

**Geiger Gibson /
RCHN Community Health Foundation Research Collaborative**

Policy Research Brief # 48

Community Health Centers Reduce the Costs of Children's Health Care

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June 20, 2017

About the Geiger Gibson / RCHN Community Health Foundation Research Collaborative

The Geiger Gibson Program in Community Health Policy, established in 2003 and named after human rights and health center pioneers Drs. H. Jack Geiger and Count Gibson, is part of the Milken Institute School of Public Health at The George Washington University. It focuses on the history and contributions of health centers and the major policy issues that affect health centers, their communities, and the patients that they serve.

The RCHN Community Health Foundation is a not-for-profit foundation established to support community health centers through strategic investment, outreach, education, and cutting-edge health policy research. The only foundation in the U.S. dedicated solely to community health centers, RCHN CHF builds on a long-standing commitment to providing accessible, high-quality, community-based healthcare services for underserved and medically vulnerable populations. The Foundation's gift to the Geiger Gibson program supports health center research and scholarship.

Additional information about the Research Collaborative can be found online at <http://publichealth.gwu.edu/projects/geiger-gibson-program-community-health-policy> or at rchnfoundation.org.

Acknowledgements

The authors thank Anne Markus, Sara Rosenbaum, Jessica Sharac, Michelle Proser, Susan Sumrell, Dan Hawkins, and Amy Simmons for their review and assistance during preparation of this brief and Eva Dugoff for statistical advice. This research was supported in part by the National Association of Community Health Centers (NACHC).

Executive Summary

This study is the first to examine whether community health centers (CHCs) save money when they treat children. Annual health care spending was significantly lower for children who obtained the majority of their care at CHCs than for those who did not. Compared to those who received care from other types of providers, and after adjusting for their underlying differences, children cared for by CHCs had annual health care costs about 35 percent lower than other children (\$1,133 if all children used CHCs vs. \$1,751 if all children used other providers). Pediatric care at CHCs also was associated with significantly lower expenditures for ambulatory care and prescription drugs.

Background

Community health centers (CHCs) are part of the health care safety net, forming a health care backbone for medically underserved communities and populations. In 2015, federally-funded CHCs delivered primary health care to 7.6 million children under age 18, one in ten children nationwide and nearly four in ten low-income children.

Seventy percent of all health center patients have incomes below the federal poverty level. Thus, the vast majority of insured children served at health centers can be expected to be enrolled in Medicaid, which requires coverage of all children up to age 18 with family incomes up to 138 percent of the federal poverty level. Among children cared for by CHCs in 2015, 5.6 million children were insured through Medicaid or the Children's Health Insurance Program (CHIP) while another 1.0 million were uninsured.¹ Between 2010 and 2015, the number of children cared for by CHCs increased by about 20 percent, a growth rate possibly attributable to a growing number of health centers and a rising rate of insurance coverage among children.²

For the children they serve, at more than 10,000 community-governed locations in medically underserved urban and rural communities, CHCs serve as medical homes, furnishing ongoing, patient-centered care regardless of family income, health insurance status, or ability to pay.³ Health centers offer comprehensive services addressing

¹ Based on the 2015 Uniform Data System, Health Resources and Services Administration.

² Kenney G, Haley J, Pan C, Lynch V, Buettgens M. *Children's coverage climb continues: uninsurance and Medicaid/CHIP eligibility and participation under the ACA*. Robert Wood Johnson Foundation / Urban Institute. May 2016.

³ Hollette L, Blumkin A, Baldwin C, Fiscella K, Szilagi P. Community health centers: medical homes for children? *Acad Pediatrics*. 13(5): 436-442

children's physical, mental, developmental, and oral health needs; in addition to high-quality clinical care, they provide enabling services to address social and economic needs, such as care management, interpretation, social services, and transportation.

