Demonstrating a return on investment in funding a Medicaid & Medicare adult dental benefit: A new perspective

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Medicaid dental: Benefits, costs & new models

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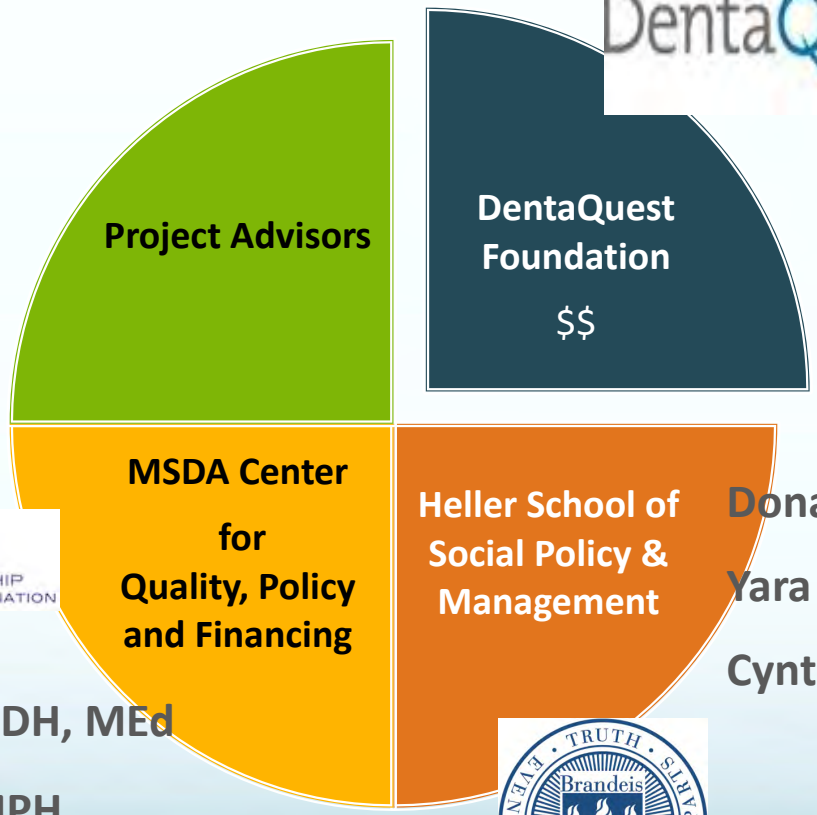
Research team

Medicaid
Academia
Dental Public Health



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DentaQuest Foundation: Oral Health 2020 goals and targets

Goal 3

Mandatory inclusion of an adult dental benefit in publicly funded health insurance: Adult Medicaid

Key charges

1. Study *non-traditional* factors/indicators that may be impacted by adding benefits;
2. Propose and study *non-traditional* factors that could impact overall state budgets and/or communities and programs; and
3. Develop a conceptual model for states to use in budget preparations and policy-making

Medicaid

Entitlement program, federal + state partnership

Children

- Ages 0 to <21 Years
- Minimum income eligibility established by Federal Gov.
- States may expand
- EPSDT Program
- Mandated Medical & Dental Benefits
- "Medically Necessary"
- No limit/No co-pay

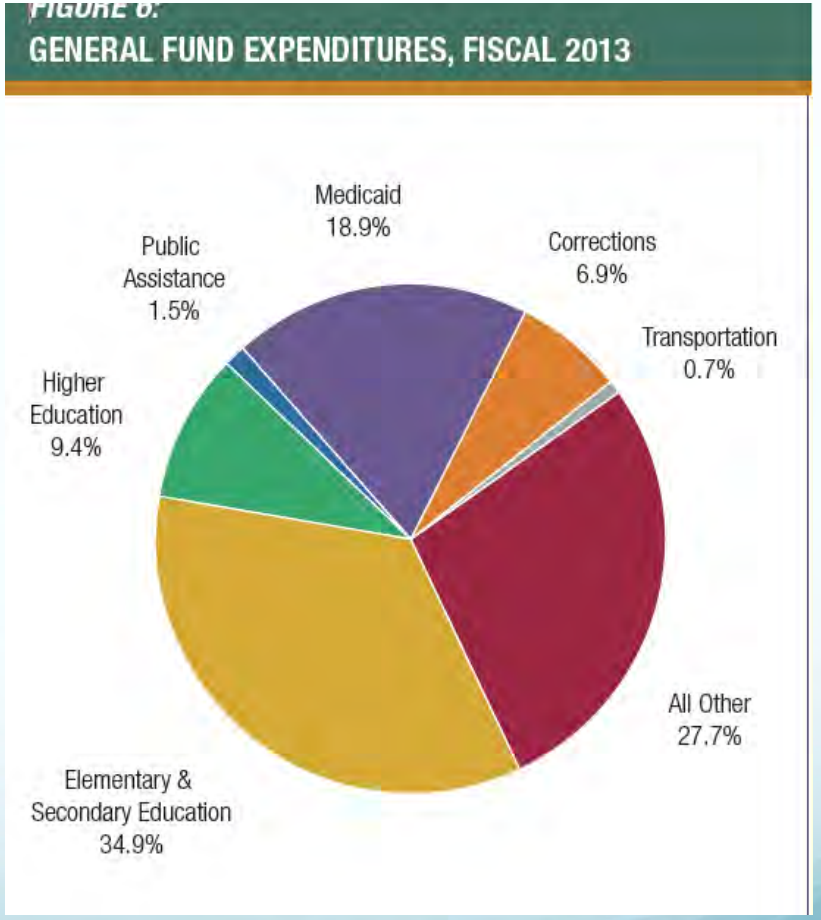
Adults

- Ages 21+
- Minimum income eligibility established by Federal Gov.
- Mandated Medical benefits
- Dental benefits optional
- Significant variability across states
  - ✓ Eligibility
  - ✓ Benefits
  - ✓ Payment

State expenditures report 2012-2014

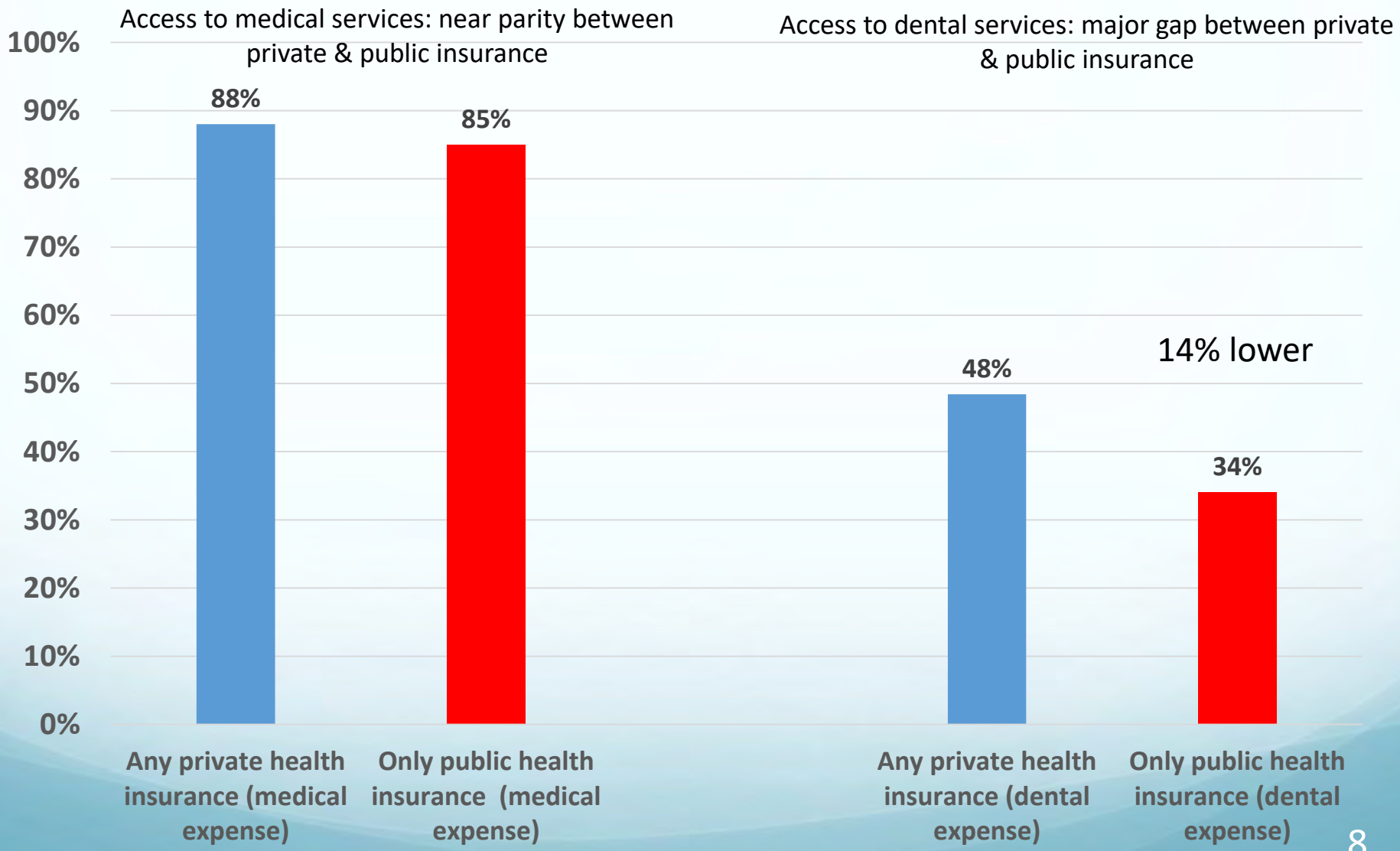
Top Budget Busters

1. Medicaid
2. Corrections
3. Transportation
4. Higher Education
5. Elementary & Secondary Education
6. Public Assistance
7. All Other



