



Multimodal Approaches to using Big Data in Oral Health Services Research

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In This Presentation

- University of Iowa Public Policy Center (PPC)
- Health services research and use of multimodal research
- Oral health services and use of multimodal research
- Example of oral health services research
 - Iowa Dental Wellness Plan evaluation



Public Policy Center Research Programs (PPC)



1. Transportation and Vehicle Safety
2. Health
3. Social and Education
4. Politics and Policy
5. Environmental
6. Iowa Social Science Research Center



Health Services/Policy Research

Study of the health care system

- Access to care
- Quality of care
- Costs of care



Multimodal (Mixed Methods) Approach using Big Data

Administrative Data

- Insurance enrollment files
- Claims/encounter data
- Provider data

Surveys

- Consumers, members, patients
- Providers, administrators

Qualitative data

- Interviews
- Focus groups



Each Approach Evaluates Different Aspect of the Question

Administrative Data

- Factual

Surveys

- Knowledge
- Attitudes
- Experiences

Qualitative data

- Methods development
- Depth of inference



Oral Health Services Research at PPC



Oral Health Services Research Team

Dentist Investigators

- Ray Kuthy
- Susan McKernan
- Julie Reynolds
- Astha Singhal
- Donald Chi

Health Services Researcher

- Elizabeth Momany (Asst. Director)

Behavioral Scientist

- Natoshia Askelson

Economists

- Dan Shane
- Padmaja Ayyagari
- George Wehby

GIS Expert

- Mark Pooley



Oral Health Services Research

- Similar multi-modal approaches and methods
- No diagnosis codes
- Less evidence base for some services



Recent Use of Multimodal Approaches

1. Coordinating and Improving Oral Health Workforce Activities in Iowa
 - HRSA-supported
2. First Preventive Dental Exam: Disparities in Need, Costs and Behavioral Insights
 - NIH-supported
3. Iowa Dental Wellness Plan Evaluation
 - CMS- and Iowa DHS-supported



Iowa Dental Wellness Plan Evaluation



Iowa Health & Wellness Plan

- Medical portion designed to look more like private insurance
 - Began January 1, 2014
 - Includes healthy behavior incentives
- Dental Wellness Plan (DWP)
 - New adult dental benefit for expansion population
 - Began May 1, 2014
 - Administered by Delta Dental of Iowa
 - Mirrors medical insurance with healthy behavior incentives



Role of Multimodal Research in DWP Development

UI PPC Study of IowaCare Program (2013)

- IowaCare did not have a dental component
- Key findings:
 - Significant pent-up demand for dental care and lower oral health status among uninsured adults