Medicaid pays CHCs in accordance with a special, prospective formula related to the cost of care. The purpose of the Medicaid health center PPS payment system is to ensure that CHCs are able to conserve their federal grant funding for uninsured populations and services. In a growing number of states, Medicaid programs and health centers, working together under legal authority contained in the Medicaid statute, have developed alternative payment strategies designed to promote efficiency, quality, and treatment innovation.⁴

Research has demonstrated that high-quality primary and preventive care received at CHCs can lower the use of more expensive health services, such as emergency rooms and preventable hospital admissions.^{5,6,7,8,9} Studies also show that compared to other primary health care providers, CHCs can achieve lower overall medical costs for Medicaid and other payers.^{10,11,12} One recent study documented overall Medicaid health care costs for adults cared for in CHCs, including the cost of ambulatory care, prescriptions, emergency and inpatient care, that were 24 percent lower than those associated with a comparable group of adults cared for in other settings.¹³ These findings supplement those of an earlier study that similarly found lower overall annual

⁴ Shin P, Sharac J, Barber Z, Rosenbaum S. *Community health centers and Medicaid payment reform: emerging lessons from Medicaid expansion states*. Geiger Gibson RCHN Community Health Foundation Issue Brief #45. October 2016.

⁵ Rothkopf J, Bookler K, Wadhaw S, Sajowetz M. Medicaid patients seen at federally qualified health centers use hospital services less than those seen by private providers. *Health Affairs*. 2011; 30(7): 551-61.

⁶ Falik M, Needleman J, Wells B L, Korb J. Ambulatory care sensitive hospitalizations and emergency visits: Experiences of Medicaid patients using federally qualified health centers. *Medical Care*, 2001; 39(6), 551-561.

⁷ Epstein A. The role of public clinics in preventable hospitalizations among vulnerable populations. *Health Serv Res*, 2001; 36(2), 405-420.

⁸ Probst J C, Laditka J N, Laditka, SB. Association between community health center and rural health clinic presence and county-level hospitalization rates for ambulatory care sensitive conditions: An analysis across eight US states. *BMC Health Serv Res*. 2009; 9: 134. doi:10.1186/1472-6963-9-134

⁹ Streeter S, et al. The effect of community health centers on health care spending and utilization. Avalere Health, 2009.

¹⁰ Duggar B, Keel K, Balicki B, Simpson E. Utilization and costs to Medicaid of AFDC recipients in New York Served and not served by community health centers. Center for Health Policy Studies, Bureau of Primary Health Care, 1994.

¹¹ Starfield B, Powe N, Weiner J, Stuart M, Steinwachs D, Scholle S, Gerstenberger A. Costs vs. quality in different types of primary care settings. *JAMA*. 1994; 272(24): 1903-1908.

¹² Mundt C, Yuan S. An evaluation of the cost efficiency of Federally Qualified Health Centers (FQHCs) and FQHC lookalikes operating in Michigan. October 2014. The Institute for Health Policy at Michigan State University.

¹³ Nocon R, Lee SM, Sharma R, Ngo-Metzger Q, et al. Health care use and spending for Medicaid enrollees in Federally Qualified Health Centers versus other primary care settings. *American Journal of Public Health*, 2016 Nov; 106(11):1981-1989.

health care costs among CHC patients compared to patients receiving health care in other settings.¹⁴

No study has ever specifically examined how the cost of care furnished by CHCs to children compares to costs of care for children in other settings. In general, children insured through Medicaid and CHIP have relatively low annual health care costs. But the question of cost efficiency in pediatric care is important. This is particularly true for children insured through Medicaid, because Medicaid entitles children to an unusually comprehensive range of benefits known as early and periodic screening, diagnosis and treatment (EPSDT) and bars the use of patient cost-sharing. Given the breadth of EPSDT coverage, an important challenge is ensuring that benefits are managed efficiently and effectively.

Study Approach

This study is based on pooled analyses of the nationally-representative Medical Expenditure Panel Surveys (MEPS) for 2011-12, the most recent years when respondents were asked about the setting in which they received their care. We focus on children ages 0 to 17 who had one or more visits with an office-based physician, physician assistant, nurse, or nurse practitioner. A “CHC user” is any child for whom at least half of all visits to these types of providers occurred at a “community health center” or “neighborhood/family clinic”; they account for 2.3% of all children who used the types of providers noted above. The remaining 97.7% of children are non-CHC users, who had more than half of their visits in other settings, such as physician solo and group practices.

Propensity score weighting models were utilized to make characteristics of the CHC users and non-users as similar as possible, so the results approximate those of a randomized experiment. That is, the results isolate the effects of receiving care at a CHC, as opposed to the effects of other underlying differences, such as insurance status, race/ethnicity or health status of the children. We also controlled for differences associated with age, race/ethnicity, health status, insurance coverage and family income, using multivariate statistical methods. The Appendix provides more detail about the methodology.

