



**eFigure 1.** Schematic of inclusion and exclusion criteria

**eTable 1.** Sensitivity analysis I: Uninsured at 10, 25, 50, and 150% of the national Medicaid rate

		<b>Estimated annual number of outpatient visits nationwide</b>	<b>90%CI for national burden</b>	
<b>Ambulatory ED</b>	<b>Overall 10% Medicaid</b>	376,903.3	370,454.9	383,351.7
	<b>Overall 25%</b>	382,887.3	376,130.9	389,643.7
	<b>Overall 50%</b>	392,860.7	385,591.1	400,130.3
	<b>Overall 150%</b>	432,754.1	423,431.5	442,076.6
<b>Urgent care</b>	<b>Overall 10% Medicaid</b>	35,230.1	34,697.1	35,763.1
	<b>Overall 25%</b>	35,563.9	35,013.7	36,114.1
	<b>Overall 50%</b>	36,120.3	35,541.4	36,699.1
	<b>Overall 150%</b>	38,345.6	37,652.3	39,039.0
<b>Office visit</b>	<b>Overall 10% Medicaid</b>	770,230.2	758,916.8	781,543.5
	<b>Overall 25%</b>	776,429.7	764,797.3	788,062.0
	<b>Overall 50%</b>	786,762.1	774,598.0	798,926.2
	<b>Overall 150%</b>	828,091.9	813,801.0	842,382.9
<b>Any presentation</b>	<b>Overall 10% Medicaid</b>	1,182,350.2	1,164,055.4	1,200,645.0
	<b>Overall 25%</b>	1,194,868.3	1,175,929.3	1,213,807.3
	<b>Overall 50%</b>	1,215,731.8	1,195,719.1	1,235,744.5
	<b>Overall 150%</b>	1,299,185.9	1,274,878.5	1,323,493.2
<b>Outpatient only</b>	<b>Overall 10% Medicaid</b>	805,460.3	793,614.0	817,306.7
	<b>Overall 25%</b>	811,993.6	799,811.1	824,176.2
	<b>Overall 50%</b>	822,882.4	810,139.5	835,625.3
	<b>Overall 150%</b>	866,437.6	851,453.3	881,421.9

**eTable 2.** Sensitivity analysis II: Possible misclassification at 5, 10, and 20% over- or underestimation

		Estimated annual number of outpatient visits nationwide	90% CI for national burden	
<b>Ambulatory ED</b>	20% <b>Overestimation</b>	330,245.9	323,609.0	336,882.7
	10%	371,526.6	364,060.2	378,993.1
	5%	392,167.0	384,285.7	400,048.3
	5% <b>Underestimation</b>	433,447.7	424,736.9	442,158.6
	10%	454,088.1	444,962.4	463,213.8
	20%	495,368.8	485,413.6	505,324.1
<b>Urgent care</b>	20% <b>Overestimation</b>	29,786.3	29,277.5	30,295.2
	10%	33,509.6	32,937.2	34,082.1
	5%	35,371.3	34,767.0	35,975.6
	5% <b>Underestimation</b>	39,094.6	38,426.7	39,762.5
	10%	40,956.2	40,256.6	41,655.9
	20%	44,679.5	43,916.3	45,442.8
<b>Office visit</b>	20% <b>Overestimation</b>	645,941.66	635,359.6	656,523.6
	10%	726,684.3	714,779.6	738,589.1
	5%	767,055.7	754,489.5	779,621.8
	5% <b>Underestimation</b>	847,798.4	833,909.5	861,687.3
	10%	888,169.7	873,619.5	902,720.0
	20%	968,912.4	953,039.4	984,785.5
<b>Any presentation</b>	20% <b>Overestimation</b>	1,005,967.1	988,239.1	1,023,695.1
	10%	1,131,713.0	1,111,769.0	1,151,657.0
	5%	1,194,585.9	1,173,533.9	1,215,637.9
	5% <b>Underestimation</b>	1,320,331.8	1,297,063.8	1,343,599.8
	10%	1,383,204.7	1,358,828.7	1,407,580.7
	20%	1,508,950.6	1,482,358.6	1,535,542.6
<b>Outpatient only</b>	20% <b>Overestimation</b>	675,728.0	664,637.1	686,818.9
	10%	760,194.0	747,716.8	772,671.2
	5%	802,427.0	789,256.6	815,597.4
	5% <b>Underestimation</b>	886,893.0	872,336.2	901,449.8
	10%	929,126.0	913,876.1	944,376.0
	20%	1,013,592.0	996,955.7	1,030,228.3

