

The Economic Cost of Pediatric Patients Traveling Outside Northwest Pennsylvania for Subspecialty Treatment

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- Certain pediatric subspecialty care is currently not available locally and this requires children in Northwest Pennsylvania to travel to receive care. This project estimated the cost to the region of these patients and their families seeking this outside care.
- Eight different pediatric subspecialties were specifically examined. These eight subspecialties were those that Allied Pediatric Health believed to be important in the local area. These children were from Erie, Crawford, McKean, and Warren counties that traveled in 2007 and 2008 to hospitals in Pittsburgh, Cleveland, and Buffalo. It was assumed that only one parent or guardian accompanied each child.
- Data from the Pennsylvania Health Care Cost Containment Council (PHC4) and private sources were used to calculate the number of patients traveling out of the region. These included inpatients, outpatients, and also patients seeking professional services, such as physician office visits.
- The costs examined included: transportation, housing, parking, food, and lost wages.
 - Transportation costs were calculated by car, ambulance, or air.
 - Housing costs were gathered from hotels and Ronald McDonald Houses.
 - Parking and Food costs were determined from hospital rates in each city.
 - Lost Wages were calculated with average daily wages and labor force percentages in each county.

Estimated Costs to the Region by Cost Type

Lost Wages	\$1,234,921	Food	\$342,023
Transportation	\$1,124,614	Parking	\$191,419
Housing	\$672,622	Total	\$3,565,599

Estimated Costs to the Region by Eight Subspecialties

Cardiology	\$704,849	Dermatology	\$412,854
Pulmonology	\$631,633	Neurology	\$344,192
Gastroenterology	\$516,007	Allergy	\$268,123
ENT	\$465,598	Endocrinology	\$222,343

**Total Estimated Regional Loss Over Two Years –
\$3.57 million**

- Throughout this project assumptions had to be made. These were made in such a way as to provide a conservative estimate for the total loss to the region, to avoid inflating this loss. Additional alternative assumptions are also presented in the report in order to provide an estimated potential loss range.
- These alternative assumptions included:
 - Two parents or guardians accompanying each child
 - All parents traveling produce a loss to the region's economy through lost wages
 - Children who travel out of the region by ambulance or air may also need to travel back home via ambulance.
- Using all of these assumptions creates a different "high" estimated loss to the region of \$7.03 million. The real loss to the region for these eight subspecialties over the two year period range between \$3.57 and \$7.03 million.



Northwest PA with Erie, Crawford, Warren, and McKean counties shaded. Patients Traveled to Pittsburgh, Buffalo, and Cleveland hospitals.

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Executive Summary

Children are different from adults because of their smaller and developing bodies. This difference sometimes requires children to seek pediatric specialists in order to treat medical problems that arise. But specialists are located more often in larger cities and for children in a region like Northwest Pennsylvania, this sometimes necessitates that the children and their parents travel out of the region to larger cities. For residents of Northwest Pennsylvania this typically means Pittsburgh, Cleveland, and Buffalo. Traveling outside of the region to these cities for treatment imposes costs on families and the region. The purpose of this project was to estimate the additional costs beyond medical treatment for these families and the ultimate effect on the regional economy over a two year period.

The region studied included Erie, Crawford, McKean, and Warren counties in Northwest Pennsylvania. The subspecialties examined were limited to the eight subspecialties that Allied Pediatric Health (APH) believed were needed the most by children in the region. These subspecialties are: cardiology, neurology, pulmonology, gastroenterology, endocrinology, otolaryngology (ENT), dermatology, and allergy.

The specific costs examined in the project include transportation, parking, housing, food, and also the cost to the economy through the loss of wages. Estimates of these costs were based on data from a wide variety of public and private sources.

There are three different types of patients in the analysis: inpatients, outpatients, and those who sought professional services. Professional services are defined as the cost of physician care at a medical facility. The total number of patient visits out of the four counties to hospitals in Pittsburgh, Cleveland, and Buffalo is 9,131, and the table below provides an estimated breakdown of that number into the eight subspecialties. Cardiology has the highest number of visits and the dermatology, allergy, and ENT subspecialties follow.