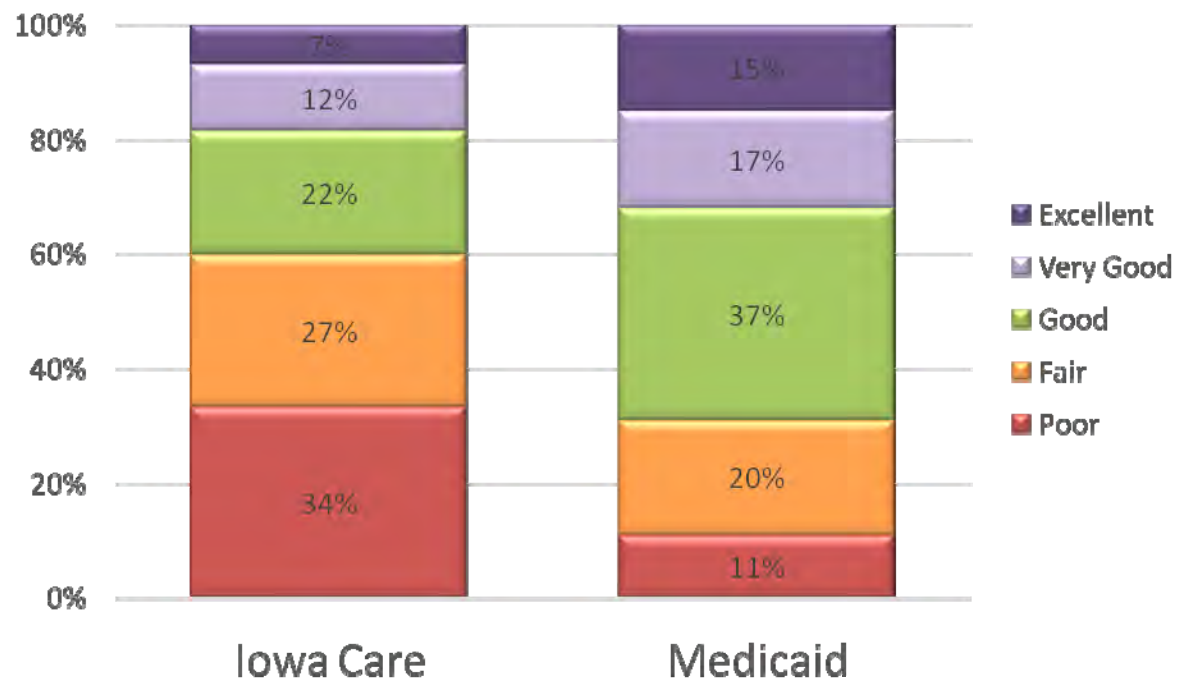
Chronic Health Conditions of Uninsured

Health conditions lasting >3 months	% reporting
Dental, Tooth or Mouth Problems	39%
BACK OR NECK PROBLEMS	37%
Arthritis, Bone or Joint Problems	36%
Hypertension	34%
Overweight/Obesity	31%
Allergies or Sinus Problems	29%
Indigestion, Heartburn or Ulcers	27%
Migraine Headaches	16%
Bladder or Bowel Problems	15%
Diabetes	15%
Bronchitis, Emphysema, Lung Problems	14%
Heart Problems	11%
Asthma	11%