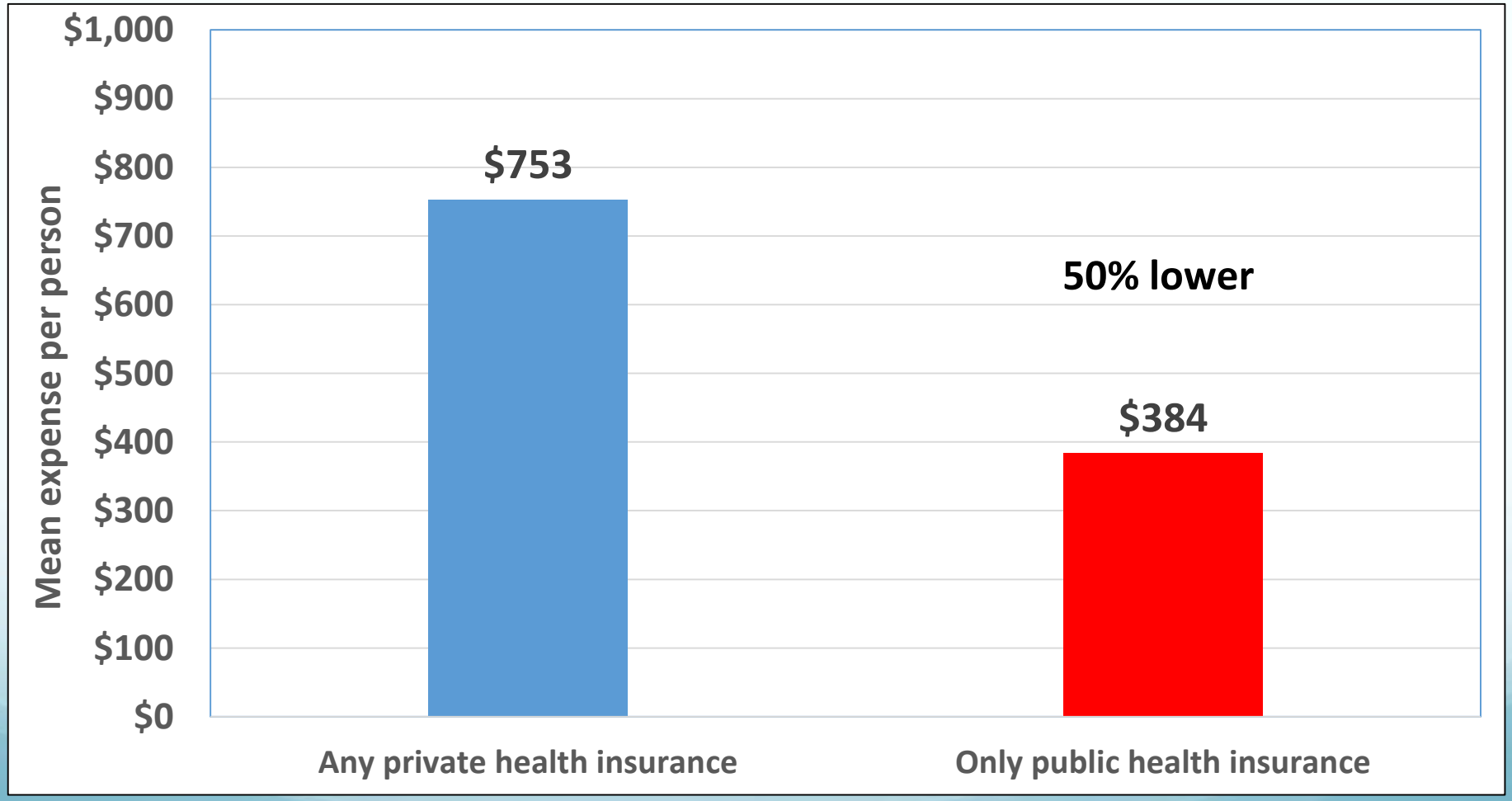
Access to medical and dental services:

% of insurance group incurring an expense in 2013



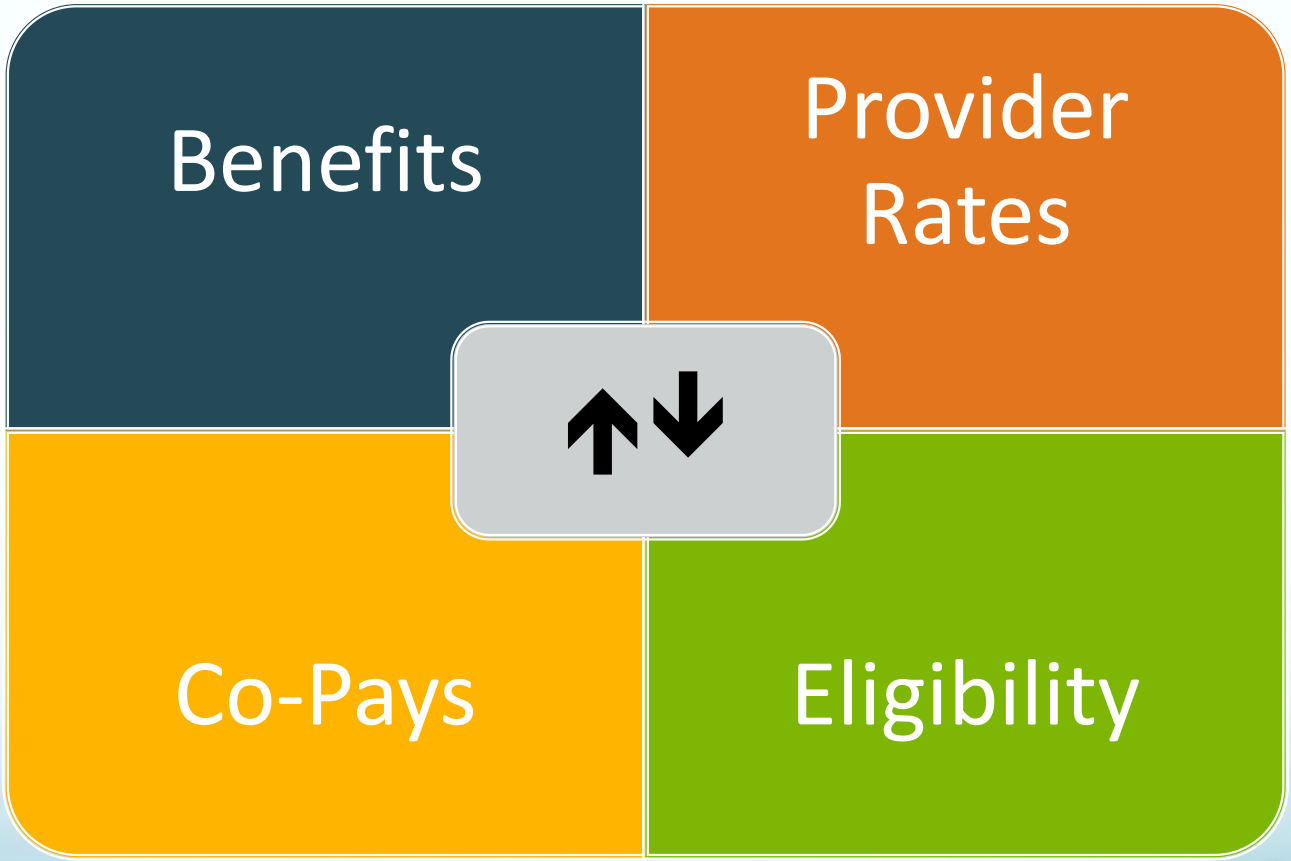
Source: AHRQ, Medical Expenditure Panel Survey (MEPS)

Extent of dental services:
Mean expense by insurance group among persons incurring an expense in 2013

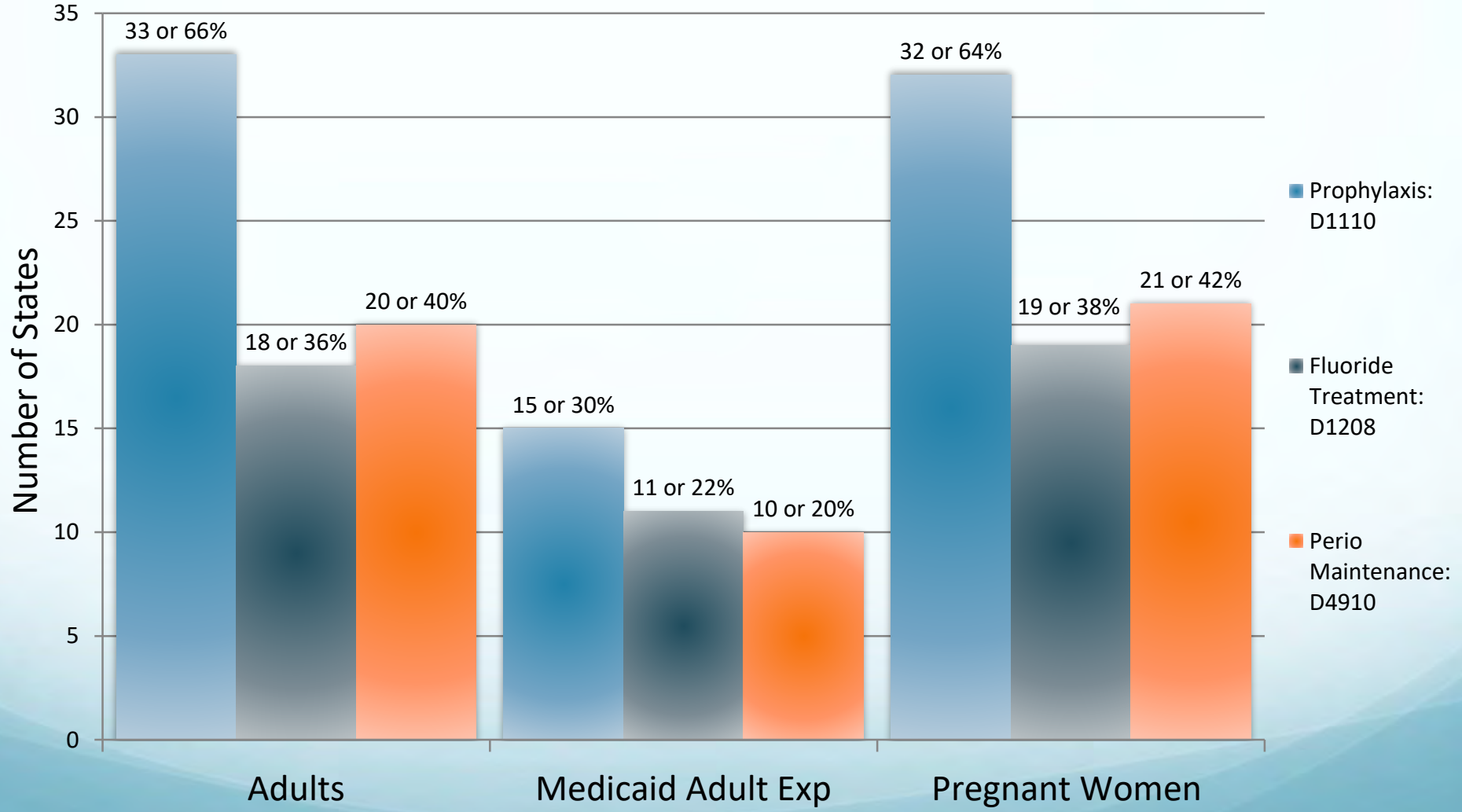


Source: AHRQ, Medical Expenditure Panel Survey (MEPS)

