

Assessing the Effectiveness of Efforts to Diversify the Health Professions: Evidence from the RWJF Summer Medical and Dental Education Program

Advancing Diversity: A Critical Role of Pipeline Programs

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Minorities Continue to Be Underrepresented in the Health Professions

- **Underrepresented minorities account for about 12 percent of physicians and 9 percent of dentists**
- **Projections point to a shortage of 45,000 primary care physicians and 46,000 surgeons and medical specialists by 2020 (Kirch 2014)**
- **Shortages are likely to be particularly acute in communities already suffering from inadequate access to medical services, such as low-income and rural areas, which are more likely to be served by minority providers (National Research Council 2004)**
- **Pipeline programs are sponsored by universities, federal government agencies, and private foundations to address the supply and disparity problems**

Pipeline Programs are Widespread

- **Most of the 141 accredited medical schools sponsor or host pipeline programs today (Ready & Nickens 1994; AAMC 2015)**
- **83 percent of the 65 accredited dental schools sponsor or host a pipeline program today (ADEA 2015)**

Evidence of Their Effectiveness is Lacking

- **Most evaluations are:**
 - **Outcome studies (follow program participants over time)**
 - **Benchmarking studies (compare program participants to a broader population)**
- **Few evaluations use a comparison group design or are “rigorous” in studying impacts**
 - **Literature review conducted by the Department of Health Human Services (2009) included one rigorous evaluation**
 - **Our ongoing update uncovered only one more rigorous study (so far)**

Contribute To Existing Knowledge

- Much is known about SMDEP through prior evaluations and the National Program Office
- Mathematica's task was to leverage existing data to:
 - Produce rigorous evidence of impacts
 - Identify the key “ingredients” of SMDEP to inform decision making and potential replication efforts

Key Research Questions

1. Student Impacts

What is the impact of the program on students' health career trajectories?

Do average outcomes vary by student characteristics?

2. Key Components

What are the critical ingredients of this program?

Do average program outcomes vary with program components?

Summer Medical and Dental Education Program (SMDEP)

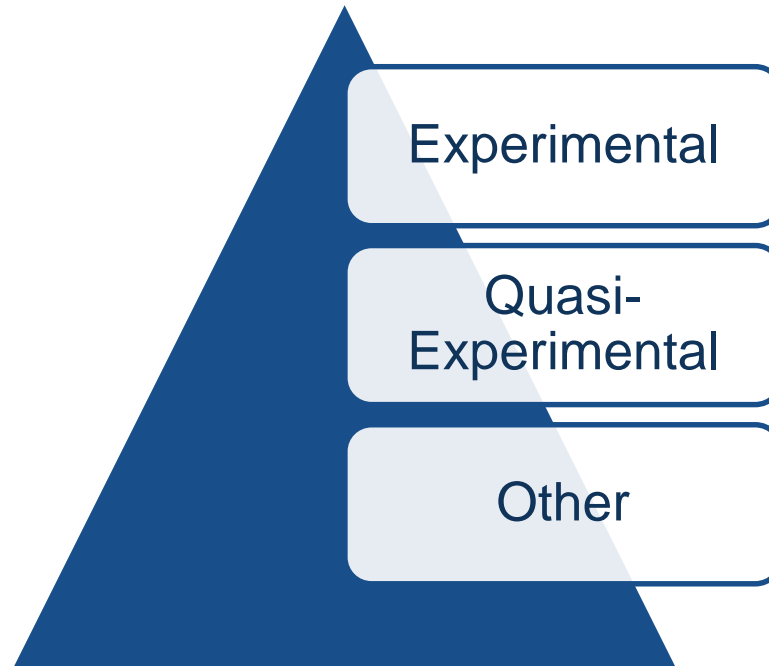
- **Is a free, six-week residential science enrichment program sponsored by the RWJF**
- **Offered yearly to close to 1,000 minority or disadvantaged college students who are interested in attending medical or dental school**
- **To increase the number of successful applicants to medical and dental schools and help diversify the health professions**
- **Includes activities focused on:**
 - **Academic content (mostly biology, physics, and chemistry)**
 - **Exposure to clinical experiences and health disparities**
 - **Application prep (communications skills, financial education, advising, and other)**

