

DETERMINING THE IMPACT OF BUNDLED PAYMENTS ON PATIENT
SATISFACTION LEVELS: A REGRESSION ANALYSIS ON A COST SAVING
METHOD WITHIN HEALTHCARE

A THESIS

Presented to

The Faculty of the Department of Economics and Business

The Colorado College

In Partial Fulfillment of the Requirements for the Degree

Bachelor of Arts

By

Dennis Zhang

May 2017

DETERMINING THE IMPACT OF BUNDLED PAYMENTS ON PATIENT
SATISFACTION LEVELS: A REGRESSIVE ANALYSIS ON A COST SAVING
METHOD WITHIN HEALTHCARE

Dennis Zhang

May 2017

Economics

Abstract

Rising healthcare costs have prompted healthcare systems and public policymakers to begin to consider alternative payment structures. However, with the recent implementation of the Affordable Care Act and other healthcare mandates, patient satisfaction is becoming an increasingly important topic that will soon influence hospital compensation. An OLS regression was used to investigate if a new method of cost saving known as bundled payments has any impact on patient satisfaction levels. Using panel data on patient satisfaction and on healthcare systems that participated in an experimental bundled payment program, the results suggest that bundled payment programs have no significant impact on patient satisfaction levels. While there are notable data issues that frame the interpretation of the results somewhat, this study indicates that bundled payment structures can preserve care delivery.

KEYWORDS: (Healthcare, Macroeconomics)

JEL CODES: (I11, I13, I18)

Acknowledgements

I would like to thank the faculty and staff of the Colorado College Economics and Business department for an invaluable education and for all the help I have received. I would also like to thank all of my professors, both within and outside the Econ department, for a truly memorable four years.

I would like to extend a massive thank you to my thesis advisor, Jessica Hoel, for her amazing support. Thank you for answering my endless questions, for sharing your incredible knowledge with me, and for your steadfast guidance throughout this thesis process.

I would like to thank my family and friends for all they have done for me. I would truly not be where I am today without them.

ON MY HONOR, I HAVE NEITHER GIVEN NOR RECEIVED
UNAUTHORIZED AID ON THIS THESIS

Dennis Zhang
March 13, 2017

Signature

TABLE OF CONTENTS

ABSTRACT	i
ACKNOWLEDGEMENTS	ii
1 INTRODUCTION	1
2 SETTING AND CONTEXT	4
3 METHODS	9
4 ANALYSIS AND RESULTS	12
5 CONCLUSION	15
6 REFERENCES, FIGURES, AND TABLES	
6.1 References.....	17
6.2 Tables.....	18
6.3 Figures.....	21

Introduction:

Rising healthcare costs and a stagnating level of care within our nation has necessitated the exploration of new methods to reform our healthcare system.

Governmental programs are currently being heavily taxed from trying to care for an aging population who often require extremely expensive care. With increasing governmental expenditures on healthcare making up almost \$1.5 trillion of the national budget, it has become important to the health of our population and the financial health of our nation to determine if there are any methods to reduce costs without a sacrifice in customer service.

The traditional methods of healthcare payment and reimbursement would usually bill the insurer for every procedure performed per episode of care. Insurance companies would typically only reimburse patients for a flat percentage of services rendered, leaving the patient to pay the remainder of their bill out of pocket. This system allows hospitals to be flexible with how they deliver care by giving the attending physician almost complete autonomy in selecting which procedures are appropriate for their patients. Physicians are incentivized to run the full spectrum of tests and try a wide variety of procedures as it ensures that the hospital is thorough with delivering care. The physician stands to make the most money this way as a doctor is compensated for each and every single procedure performed. This system of healthcare reimbursement has been in place for over a

century and has its variants throughout the world. Healthcare is treated in the same manner as any other consumer commodity, in the sense that services are “bought” a la carte. However, it is doubtful that this is really the best method to approach healthcare spending as healthcare purchasing decisions are not made by the consumer, but rather by the provider of healthcare. Furthermore, physicians and hospitals may be performing procedures or tests that the patient does not actually require. These extra procedures and tests may actually be causing additional harm to the patient with limited benefits. Patients can run the risk of being exposed to unnecessary radiation or additional exposure to dangerous chemicals without any substantial benefit. Patients also run the risk of increased false positives with unnecessary testing, further complicating their care. Having long queues for procedures also may prevent patients who actually need a particular test or procedure from getting their care in a timely fashion.