Cost drivers



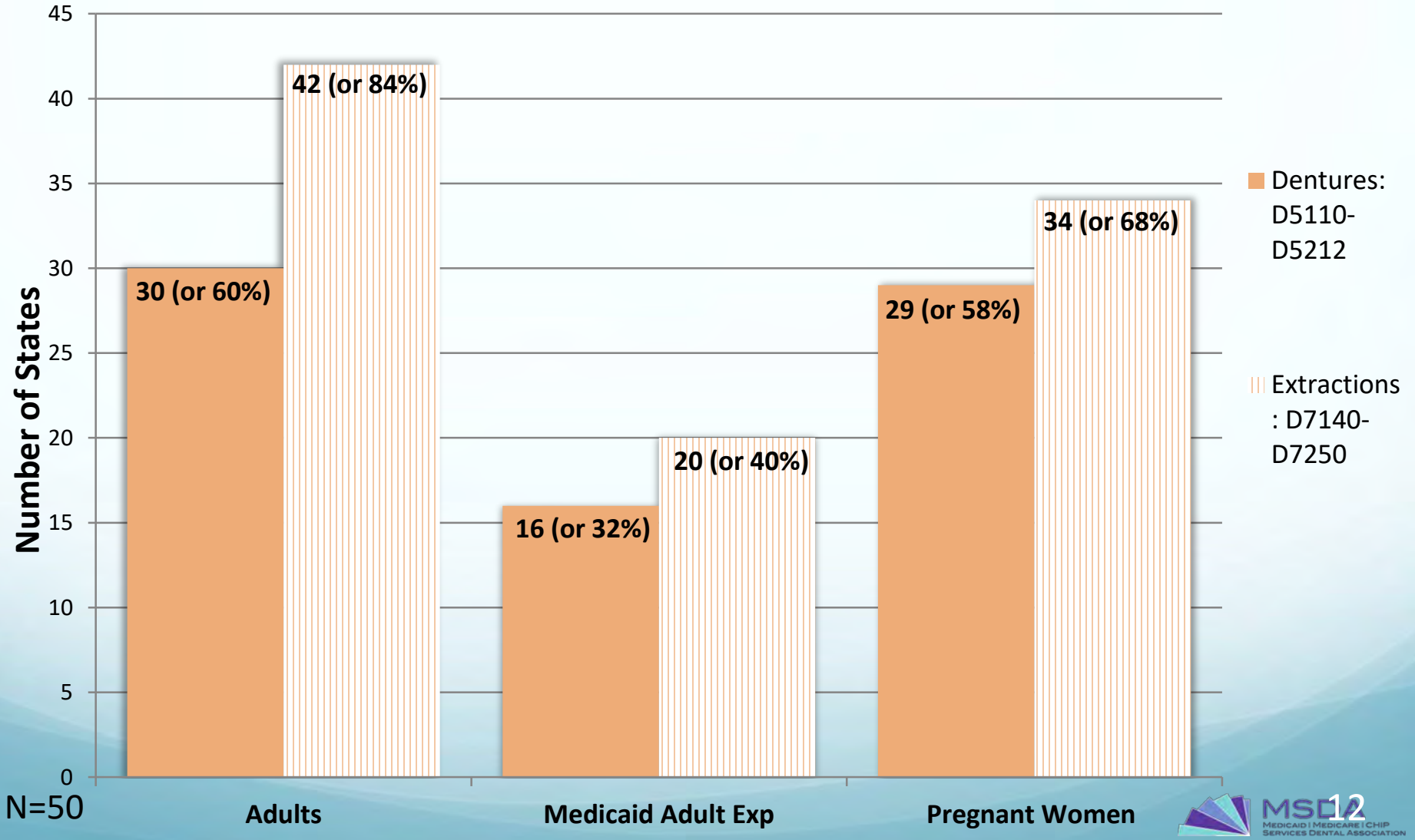
Adult dental benefits:
Preventive services - 2015



N= 50

Adult dental benefits

Dentures and extractions - 2015

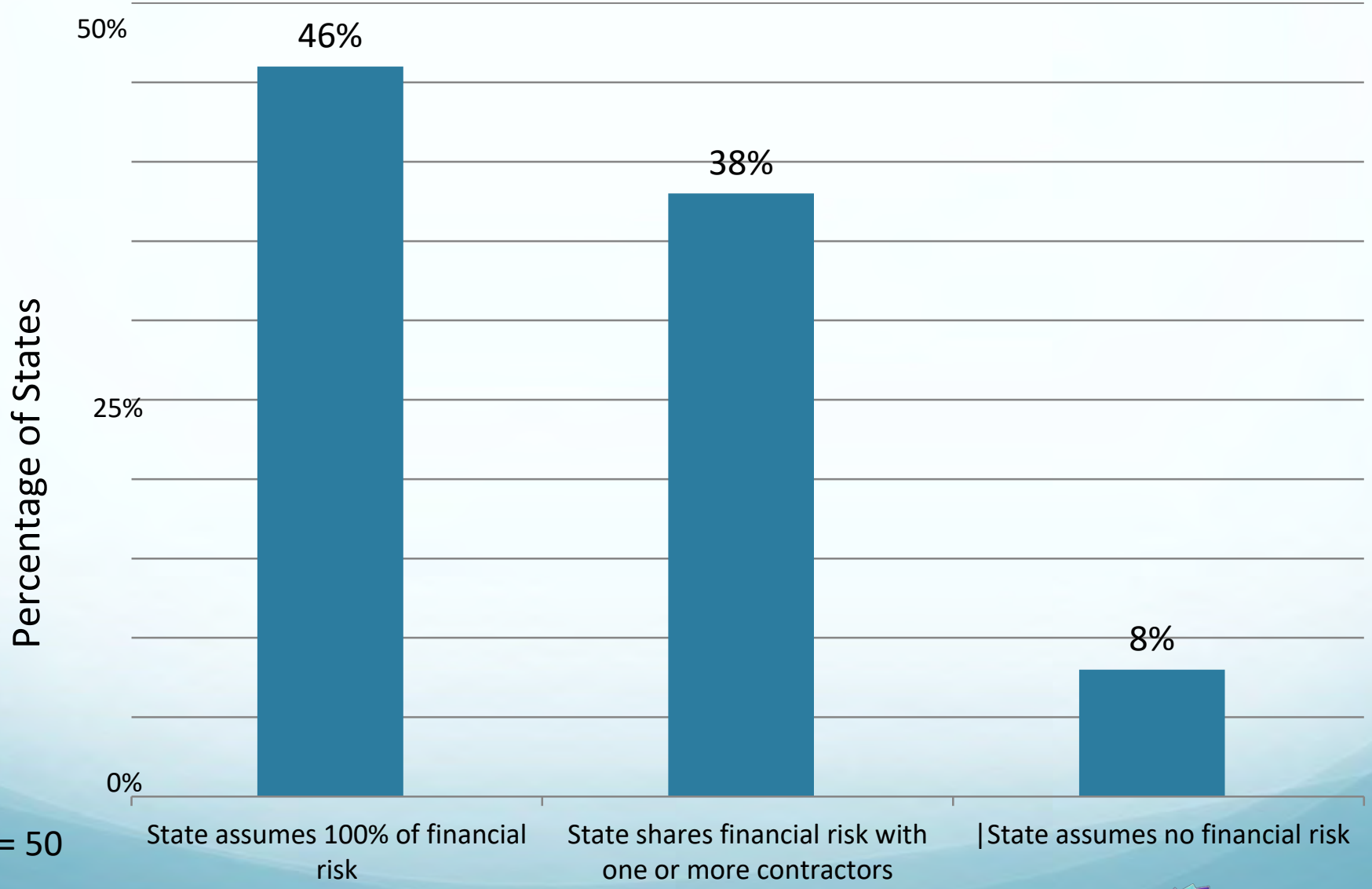


N=50

New models in Medicaid

- Dental Managed Care
  - Shared financial risk
  - Pay for performance
- Accountable Care Organizations (ACOs)
  - Active management of both quality & cost of care

Percentage of states sharing fiscal responsibility: Medicaid - 2015



N= 50

6% States Responded "Do Not Know" | Data was not available in one State | One State did not respond