Universities Offering SMDEP

- **Case Western** Reserve University, Schools of Medicine and Dental Medicine
 - **Columbia** University College of Physicians and Surgeons and College of Dental Medicine
 - **Duke** University School of Medicine
 - **Howard** University Colleges of Art and Sciences, Dentistry, and Medicine
 - David Geffen School of Medicine at **UCLA** and UCLA School of Dentistry
 - University of **Louisville**, Schools of Medicine and Dentistry
 - University of Medicine and Dentistry of **New Jersey**, New Jersey Medical School, and Rutgers School of Dental Medicine
 - University of **Nebraska** Medical Center, Colleges of Medicine and Dentistry
 - University of **Texas** Health Science Center at Houston, Schools of Medicine and Dentistry
 - University of **Virginia** School of Medicine
 - University of **Washington** Schools of Medicine and Dentistry
 - **Yale** University School of Medicine
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How Best to Evaluate SMDEP Impact?

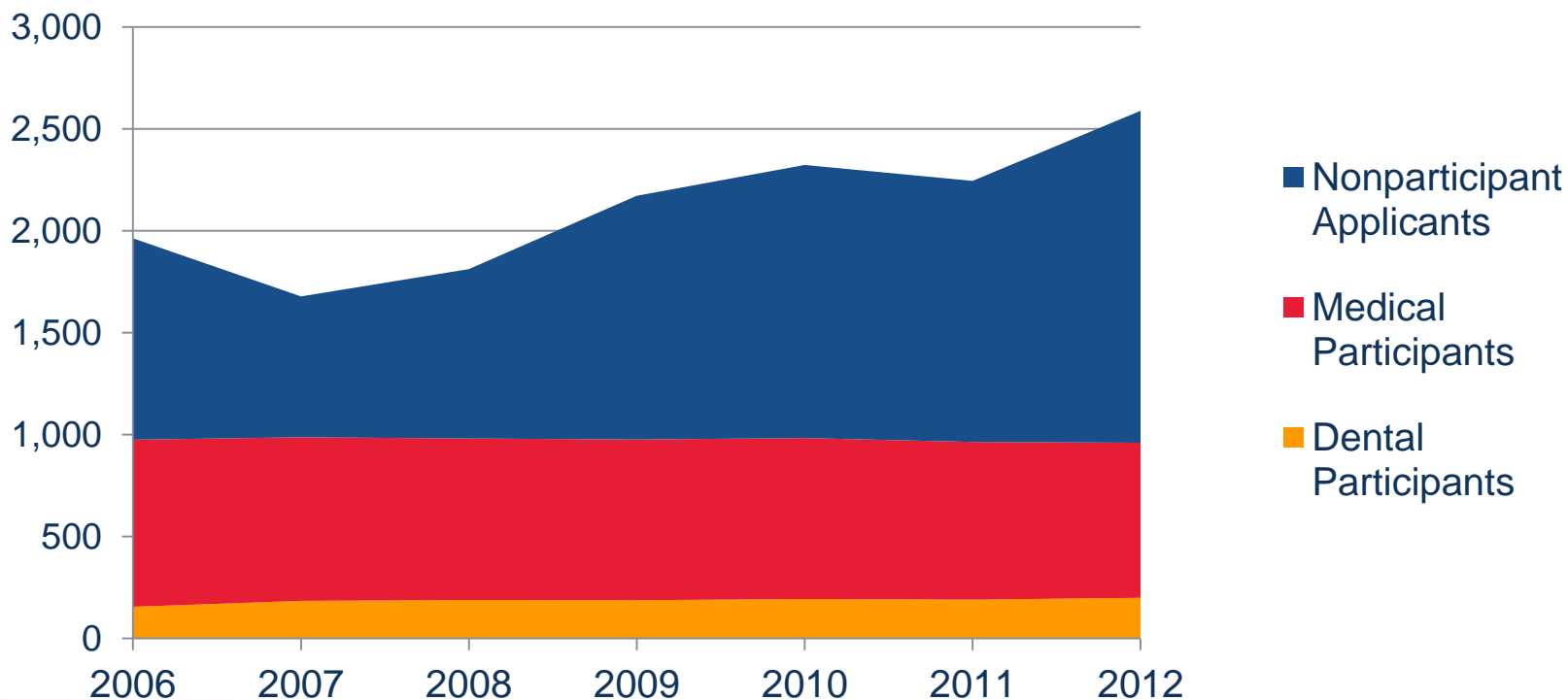
- The hierarchy of comparison-group designs