Source: IowaCare Member survey, 2013



Oral Health Status of Uninsured



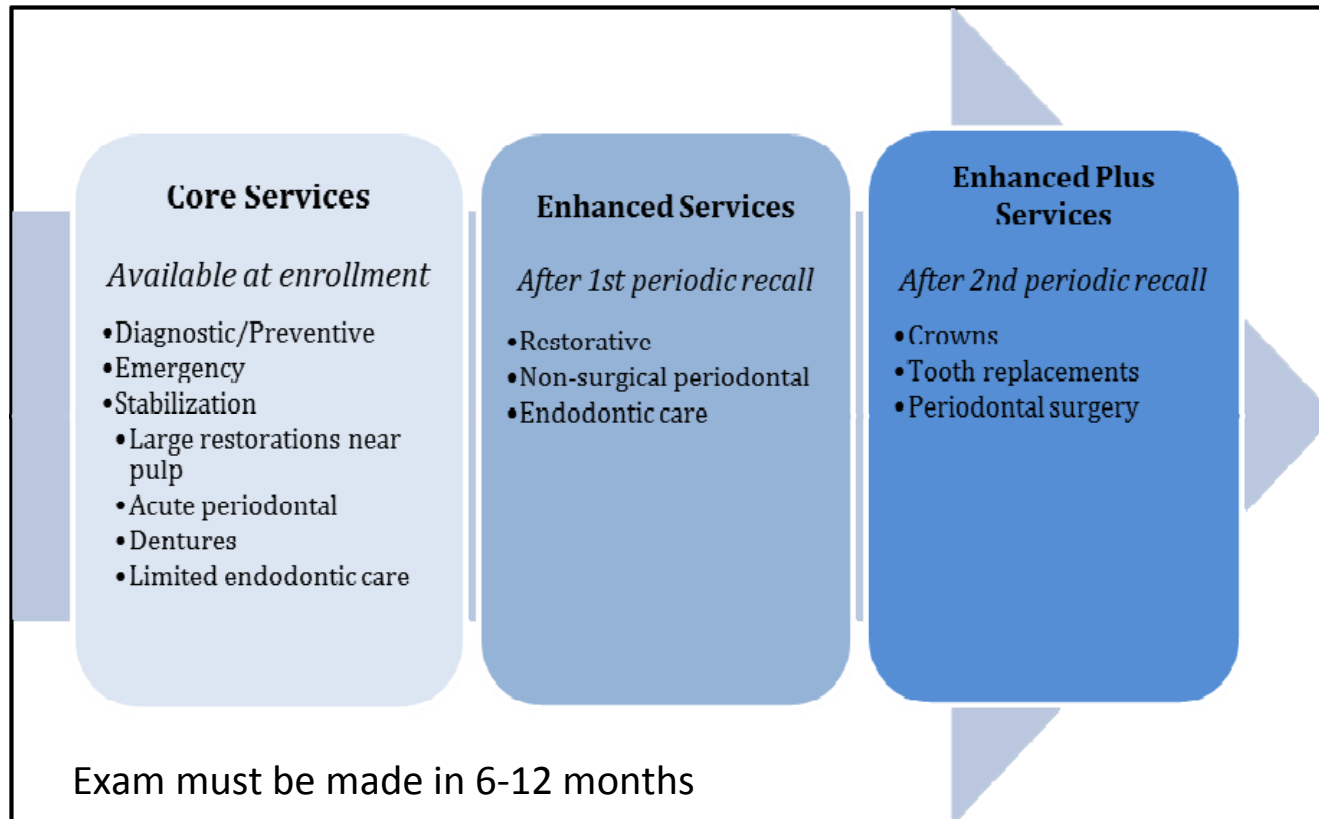
Source: IowaCare Member survey, 2013

Dental Wellness Plan (DWP)

- Earned benefits maintained with recalls every 6-12 months
- Dentists encouraged to do an online clinical risk assessment (Previser)
- Reimbursement ~60% higher than Medicaid
- No annual maximum