MSDA
Medicaid | Medicare | CHIP Services Dental Association

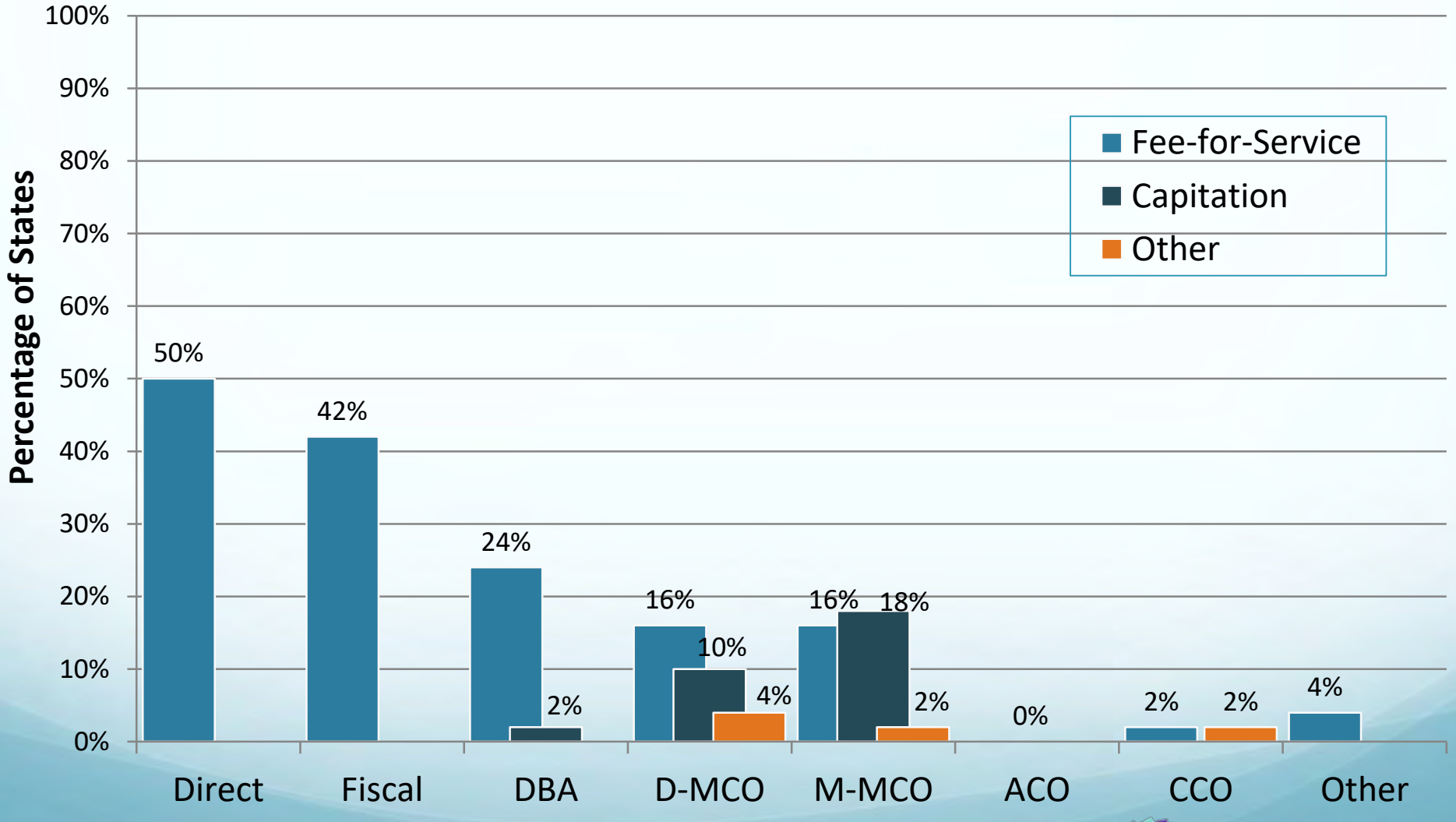
New payment environment

Traditional models are moving away from pure "fee-for-service" (FFS) payment to providers

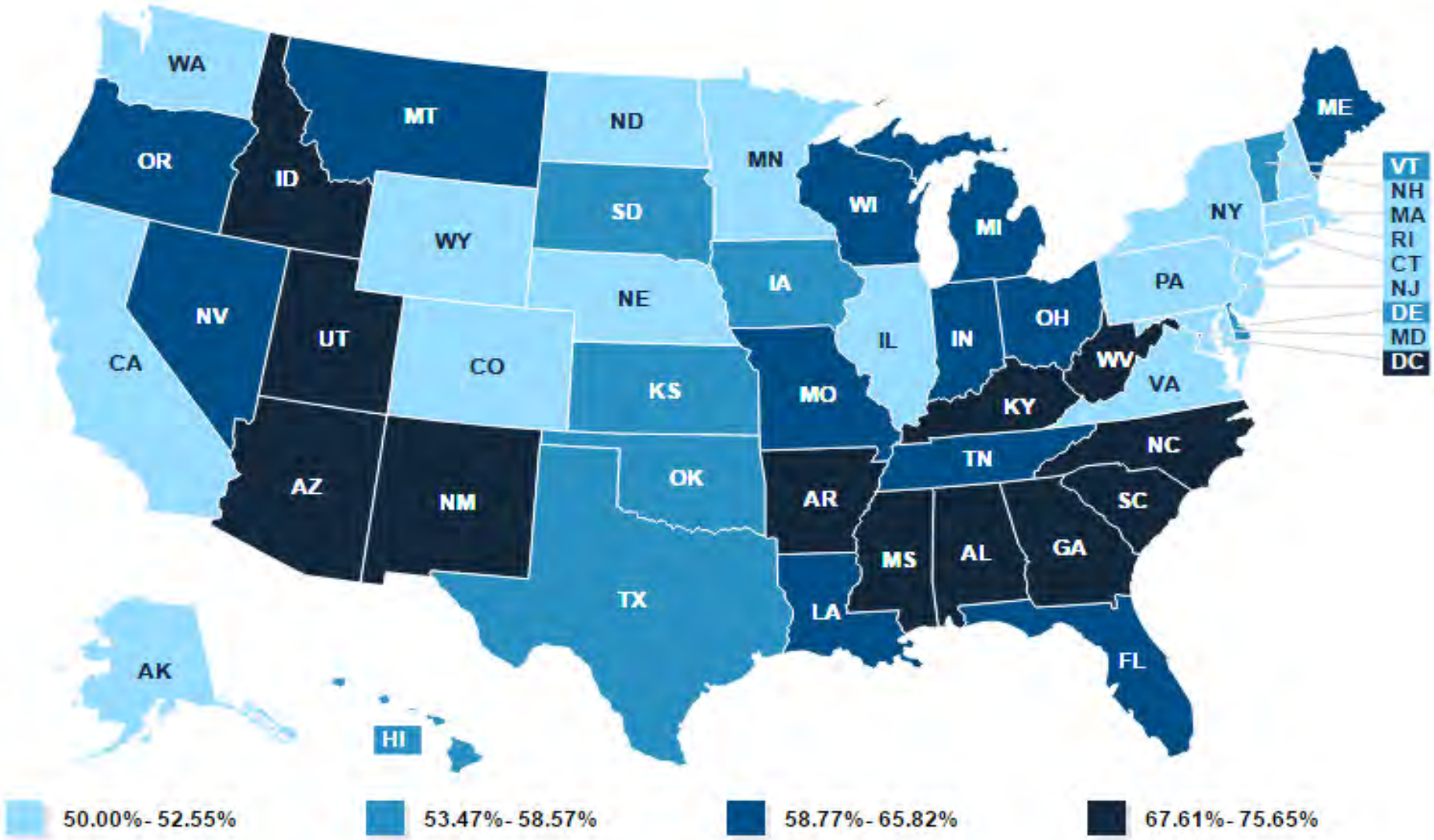
The patient-centered medical home model or PCMH includes rewards with:

- Enhanced payments
- Incentives

Variability in dental provider reimbursement - 2015



KFF.org | *Federal Medical Assistance Percentage (FMAP) for Medicaid...*

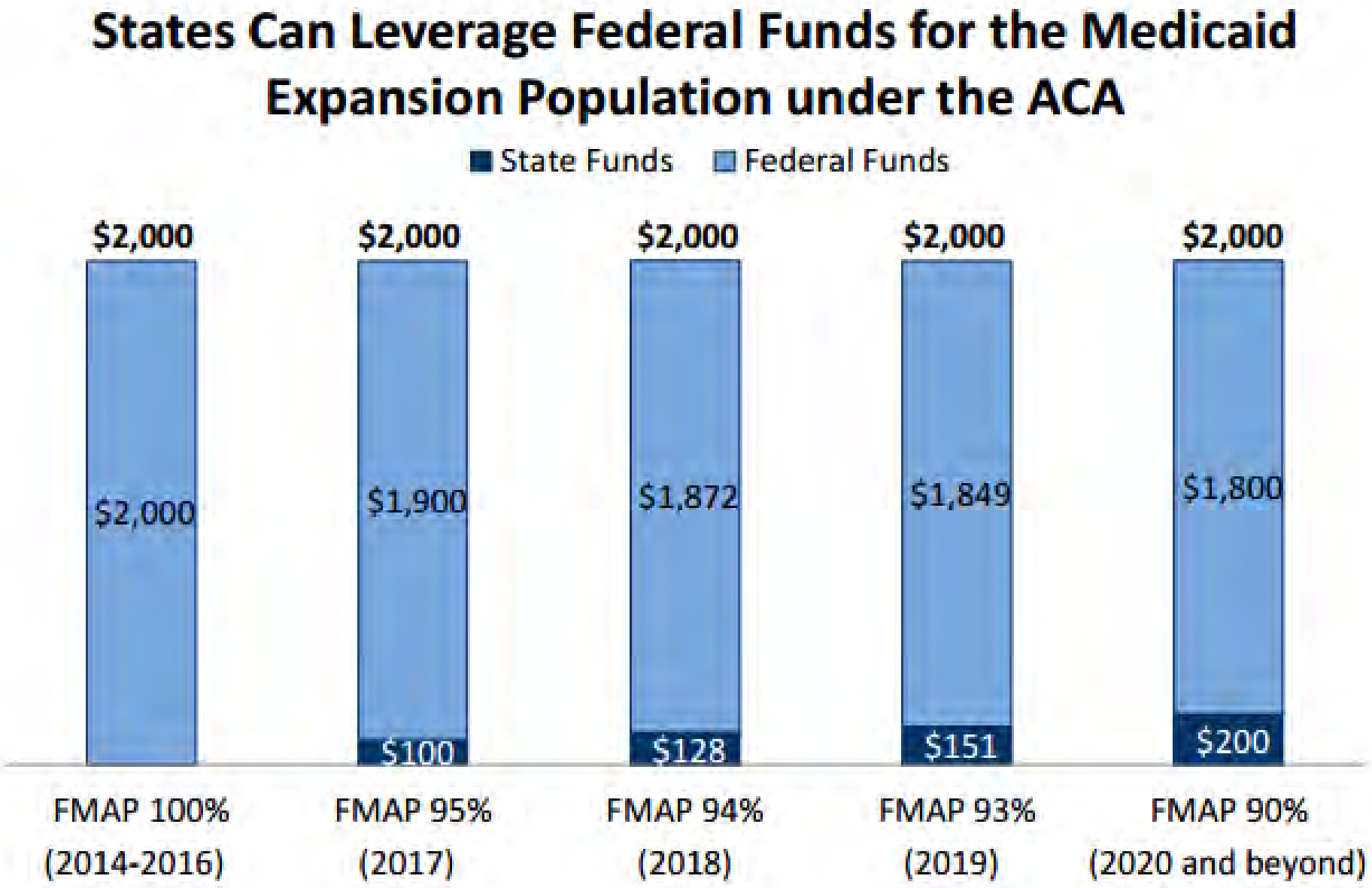


Appendix Table 1: Enhanced Matching Rates for Parents and Childless Adults, 2014 and Beyond