- Used a quasi-experimental design: propensity score matching to create a comparable group

Impact Analysis: Propensity Score Matching

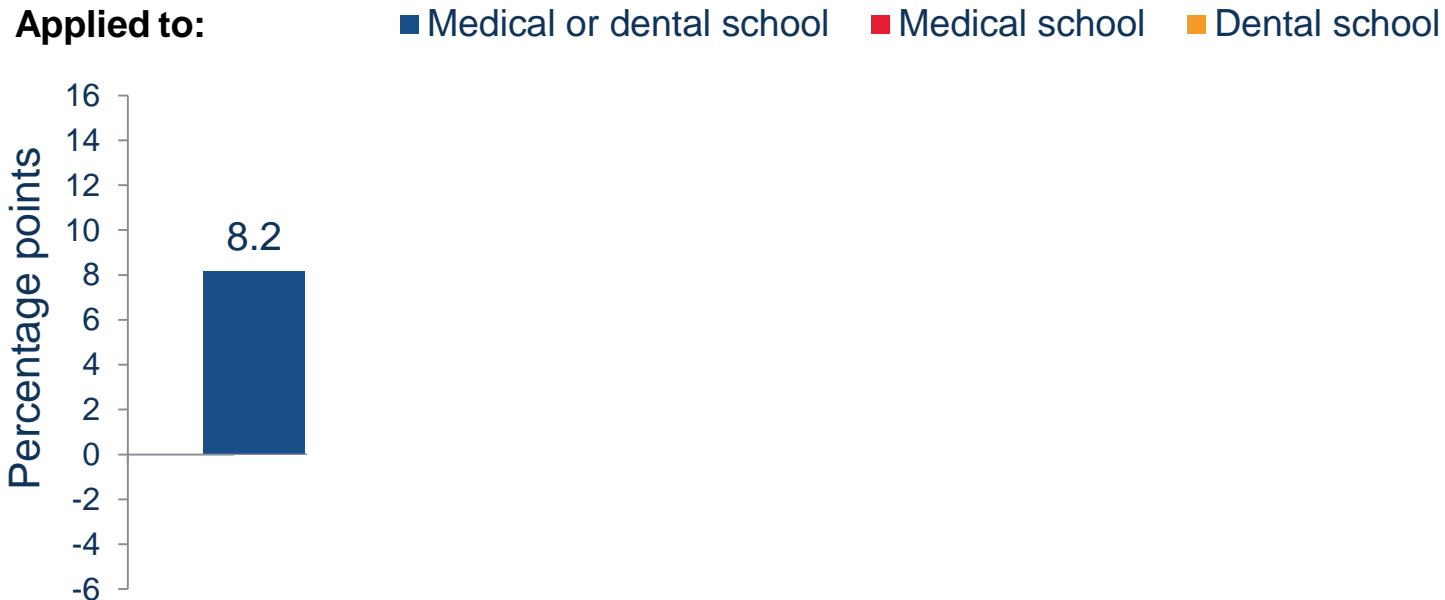
- Matched 2,864 participants to 894 non-participants within sites (cohorts 2006-2008)
- Feasible given SMDEP oversubscription and “qualified candidates” in the non-participant pool



1. Student Impacts:

What is the impact of the program on students' health career trajectories?