Total Number of Patient Visits by Subspecialty

Cardiology	Neurology	Pulmonology	Gastroenterology	Endocrinology	ENT	Dermatology	Allergy	Total
2,266	402	347	676	420	1,599	1,976	1,445	9,131

Estimation of the costs involved with these visits started with transportation expense. Although there are multiple hospitals in each city where patients sought treatment, the majority in each location sought treatment at the major children's hospital in each city--Children's Hospital of Pittsburgh, Rainbow Babies and Children's Hospital in Cleveland, and Women and Children's Hospital of Buffalo. These locations were used along with central locations within the large cities in each county to determine distances of travel required. There are also three modes of transport: car, ground ambulance, and air ambulance. Each mode was examined to determine the cost of transport.

The second cost estimated was parking expense. Rates for parking at each hospital were determined from each hospital location.

The cost of housing was calculated next and included two different options for inpatients: a private hotel or a Ronald McDonald house near the children's hospitals.

The next two costs calculated partly depend on the number of adults traveling with the children seeking treatment. Because data were not available on the number of adults traveling, an assumption was made that only one adult travels with each child. This provided a conservative estimate.

Food cost was the next cost calculated and it was determined by contacting the hospitals.

The value of lost wages was the last loss to the economy examined. This estimate was based on the average wage, as well as the percentages of the population employed for each county.

The estimated total additional loss to the local economy beyond treatment is provided in the table below along with the total cost associated with each cost type. Lost wages comprise the largest component with a loss to the region of \$1.23 million. Transportation is the second largest with \$1.12 million. Transportation, parking, housing, and food sum to a total expense of \$2.33 million. The total loss to the regional economy for the two year period is \$3.57 million.

Total Additional Loss to Regional Economy by Expense Type

Transportation	Parking	Housing	Food	Total Expense	Lost Wages	Total Loss
\$1,124,614	\$191,419	\$672,622	\$342,023	\$2,330,678	\$1,234,921	\$3,565,599

An additional overall estimate was made to determine the additional cost to the region from all subspecialties rather than just the eight specifically examined. The total additional loss to the economy from all subspecialties is \$25.4 million. The eight subspecialties comprise \$3.57 million out of the \$25.4 million, or 14.1 percent of the total loss.

Throughout this process assumptions were made that resulted in what we believe to be conservative estimates. Alternative assumptions were also made in order to estimate potential maximum costs and provide a range of values. One alternative is that patients that travel by ambulance or air transportation return by ground ambulance transportation rather than car transportation. Another alternative is that all adults traveling with the children receiving treatment produce a loss to the economy through a loss of productivity, rather than the more conservative assumption that only those who were employed produced a loss to the regional economy. A third alternative is that there are two adults traveling with each child seeking treatment. This assumption would increase the lost wages and also the food costs. The total loss to the economy using all of these alternatives amounted to nearly double the previous estimate, as seen in the following table.

Total Additional Loss to Economy by Expense Type Under All Alternative Assumptions

Transportation	Parking	Housing	Food	Total Expense	Lost Wages	Total Loss
\$1,225,220	\$191,419	\$672,622	\$575,267	\$2,664,528	\$4,363,821	\$7,028,349

In summary, we estimate that the four-county region suffered losses of approximately \$3.57 to \$7.03 million over the two year period, based just on treatment in eight pediatric subspecialties. It is estimated that these eight subspecialties account for only about 9.2 percent of all pediatric patients traveling outside the region, so it is reasonable to expect the total cost of pediatric subspecialty care is several times as large as the estimates above.

The Economic Cost of Pediatric Patients Traveling Outside Northwest Pennsylvania for Subspecialty Treatment

I. Introduction

Children with medical problems occasionally require specialists to treat their small and developing bodies. These specialists are often in larger cities and families in Northwest Pennsylvania sometimes find it necessary to travel outside the region to receive specialized care. Pediatric patients from this area typically travel to hospitals in Pittsburgh, Cleveland, and Buffalo in order to receive the advanced treatments that only specialists can provide. This kind of travel imposes costs on the families and the region, and the goal of this report is to estimate those costs.

The specific region studied in this project includes Erie, Crawford, McKean, and Warren counties in Northwest Pennsylvania. These counties are displayed below in the map of the region along with Pittsburgh, Cleveland, and Buffalo. This project estimated the costs beyond treatment incurred by patients and family members for the transportation, parking, housing, and food expenses required by this medical travel. In addition, the value of lost wages of family members was estimated as well. The end purpose of this project was to sum all these individual costs in order to estimate the total additional cost to the regional economy of travel outside the region by these patients and their families.

