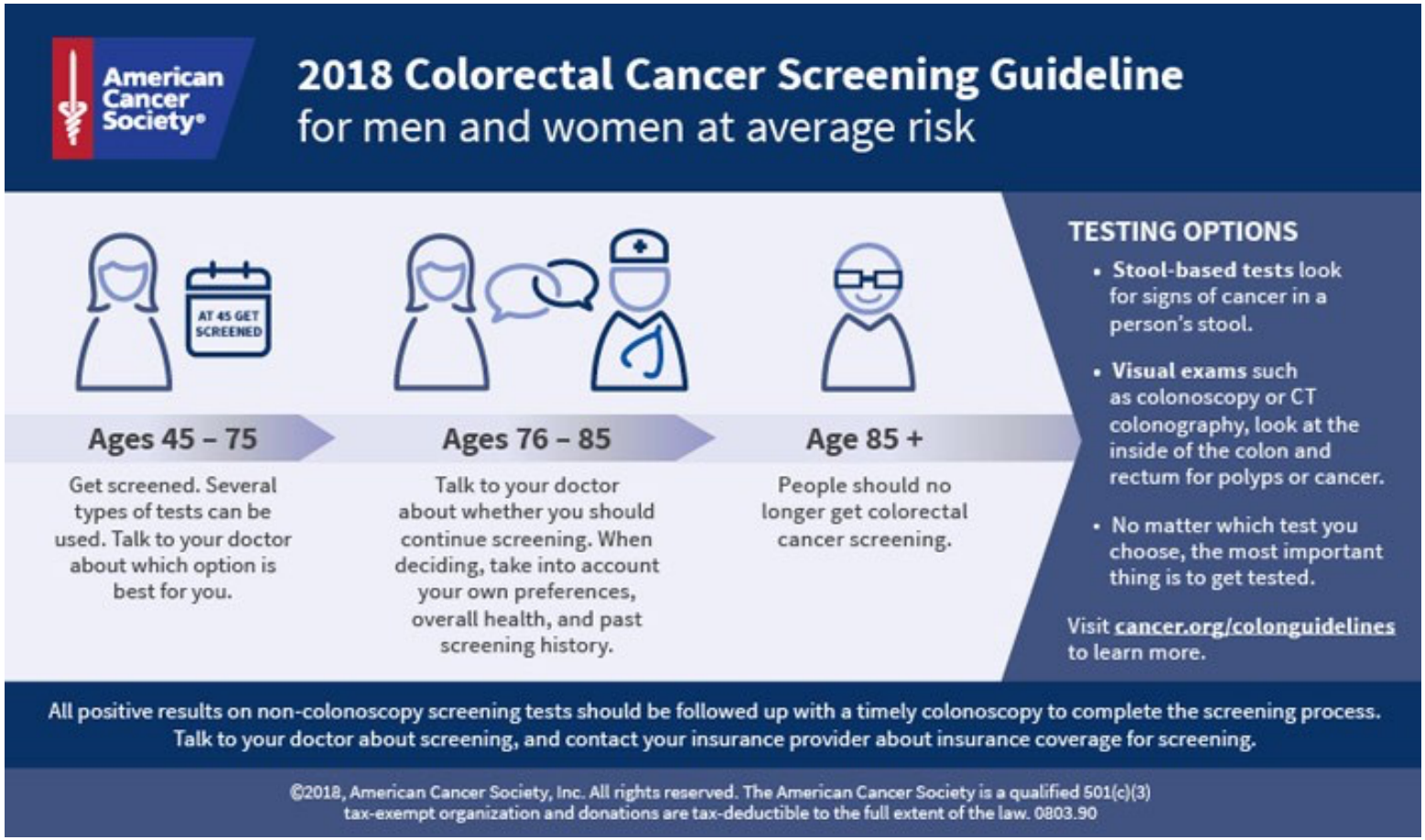
Immigration in the United States



Motivating question

At a population level, are immigrants receiving appropriate healthcare and what could be drivers for disparities in care?



