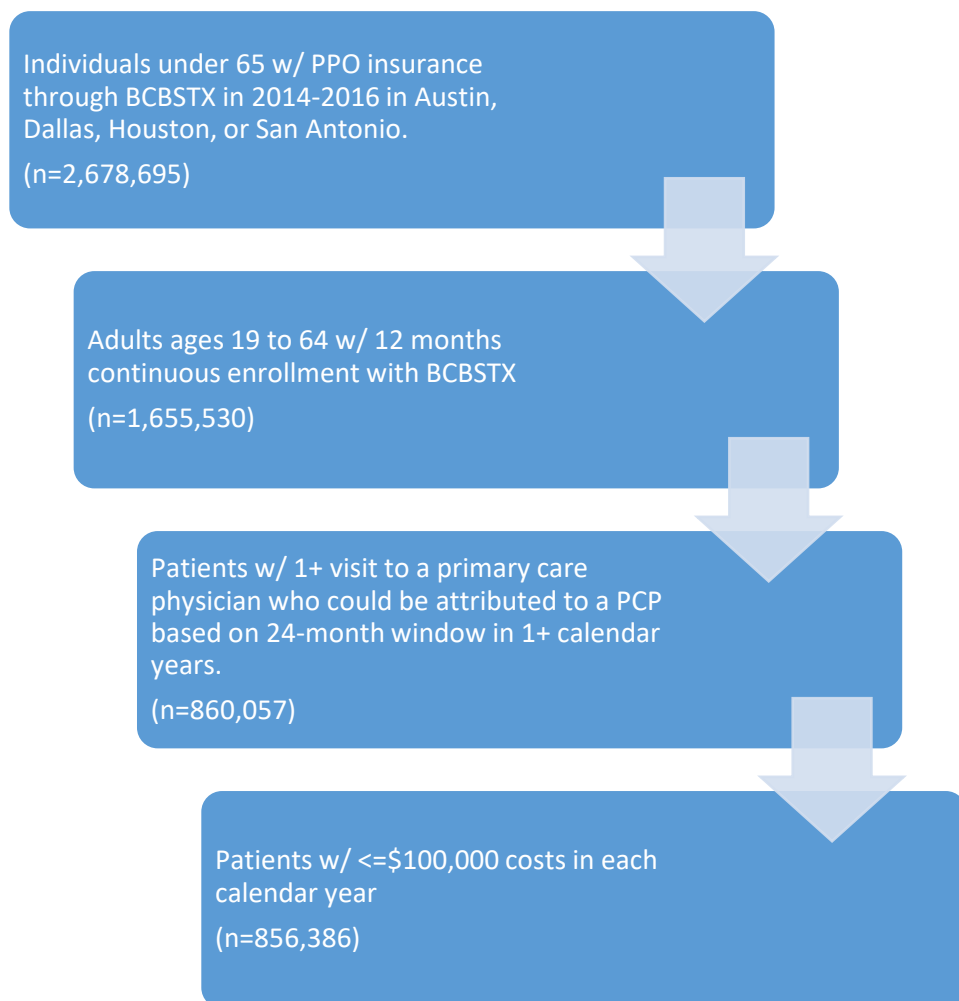


Appendix: Are Hospital-Owned or Physician-Owned Organizations More Costly?

Appendix eFigure 1: Sample Size After Each Study Exclusion



Appendix eTable 1: Characteristics of Patients in the Analyses Sample Compared to Excluded Patients^a		
	Members in the Sample	Members Excluded
Age	43	38
Risk score	1.258	1.061
Male	45.46%	49.63%
CDHP	22.74%	23.60%
% Austin	11.50%	11.33%
% Dallas	40.45%	39.16%
% Houston	37.14%	37.97%
% San Antonio	10.91%	11.54%
Wage Index	0.952	0.945

^a Patients were excluded from the sample if they could not be attributed to a physician.

Appendix eTable 2: Distribution of Physician Specialties in Physician versus Hospital-Owned Organizations, by Year		
	Physician-Owned	Hospital-Owned
2014		
Family Practice	71.5%	70.9%
Internal Medicine	27.2%	28.3%
Pediatrics	1.0%	0.7%
General Practice	0.3%	0.1%
2015		
Family Practice	71.1%	72.0%
Internal Medicine	27.6%	27.1%
Pediatrics	1.0%	0.8%
General Practice	0.4%	0.1%
2016		
Family Practice	71.4%	72.9%
Internal Medicine	27.2%	26.2%
Pediatrics	0.9%	0.8%
General Practice	0.4%	0.2%