DWP Earned Benefits Model



DWP Evaluation Plan

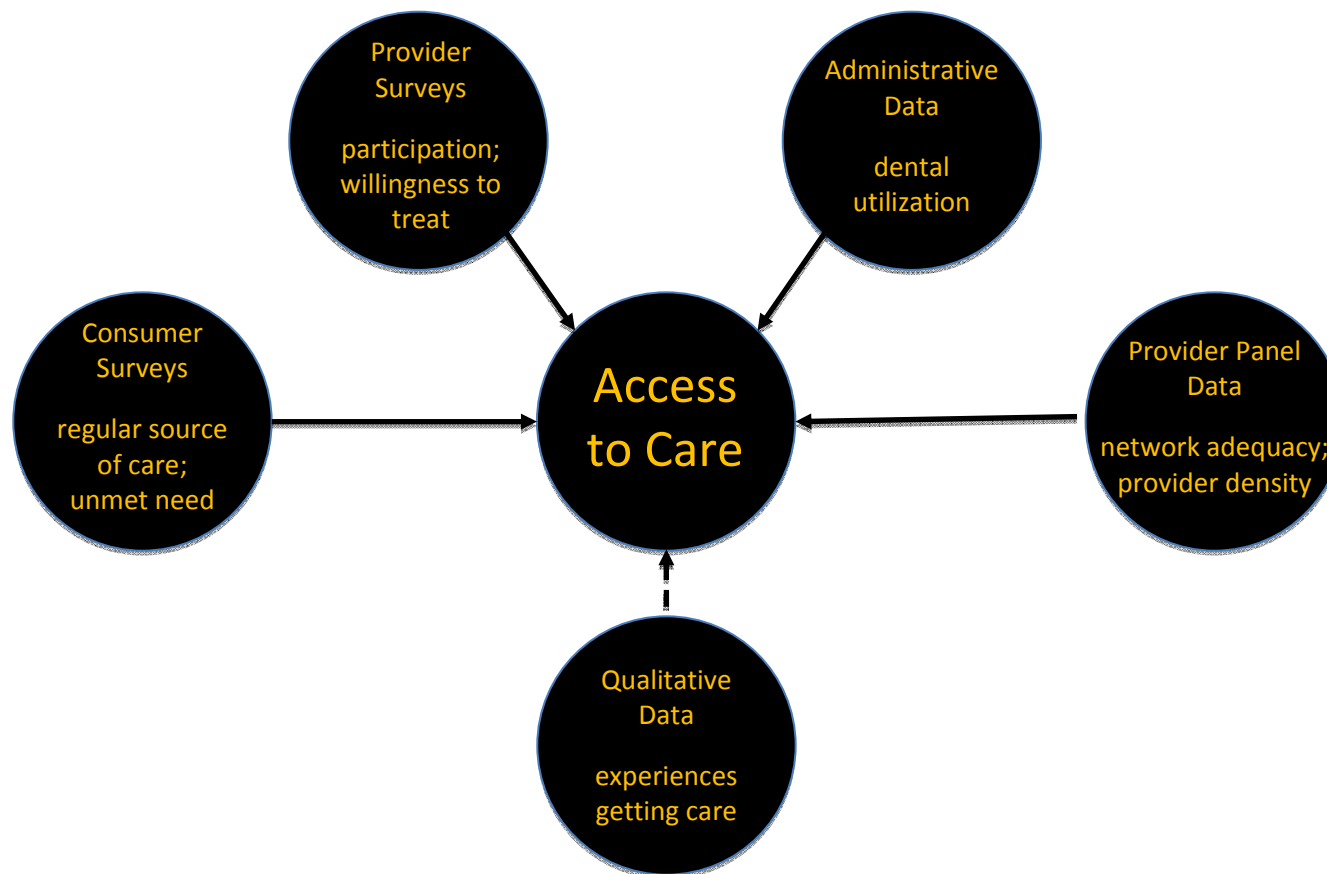


Key Questions for DWP Evaluation

- Access to care
- Quality of and satisfaction with care
- Cost of care
- Provider participation in and attitudes toward program
- Adequacy of provider network
- Outreach and referral services



Multimodal Research using Big Data in Action



Administrative Data

- Medicaid and Delta Dental of Iowa (Commercial) in SQL database
 - Claims/encounter
 - Enrollment
 - Provider
- Medicaid data
 - Past 16 years
- Delta Dental of Iowa
 - Past 10 years
- Statewide dentist tracking system
- Medicare??



Administrative Data

Claims-based outcomes

•DWP vs Medicaid

- Annual dental visit rate
 - Means tests
 - Pre/post
- Preventive visit rate by tier
 - Means tests for each tier
- Time to first visit
 - Survival analyses



Administrative Data

Cost outcomes

- DWP vs Medicaid

- Incremental cost effectiveness ratios

- Annual dental visit
- ED use for non-traumatic dental
- Dental exams for people with diabetes

*Diabetes diagnoses identified from medical claims



Member Surveys

- DWP (n=4800) and Medicaid (n=6000)
[new members]
 - Access to care
 - Unmet need
 - Timeliness of appointments
 - Regular source of care
 - Need to change dentists
 - Rating of care
 - Earned benefits model
 - Understanding and satisfaction with



Provider Surveys

Sample

- All private practice dentists in state (n=1400)
- Statewide dentist tracking system

Topics

- Level of participation
- Barriers to participation
- Earned benefits model
 - Understanding and satisfaction with