**eTable 3.** Comparison of annual rates of head trauma presentations between 2010-2012 MarketScan and weighted national rates from 2010-2012 HCUP NIS/NEDS data

Age group	Annual rate per 100,000 enrollees/population*
<b>(Tier 2) Head injury-related hospitalizations (died or survived)</b>	
<b>2010 HCUP NIS: 0-17 years (overall)</b>	<b>58.7</b>
Private Insurance	54.0
Medicaid	65.4
Uninsured	35.8
<b>2011 HCUP NIS: 0-17 years (overall)</b>	<b>38.1</b>
Private Insurance	33.8
Medicaid	44.3
Uninsured	21.5
<b>2012 HCUP NIS: 0-17 years (overall)</b>	<b>42.8</b>
Private Insurance	37.4
Medicaid	50.6
Uninsured	22.5
<b>2010 MarketScan: 0-17 years</b>	<b>46.3</b>
<b>2011 MarketScan: 0-17 years</b>	<b>43.7</b>
<b>2012 MarketScan: 0-17 years</b>	<b>43.0</b>
<b>(Tier 3) Head injury-related Emergency Department visits (admitted or discharged)</b>	
<b>2010 HCUP NEDS: 0-17 years (overall)</b>	<b>961.4</b>
Private Insurance	980.6
Medicaid	951.6
Uninsured	873.1
<b>2011 HCUP NEDS: 0-17 years (overall)</b>	<b>1046.8</b>
Private Insurance	1002.3
Medicaid	1151.3
Uninsured	851.5
<b>2012 HCUP NEDS: 0-17 years (overall)</b>	<b>1142.0</b>
Private Insurance	1043.3
Medicaid	1315.4
Uninsured	993.2
<b>2010 MarketScan: 0-17 years</b>	<b>784.7</b>
<b>2011 MarketScan: 0-17 years</b>	<b>828.4</b>
<b>2012 MarketScan: 0-17 years</b>	<b>854.4</b>
<b>(Tier 4) Head injury-related office/clinic visits (not including urgent care)</b>	
<b>2010 MarketScan: 0-17 years</b>	<b>913.3</b>
<b>2011 MarketScan: 0-17 years</b>	<b>1022.6</b>
<b>2012 MarketScan: 0-17 years</b>	<b>1125.8</b>

\* Data from the Agency for Healthcare Research & Quality's Healthcare Cost and Utilization Project (HCUP) National (Nationwide) Inpatient Sample (NIS) and Nationwide Emergency Department Sample (NEDS) include *weighted* national estimates of pediatric patients with private insurance, Medicaid, and no insurance (self-pay). They represent cross-sectional administrative claims (no indication of follow-up or not in the preceding 30 or following 180 days—parameters that were included in MarketScan inclusion/exclusion criteria for reported data). MarketScan data do not include uninsured patients.

**eTable 4.** Annual rates of outpatient head trauma presentation per 100,000 pediatric enrollees from 2004-2013 and jointpoint regression results (AAPC= average annual percent change, APC= annual percent change)