Bundled payments or episodic payments are a new approach towards healthcare reimbursement where the patient and insurance companies pay a set amount for each episode of care. Hospitals under a bundled payment program receive a lump sum of money for each diagnosis rather than receiving a fee for each service rendered. The hospital stands to make a profit if they can treat the patient with fewer procedures and fewer costs than the lump sum provided, but they are typically expected to suffer a loss if they are unable to do so. This style of reimbursement is so new that there are not any clear indications if this system is beneficial or not. Some believe that this payment structure reduces unnecessary healthcare and it increases efficiency while reducing costs.

Bundled payments may actually improve care, as hospitals are incentivized to pay special attention to each patient, rather than performing the whole range of tests for every single patient. Bundled payment methods also may lead to increased healthcare coordination between inpatient (hospital) and outpatient (rehab, physicians, pharmacies) services since the lump sum payments are often shared which offers a strong incentive for both inpatient and outpatient services to coordinate care in order to maximize profit.

Others have claimed that this payment structure disincentives doctors to properly treat their patients and instead focus on providing the bare minimum of care in order to maximize profit. Under a bundled payment system, hospitals may start to ration expensive tests and procedures just to maximize profits. With the lump sum payment being split across both inpatient and outpatient services, this may also put a financial squeeze on any services delivered further down the healthcare chain (i.e post-acute care, home-health services, preventative care services, etc) as these services reduce the profit that hospitals and physicians stand to make.

Healthcare seems to be focusing on moving away from fee-for-service model, in which physicians and healthcare systems are reimbursed by the number of procedures performed, and towards various pay-for-performance models, in which healthcare networks are compensated based on how well they meet several performance metrics. As a result, ensuring high patient satisfaction has been a major priority for both the hospitals and payers of healthcare. It is within the best interests of our nation's healthcare system to measure if customer satisfaction levels are impacted by an introduction of a bundled

payment model. This research will give an indication if it is possible to engage in an alternative payment structure without negatively impacting the hospitals ability to provide a high level of care for their patients.

The primary purpose of this study is to measure the impact of a bundled payments structure on the level of patient satisfaction solely in hospitals throughout United States. However, it is first necessary to provide a cursory analysis of the previous studies conducted on this topic in order to determine a foundation for this study's methods. This study aims to employ a modified OLS regression in order to study the impact of an experimental bundled payment structure. Several data issues necessitated the creation of a proxy variable that we could use to measure the impact of bundled payments on the quality of care. Finally, after quantitatively analyzing the data, this study will begin to delve deeper into the suggested finding that bundled payments have little impact on the quality of care provided.

Setting and Context

Research conducted by those within the medical community have documented how dire the healthcare situation is within America and they have demonstrated how healthcare prices will only continue to spiral out of control if no action is taken. A recent healthcare investigation claimed that healthcare spending comprised 18% of all spending in the United States (Berwick and Hackbarth 2012). The researchers go on to claim that that number will most likely increase dramatically in the future. The current model of healthcare spending is not conducive to cost reduction and new methods are necessary to

begin to tame the inflation of prices. Key among the suggestions listed by these researchers is the need for alternatives to fee-for-service payments, specifically bundled payments, as they claim this method has found success in Europe and could be successfully implemented within the United States.

However, different researchers who examined the programs within Europe found mixed results in how successful a bundled payment program was in action. A study that examined an experimental bundled payment structure within a small group of hospitals in the Netherlands found average results for hospitals and patients receiving long term diabetes, chronic COPD, and pulmonary care (Baan and Struijs 2011). The study found that hospitals greatly improved their coordination of healthcare, as their compensation depended on successful teamwork in treating their patients. However, these researchers also noted that there was actually limited healthcare savings for both the healthcare system and for the payers of healthcare. A key issue was that inexperience with the program led insurers to all have different standards of what they deemed as an acceptable lump sum, causing the hospital to vary in how they treat their patients. The study found that patients enjoyed increased transparency and an increased speed of delivery of care, but there were relatively minor savings and limited choice for patients. More importantly, this study noted that it was almost impossible to tell if the quality of care was impacted by this trial, due to the fact that the hospital systems already had exceptionally high quality ratings before the implementation of the program and that the paper was published only a year after the conclusion of the trial.

