



Dental Procedures Received by Children Enrolled in Wisconsin Delta Dental and Medicaid Programs

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Background

- Utilization of dental services by various population groups has been studied extensively
- Barriers to dental care that enrollees of Medicaid, and residents of inner-cities face are well documented
- Few studies have directly compared the use of services between a enrollees of Medicaid and a privately insured population in the same market area, especially for children

Objectives

- The purpose of this study is to look at the impact place of residence and type of insurance on the patterns of dental service use among children in Milwaukee.
- Our goal was to quantify the disparities experienced by publicly insured children compared to privately insured children as well as those living in inner-city and suburban neighborhoods

Methods

- This study is a Secondary analysis of Delta Dental(FFS) and Medicaid (HMO) claims and enrollment data
- The datasets had information on
 - Age
 - Zip-code of residence
 - Date of treatment
 - Treatment procedure code
 - Number of enrollees broken down by zip-code and age
- Information on children aged 0-18 years living in 46 Zip-codes in Milwaukee and its suburbs from years 2002- 2008 was included in the analysis

Methods

- We grouped dental caries related treatment procedure codes into five treatment categories:
 - Diagnostic Procedures- All codes
 - Preventive Procedures
 - Oral prophylaxis (D1120),
 - Fluoride Varnish (D1206) and
 - Fluoride gel applications (D1203), and
 - Dental sealant placement (D1351)

Methods

- We grouped dental caries related treatment procedure codes into five treatment categories:
 - Diagnostic
 - Preventive
 - Restorative procedures
 - Simple (D2000 to D2430)
 - Complex restorative (D2510 to D2999)

Methods

- We grouped dental caries related treatment procedure codes into five treatment categories:
 - Diagnostic
 - Preventive
 - Restorative
 - Endodontic: All procedures