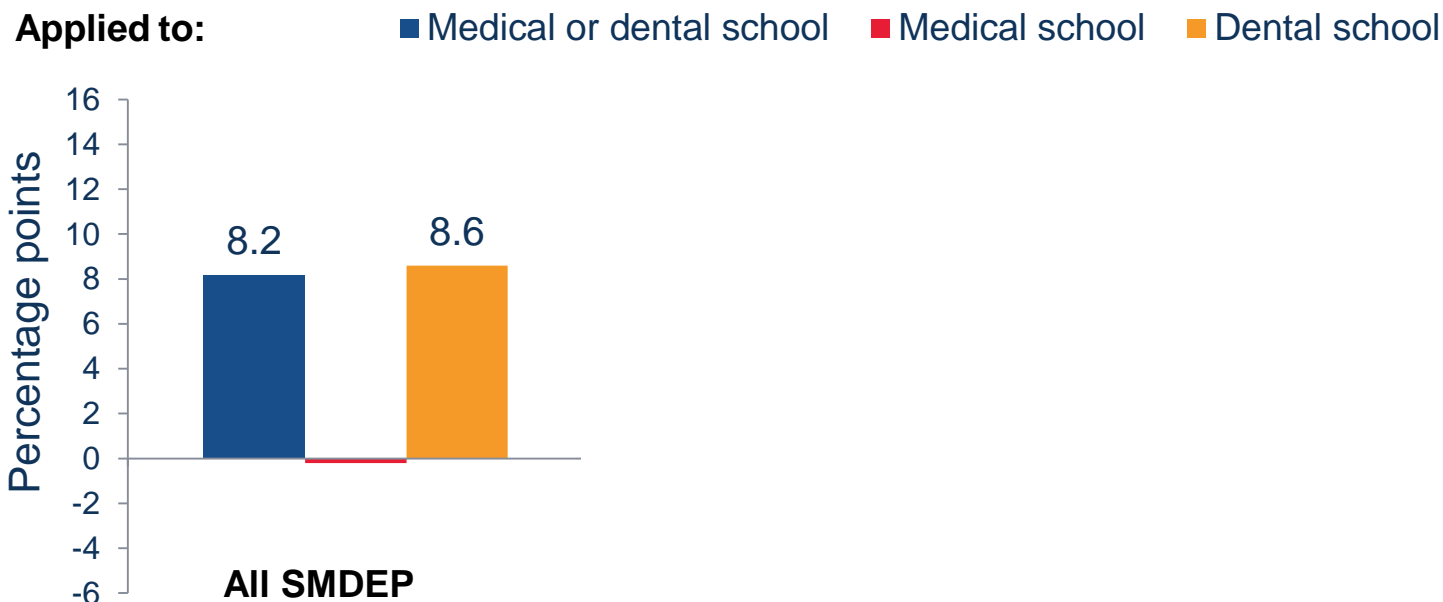
SMDEP Has a Positive Impact on Medical and Dental School Applications



Source: NPO program data and Integrated Postsecondary Education System (IPEDS) 2011.

Note: Shown impact estimates are statistically significant at 1 percent.

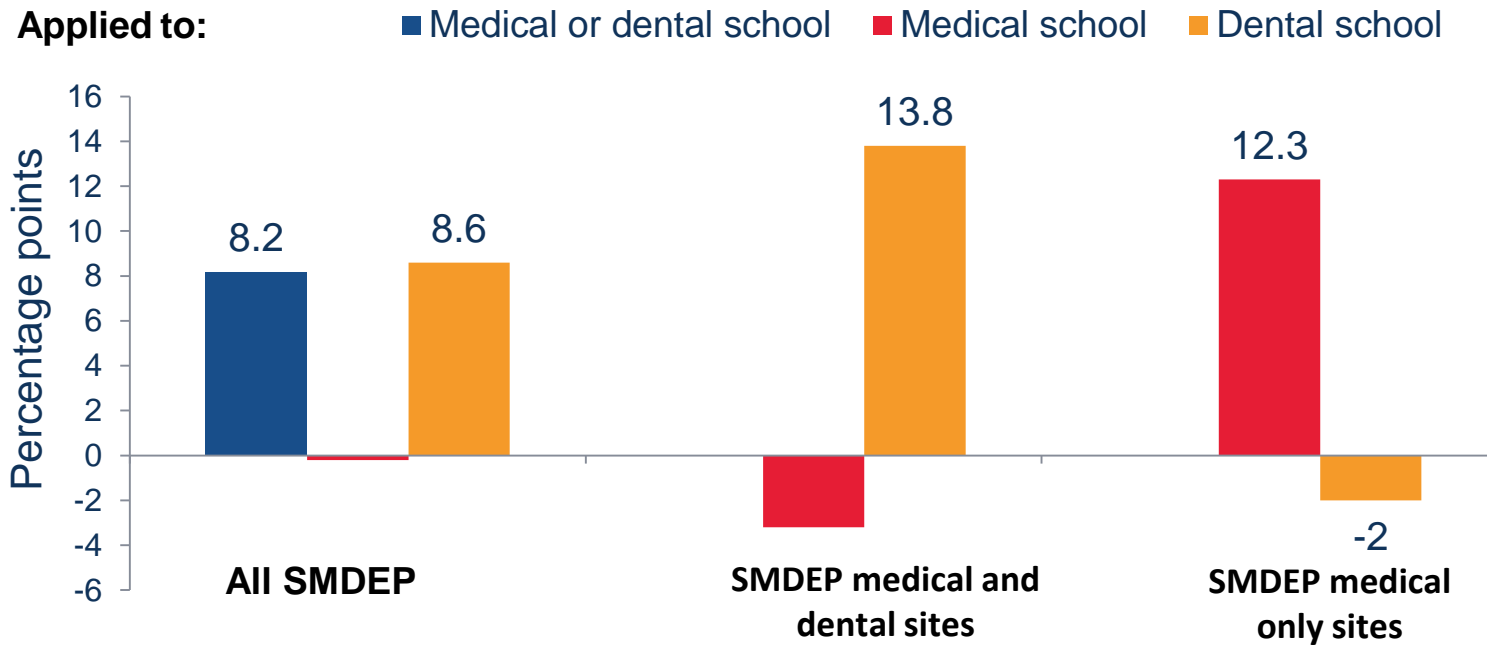
The Impact of SMDEP Is Driven by a Large Effect on Dental School Outcomes