Inspired by the experiments conducted in other countries, public health policy makers in the United States have decided to conduct a nationwide study in order to determine the feasibility of this particular method of alternative payment. In 2013, the Center's for Medicare and Medicaid Services (CMS) began the start of their Bundled Payments for Care Improvements (BPCI) initiative. This program was a wide ranging experiment that focused on allowing hospitals to adopt an experimental bundled payment system in order to provide feedback to the CMS. This initiative allowed healthcare systems to explore how to properly implement a bundled payment structure, without suffering any major financial consequences. Hospitals could choose from four separate BPCI models created by the CMS to treat any patient who was covered under Medicare and/or Medicaid. This study uses data from the hospitals who voluntarily participated under BPCI models 2 and 3, as an extremely small number of healthcare systems participated in models 1 and 4. BPCI model 2 and 3 are models in which the healthcare system still bills Medicare/Medicaid on a fee for service model. However, at the end of each episode of care the CMS compares the total billed expenditures to what they have previously calculated as the ideal amount of payment for a particular diagnosis. The CMS then dispenses payment to the hospital as close to the target amount as they deem appropriate. If a healthcare system bills Medicare an amount well over the previously determined target amount, the CMS can decide to only reimburse up to the target amount and allow the hospital to eat the rest of the accumulated costs. However, if an episode of care had unforeseen complications that lead to the cost of care being over the target limit,

Medicare could decide to reimburse in full as long if there was proof that the additional costs were completely necessary. The two models are more or less the same with the primary difference between model 2 and model 3 being what sort of post-care services the patient utilizes. Any episode of care that utilizes rehabilitation facilities, hospice facilities, home health agencies or skilled nursing homes will be considered a part of Model 3 while patient's episodes that use other services are considered a part of Model 2.

Recent discussion with the healthcare industry have indicated that a bundled payment structure is not the only significant change that healthcare systems need to come to terms with, as hospitals also need to take customer satisfaction into serious consideration. Provisions within the Affordable Care Act suggest that Medicare reimbursements will soon take patient experiences into account, although the exact time frame is unknown. In accordance with this new interest, the government began to collect data on patient satisfaction that is a vital part of this study's analysis in 2002. The Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) is a patient satisfaction survey that is required participation for all hospitals within the United States. The survey covers a wide variety of healthcare satisfaction topics ranging from how well the staff communicated to the general cleanliness of the facilities. The data is re-aggregated every year, so it is possible to see how well a hospital performs on a year to year basis. HCAHP surveys are given out to every patient by certified third party vendors, to ensure that the responses are non-biased and neutral. Every patient who participates in a study is fully anonymized to ensure they can answer the various

questions freely and without any undue influence. Public health researchers who have analyzed the HCAHP system currently in place have found that it is a satisfactory and well-designed method for hospitals to receive feedback on what their customer satisfaction levels are (Giordano, Elliott, Goldstein, Lehrman, and Spencer 2010).

This concept of bundled payments is so new that there are not a lot of comprehensive studies that examine the economic effects, however, there are positive signs based on some theoretical calculations that several doctors have published in the New England Journal of Medicine. These researchers analyzed payment data on seventeen different DRG's (medical codes that describe a variety of conditions) and after finding the ideal payment for each DRG they claim that a bundled payment system could save between 18 to 35 billion dollars per year for treatment associated with these seventeen conditions depending on the level of reimbursement per patient (Cutler and Ghosh 2012). The researchers acknowledge that they did not factor in the heterogeneity in treating patients, but they suspect that these variations are small and would not drastically change their calculations.

While there have been comprehensive studies in regards to the rising costs of healthcare, there have been relatively limited investigations if cost saving measures such as bundled payments have an impact on the quality of care that a hospital in the United States is able to provide. Several researchers looked at the impact of a bundling program that the Texas Heart Institute implemented in 1984 for its non-Medicare patients in need of coronary bypass grafting surgery. These researchers found that patients enjoyed a

decrease in out-of-pocket costs while experiencing little to no change in the quality of care that they received (Shih, Chen and Nallamouthu 2015). While this study certainly does suggest that it is possible to implement a bundled payment program without a sacrifice in how effectively patients are treated it is important to note that this program was for a very small subset of privately insured patients who needed a relatively niche and fairly uncommon procedure. This study also does not address if this program implemented by the Texas Heart Institute could be feasibly expanded to more patients, if it could be expanded to cover Medicare/Medicaid patients, nor if it could be expanded to cover across a wider variety of procedures. Nonetheless, the key finding of the study still demonstrates that healthcare systems are more than capable of designing an effective bundled payment system that benefits the providers of healthcare, the payers of healthcare, and the patients.