¹⁴ Richard P, Ku L, Dor A, Tan E, Shin P, Rosenbaum S. Cost savings associated with the use of community health centers. *J Ambul Care Mgmt.* 2012 Jan-Mar.; 35(1): 50-59.

Findings

Table 1 compares demographic, economic, and health status characteristics of child CHC users and non-users. These are unadjusted estimates from the combined surveys, using survey weights and design adjustments, without other statistical adjustments. As shown at the top of the table, despite the breadth of EPSDT coverage, health care costs for children are low. This Table also shows that average total health care expenditure for a child is about \$770 less for CHC users (\$1,024) than for non-CHC users (\$1,796). This difference is statistically significant ($p < .01$). These estimates do not control for other factors that may contribute to spending differences. For example, as demonstrated by the remaining data in **Table 1**, children who are health center users are more likely to: be Black or Hispanic; have incomes less than 200% of the federal poverty level (FPL); and have public insurance, compared to children who are non-CHC users.

Table 1. Unadjusted Characteristics of Children Using and Not Using CHCS, 2011-12

	CHC User Mean (average)	Non-CHC User Mean (average)	Significance
Total health care expenditures (\$)	\$1,024	\$1,796	< 0.01
Age	7.7 years	8.2 years	0.22
Female	56.00%	55.90%	0.97
Race/ethnicity			
Black	29.30%	13.20%	< 0.01
Hispanic	38.30%	24.70%	0.02
White/other	32.40%	62.10%	< 0.01
Income			
Less than 100% FPL	40.00%	22.80%	< 0.01
100-124% FPL	8.20%	6.10%	0.27
125-199% FPL	29.80%	17.00%	< 0.01
200-399% FPL	18.20%	34.60%	< 0.01
400% FPL and higher	3.90%	19.50%	< 0.01
Insurance type			
Private	21.00%	56.90%	< 0.01
Public	72.20%	39.60%	< 0.01
Uninsured	6.80%	3.50%	0.21
Health indicators			
Health status	4.2	4.3	0.08
Asthma diagnosis	13.10%	12.50%	0.72

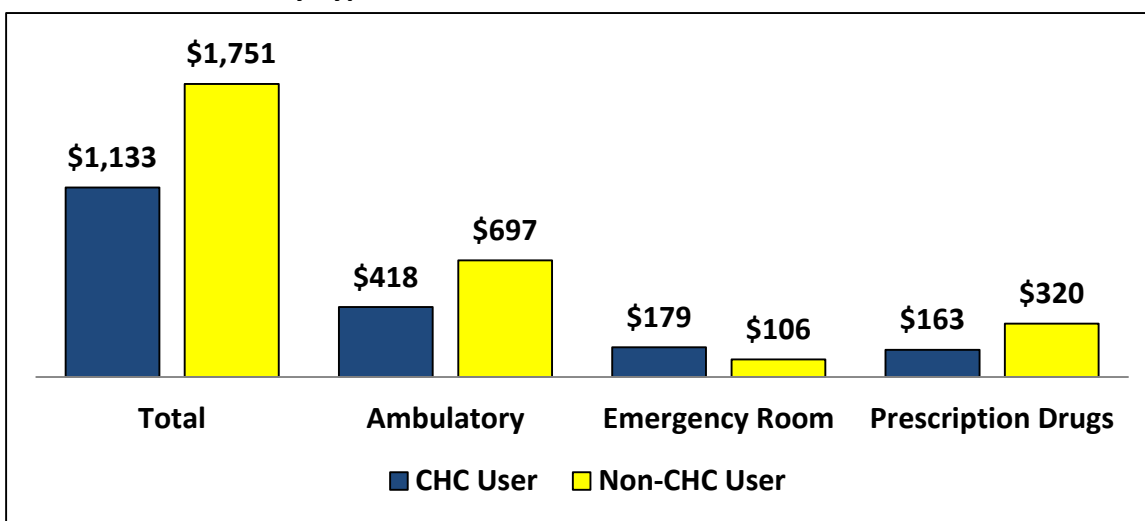
Source: Authors' analysis of 2011-12 Medical Expenditure Panel Survey

We use propensity score weighting methods to attempt to better balance the distribution of these factors between CHC and non-CHC users. After adjustment, estimated health care costs for children who use CHCs continue to fall below costs for children who primarily use other settings of care.