Year	Newly-Eligible Parents & Childless Adults (up to 138% FPL)
2014	100%
2015	100%
2016	100%
2017	95%
2018	94%
2019	93%
2020 on	90%

http://kff.org/medicaid/issue-brief/understanding-how-states-access-the-aca-enhanced-medicaid-match-rates/

Figure 4



https://kaiserfamilyfoundation.files.wordpress.com/2013/01/8352.pdf

Return on investment

Investments:

- Expanded coverage for adult dental services to improve access and depth

New Types of Returns:

- Less crime
- Less addiction
- Increased employment probability

Impact of limited adult Medicaid dental benefits

Impact on Individual

Impact on Society

Economic Impact

Impact on the individual

No Dental Insurance

- ↑ Use of ER for dental care
- ↑ Co-morbidity
- ↑ Out-of-pocket healthcare costs
- ↓ Disposable income
- ↓ Social and other activities

Poor Oral Health

- Poor aesthetics
- Diminished self-esteem
- ↓ Employment opportunity
- Unemployment
- Underemployment
- Limited social mobility
- Discrimination

Pain and Dysfunction

- ↓ productivity
- Substance abuse
- ↑ Crime
- ↑ Incarceration
- ↑ Need for social services
- Loss of employment
- Diminished effort to seek employment

Impact on the community

No Dental Insurance

- ↑ Need for safety-net and urgent healthcare
- ↑ Healthcare costs

Poor Oral Health

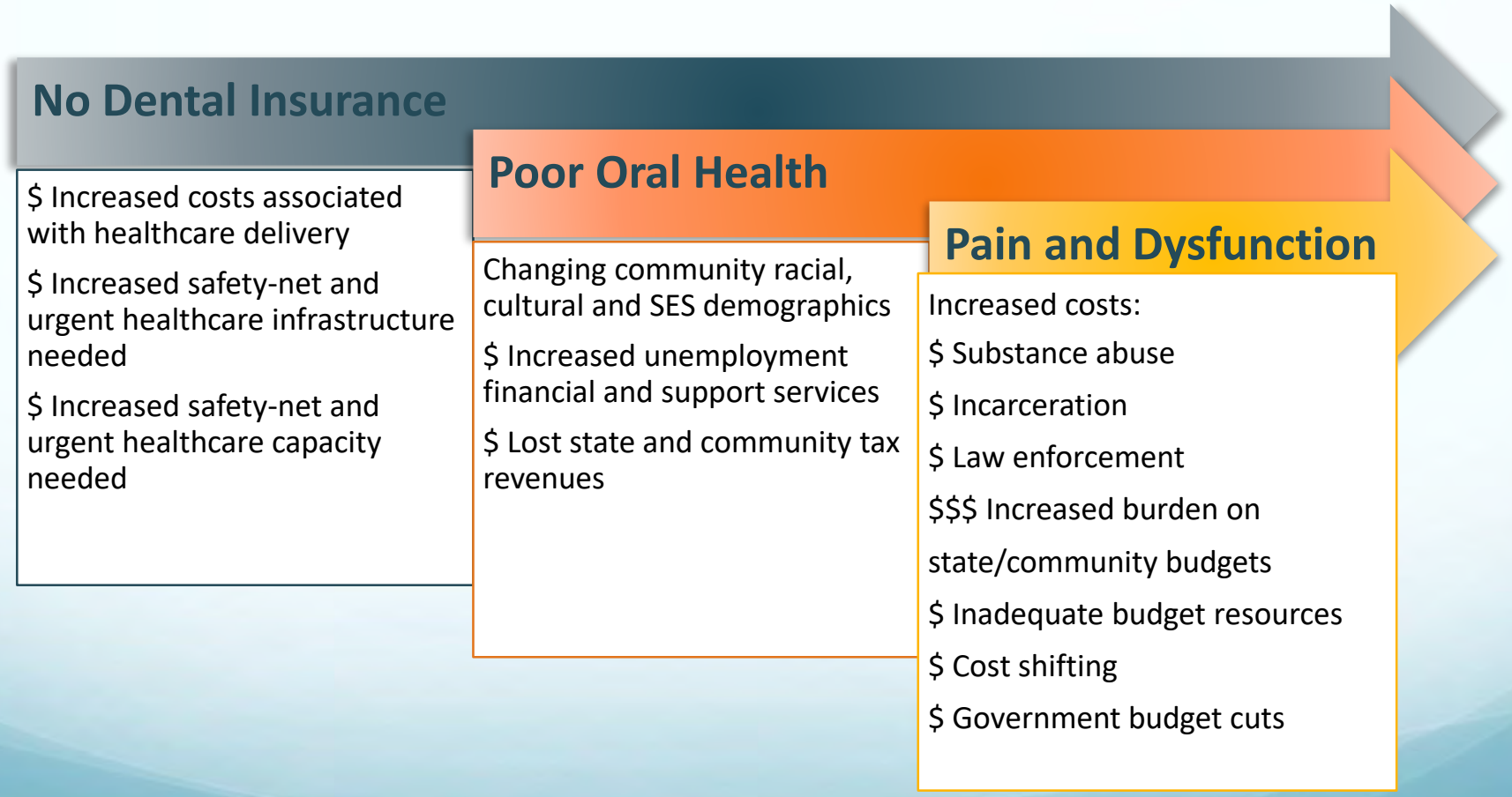
- ↑ HS drop-out rate
- ↑ Rate of unemployment
- ↑ Underemployment
- ↓ Income, sales, and property tax revenue
- ↓ Economic stability
- Migration in/out of community by SES Fewer citizens for higher level jobs

Pain and Dysfunction

- ↑ Substance abuse
- ↑ Crime
- Decrease community safety
- ↑ Detention & imprisonment
- Need for increase law enforcement
- ↑ Need for social and financial support services
- Loss of employment
- ↓ Effort to seek employment

Economic impact:

Costs to community and state



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Broken Smiles: The impact of untreated oral diseases on employment

Objectives

- Estimate the impact of unsightly dental diseases and routine dental visits on
  - Applicants' employability
  - Government spending

Data

10,175 respondents **in 2013-2014**

3,931 working age adults between 21 and 64 who completed detailed dental examination

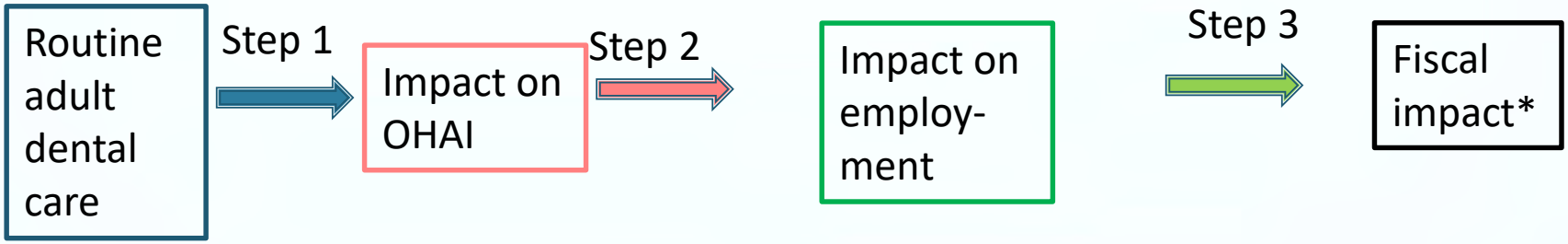
28% underserved population covering Mexican Americans. Hispanics and non-Hispanic Blacks

72% not underserved population

Oral Health Aesthetic Index (OHAI)

- 12 Upper and lower permanent anterior teeth
- Tooth count and tooth surface condition variables
  - Sound tooth, missing tooth with replacement, treated tooth = 1
  - Missing or tooth with untreated surface condition = 0
- Summed score for the upper and for the lower anterior teeth
- Averaged upper and lower scores, giving range of 0-6
  - Maximum score: 6 - All teeth are sound, replaced or treated
  - Minimum score: 0 - All teeth are missing or untreated

Framework



*Government revenues and spending through taxes, unemployment benefits, Medicaid spending)

Impact of routine dental visit (step 1)

OHAI

Person with a recent routine dental visit in last (in the 6 months)

Demographically matched person who did not have a recent routine dental visit

Key premise (step 2, part 1)

Physical appearance affects the employability of job applicants

Employment impact (step 2, part 2)

Employment status = **Function of**

- **OHAI**
- **Age**
- **Sex**
- **Marital status**
- **Years of education**
- **Living in poverty**
- **Health status**

Employment impact (step 2, part 3)

- Predicted the increased probability of employment associated with having a recent routine dental visit

Fiscal impact (step 3)