Methods

This research question is particularly well suited to using OLS method that measures a linear change of average patient satisfaction levels using panel data measured over a time span of three years. The focus of this model is to primarily determine if there was an impact that the bundled payment program initiative had on patient satisfaction rates, if any at all. I decided to use publically available data on the BPCI participants from the CMS as well as patient satisfaction data from Medicare.gov. In measuring overall patient satisfaction, I decided to use the percentage of patients who rated their

hospital either a nine or a ten on a ten point scale as my primary metric for patient satisfaction rates. I choose this variable as the best possible method of patient satisfaction measurement because it was one of the only metrics that measured a patient's overall experience as other patient metrics often referred to more specific things such as cleanliness or volume levels of the hospital.

In order to thoroughly examine this particular research question, the econometric model used to analyze the data can be described as a modified OLS regression of the patient satisfaction levels on treatment intensity as listed below.

$$Y_{T1} = \beta_0 + \beta_1 Y_{T0} + \beta_2 T_s + E$$

The dependent variable (Y_{T1}) is the average level of patient satisfaction in 2016 or after the implementation of a bundled payment program. The first explanatory variable (Y_{T0}) refers to the average patient satisfaction levels before the beginning of the BPCI, to serve as a baseline in order to measure the true impact of the BPCI program. The second explanatory variable (T_s) serves to measure the impact that the bundled payments program has on the average patient satisfaction rate, but constructed in a manner that addresses the inconsistency of the datasets. The primary issue with the data collected on the bundled payment initiatives was the programs that participated in the BPCI were listed as corporate entities rather than the hospital that participated within the program. In

other words, while the patient satisfaction data was measured on a hospital level the bundled payment data was measured on a corporate entity or holding company level.

In order to address this issue, this study measured the number of recorded cases that utilized this bundled payment structure in each state. That figure was then divided by the population of that state (as of 2016) in order to generate the number of BPCI episodes per million citizens for each of the fifty states. This factor in turn is used to measure if there is any notable correlation between a higher rate of bundled payment cases and a significant change in patient satisfaction.

After the construction of the bundled payment metric, both datasets required several modifications and adjustments before any analysis could be performed. In regards to the HCAHP survey data, patient satisfaction levels of hospitals outside of the fifty states (Washington D.C, Guam, Puerto Rico etc) were removed from the dataset. Any hospital that did not have any patient satisfaction data for both 2013 and 2016 were not included in the regression analysis. In regards to the BPCI data, any organization explicitly listed as a rehabilitation center, nursing home, or physician group was removed from the dataset.

After modifying the datasets to properly suit the theoretical model, statistical analysis does not suggest the problematic presence of the five common econometric issues. The data set is not subject to neither heteroskedascity nor autocorrelation, as the analysis was performed with a clustering method within Stata. A clustering method seeks to resolve any heteroskedascity or any autocorrelation issues within a dataset by grouping

variables that behave similarly before performing regression analysis. Statistical tests suggest this dataset is not subject to any non-normal distribution of the error terms. The Jacque-Bera test as well as a histogram of the residuals indicate a regular distribution of the residuals (see Figure 1). This dataset does display a slight presence of multicollinearity, specifically there is relatively strong correlation between the patient satisfaction levels in 2013 and in 2016. However, this is not unreasonable as it stands to reason that a hospital's patient satisfaction score is highly reliant on what they scored three years before. Omitted variable bias is almost certainly at play within this model, as healthcare is extremely complex with hundreds, if not thousands, of exogenous factors impacting the level of care delivered. However, for the purposes of this study, all other variables outside of ones within our theoretical model will be held *ceteris parabus*.