Figure 1 summarizes the adjusted, estimated total annual health care expenditures for children under two hypothetical scenarios: (1) if all children received a majority of their care at CHCs, and (2) if all children received a majority of their care in other settings. (Most of the non-users did not have any reported care at a CHC.) Total health care expenditures include ambulatory care, emergency room care, inpatient hospital care, prescription drugs, dental care and other subcategories of care. Under these scenarios, the average total health care expenditures in the 2011-2012 period were \$1,133 per year for those using CHCs, compared to \$1,750 for those using other settings. That is, CHC use is associated with estimated annual health care expenditures that are, on average, 35 percent lower per child.

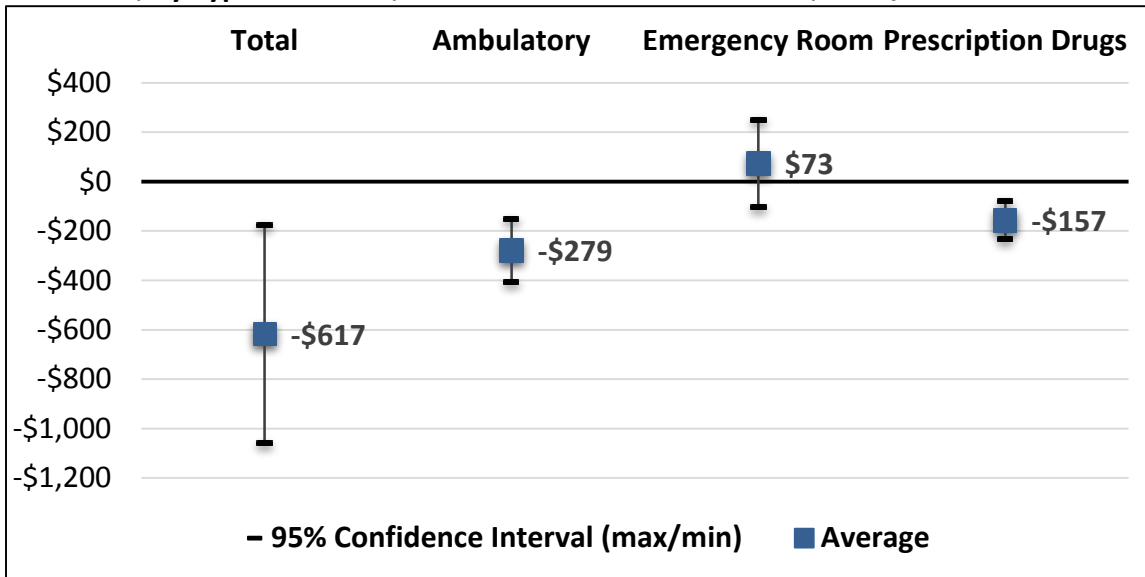
We also estimated adjusted expenditure levels for ambulatory care (including office-based and outpatient department care), emergency room care, and prescription drugs. The analyses show that CHC use is correlated with lower ambulatory and prescription drug costs than care in other settings, but slightly higher emergency room expenditures. We were unable to examine differences in inpatient hospital expenses because so few children are hospitalized in a year.

Figure 1: Adjusted Average Expenditures for Children Who Are CHC Users Compared to Non-CHC Users, by Type of Service, 2011/12



Source: Authors' analysis of 2011-12 MEPS data

Figure 2: Estimated Average Marginal Effect of CHC Use on Expenditures for Children, by Type of Service, with 95% Confidence Intervals, 2011/12



Source: Authors' analysis of 2011-12 MEPS data

To evaluate whether these adjusted differences are statistically significant, we computed average marginal effects of being a CHC user, shown in **Figure 2**. The average marginal effects are the same as the differences shown in **Figure 1**, but also include confidence intervals that illustrate the precision of the estimates. The analyses show that effects for total health care expenditures, ambulatory care expenditures, and prescription drug expenditures were significantly different (with 95 percent or greater confidence), but the emergency room differences were not.