- Estimated the net fiscal benefit of a recent routine visit to state and federal governments as
  - Additional tax revenue
  - Savings from reduced unemployment benefits
  - Saving from lower Medicaid enrollment

Results

Contextual statistics

- Visited dentist within last 6 months (step 1)
  - 32.1% Routine visit
  - 45.2% Any visit
- OHAI (step 2)
  - Average 5.7
  - Standard deviation 0.8

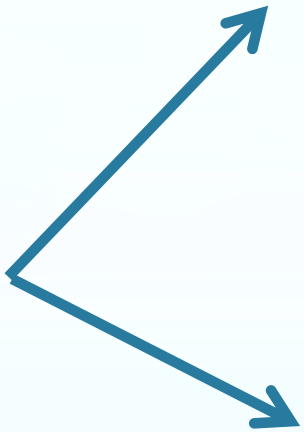
Routine dental visit (step 1)

Increased OHAI score by 0.20 points (95% CI: 0.11-0.29)

Amy is…

- Married
- 42.1 years of age
- 13.9 years of education
- In excellent health
- Does not live in poverty

Amy's probability of employment is



75.1% with routine dental visit

74.2% **<u>without</u>** routine dental visit

Incremental probability of employment (step 2, part 1)

0.87 percentage point

(75.1% with routine dental visit

-74.2% without routine dental visit)

Impact: Employability (step 2, part 2)

- Access to routine dental care may improve the appearance of anterior teeth
  - Improve employability of 34,000 adults (15,000 of these individuals are underserved)

Impact: Annual fiscal contribution (step 3)

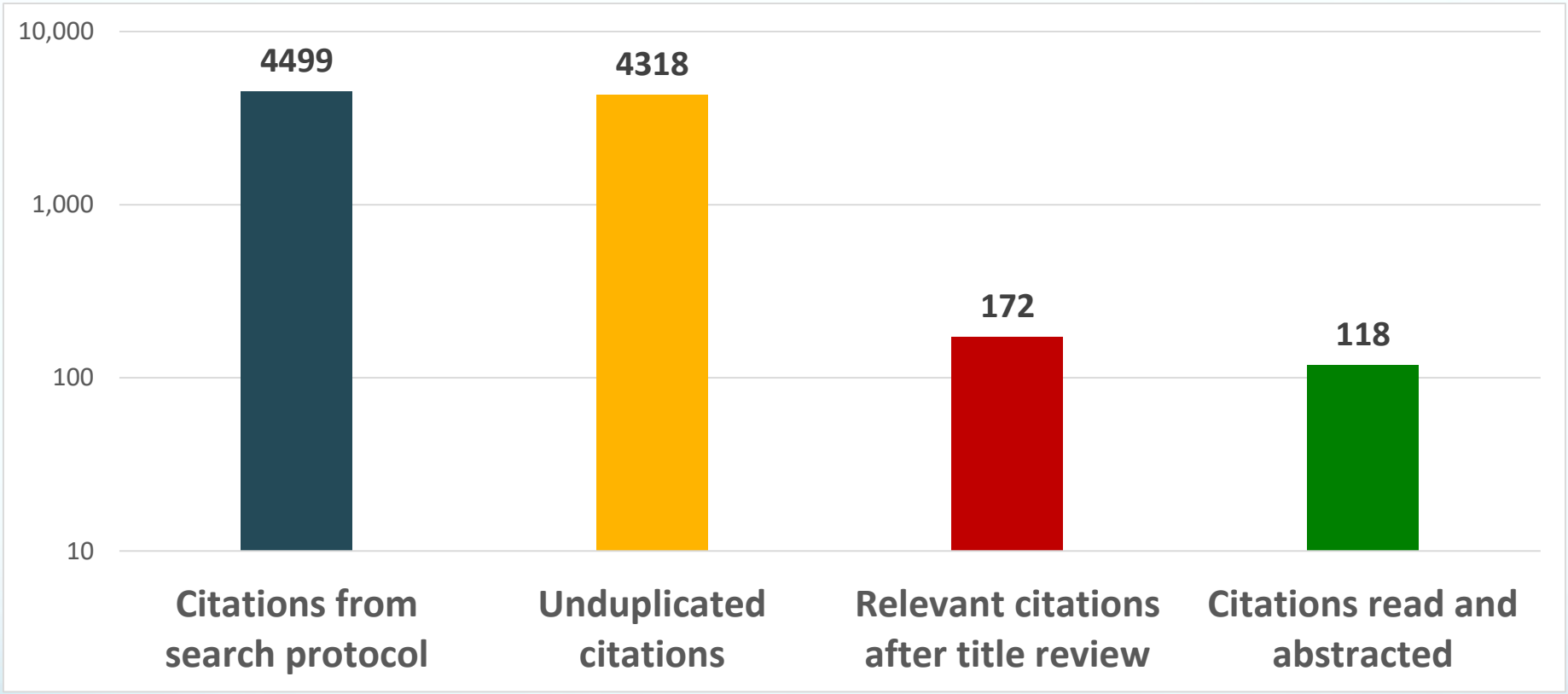
- Annual net fiscal contribution $95.1 million
  - $48.6 million tax revenues
  - $26.9 million savings from reduced unemployment benefits
  - $19.6 million savings from Medicaid enrollment
- Benefits may persist for more than one year

Downstream Impacts of Analgesic Use and Misuse, Secondary to Chronic Orofacial Pain

Linking orofacial pain to outcomes

- Begin with assumption that chronic orofacial pain leads to analgesic use
- Linkages mapped after literature reviews
- Two stages of data extraction, then began calculations
- Population at risk estimated using NHANES
- Returned to literature to fill gaps in linkages and/or costs (n=29)

Literature review: Opioids



- Systematic review on orofacial pain and opioids
- Narrowed focus to crime and ED visits based on combined importance and data availability

Literature review: Non-opioids

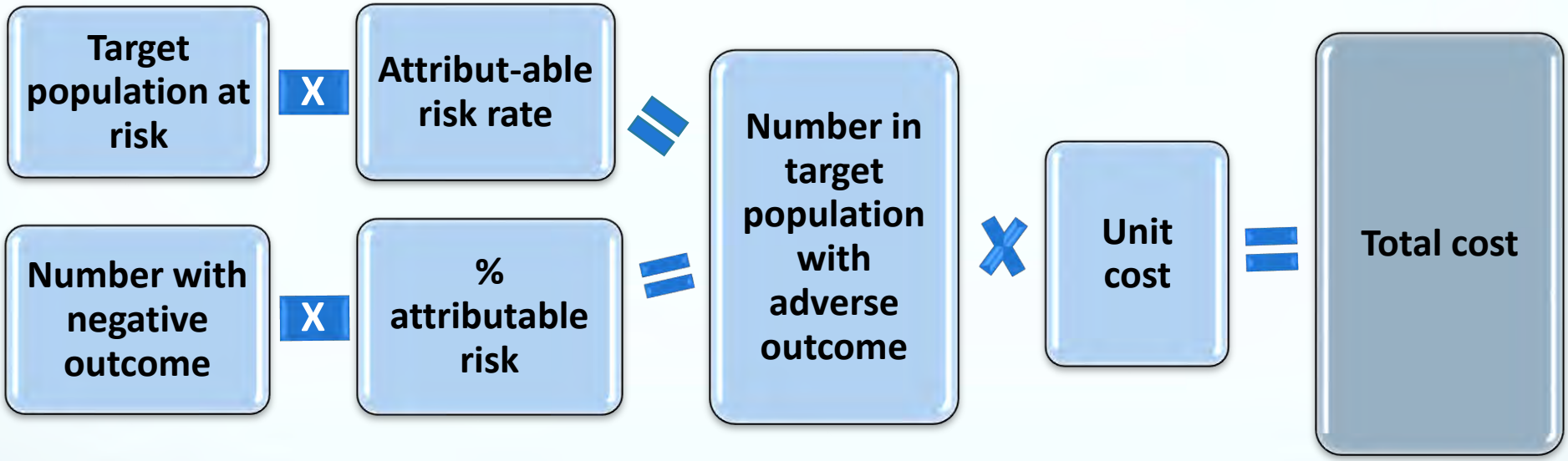
- Systematic review focused on NSAIDs, updated in 2016
- Identified most significant impacts
- 40 articles read and extracted
- Focus narrowed to end-stage renal disease (ESRD) and liver transplant based on combined importance and data availability

Negative outcomes mapped…

- Interim outcomes: alcohol and opioid use disorder
- NSAID*-related downstream outcomes:
  - **End-stage renal disease**
  - **Liver transplant**
  - Gastrointestinal (GI) bleeding
  - Acute renal failure
  - Cardiac events
- Opioid-related downstream outcomes:
  - **Crime**
  - **Emergency department (ED) visits**
  - Early death
  - HIV infection
  - Hepatitis infection
  - Lost productivity

* Nonsteroidal anti-inflammatory drug, e.g. acetaminophen, ibuprofen, naproxen and aspirin