Appendix eTable 3. Characteristics of Physician Organizations and Attributed Patients Participating in the BCBSTX Network by Year									
	2014			2015			2016		
	Medical Groups			Medical Groups			Medical Groups		
	Physician-Owned	Local Hospital-Owned	Multihospital System-Owned	Physician-Owned	Local Hospital-Owned	Multihospital System-Owned	Physician-Owned	Local Hospital-Owned	Multihospital System-Owned
Total									
No. of Physician Organizations (Pos)	1,869	27	11	1,869	27	11	1,869	27	11
No. of patients	477,841	63,157	69,462	477,927	66,127	77,789	426,827	61,415	74,318
Patients per PO, mean	256	2,339	6,315	256	2,449	7,072	228	2,275	6,756
Patients per PO, minimum range	5	7	73	5	8	70	5	5	55
Patients per PO, maximum range	57,991	30,806	38,627	64,168	29,833	40,349	58,402	25,411	39,005
Severity of patient health status (DxCG risk scores)									
	1.22	1.26	1.17	1.25	1.29	1.22	1.26	1.29	1.21
Allowed Medical Spending	4,163	4,748	4,374	4,558	5,078	4,800	4,656	5,181	4,818
Age	43.1	43.5	42.9	43.1	43.5	42.8	43.1	43.4	42.6

Appendix eTable 4: Percent of Patients with Positive Annual Spending, 2014-2016 by BETOS Category and Site and Type of Care

	Physician-Owned	Hospital (Local + Multi)	P-value
By BETOS category (\$)			
Evaluation and management	99.3%	99.2%	<.0001
Procedures	55.8%	55.9%	0.30
Imaging	57.0%	56.8%	0.15
Test	89.6%	89.2%	<.0001
Durable medical equipment	21.2%	22.3%	<.0001
Other	53.1%	56.4%	<.0001
Unclassified	24.6%	21.9%	<.0001
By site and type of care (\$)			
Professional payments	100.0%	100.0%	0.13
Outpatient facility	39.1%	47.9%	<.0001
Inpatient facility	5.1%	5.0%	0.01

Appendix eTable 5: Determinants of Annual Expenditure Differences per Patient, 2014-2016			
	Adjusted Percentage Difference		Adjusted Dollar Difference
Hospital-owned Practice	5.83**		280.08***
Organization Size, No. of patients			
1st Quartile	reference		reference
2nd Quartile	-0.66		-5.68
3rd Quartile	0.85		40.6
4th Quartile	-2.08		-10.68
Year			
2014	reference		reference
2015	6.80**		66.92
2016	8.11**		50.47
Patient Age			
19 to 29	1.42		-94.90**
30 to 39	-1.24**		-266.19***
40 to 54	-0.2		-151.95***
55 to 64	reference		reference
Patient Risk score			
1st Decile	reference		reference
2nd Decile	50.26***		312.95***
3rd Decile	86.95***		643.42***
4th Decile	117.84***		1032.73***
5th Decile	145.3***		1495.02***
6th Decile	172.88***		2106.56***
7th Decile	204.49***		3046.91***
8th Decile	241.83***		4621.14***
9th Decile	295.19***		8200.65***
10th Decile	382.66***		20180.37***
Male Gender	-2.72***		83.71***
Consumer-Directed Health Plan	-0.83		149.00***
Index of wages and other supply costs			
Wage Index	-73.31		78839.42*
Wage Index ²	63.56		-44265.00*
Cities by Year			
San Antonio 2014	-5.77		-953.92**
San Antonio 2015	-5.09		-828.19***
San Antonio 2016	-6.33		-872.83***
Dallas-Fort Worth 2014	7.44*		109.84
Dallas-Fort Worth 2015	5.03*		169.08*
Dallas-Fort Worth 2016	3.19		320.46***
Austin 2014	-0.43		-304.56
Austin 2015	-0.44		-200.80
Austin 2016	0.74		-65.48
Houston	reference		reference
Physician Specialty			
Internal Medicine	0.42		-50.38
Pediatrics	7.27***		155.35*
General Practice	-3.74		97.93
Family Practice	reference		reference
Intercept	616.54		-34458.70*
*p<0.05, **p<0.01, ***p<0.001			

Appendix eMaterial 1: Attribution of patients to a PCP

Attribution of patients to a PCP was a multi-step process. For each enrollment month within a calendar year, we identified each patient's visits to a PCP in the same calendar year. For example, for patients continuously enrolled with BCBSTX in calendar year 2015, we first identified the most frequently visited PCP in each month from January to December of 2015. However, if an enrolled patient did not visit a PCP in 2015, we would not be able to attribute her to a PCP. Therefore, for each month in 2015, we searched for claims for visits to a PCP in a 24-month window that included the calendar year and additional months closest to that year. For example, for January 2015, we searched for the most visited PCP in each month between February 2014 and January 2016. Note that January 2015 is the midpoint of this time interval. This approach increases the probability that each patient will be attributed to a PCP, using additional information from months closest to the relevant calendar year. When processing a later month, say June 2015, we shifted the 24-month window forward to run from July 2014 through June 2016. By performing this process for each month of each calendar year, we raised the probability of identifying PCP visits, thereby raising the number of patients who could be attributed to a PCP.