Figure 1 – Map of Tri-State Region with Counties Studied Shaded



II. Demographics

In order to better understand the counties being studied, we start with some standard demographic data. The demographic factors researched include total population, population by age group, poverty rates, and income per capita. The population, age breakdown, and poverty rate statistics were obtained from the Census Bureau's American Community Survey three year estimates at census.gov for the years 2006 through 2008. The income per capita statistics were obtained online from the Bureau of Economic Analysis at bea.gov and are for 2008. For this paper, the term "four county" region stands for the sum of Erie, Crawford, McKean, and Warren counties. In addition to the county data, data for Pennsylvania and the U.S. are also provided for comparison. Table 1 on the following page displays these data.

A. Population

The population of each county is presented in Table 1. In addition the total population of all four counties, the population of Pennsylvania, the population of the United States, and the percentages of the population are also in Table 1. Erie County comprises about 60 percent of the total population of the four counties studied. Crawford County accounts for approximately 20 percent, while McKean and Warren counties account for about 10 percent each.

B. Age

Table 1 also provides the breakdown of the population by age group. Overall, children comprise about 22 percent of the overall population in the four counties and also in Pennsylvania. This is lower than the national percentage of the population, which is 24.5 percent. Also important to note are the lower percentages of the population in the younger age groups for the four counties and also Pennsylvania. There are fewer children born in the four counties and Pennsylvania in the more recent years. This can be compared to the national percentages, which are more equal across age groups.

In order to compare the percentages, a location quotient can be used. A location quotient is the ratio of two values, or a percent for one region compared to the percent for a reference region. This comparison allows one to discover whether a region has more or less of a particular variable than the reference region. For the breakdown of the population by age group, the percent for each county was compared to the percentages of Pennsylvania and the United States as a whole. The percentages in each age group for the four county total was also compared to the percentages of Pennsylvania and the U.S.. These location quotients are summarized in Table 2.

A location quotient greater than one indicates that the region has a greater percent of the value being compared than the reference region. Likewise, a value less than one indicates a smaller percent than the compared region. A location quotient of one indicates an equal amount (Blair (1995)). The location quotients for Erie County as compared to Pennsylvania in each age group are close to one. This is not true for the other counties and for the rates as compared to the United States. The location quotients for Crawford, Warren, and McKean counties show that the younger age groups contain less of their share of the population compared to Pennsylvania as a whole. This same trend is noticeable for all four counties compared to the United States as well. However, each of the counties has more than its

Table 1 – Population, Age, Poverty Rates, and Income per Capita, 2008

Demographic	Erie County		Crawford County		Warren County		McKean County		4 County Total		Pennsylvania		United States	
Population	Total	% of 4 County	Total	% of 4 County	Total	% of 4 County	Total	% of 4 County	Total	% of PA	Total	Percent of US	Total	
	279,370	61.71%	88,661	19.58%	40,942	9.04%	43,761	9.67%	452,734	3.65%	12,418,756	4.12%	301,237,703	
Age		% of Erie Pop.		% of Crawford Pop.		% of Warren Pop.		% of McKean Pop.		% 4 Co. Pop.		% of PA Pop.		% of US Pop.
Under 5	16,491	5.90%	5,071	5.70%	1,968	4.80%	2,331	5.30%	25,861	5.71%	732,259	5.90%	20,672,826	6.90%
5 to 9	17,211	6.20%	5,140	5.80%	2,548	6.20%	2,332	5.30%	27,231	6.01%	739,224	6.00%	19,773,981	6.60%
10 to 14	18,410	6.60%	5,662	6.40%	2,203	5.40%	2,830	6.50%	29,105	6.43%	788,337	6.30%	20,425,884	6.80%
15 to 17	12,304	4.40%	3,844	4.30%	1,791	4.40%	1,897	4.40%	19,836	4.38%	523,858	4.20%	12,933,884	4.20%
Total below 18	64,416	23.10%	19,717	22.20%	8,510	20.80%	9,390	21.50%	102,033	22.54%	2,783,678	22.40%	73,806,575	24.50%
18 & above	214,954	76.90%	68,944	77.80%	32,432	79.20%	34,371	78.50%	350,701	77.46%	9,635,078	77.60%	227,431,128	75.50%
Total	279,370	100.00%	88,661	100.00%	40,942	100.00%	43,761	100.00%	452,734	100.00%	12,418,756	100.00%	301,237,703	100.00%
Poverty Rate	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Under 18	63,138	22.60%	18,707	21.10%	9,089	22.20%	9,802	22.40%	100,737	22.25%	2,061,513	16.60%	54,825,262	18.20%
Total	41,906	15.00%	12,590	14.20%	4,954	12.10%	6,608	15.10%	66,057	14.59%	1,477,832	11.90%	39,763,377	13.20%
Income Per Capita		% of US		% of US		% of US		% of US	**4 Co. Av.	% of US		% of US		% of US
	\$32,294	80.40%	\$29,222	72.75%	\$31,325	77.99%	\$30,865	76.84%	\$31,467	78.34%	\$39,762	98.99%	\$40,166	100.00%