Immigration status: current research

- Immigration status is believed to be a powerful social determinant of health, possibly affecting multiple generations
- Undocumented and recently "documented" immigrants (within five years of arrival) are barred from federal insurance programs, such as Medicare and Medicaid.
- Methods for studying the impact of immigration status on health utilization/outcomes are under-developed and limited.
- In the United States, Latino immigrants, mostly from Mexico, number $>$ 19 million.

Immigration status: current research (SURVEYS)

Survey and interview methods are commonly used to determine immigration status when studying health outcomes and utilization

Why are survey methods potentially limited for this group?

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Confirmed: The U.S. Census Bureau Gave Up Names of Japanese-Americans in WW II

Government documents show that the agency handed over names and addresses to the Secret Service

By JR Minkel on March 30, 2007

Limitations of Surveys and Claims

- Labor intensive, risk social desirability bias, and may feel unsafe for participants
- Health effects may take a long time to appear
- How do we scaling up to the scope necessary for population-level research?
- Potential lack of important confounders
- Exclude the uninsured in claims

Can EHRs add to our understanding of immigrant health?

EHRs may be a source of data for studying immigrants which could overcome the challenges of scale and self-reporting bias in surveys

- Demographic data in the EHR are collected in the routine process of delivering health care
  - Often contain demographic data, such as race, ethnicity, income level, and objective measures of health (e.g. colorectal cancer screening)
- The information that is routinely collected is not directly related to immigration status, making disclosure of these demographics less risky
- Primary care clinics (in particular, Community health centers) are perceived to be a safe place to share information about one's social and economic background