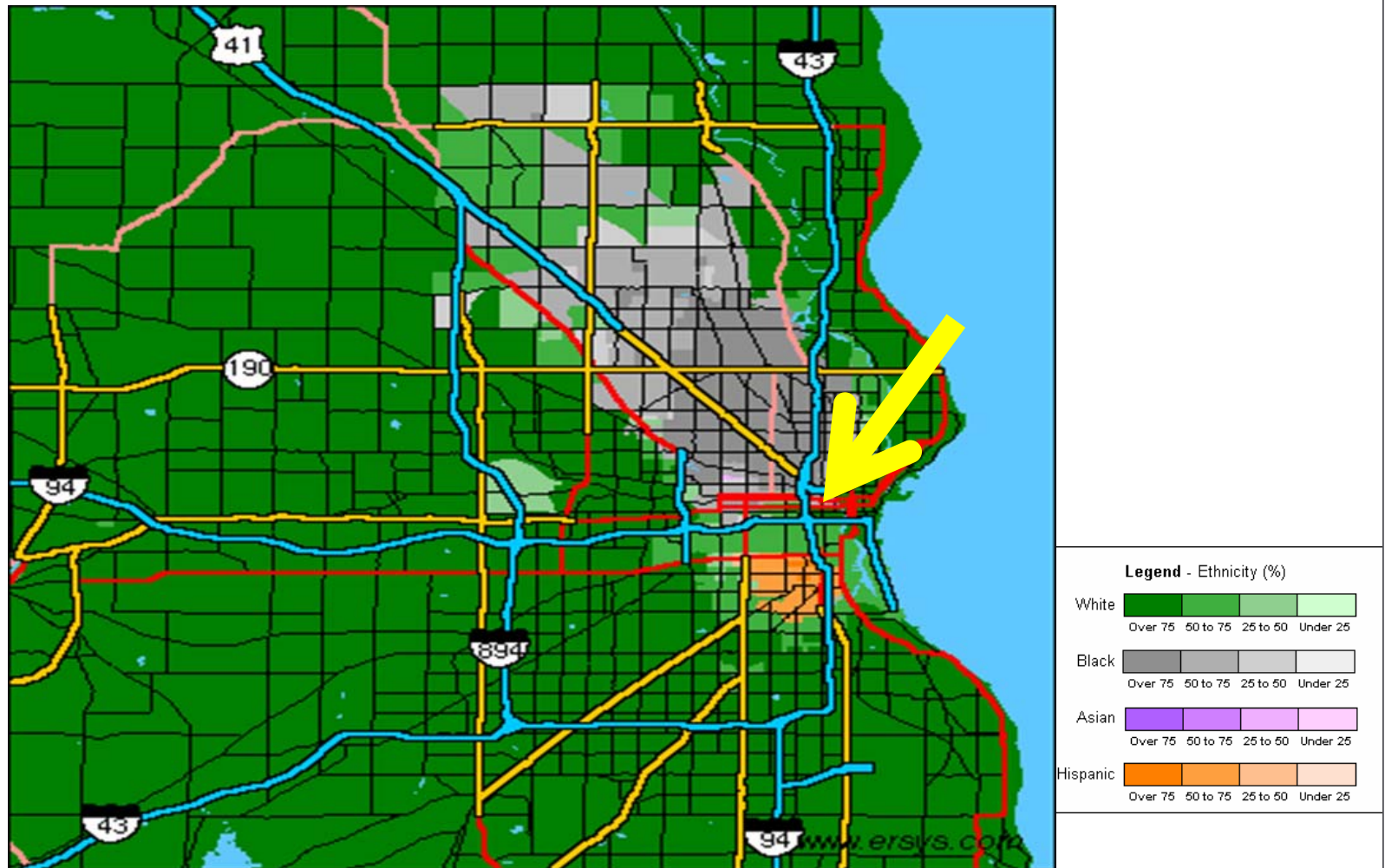
Methods

- We grouped dental caries related treatment procedure codes into five treatment categories:
 - Diagnostic
 - Preventive
 - Restorative
 - Endodontic
 - Surgical
 - Extraction of deciduous teeth (D7111)
 - Extraction of erupted teeth (D7140)
 - Extraction of teeth requiring flap elevation (D7210)