Analysis and Results

With the model constructed in a manner that is somewhat suitable to statistical analysis, the results should be viewed favorably upon by the healthcare community. The descriptive statistics in Table 1 show that there was an approximately two percent increase in the average number of patients who were very satisfied with their care from 2013 to 2016 (from 70.81% to 71.9%). In regards to analysis performed on the bundled payments episodes per capita per state variable, the statistical results in Table 2 not only show a statistically insignificant result ($p=0.15$), but also a relatively miniscule coefficient (0.006). The statistical results for the 2013 average patient satisfaction score demonstrate a significantly significant result of $p=0.00$, but a fairly small coefficient of

0.78. The statistics for the coefficient of the constant differed somewhat from the previous variables with a significantly significant result of $p=0.00$ and a high coefficient of 16.43. However, statistical analysis of the BPCI per million variable suggested that four states were acting as outliers (see Figure 2). Regression analysis was performed again after these outliers were removed. The BPCI now was a statistically significant variable ($p=0.05$), but the coefficient still remained extremely small (see Table 3). We can conclude that even after the outliers were removed from our analysis, the implementation of a BPCI program has no economically significant influence on patient satisfaction levels. As mentioned before, the extremely high t-statistics for the 2013 score variable reasonably suggests that a hospital's performance in 2016 is heavily correlated with what their score three years prior. The t-statistic in regards to the coefficient of the constant is also very high, suggesting that undefined variables play a significant role in determining a hospital's performance (see Table 2 and 3).

The increased patient satisfaction rate is certainly a positive sign for our overall healthcare system and the statistical analysis tentatively suggests that hospitals and healthcare payers can implement a bundled payment system without experiencing a decreased level of care. The results seem to suggest the conclusions reached by the researchers (Sinh et.al 2015) who analyzed the implementation of a bundled payment structure at a specific institute in the 1980's appear to mostly hold true on the national level. States with a higher bundled payment participation rate did not perform any worse or any better than states with little or no participation in the BPCI. This result can appear

to be positive for healthcare systems looking to reduce costs, but it can also be a negative sign if a healthcare system is looking to adopt a bundled payment system primarily to improve performance. If a hospital is looking to adopt this particular payment structure to encourage either specialized attention or to increased care coordination, they should be dissuaded due to the lack of impact that bundled payments have on patient satisfaction.

While the results seem to be generally favorable towards the wide spread implementation of bundled payments, these results should be taken with a fairly large grain of salt due to three major issues with the data of this study. The first issue is that the satisfaction rating is only one component of the overall quality experience. Measuring a hospital's performance is notoriously difficult, as healthcare has many different methods to measure if patient was treated well or not. Healthcare has a whole series of different variables that can be used to measure the standard of care, ranging from readmission rates to patient safety metrics. This study choose to focus upon the average level of patient satisfaction due to HCAHP data being easily accessible, but it is difficult to determine within the data if a patient truly had a poor experience with the hospital and its staff or if they received the best possible care they could have but still noted on the survey that they had a poor experience due to factors outside of the hospitals control. The second issue that this research faces is the discrepancy between how the HCAHP survey participants were recorded and how the BPCI participants were recorded. Many of the hospitals that were listed as participants consist of large healthcare provider networks, which complicates the results of this study. For example, the dataset states twenty-one episodes

of bundled payment care were attributed to the Stamford Hospital in Stamford, Connecticut. However, it is impossible to tell from the dataset how many episodes were performed within the actual hospital and how many episodes actually referred to procedures done within the offices of physicians, surgery centers, and imaging centers associated with Stamford Hospital. This problem was not just unique to the Stamford Hospital, as this issue was compounded on a national scale. The lack of complete transparency and detailed data necessitated the creation of the bundled payment episode per capita variable since it was impossible to pinpoint details about every single hospital that was part of the BPCI. The third issue to note is that this BPCI program is still extremely experimental and somewhat limited in the scope of both the hospitals that participated and the number of conditions covered. It definitely within the realm of possibility that bundled payments could have a different impact than what was found within this study if this program was adopted by extremely poorly performing hospitals or if the program was expanded to conditions that require more strenuous care.

Conclusion

The implications of this study certainly are relevant to a wide variety of figures within healthcare, but there is quite a lot of potential on how this research can be expanded. This study design was purposely narrow in order to properly focus on a single, albeit important, relationship between two variables. Future studies should look to perform a wider analysis on a wider array of both cost saving measures and performance metrics. Future studies should also look to include more exogenous factors in the

regression analysis, in order to pinpoint what influences a patient experience. This research could also focus on regional or state specific bundling payment initiatives using a similar theoretical framework. Similarly, future studies could investigate the usefulness of this program in improving satisfaction in facilities other than hospitals, particularly physician offices, nursing homes, and urgent care facilities.