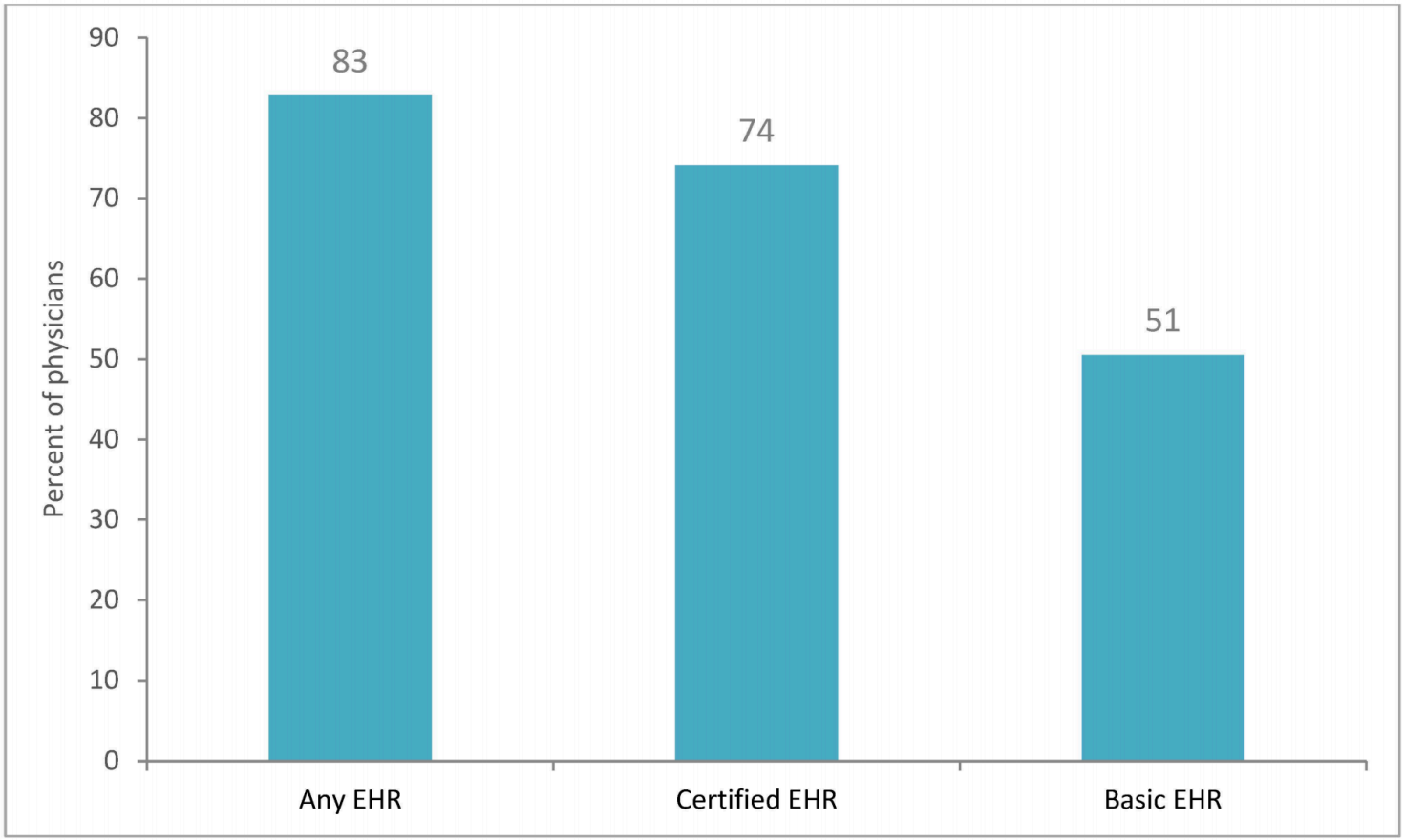
Community Health Centers

Around 2014, CHCs provided 61 million medical care visits, of which 35% were to uninsured patients

Can EHRs add to our understanding of immigrant health?

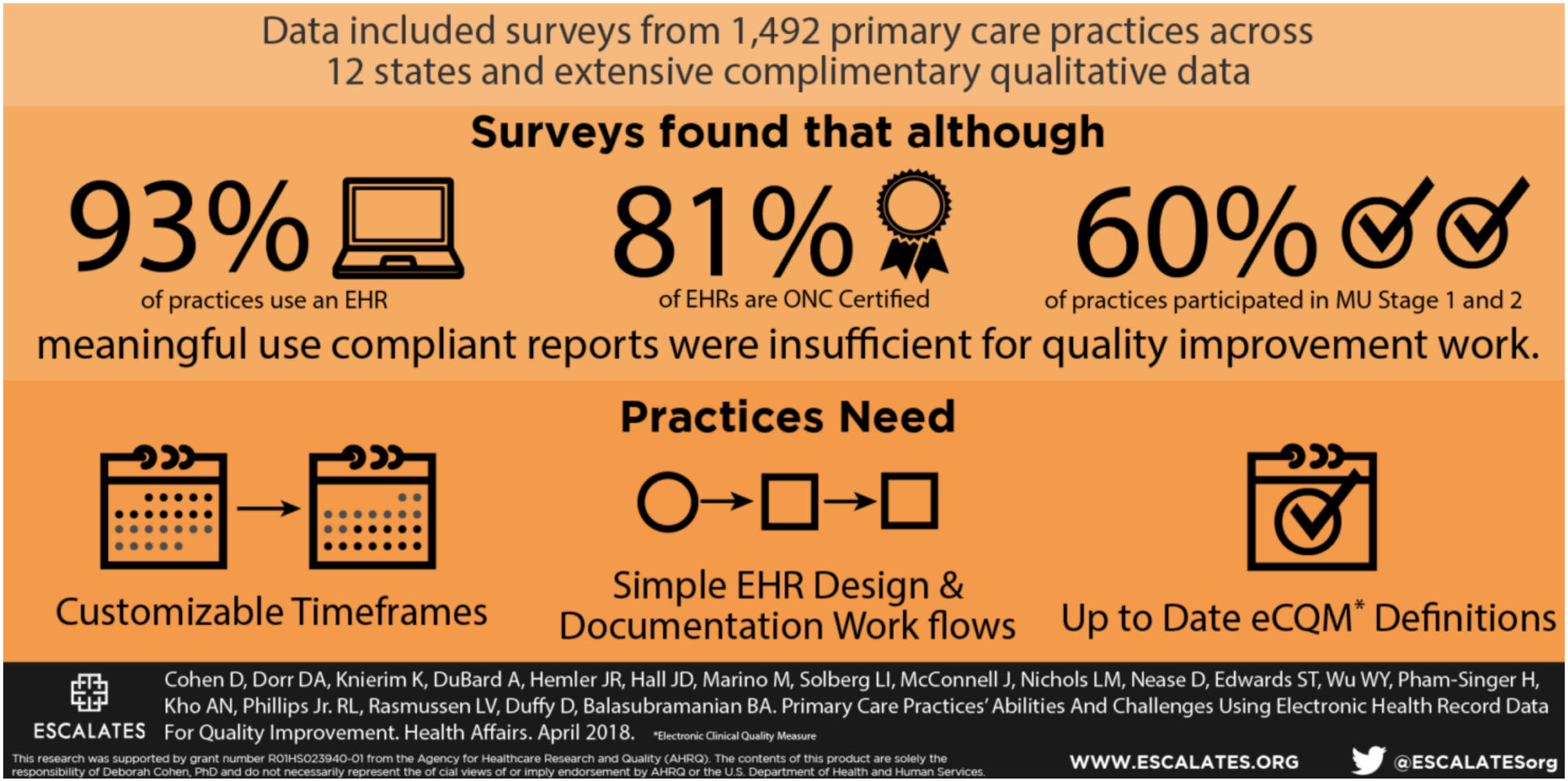
More than 8 in 10 physicians had adopted an EHR.