**Weighted average of four counties¹

¹ Calculated by dividing the sum of the aggregate income of the four counties by the total population of all four counties

$$\begin{aligned}
 \text{4 County Weighted Average} &= \frac{\sum(\text{Income per Capita of County} \times \text{Population of County})}{\sum \text{Population of County}} \\
 &= \frac{(\$32,294 \times 279,370) + (\$29,222 \times 88,661) + (\$31,325 \times 40,942) + (\$30,865 \times 43,761)}{279,370 + 88,661 + 40,942 + 43,761} \\
 &= \$31,467
 \end{aligned}$$

share of the 15 to 17 age group compared to both Pennsylvania and the U.S.. In each consecutive younger age group though, the share of the population decreases as can be seen by the lower location quotients. In summary, Northwest Pennsylvania has less than its share of younger children.

Table 2 – Age Group and Poverty Rate Location Quotients

Demographic	Erie County		Crawford County		Warren County		McKean County		4 County Total	
	PA	US	PA	US	PA	US	PA	US	PA	US
Location Quotient to:										
Ages										
Under 5	1.00	0.86	0.97	0.83	0.81	0.70	0.90	0.77	0.97	0.83
5 to 9	1.03	0.94	0.97	0.88	1.03	0.94	0.88	0.80	1.00	0.91
10 to 14	1.05	0.97	1.02	0.94	0.86	0.79	1.03	0.96	1.02	0.95
15 to 17	1.05	1.05	1.02	1.02	1.05	1.05	1.05	1.05	1.04	1.04
Total below 18	1.03	0.94	0.99	0.91	0.93	0.85	0.96	0.88	1.01	0.92
18 & above	0.99	1.02	1.00	1.03	1.02	1.05	1.01	1.04	1.00	1.03
Poverty Rate										
Under 18	1.36	1.24	1.27	1.16	1.34	1.22	1.35	1.23	1.34	1.22
Total	1.26	1.14	1.19	1.08	1.02	0.92	1.27	1.14	1.23	1.11

C. Poverty Rates

Poverty rates for the entire population and also for just those under the age of eighteen are also provided in Table 1. The poverty rates of those under the age of eighteen are higher for each county compared to the average for the nation, although Pennsylvania’s poverty rate is below the national average. The average poverty rate for the 4 County Total is also higher than the poverty rates of Pennsylvania and also the U.S. as a whole. Only Warren County had a lower total poverty rate than the national rate. This can also be observed in the location quotients in Table 2 for the poverty rates. All the location quotients are greater than one for the poverty rates except Warren County. Northwest Pennsylvania clearly has more than its share of poor children, which will certainly affect their ability to seek medical treatment outside the region.

D. Income per Capita

Table 1 also includes Income per Capita for each location. The income per capita for each of the counties examined is similar. These incomes per capita, however, are lower than the state and national levels. Each county only averages about 70 to 80 percent of the national income per capita.

III. Costs

Pediatric patients traveling outside the region incur more costs to the economy than just the cost of the treatments required. First of all, when pediatric patients leave the region there will be transportation costs. The cost of transportation at a minimum is the cost of traveling by car. Some patients require specialized treatment during transportation and must travel by ambulance or even by air. The cost of these special transports is much more than transport by car. If patients travel by car, there are also parking costs that are incurred during the stay. In addition, parents or guardians traveling with the children also require housing and food while they are staying in the treatment cities. There is also a significant cost to the economy of the region in the loss of wages from adults that are traveling with the pediatric patients. These people will not be working during the time of their stay outside of the

region and this loss impacts the local economy. Stated another way, an economist would ask what these people could have been doing if they were not spending time traveling for medical care, and what would have been the value of their output.