Conclusion

In any health care setting, the cost of caring for children is low, compared to costs for adults, even though Medicaid covers a comprehensive range of pediatric health services. Even so, children who obtain the majority of care at CHCs incur substantially lower total health care expenditures than those who obtain care in other settings. This indicates that, even though health centers are paid at a rate that reflects the cost of care, the CHC model of comprehensive, community-oriented primary care has value and is efficient for pediatric patients. These analyses are consistent with prior research, cited earlier, about the overall value of CHCs and their effectiveness in “bending the cost curve.”

This study is especially relevant when much about the American health care system is potentially in flux as Congress and the President consider efforts to repeal and replace

the Affordable Care Act. The American Health Care Act, passed by the House of Representatives, would dramatically lower funding for Medicaid by more than \$800 billion over a ten-year time period and would apply cost savings to reducing taxes. The AHCA also would offer states the option of block granting coverage of children, freezing funding levels and eliminating the EPSDT benefit. In addition, the future of the ACA's Health Center Fund remains uncertain, as does future funding for the Children's Health Insurance Program (CHIP), which will expire on September 30, 2017. President Trump's proposed budget for Fiscal Years 2018 and 2019 would further reduce Medicaid funding beyond the reductions called for by the AHCA. The Administration also would extend the mandatory Health Center Fund for two years, at an annual amount of \$3.6 billion, and extend CHIP funding while lowering overall CHIP funding levels by about one-fifth.¹⁵ It is not yet clear whether these proposals will be enacted into law or be substantially changed.

To the extent that federal Medicaid funding is reduced and the future of CHIP and the Health Center Fund remains uncertain, the impact on pediatric care could be immense, despite the fact that overall costs associated with the care of children are already low and the results of this study underscore that costs could be still lower.

Another area of policy concern surrounds how CHCs could fare under Medicaid or other health reform waivers. Federal legislation requires that Medicaid, CHIP or health insurance exchange plans pay health centers special payment rates in recognition of the additional services they offer, and the need to conserve grants for care of the uninsured. Some states have sought waivers to eliminate these special payment rules, which also allow health centers and state Medicaid agencies to develop alternative payment approaches that promote quality and efficiency without sacrificing health centers' ability to apply their grants toward uninsured populations and services. This analysis indicates that even though CHCs are paid at levels that may seem higher than rates paid to other providers, the value of the care provided still leads to lower overall pediatric health care expenditures.

The model projects that average total health care expenditures for children who use CHCs are about 35 percent lower than average total expenditures for non-CHC users. The difference between the two groups is greater for ambulatory services, including office-based and outpatient hospital services (40 percent savings), and prescription drugs (49 percent savings). CHCs may be able to reduce costs by offering a broader range of ambulatory services under one roof or in one visit, requiring fewer visits to different providers. Lower drug expenditures suggest that CHCs may better manage

¹⁵ Dept. of Health and Human Services. FY 2018 Budget in Brief. May 2017.

drug use, promote broader use of generics when appropriate, and/or secure lower drug pricing through the federal 340B drug purchasing program.

This study suggests one area of possible concern. The cost of emergency room care did not differ for CHC users. While CHCs provide a nationwide system of access to primary care for uninsured and Medicaid children, there is no comparable system of specialty care for children. Studies suggest that CHCs often encounter difficulties in securing specialty care for their uninsured and Medicaid patients.¹⁶ Barriers to successfully accessing specialty care might contribute to continuing use of emergency care. Further reductions in the percentage of children who are uninsured could promote improved access to specialty care, since that would provide a system to pay for more specialized care. In addition, it may be possible for CHCs (as well as other providers) to better manage pediatric care for chronic diseases, like asthma, which could improve health and reduce unnecessary care such as emergency department visits or hospitalization.¹⁷

Despite these concerns, this study provides new evidence of the value of comprehensive primary care services for children, especially children cared for through CHCs.

¹⁶ Doty M, Abrams M, Hernandez S, et al. Enhancing the Capacity of Community Health Centers to Achieve High Performance. New York: Commonwealth Fund. May 2010.