Figure 1: Proportion of physicians who reported using an EHR by type of EHR, 2014



SOURCE: Jamoom E, Yang N, Hing E. Percentage of office-based physicians using any electronic health records or electronic medical records, physicians that have a basic system, and physicians that have a certified system, by state: United States, 2014 (table). 2015.

Adoption of EHRs: Small-to-medium PC practices



Study Objective

In the setting of community health centers, and focusing on the Oregon Latino immigrant population:

- Using routine demographic information collected in the EHR, develop an EHR-based algorithm to serve as a proxy for immigrant status
- Evaluate the validity of the proposed EHR algorithm

Ultimate goal: Develop a proxy for immigration status in health services research in order to investigate alternatives to surveys for large-scale studies of immigrant Latino populations.

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Methods: Qualitative

- Interviews with a convenience sample of 12 CHC-based insurance eligibility specialists to
  - Assess their knowledge of immigration issues in patients and whether their knowledge can serve as the 'gold standard' for validating our EHR-based algorithm.
- 15-25 minute interview on their experiences caring for immigrant clients, with a focus on the collection of immigration information
- Analyzed by multiple faculty, with multiple crystallization-immersion cycles, using Atlas software

Results: Qualitative

"So, I think I feel pretty comfortable just asking straight up. If they have a hesitancy to answer, then I'll explain to them why it's important to know the information and what it's for. So, just I basically ask first if they're a U.S. citizen. And I don't assume anything when I see somebody. **So, I'll ask anybody, basically who's going to be filling out an application, whether they're a U.S. citizen."** Yes or no? Then, no. Then I ask if they are a legal permanent resident. Then we go from there"

Results: Qualitative

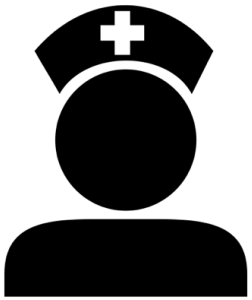
"...even though I may not be enrolling them into Oregon Health Plan, I'm helping them out with financial assistance applications. So I do have to ask them that. Or if they have a medical need, then I do ask that again because it's like, are you insured? Why are you not insured? Do you qualify? **And so I end up, somehow, always asking the question** ...going back to it."

Eligibility specialists as the gold standard

We searched for adult Latino patients whose chart was electronically accessed by a participating eligibility specialist in the three months prior to the interview

N=441

Eligibility Specialist Interview



"Look through the list, identify names you recognized"

Recalled
N=130 (29%)

Not Recalled
N=311 (71%)

"It this patient a recent or undocumented immigrant? What is your level of confidence?"