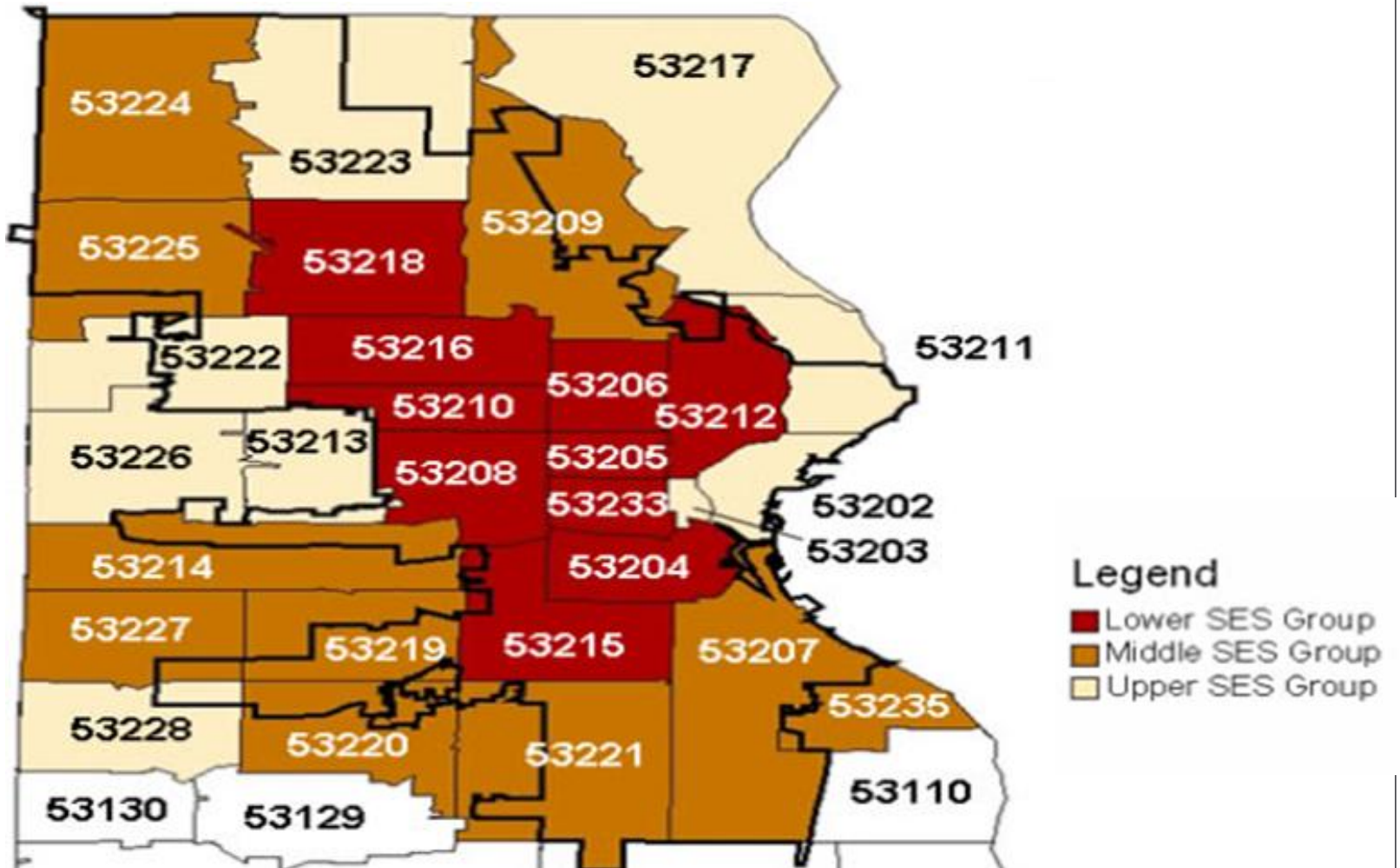
Methods

- Children were categorized into 4 groups based on insurance carrier and zip code of residence into
 - Inner-city Medicaid (ICM),
 - Suburban Medicaid (SM),
 - Inner-city Delta Dental (ICDD), and
 - Suburban Delta-Dental (SDD) groups

Milwaukee- Racial Distribution



Milwaukee-ZIP Codes and SES



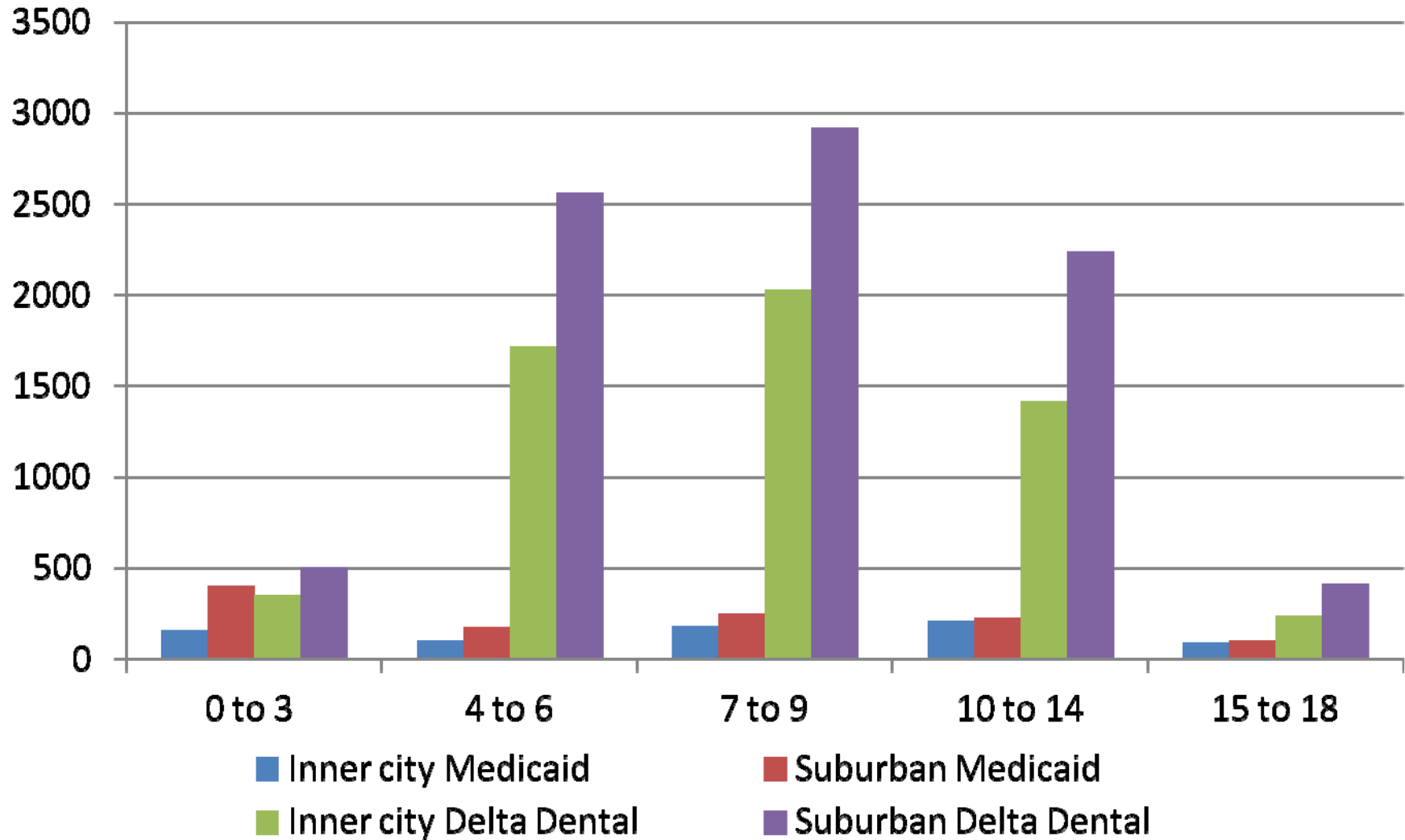
Methods: Statistical Analysis

- Descriptive and bivariate analysis were performed
- Multivariable analysis using Poisson generalized estimating equation modeling on the number of procedures per year was performed
- The final regression model included
 - Treatment Procedure
 - Type of insurance
 - ZIP- code of residence
 - Age at treatment
 - Year of treatment