Source: NPO program data and Integrated Postsecondary Education System (IPEDS) 2011.

Note: Shown impact estimates are statistically significant at 1 percent.

Impacts Vary by Type of Program

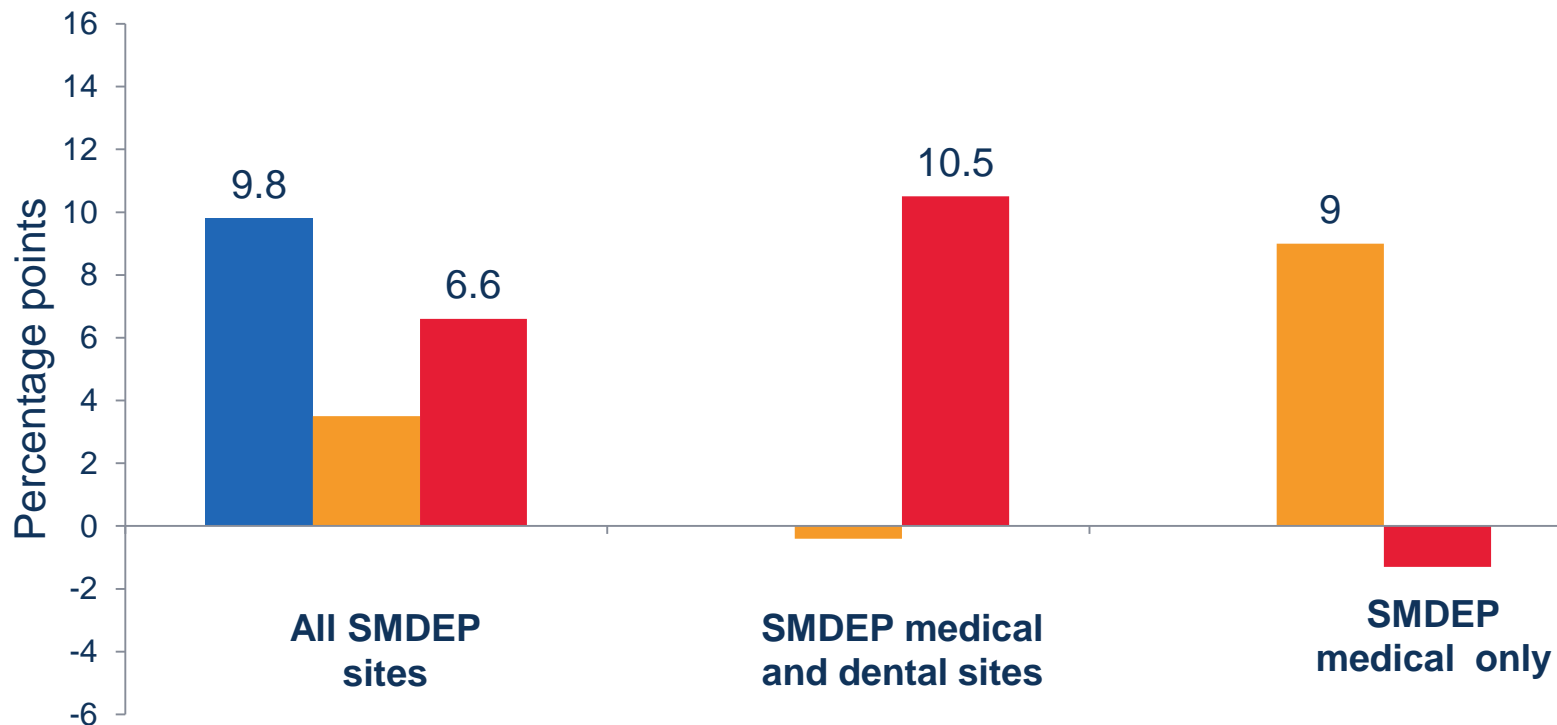


- Sites offering a medical and dental program have an impact on dental school outcomes
- Sites offering only a medical program have an impact on medical school outcomes

Note: Shown impact estimates are statistically significant at 1 percent.

Findings on Matriculation to Medical or Dental School Mirror Those on Applications

Matriculated in: ■ Medical or dental school ■ Medical school ■ Dental school



Note: Shown impact estimates are statistically significant at 1 percent.

No Evidence that Impacts Vary by Student Characteristics

- **We found no consistent relationships between program impacts and student characteristics:**
 - **Gender**
 - **Minority status**
 - **Disadvantaged status**
 - **Level of academic preparation**
 - **Type of institution (two-year versus four-year)**

2. Key Components:

**What are the critical components of SMDEP?
Do average student outcomes vary by
components?**

Sites Employ Different Strategies To Teach Academic Content

- The 12 SMDEP sites vary in terms of:
 - Ability grouping (within and across courses)
 - Academic focus (number of courses)
 - Interactive pedagogical styles (use of hands-on, problem- or case-based learning)
- We found no impacts related to use of these strategies

Clinical Experiences Vary in Number and Duration

- What is clinical?
- 1-6 clinical experiences offered (mean = 2.5)
- 4-24 total hours devoted to clinical (mean = 12)
- Most students requested more clinical exposure, though only three sites cited this as a critical program component
- **Less clinical exposure (high v. low based on number and duration of experiences) is associated with better dental school outcomes**

Sites Follow Different Approaches to Recruit Instructional Staff

- The staffing approach is mostly driven by universities' ability to maintain a core group of faculty instructors over time