Yes
N=81

No
N=49

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Methods: Algorithm development and plan

Based on a knowledge of Oregon Medicaid policy, we hypothesized that a population of patients meeting each of the following 5 criteria would contain a high proportion of recent or undocumented immigrants:

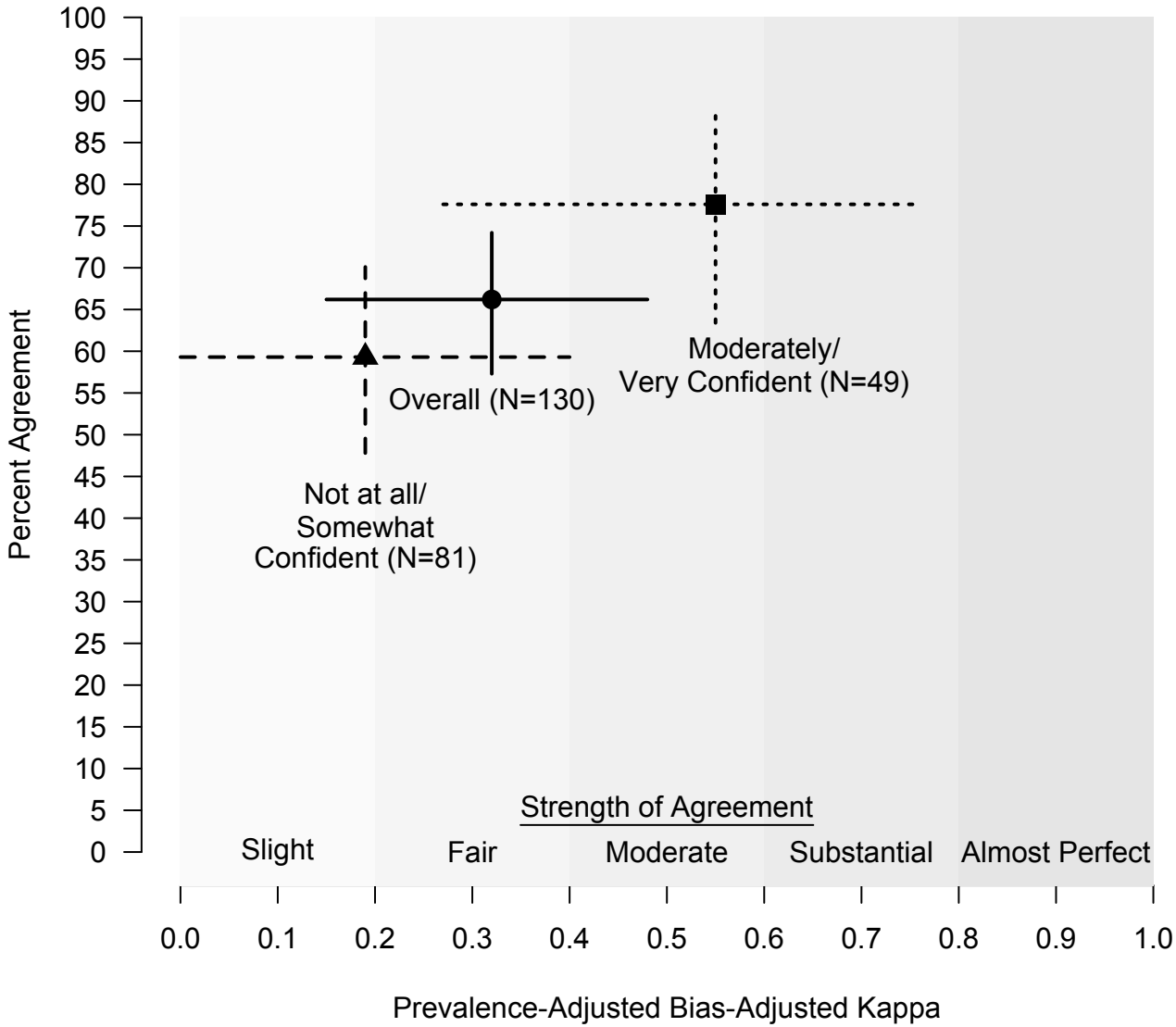
1. Oregon CHC patient
2. Household income $< 100\%$ of the Federal Poverty Level before 1/1/2014 and always $< 138\%$ on or after 1/1/2014 in all visits (income level that would correspond to Medicaid eligibility in Oregon)
3. Hispanic/Latino or primary language Spanish (both as self-identified to clinic)
4. Age > 18 years
5. Uninsured at all visits/encounters available in the record