¹⁷ Kennedy S, Bailey R, Jaffee K, Markus A, Gerstein M, Stevens D, Lesch JK, Malveaux F, Mitchell, H. Effectiveness of Evidence-Based Asthma Interventions. *Pediatrics*. 2017;139(6): e20164221

Appendix: Methods and Descriptive Data

We estimated health care expenditures for children, newborn through age 17, using pooled data from the 2011 and 2012 versions of the nationally-representative Medical Expenditure Panel Survey (MEPS), conducted by the Agency for Healthcare Research and Quality (AHRQ). We use the 2011 and 2012 MEPS because they are the last years which asked respondents about the type of setting of their care. We focused on children who had one or more visits with an office-based physician, physician assistant, nurse, or nurse practitioner. In this study, a “CHC user” is any child for whom at least half of visits to these providers occurred at a “community health center” or “neighborhood/family clinic.” Non-CHC users had more than half of their visits with these providers in other settings. (Most of the children in the non-user category never went to a community health center or neighborhood/family clinic.)

Direct comparisons of average expenditures for CHC users and non-CHC users can be misleading because differences in total medical costs may be caused by differences in the characteristics of people in each group (e.g., whether they are insured or uninsured), as opposed to whether they received care at a CHC or not. To try to control for this diversity and estimate the “true” difference in costs between CHC users and non-CHC users, we used propensity score-based methods. The specific method used for this analysis consists of weighting by the inverse probability of treatment weights. This approach is used to make the underlying characteristics of users and non-users as similar as possible based on observed characteristics, to emulate the effect of a randomized experiment, which is the “gold standard” of evaluation methods.^{18,19} We use “stabilized” weights to mitigate the impact of cases with extreme weights.²⁰

The first step in this process is a multivariate logistic regression model that estimates each child’s likelihood of being a CHC user, based on observed characteristics. Our chosen model assigned each child a likelihood of using a CHC for office-based services – i.e., a propensity score – based on the child’s age, race/ethnicity, gender, family income level, general health status, and presence/absence of a diagnosis of asthma. These factors could affect the likelihood of using a CHC and may contribute to

¹⁸ Austin PC. An introduction to propensity score methods for reducing the effects of confounding in observational studies. *Multivariate Behavioral Research* 2011; 46:399–424. DOI: 10.1080/00273171.2011.568786

¹⁹ Garrido MM, Kelley AS, Paris J, Roza K, Meier DE, Morrison RS, and Aldridge MD. Methods for constructing and assessing propensity scores. *Health Services Research*, 2014; 49:5, 1701-1720. DOI: 10.1111/1475-6773.12182

²⁰ Austin PC, and Stuart EA. Moving towards best practice when using inverse probability of treatment weighting (IPTW) using the propensity score to estimate causal treatment effects in observational studies. *Statist. Med.* 2015; 34:3661–3679. DOI: 10.1002/sim.6607

differences in health care service utilization, more broadly. There was substantial overlap in the propensity scores for the CHC users and non-CHC users, providing a wide range of common support. We checked the balance of the propensity scores and each covariate using standardized differences and graphical comparisons of continuous variables, as recommended in the literature.²¹ The results generally indicated adequate balance, and any observed imbalance was sporadic and usually farther out in the tails of the distributions. Next, we computed stabilized inverse probability weights to adjust the sample weights and make the underlying characteristics of the two groups as similar as possible, based on observed characteristics. Lastly, we multiply the stabilized weights by pooled survey weights from the MEPS, as suggested by prior research in cases where one is using propensity score-based weights with complex survey data, such as the MEPS.^{22,23}

We employed these weights in two-part expenditure multivariate models that account for the skewed nature of medical expenditures (that is, there are many people with low expenditures, but a few with very high expenditures).²⁴ To reduce the influence of unusually high-cost cases on our estimates of average expenditures, we excluded a small number of children from each group with total annual expenditures greater than \$100,000.

²¹ Austin PC, Jembere N, and Chiu M. Propensity score matching and complex surveys. *Statistical Methods in Medical Research*, 2016; 0(0) 1–18. DOI: 10.1177/0962280216658920

²² Ridgeway G, Kovalchik SA, Griffin BA, and Kabeto MU. Propensity score analysis with survey weighted data. *J. Causal Infer.* 2015; 3(2): 237–249. DOI 10.1515/jci-2014-0039

²³ Austin PC, Jembere N, and Chiu M. Propensity score matching and complex surveys. *Statistical Methods in Medical Research*, 2016; 0(0) 1–18. DOI: 10.1177/0962280216658920

²⁴ Buntin M, Zaslavsky A. Too much ado about two-part models and transformation? Comparing methods of modeling Medicare expenditures. *Journal of Health Economics*. 2004; 23(3): 525-42.