Attribution and costs

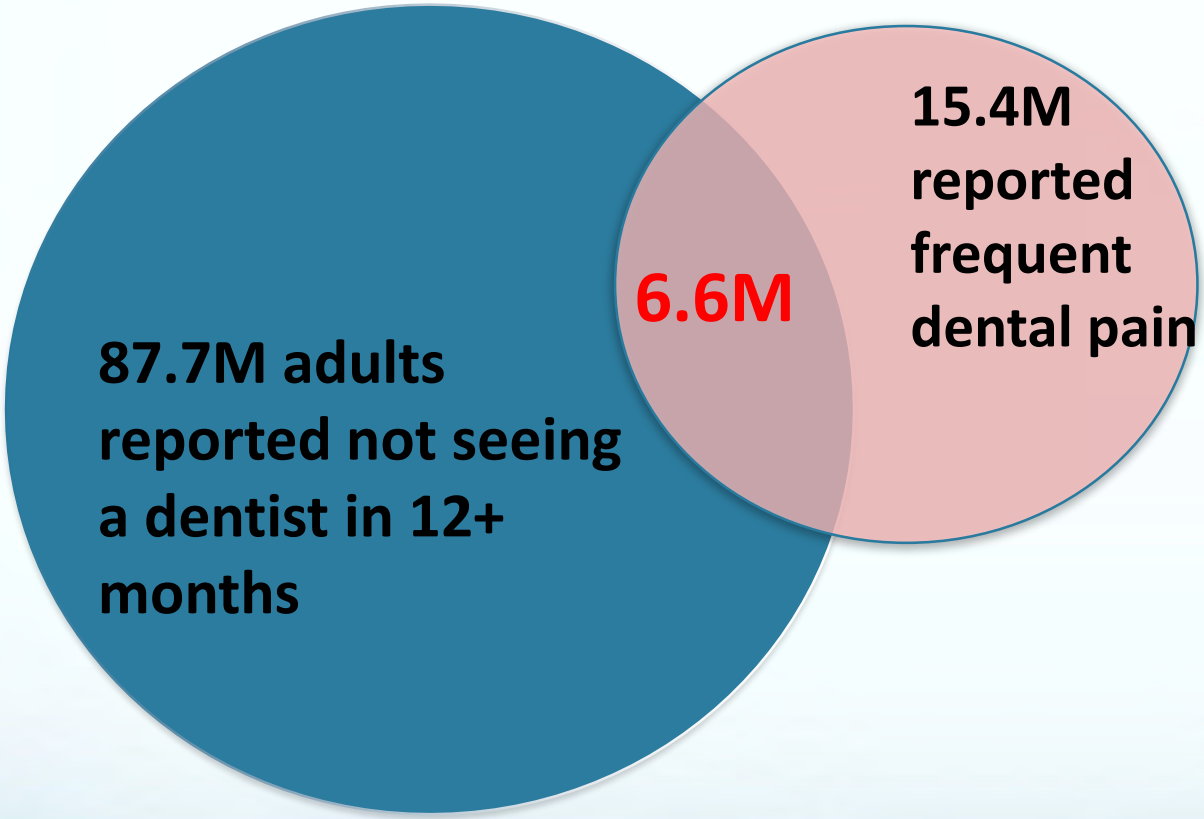


Attributable risk rates (e.g., developing opioid use disorder, committing a property crime, making a drug-poisoning emergency department visit, and developing end-stage renal disease) account for the fact that some people would have suffered the adverse impact despite access to dental care.

Summary of key parameters, including those varied simultaneously for 10,000 Monte Carlo simulations in the probabilistic sensitivity analyses

Outcome	Item	Units	Estimate	Distribution	Statistics	Values	References
End-stage renal disease	Persons who have not seen a dentist in the last 12 months and reported very/fairly often dental pain[a]	N	6,560,970				NHANES 2013-14
	Prevalence of chronic kidney disease	%	10	Beta-PERT	(Min; best; max)	(8; 10; 14)	Chen et al.; NIDDK; Ozieh et al.
	Those in at-risk population who reported weak kidneys but not dialysis and took at least one Rx NSAID for >120 days[b]	%	23				NHANES 2011-12
	Excess risk of ESRD due to NSAID consumption	%	0.4	Beta-PERT	(Min; best; max)	(0.3; 0.4; 1.6)	Kuo et al.
	Average life expectancy after initiation of dialysis	Years	5.6				2015 USRDS ESRD Annual data report
	Direct medical costs per ESRD Medicare patient per year[c]	$	66,920				2014 USRDS Annual data report
	Average ratio of total to direct costs for pain[d]	N	2.1				Gaskin et al.
Liver transplants	Annual all-cause ALF	N	2,800				Fontana et al.
	Percent of ALF due to unintentional overdose	%	48	Beta-PERT	(Min; best; max)	(46; 48; 50)	Fontana et al.; Larson et al.
	Percent of unintentional overdoses leading to ALF secondary to dental pain	%	41.1				Siddique et al.
	Percent of ALF receiving a liver transplant	%	9.0	Beta-PERT	(Min; best; max)	(8.4; 9.0; 10.0)	Fontana et al.; Larson et al.

Population at risk & risk rates



- 2013-2014 National Health and Nutrition Examination Survey (NHANES)
  - 224.1 million (M) adults age 21+
- Risk rates generally came from literature reviews

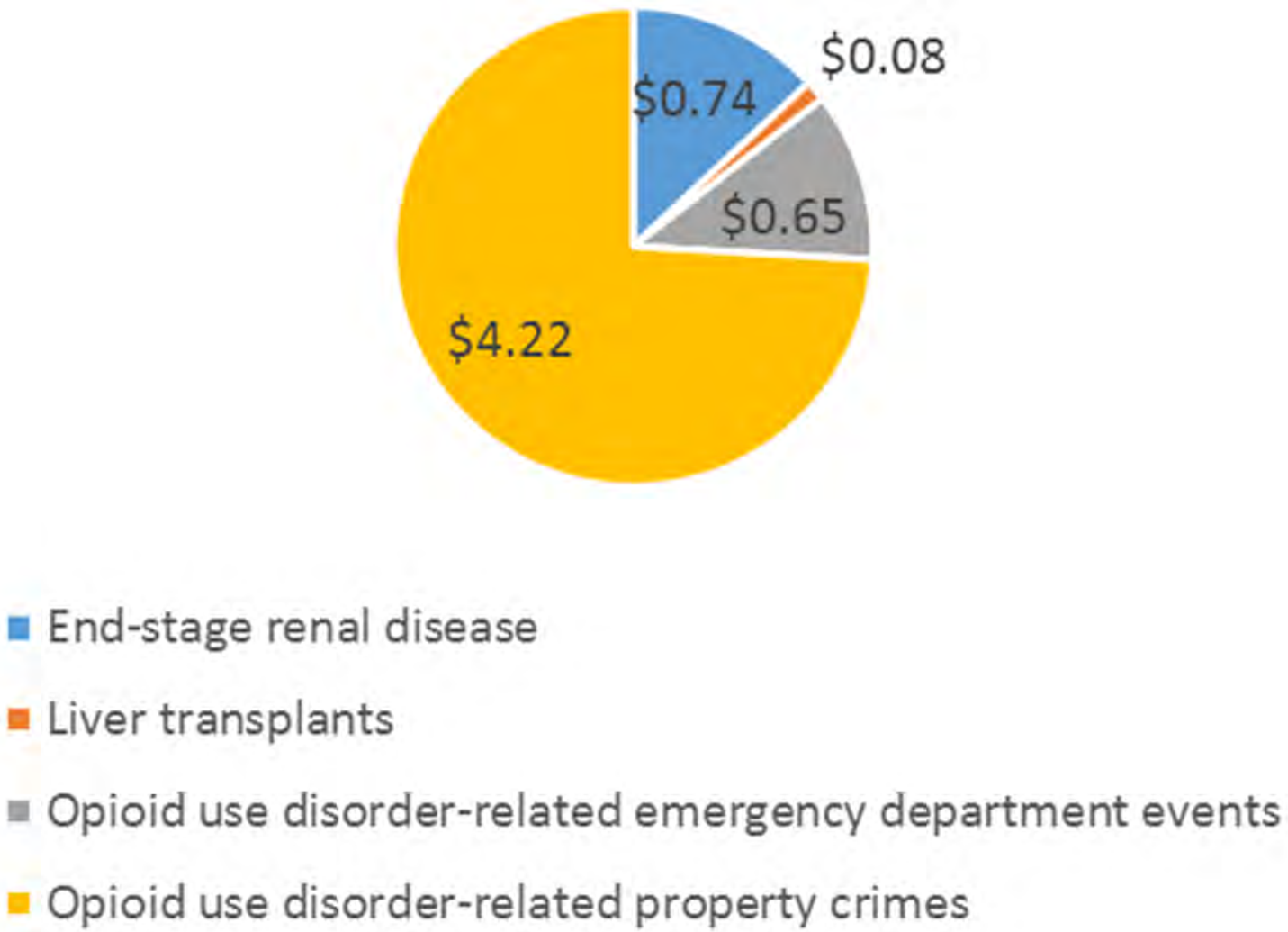
Key results

Total numbers and costs for downstream adverse outcomes secondary to chronic orofacial pain, US adults, 2014 (US$ millions)

Outcome	Attributable number	95% CI	Medical cost	Societal cost	Societal cost 95% CI
End-stage renal disease	933	484-1732	$350	$744	$387-$1,383
Liver transplants	50	47-54	$37	$79	$74-$85
Opioid use disorder-related emergency department events	14,335	8,283-20,485	$306	$652	$376-$931
Opioid use disorder-related property crimes	250,947	109,412-463,014	n/a[d]	$4,223	$1,034-$10,569

Note: CI = confidence interval; n/a – not available

Overall annual costs (in billions; total $5.70 billion)



Key limitations

- NHANES data do not include entire adult population
- NHANES data do not include over-the-counter analgesic usage
- Unable to capture patient costs for direct medical and non-medical expenditures
- Only includes costs for 4 of the adverse downstream outcomes identified

Conclusions for pathway

- Chronic dental pain leads to a number of adverse downstream outcomes, causing billions in societal costs
- Estimates of burden are conservative (small) due to data limitations

Next steps…

- Using state-level characteristics, costs and benefits calculated by state via a user-friendly Excel-based costs-offsets tool…