EHR algorithm compared to this gold standard of eligibility specialist knowledge: Agreement and Kappa statistics

Results: Quantitative

Characteristic	Undocumented/recent immigrant status as denoted by the eligibility specialist (N=441) Yes	No	Not recalled
N (row %)	81 (18.4)	49 (11.1)	311 (70.5)
Age based on EHR, N (%)			
18-30	13 (16.0)	23 (46.9)	93 (30.0)
31-40	23 (28.4)	9 (18.4)	67 (20.0)
41-50	23 (28.4)	10 (20.4)	89 (30.0)
51-60	13 (16.0)	6 (12.2)	36 (11.8)
61-84	9 (11.1)	1 (2.0)	26 (8.2)
Spanish Preferred Language, N(%)			
Yes	75 (92.6)	37 (75.5)	281 (90.5)
No	6 (7.4)	12 (24.5)	30 (9.5)
Hispanic/Latino, N(%)			
Yes	79 (97.5)	49 (100.0)	310 (99.7)
No	2 (2.5)	0 (0.0)	1 (0.3)
Uninsured, N(%)			
Yes	55 (67.9)	18 (36.7)	213 (68.0)
No	26 (32.1)	31 (63.3)	98 (32.0)

Results: Quantitative



Conclusion

- This study describes the development and validation of an EHR-based approach to study immigrant populations seeking care in safety-net settings
- Oregon community health center eligibility specialists reported consistent inquiries into the immigration status of their clients
- Assuming their knowledge as the gold standard, our EHR algorithm has a good agreement but moderate kappa, at best, with that gold standard.
  - Eligibility specialist only remembers about 30% of population: heavy caseload and time elapsed between client interaction and our interview
  - The EHR-based algorithm did not account for individuals without Medicaid for reason other than immigration status