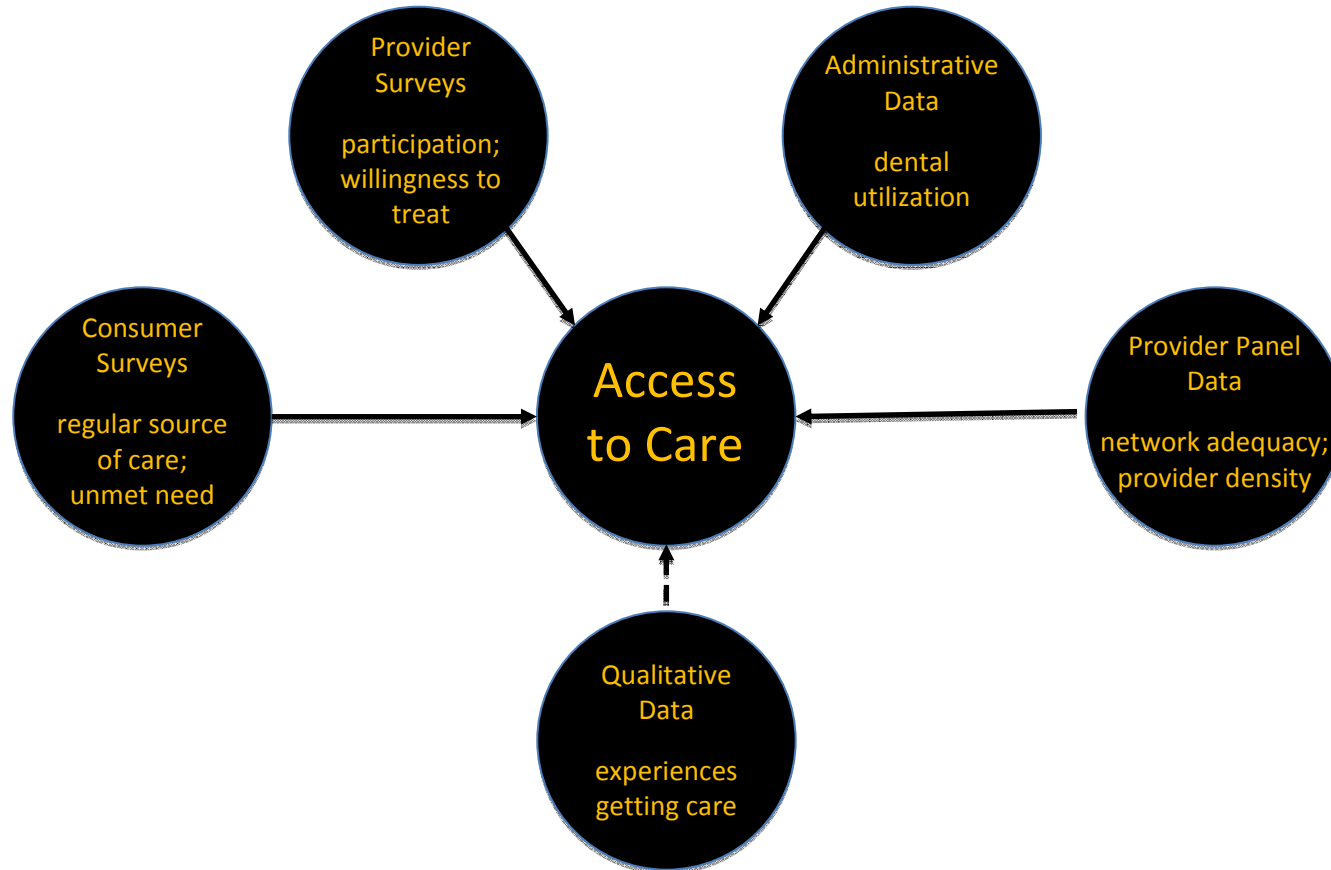


Network Adequacy

- Geographic assessment of the adequacy of the provider network
 - DWP vs Medicaid
 - Active providers (submitted at least one claim)
- Data
 - Administrative claims data
- Distance calculations
 - Private practitioners
 - Safety net



Multimodal Research in Action



Summary: Multimodal Research using Big Data

- Each individual research method has strengths/weaknesses
 - Have had some further strengthen analyses by linking survey and administrative data
- Using multiple approaches allows triangulation of issues/problems
 - Best done if this is considered at the front end of the study
- Ability to synthesize across results allows for better understanding of the nuances of the research findings
 - E.g., causes, implications



Discussion



Vinny