State Dental Cost Offsets

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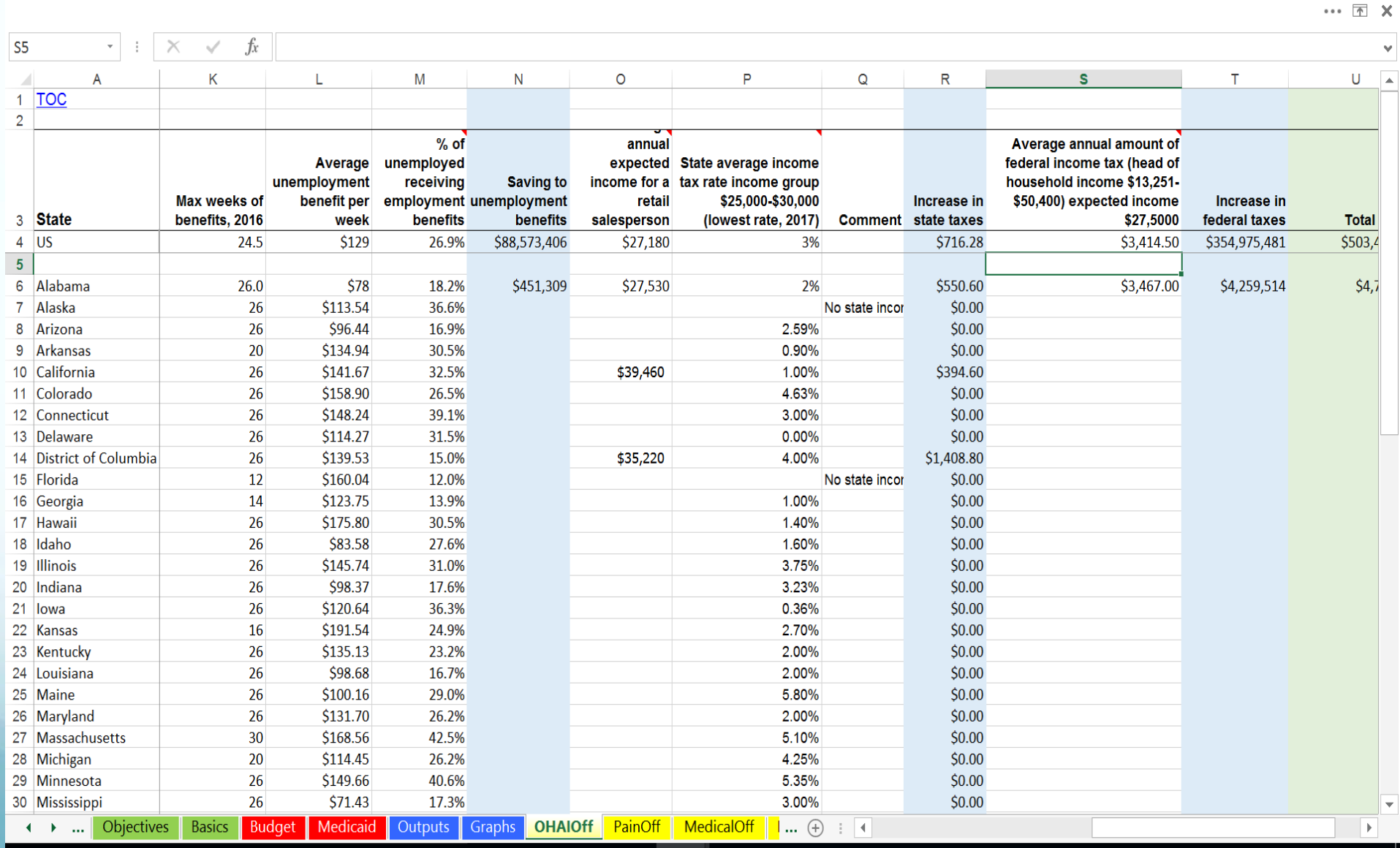
Cost offsets tool (OHAI by state)



S5

	A	K	L	M	N	O	P	Q	R	S	T	U
1	TOC											
2												
3	State	Max weeks of benefits, 2016	Average unemployment benefit per week	% of unemployed receiving employment benefits	Saving to unemployment benefits	annual expected income for a retail salesperson	State average income tax rate income group $25,000-$30,000 (lowest rate, 2017)	Comment	Increase in state taxes	Average annual amount of federal income tax (head of household income $13,251-$50,400) expected income $27,5000	Increase in federal taxes	Total
4	US	24.5	$129	26.9%	$88,573,406	$27,180	3%		$716.28	$3,414.50	$354,975,481	$503,4
5												
6	Alabama	26.0	$78	18.2%	$451,309	$27,530	2%		$550.60	$3,467.00	$4,259,514	$4,7
7	Alaska	26	$113.54	36.6%				No state incor	$0.00			
8	Arizona	26	$96.44	16.9%			2.59%		$0.00			
9	Arkansas	20	$134.94	30.5%			0.90%		$0.00			
10	California	26	$141.67	32.5%		$39,460	1.00%		$394.60			
11	Colorado	26	$158.90	26.5%			4.63%		$0.00			
12	Connecticut	26	$148.24	39.1%			3.00%		$0.00			
13	Delaware	26	$114.27	31.5%			0.00%		$0.00			
14	District of Columbia	26	$139.53	15.0%		$35,220	4.00%		$1,408.80			
15	Florida	12	$160.04	12.0%				No state incor	$0.00			
16	Georgia	14	$123.75	13.9%			1.00%		$0.00			
17	Hawaii	26	$175.80	30.5%			1.40%		$0.00			
18	Idaho	26	$83.58	27.6%			1.60%		$0.00			
19	Illinois	26	$145.74	31.0%			3.75%		$0.00			
20	Indiana	26	$98.37	17.6%			3.23%		$0.00			
21	Iowa	26	$120.64	36.3%			0.36%		$0.00			
22	Kansas	16	$191.54	24.9%			2.70%		$0.00			
23	Kentucky	26	$135.13	23.2%			2.00%		$0.00			
24	Louisiana	26	$98.68	16.7%			2.00%		$0.00			
25	Maine	26	$100.16	29.0%			5.80%		$0.00			
26	Maryland	26	$131.70	26.2%			2.00%		$0.00			
27	Massachusetts	30	$168.56	42.5%			5.10%		$0.00			
28	Michigan	20	$114.45	26.2%			4.25%		$0.00			
29	Minnesota	26	$149.66	40.6%			5.35%		$0.00			
30	Mississippi	26	$71.43	17.3%			3.00%		$0.00			

Objectives | Basics | Budget | Medicaid | Outputs | Graphs | OHAIOff | PainOff | MedicalOff

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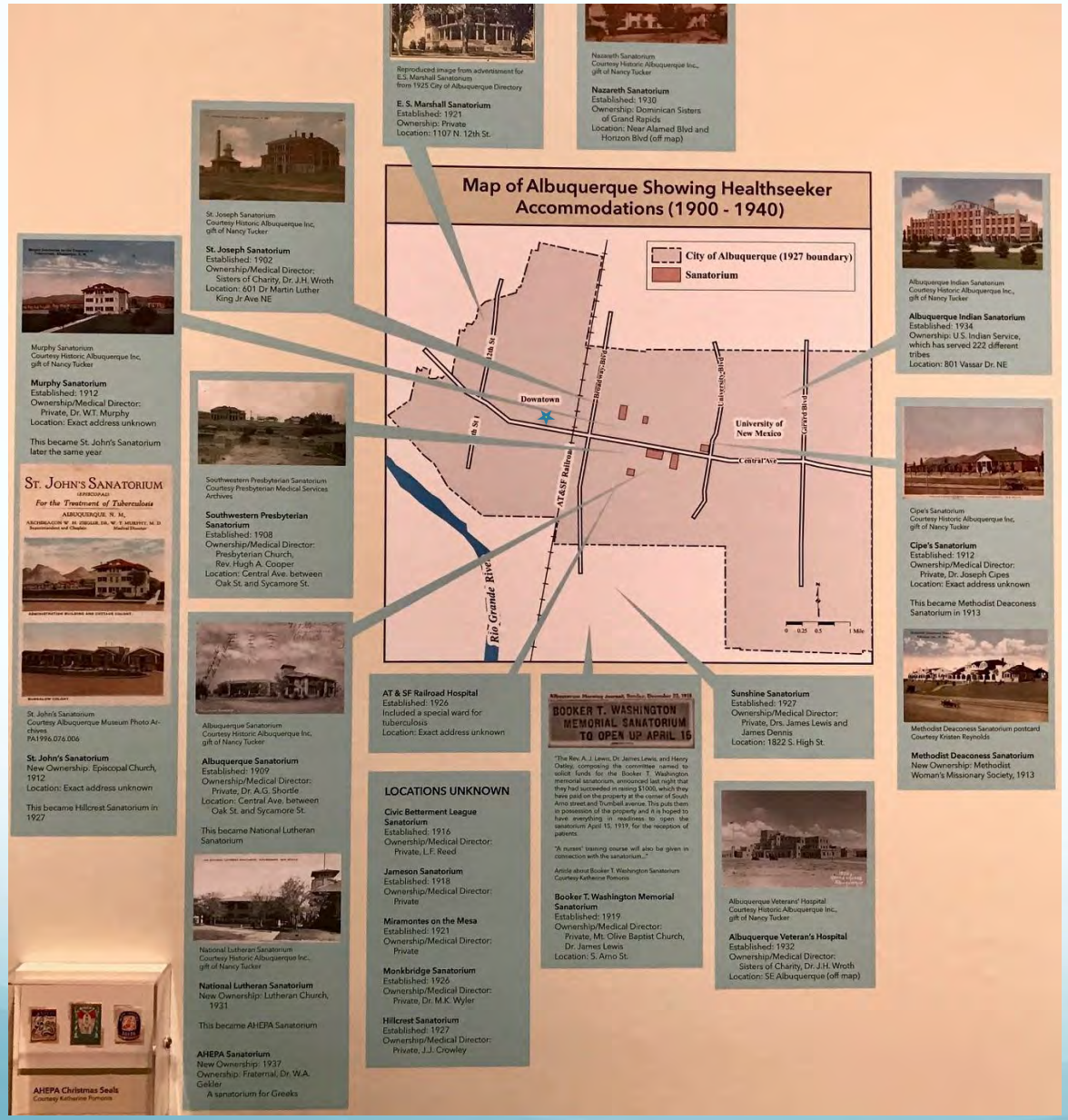
Health seekers for TB



- 15 TB facilities in Albuquerque
- Early 1900s

2017 National Medicaid, Medicare & CHIP Oral Health Symposium

MSDA
MEDICAID | MEDICARE | CHIP SERVICES DENTAL ASSOCIATION

June 4th-6th, 2017

Improving Quality through Data Mining and Analytics

New Location: *Omni Shoreham Hotel*

2500 Calvert Street, Washington DC 20008

Register online at: www.medicaiddental.org

MSDA State Membership: Travel Stipends Available $$

Thank you!
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