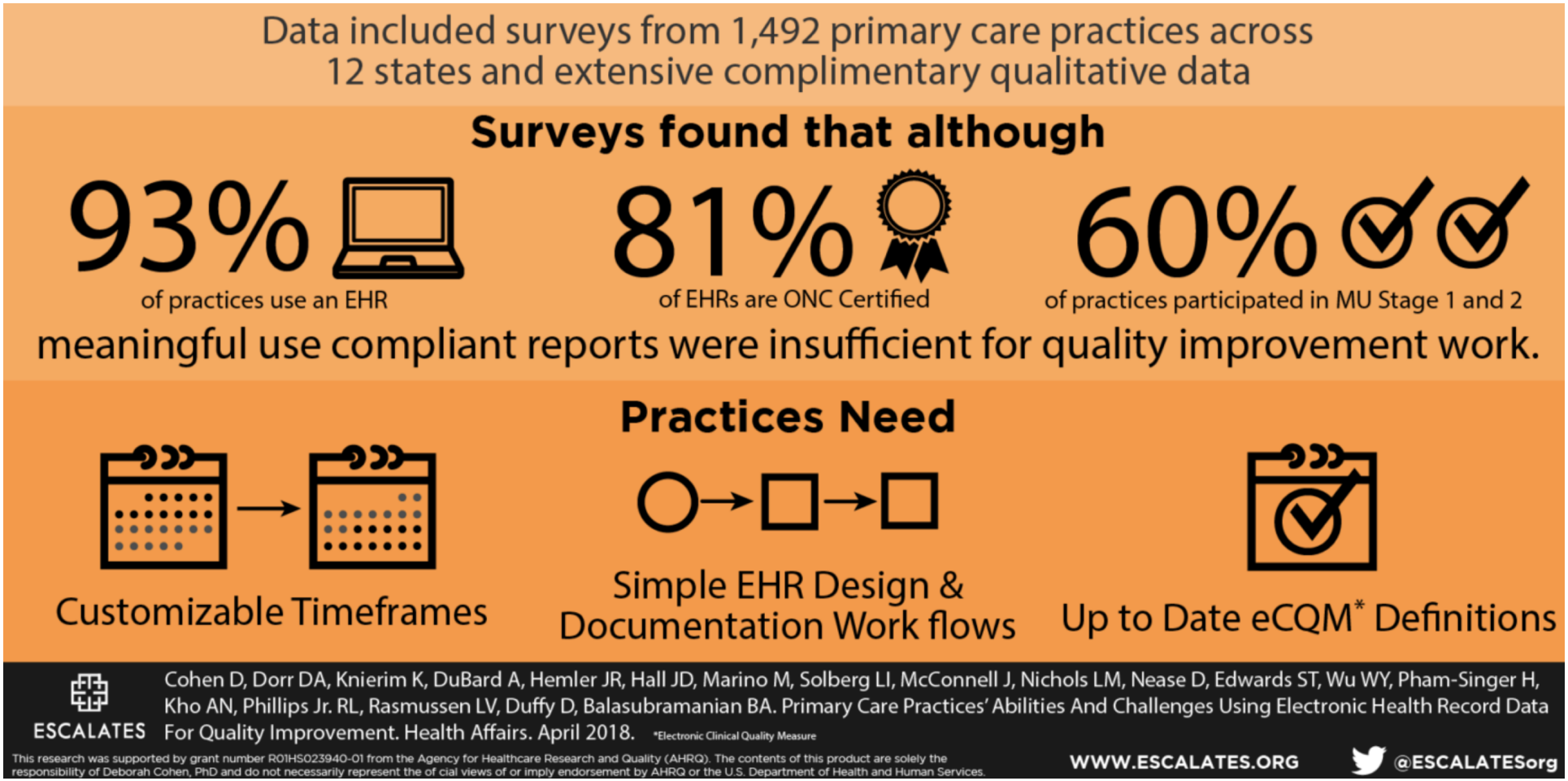
Potential Discussion Topics

- Which needs refinement – the gold standard or the EHR based algorithm?
- What is safe? Population description (protection) vs. personal prediction (precision)
- EHR research is interdisciplinary... how can we build stronger connections?
  - Bioinformaticists: what are the underlying data quality issues
  - Qualitative researchers: what are they learning on the ground
  - Physicians and staff: impacts of policies on their patients
- Could we utilize both survey and EHR data sources for specific questions?
- How do we expand to more immigrant groups and larger populations?