	Insurance	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	AAPC (%)	p-value
<b>Ambulatory ED*</b>	<b>Commercial</b>	282.7	270.6	254.4	219.6	232.9	317.6	317.8	290.8	312.3	337.5	3.3 (0.2-6.4)	<b>0.0389</b>
	<b>Medicaid</b>	645.5	674.1	613.1	637.3	641.8	852.2	792.0	883.0	783.2	733.2	2.8 (0.2-5.5)	<b>0.0372</b>
	<b>Overall</b>	439.8	455.4	420.8	336.2	339.4	456.5	430.9	410.9	431.3	455.9	0.8 (-2.0 to 3.6)	0.5505
<b>Urgent care†</b>	<b>Commercial</b>	6.6	8.0	10.6	11.2	15.4	21.5	23.8	27.6	42.6	50.8	26.6 (23.1-30.3)	<b>&lt;0.0001</b>
	<b>Medicaid</b>	1.7	2.3	5.1	9.9	14.3	23.5	31.9*	41.1	38.4	40.9	40.0 (33.4-47.0)	<b>&lt;0.0001</b>
	<b>Overall</b>	4.5	5.4	8.1	10.8	15.1	22.0†	25.7	30.4	41.6	47.8	31.5 (26.6-36.7)	<b>&lt;0.0001</b>
<b>Office/Clinic visit‡</b>	<b>Commercial</b>	614.1	624.2	698.9	787.3	804.5	1048.7	1012.5	1131.2	1232.3	1204.4	8.6 (6.5-10.7)	<b>&lt;0.0001</b>
	<b>Medicaid</b>	528.3	429.2	406.9‡	454.8	466.4	525.5	596.5	595.5	810.9	759.6	5.0 (-1.4 to 11.9)	0.1283
	<b>Overall</b>	577.0	534.9	563.5	694.5	716.5	912.8	913.3	1022.6	1125.8	1071.3	9.1 (6.8-11.4)	<b>&lt;0.0001</b>
<b>Any presentation</b>	<b>Commercial</b>	903.4	902.8	964.0	1018.1	1052.8	1387.9	1354.1	1449.6	1587.2	1592.6	7.6 (5.7-9.6)	<b>&lt;0.0001</b>
	<b>Medicaid</b>	1175.6	1105.6	1025.2	1102.1	1122.4	1401.2	1420.4	1519.5	1632.5	1533.8	5.0 (2.9-7.1)	<b>0.0005</b>
	<b>Overall</b>	1021.3	995.7	992.4	1041.5	1070.9	1391.3	1369.9	1463.8	1598.6	1575.0	6.5 (4.6-8.5)	<b>&lt;0.0001</b>

Depicted graphically in Figure 3a-b. Temporal trends were examined by year from 2004-2013, stratified by location and insurance, using jointpoint regression. Up to two joinpoints were allowed.

\* APC 2004-2010: 62.0%, p<0.001; APC 2010-2013: 4.7%, p=0.193

† APC 2004-2009: 38.7%, p<0.001; APC 2009-2013: 23.1%, p<0.001

‡ APC 2004-2006: -12.6%, p=0.313; APC 2006-2013: 10.7%, p<0.001

**eTable 5.** Monthly rates of outpatient head trauma presentation per 100,000 pediatric enrollees from January 2010-December 2013

	<b>Commercial</b>	<b>Medicaid</b>	<b>Overall</b>
Jan10	133.8	134.0	133.8
Feb10	117.0	135.1	121.2
Mar10	134.2	161.7	140.7
Apr10	142.3	176.1	150.4
May10	151.1	183.8	158.9
Jun10	126.2	143.2	130.3
Jul10	114.4	134.3	119.2
Aug10	127.7	151.2	133.3
Sept10	173.6	182.8	175.8
Oct10	184.2	184.1	184.2
Nov10	129.5	146.1	133.5
Dec10	114.4	122.1	116.3
Jan11	137.3	133.9	136.6
Feb11	125.2	138.5	127.8
Mar11	139.8	173.9	146.7
Apr11	140.8	174.0	147.5
May11	155.2	187.8	161.8
Jun11	127.7	151.1	132.5
Jul11	120.1	148.6	126.0
Aug11	149.5	171.3	154.1
Sept11	199.9	204.4	200.9
Oct11	200.0	196.4	199.3
Nov11	144.2	164.9	148.6
Dec11	133.8	138.1	134.7
Jan12	158.3	160.7	158.9
Feb12	148.4	156.1	150.3
Mar12	163.2	194.1	171.1
Apr12	162.5	185.6	168.4
May12	177.0	195.5	181.8
Jun12	135.2	153.3	139.9
Jul12	123.8	144.7	129.3
Aug12	158.2	168.3	160.9
Sept12	210.6	192.8	205.8
Oct12	222.4	199.6	216.3
Nov12	151.7	151.6	151.7
Dec12	135.0	131.7	134.1
Jan13	161.1	148.9	157.5
Feb13	142.5	135.2	140.3
Mar13	146.4	153.2	148.5
Apr13	167.7	170.9	168.7
May13	179.6	182.6	180.5
Jun13	134.0	144.0	137.1
Jul13	122.9	134.3	126.4

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Aug13	156.1	161.6	157.8
Sept13	219.4	196.1	212.1
Oct13	233.1	198.3	222.2
Nov13	155.9	150.3	154.1
Dec13	131.2	129.9	130.8

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Depicted graphically in Figure 3c.