While this research has its fair share of problems, it does reveal some interesting and useful insights into the future of our healthcare system. Healthcare providers and public policy makers will soon need to make some very difficult decisions as they must address ever increasing healthcare costs and the very likely possibility that compensation will be based on patient satisfaction levels. Prior research not only paints a dire picture for the future of our healthcare system, but other research demonstrates it is difficult to say how effective and useful a bundled payment structure really is for a hospital. Different healthcare systems have different strengths, weaknesses, and goals which means that while bundled payments can seem like a great idea for one hospital, it could be a totally inappropriate system for another. As a result, any research that offers insight into the feasibility of implementing cost saving measures will be immensely valuable in making decisions. Investigating if bundled payments lead to changes in how satisfied patients are with their care leads to the tentative conclusion that bundled payments have no impact on the percentage of patients who were very satisfied with their hospital stay and that hospitals seem to be improving as a whole in properly addressing their patient's needs.

References

- Berwick DM, Hackbarth AD. Eliminating Waste in US Health Care. *JAMA*. 2012;307(14):1513-1516. doi:10.1001/jama.2012.362
- Bundled Payments for Care Improvement (BPCI) Initiative: General Information. (2015). Retrieved February 09, 2017, from <https://innovation.cms.gov/initiatives/bundled-payments/>
- Cutler, D. M., & Ghosh, K. (2012). The Potential for Cost Savings through Bundled Episode Payments. *New England Journal of Medicine*, 366(12), 1075-1077. doi:10.1056/nejmp1113361
- Giordano, L. A., Elliott, M. N., Goldstein, E., Lehrman, W. G., & Spencer, P. A. (2009). Development, Implementation, and Public Reporting of the HCAHPS Survey. *Medical Care Research and Review*, 67(1), 27-37. doi:10.1177/1077558709341065
- Shih, T., Chen, L. M., & Nallamotheu, B. K. (2015). Will Bundled Payments Change Health Care? Examining the Evidence Thus Far in Cardiovascular Care. *Circulation*, 131(24), 2151–2158. <http://doi.org/10.1161/CIRCULATIONAHA.114.010393>
- Struijs, J. N., & Baan, C. A. (2011). Integrating Care through Bundled Payments — Lessons from the Netherlands. *New England Journal of Medicine*, 364(11), 990-991. doi:10.1056/nejmp1011849

Tables

Table 1: Descriptive Statistics of Patient Satisfaction Rates in 2013 and 2016 and of Bundled Payments Episodes per Million per State

Variable	Obvs	Mean	Std. Dev.	Min	Max
Patient Satisfaction Rate in 2013	4,056	70.81	9.07	10	100
Patient Satisfaction Rate in 2016	4,098	71.90	8.59	30	97
Bundled Payments Episodes per Million per State	4,558	21.26	24.24	0	144.29

Number of Observations=3,838
F(2, 44)= 791.22
Prob> F = 0
R-squared = 0.652
Root MSE = 4.98

Table 2: Regression of Bundled Payments Episode per Million per State on Average Patient Satisfaction Levels in 2016 (with outliers)

Variable	Coef.	Std. Error	T-stat	P-value	[95% Interval]
Bundled Payments Episodes per Million per State	-0.006	0.004	-1.46	0.15	-0.157 0.002
Avg. Patient Satisfaction Rate in 2013	0.785	0.0213	36.79	0.000	0.742 0.828
Constant Coefficient	16.43	1.65	9.96	0.000	13.11 19.74

Number of Observations=3,838

F(2, 44)= 791.22

Prob> F = 0

R-squared = 0.652

Root MSE = 4.98

Table 3: Regression of Bundled Payments Episode per Million per State on Average Patient Satisfaction Levels in 2016 (with outliers removed)

Variable	Coef.	Std. Error	T-stat	P-value	[95% Interval]
Bundled Payments Episodes per Million per State	-0.163	0.008	-1.99	0.053	-0.033 0.0002
Avg. Patient Satisfaction Rate in 2013	0.785	0.022	34.35	0.000	0.739 0.83
Constant Coefficient	16.59	1.789	9.29	0.000	12.99 20.20