Descriptive Statistics- Person years of enrollment

	Medicaid		Delta Dental	
	Inner city Milwaukee	Suburban Milwaukee	Inner city Milwaukee	Suburban Milwaukee
Gender				
Female	73,548	25,583	48,891	137,706
Male	69,969	26,170	51,452	141,696
Gender Unknown	0	0	1,208	3,817
Age				
0-3	4,129	1,873	17,540	51,226
4-6	31,496	12,702	14,371	41,896
7-9	32,667	12,558	16,005	45,355
10-14	46,761	15,675	30,031	81,356
15-18	28,464	8,945	23,604	63,386
Total	143,517	51,753	101,551	283,219

Preventive Procedures Per 1000 Enrollees



Procedures Per 1000 Enrollees

	Medicaid		Delta Dental	
	Inner city Milwaukee	Suburban Milwaukee	Inner city Milwaukee	Suburban Milwaukee
Diagnostic	415	795	1314	1749
Preventive	153	202	1109	1694
Simple Restorative	170	252	362	421
Complex Restorative	12	59	29	26
Endodontic	13	26	29	23
Extractions	33	59	61	73

Utilization Rates for Dental Procedures

- 18% of ICM and 67% of SDD children had at least one diagnostic procedure in an year, respectively
- 5% of ICM and 51% of SDD children had at least one preventive procedure in an year, respectively
- 21% of ICM and 68% of SDD children had at least one dental visit in an year, respectively

Utilization Rates for Dental Procedures

	Medicaid		Delta Dental	
	Inner city Milwaukee	Suburban Milwaukee	Inner city Milwaukee	Suburban Milwaukee
Diagnostic	0.18	0.35	0.48	0.67
Preventive	0.05	0.08	0.35	0.51
Simple Restorative	0.06	0.09	0.14	0.17
Complex Restorative	0.01	0.02	0.02	0.01
Endodontic	0.01	0.01	0.02	0.01
Extraction	0.02	0.02	0.03	0.03
Overall Utilization Rates	0.21	0.38	0.50	0.68

Rate-Ratios from Multivariable Analysis

- Children in ICM group had the fewest procedures of all types included in the analysis
- Children in SDD group had ~5 times as many diagnostic and 11 times as many preventive procedures compared to ICM group
- Children in SDD group also had ~11 times as many as many extractions as children in ICM group

Rate-Ratios from Multivariable Analysis

	Medicaid		Delta Dental	
	Inner city Milwaukee	Suburban Milwaukee	Inner city Milwaukee	Suburban Milwaukee
Diagnostic	1.00	1.95* (1.65-2.30)	3.25* (3.21-3.28)	4.73* (4.01-5.57)
Preventive	1.00	1.36* (1.14-1.62)	6.74* (6.64-6.84)	11.38* (9.56-13.54)
Simple Restorative	1.00	1.70* (1.37-2.10)	2.91* (2.35-3.59)	2.08* (2.04-2.11)
Complex Restorative	1.00	4.83* (3.62-6.45)	2.54* (2.38-2.71)	2.11* (1.58-2.81)
Endodontic	1.00	2.15* (1.60-2.89)	2.67* (2.50-2.84)	2.30* (1.73-3.08)
Extraction	1.00	2.05* (1.12-3.73)	1.94* (1.86-2.03)	11.49* (6.32-20.90)

Conclusions

- Type of insurance and place of residence have a significant impact on dental service utilization
- Significantly lower proportion of the Medicaid enrollees used dental services
- Medicaid enrollees living in Suburban regions had significantly higher utilization rates than those living in inner city
- DDWI enrollees living in inner city had fewer preventive and simple restorative procedures than those living in suburban Milwaukee

Implications and Future Directions

- Fewer dental visits and treatment procedures indicate barriers in access and untreated disease
- Policies and strategies to increase utilization and improve oral health among these vulnerable populations are required
- Future studies collecting primary data through are needed to ascertain the actual reasons for low utilization of dental services

Limitations

- Procedure codes preclude the possibility of knowing the normative need
- Potential confounders such as dentist to population ratios, SES and Race were not accounted for in analysis
- Relationship of Extractions with orthodontic treatment or impacted 3rd molars not examined
- Some of the differences may have been caused because of differences in reimbursement types

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Thank You!