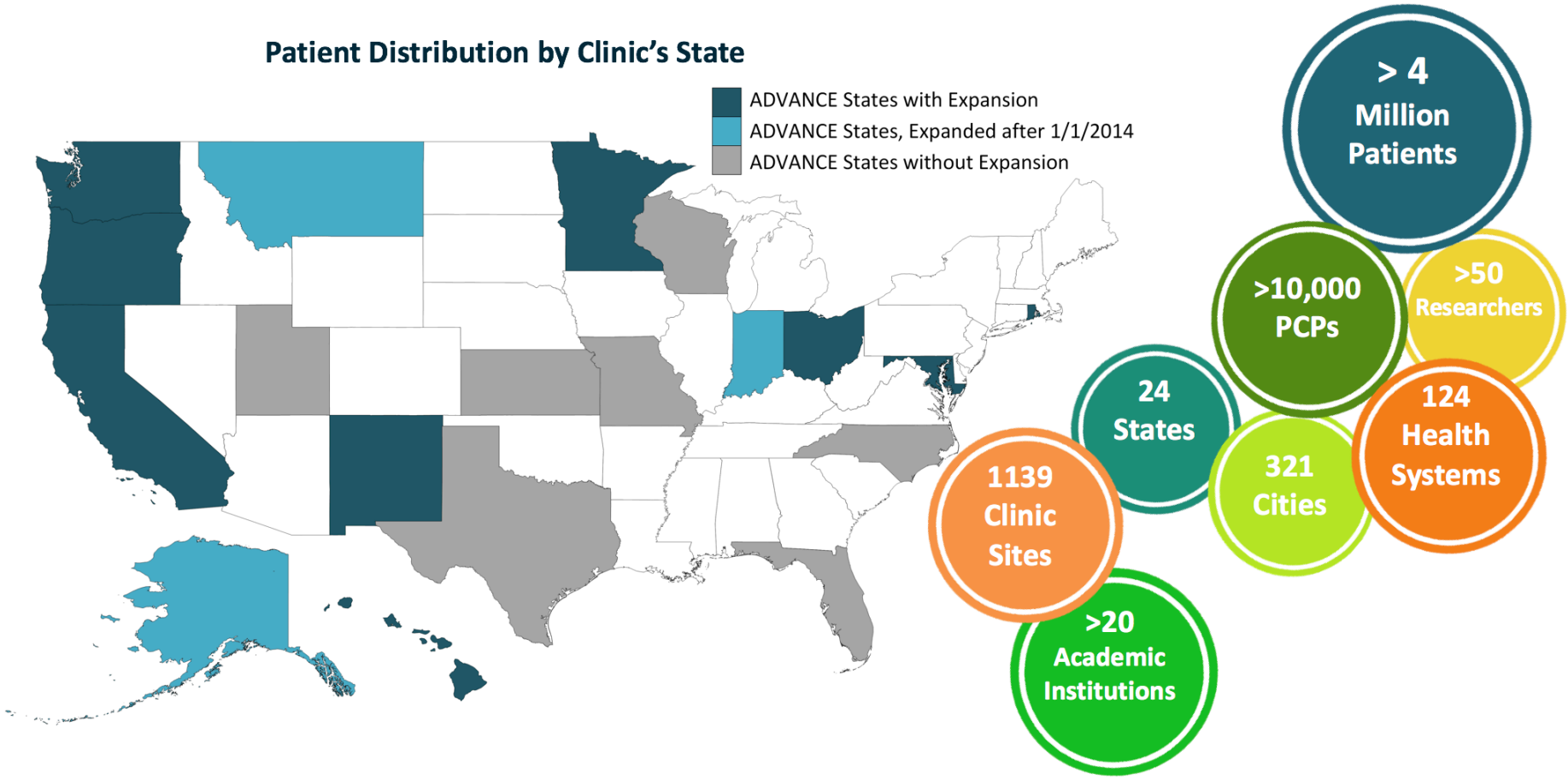
EHR Silos

In 2014, ≈1,100 different EHR vendors.

Adoption of EHRs: Small-to-medium PC practices



ADVANCE Network of CHCs



Data warehouse of 359 CHCs across 19 states

Leveraging the ADVANCE Network of CHCs

ADVANCE Research Data Warehouse (RDW) includes:

- Demographics (DOB, sex, race)
- Enrollment
- Encounter
- Diagnosis
- Labs
- Prescribing and Dispensing
- Death date and cause
- Vital Signs (height, weight, smoking)
- Condition (incl. Problem List)
- Patient Reported Outcomes

Plus additional data needed for research on the safety net:

- Federal Poverty Level (FPL)
- Household income & size
- Insurance status (incl. uninsured)
- Homeless status
- Migrant/seasonal worker status
- Veteran status
- Community Vital Signs

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Questions?

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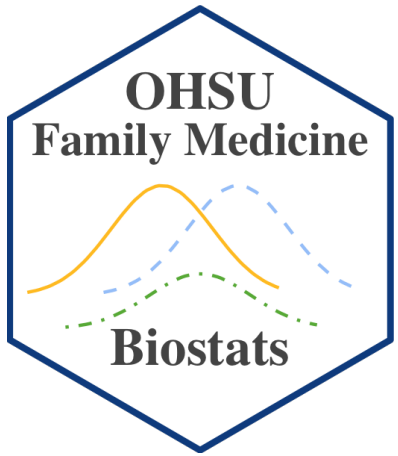

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