Number of Observations=3,531

F(2, 44)= 762.23

Prob> F = 0

R-squared = 0.652

Root MSE = 5.04

Figures

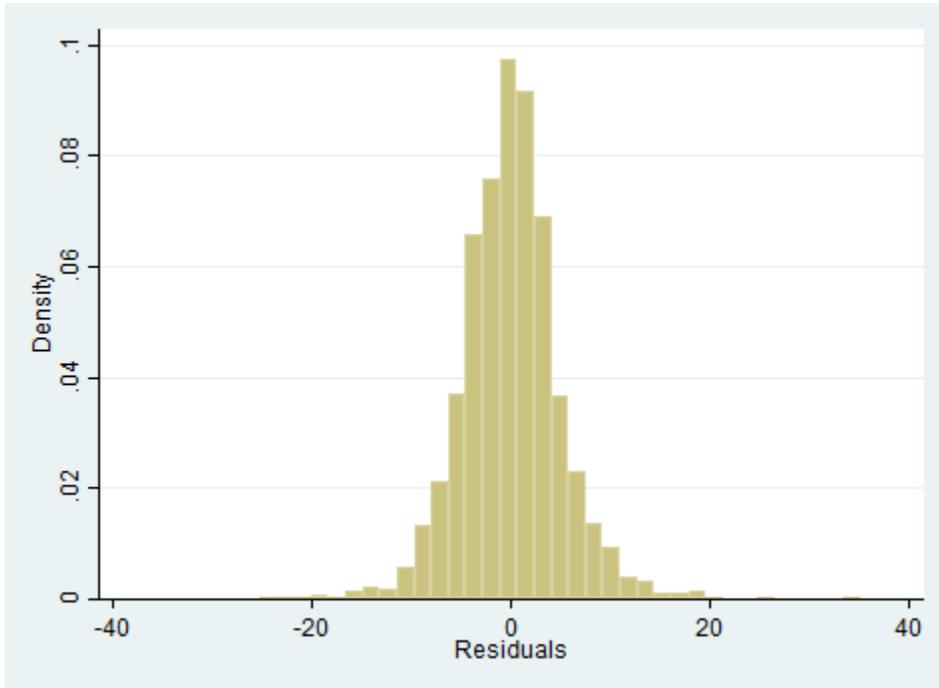


Figure 1: Histogram of the residuals suggests a normal distribution of the predicted terms

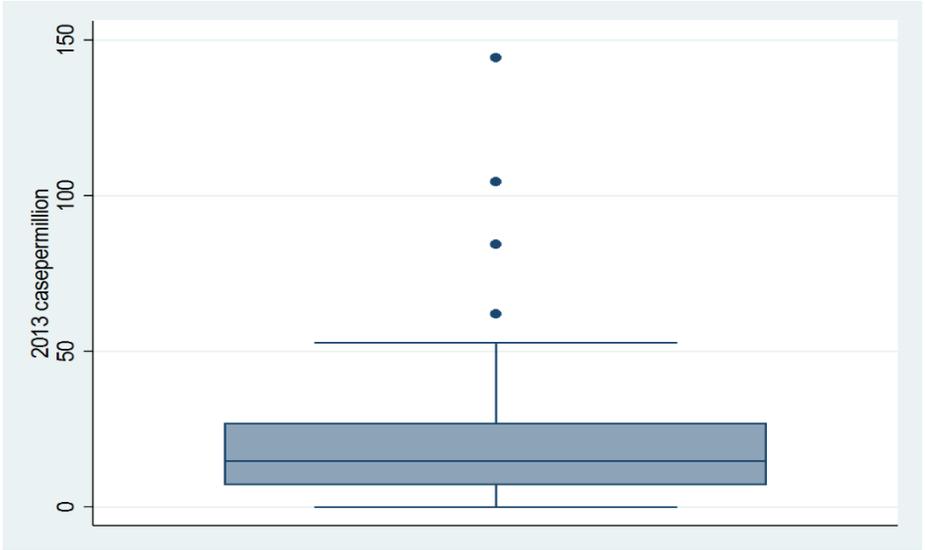


Figure 2: Box Plot of Bundled Payments Episodes per Million per State variable. Note the four sets of data outside the 95% confidence interval. These four points were subsequently removed from the dataset.