 - 3 sites hire in-house tenured faculty
 - 6 sites use a combination of tenured faculty, graduate students, local professionals, and adjuncts
 - 3 sites rely exclusively on external instructors or hire graduate students to teach each year
- **Low faculty engagement (stable faculty v. yearly recruitment) has a negative impact on medical school outcomes**

Leadership Structures Reflect Expansion To Include a Dental Component

- Sites offering a dental component typically have 3 program leads; some sites are primarily led by a medical or dental PI; others have a true collaborative partnership
 - Sites led primarily by one program (medical or dental) have better dental school outcomes than those with a more collaborative leadership approach
- Some programs are led by someone in a leadership position; others are not
 - Leadership position had no impact on student outcomes

Implications

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- **The SMDEP program works but implementation matters**
 - **Low faculty engagement can be detrimental**
 - **Leadership matters when deciding how to work collaboratively**
 - **More is not better when allocating time and effort to clinical experiences**

Implications (*continued*)

- **SMDEP helps diversify professional schools**
 - **Medical-only sites have an impact on medical school applications and matriculation**
 - **Medical and dental sites have an impact on dental school applications and matriculation**
- **Some questions remain**
 - **Why does SMDEP have a positive impact on medical school outcomes at some sites but not others?**
 - **Are minority and disadvantaged physicians and dentists more likely to serve those populations that are currently underserved (such as low-income and rural populations)?**

Thank You

For more information:

- **Clemencia Cosentino**

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- **Full report:**

<http://www.mathematica-mpr.com/our-publications-and-findings/publications/impact-evaluation-of-the-rwjf-summer-medical-and-dental-education-program-smdep>