There are many different subspecialists that a child may seek for treatment of medical problems, but this project focused on eight of the greatest interest. The pediatric subspecialties listed in Table 3 are the ones that Allied Pediatric Health (APH) believes are most needed in Northwest Pennsylvania. The costs of children seeking treatment in these eight subspecialties from the four county region were estimated in this project.

Table 3 – Most Needed Pediatric Subspecialties

Subspecialty	Definition
Cardiology	Provides care for children with cardiovascular diseases or other problems
Neurology	Diagnoses, treats, manages nervous system problems and spine and head deformities in children
Pulmonology	Provides care for children with breathing problems caused by asthma, pneumonia, wheezing, bronchitis, apnea, or cystic fibrosis
Gastroenterology	Cares for digestive system, liver, or nutritional problems in children
Endocrinology	Treats problems arising from improperly functioning glands and hormones in children, often in relation to growth, puberty, diabetes, or other disorders
Otolaryngology (ENT)	Cares for children with ear, nose, or throat problems
Dermatology	Cares for dermatological diseases in children
Allergy	Treats children with allergies or immune system problems as well as infections such as sinusitis, pneumonia, thrush, and abscesses

(Pediatric Specialty Definitions (2005))

A. Data

The data sets used in this project were from both private companies and government agencies. These sources were:

- Pennsylvania Health Care Cost Containment Council (PHC4) – inpatient and outpatient pediatric admissions data
- Highmark Blue Cross Blue Shield insurance company – data on professional service visits
- Centers for Medicare and Medicaid Services (CMS) – ambulance and air transportation cost data
- Emmco West Inc, which is the Regional EMS Council for the PA Department of Health – ground and air ambulance transport data
- EmeryCare Inc emergency service transportation company – ground and air ambulance transport data

B. Numbers of Patients

Data on patients were broken down into three separate categories for the purpose of this study. The categories are inpatients, outpatients, and patients seeking professional services. Inpatients are patients whose treatment requires more than 24 hours in an acute care facility. An inpatient is a child who undergoes a major surgery and requires care in a hospital for more than one day. Outpatients are patients whose treatment can be completed in less than one day. Outpatients undergo minor surgeries

or procedures at hospitals or ambulatory centers and are expected to require less than one day of care there. Professional visits involve patients who seek the knowledge of a physician and the costs are incurred by that physician for the visit and not an institution. Professional visits include minor procedures, consultations, and check-ups that may not require the use of hospital facilities (APH (2010), p 15). Data on the number of pediatric patients in each category were determined from the Pennsylvania Healthcare Cost Containment Council (PHC4) and Highmark Blue Cross databases.

PHC4 “is an independent state agency responsible for addressing the problem of escalating health costs, ensuring the quality of health care, and increasing access for all citizens regardless of ability to pay.” The agency has a publicly accessible database online and specialized requests for data can be submitted for a fee (PHC4).

The PHC4 data used in this project are from January 1, 2007 through December 31, 2008 and included the number of inpatients receiving treatment by county of origin, destination, and subspecialty. There were also two data sets from PHC4 for outpatients. One data set provided the county of origin of the patient and the hospital that provided treatment. The other data set provided the number of patients in each subspecialty and the county the patient originated from. Unfortunately, the two data sets could not be connected, so it was necessary to estimate the number of patients traveling from each county to each hospital for each subspecialty.

The first step in the procedure involved determining the number of patients traveling to each hospital location from each county. These numbers of patients were then used to determine a percent of the total. This was done by multiplying the percents by the total number of patients seeking each type of subspecialty treatment. This process resulted in an estimate of the number of patients seeking treatment for each type of subspecialty at the hospitals for each of the four counties. This estimate also caused partial numbers of people (e.g., 6.7 patients), rather than exact numbers for the outpatient numbers used in subsequent calculations.

In addition, the PHC4 data unfortunately did not include data on the number of outpatient visits to hospitals in Ohio. The data from Highmark did include data on outpatients traveling to Ohio for Cardiology and these data were integrated into the PHC4 data in order to provide a reference. The Highmark data, however, did not include data on any of the other subspecialties for outpatients traveling to Ohio.

PHC4 did not have data available on the number of professional visits, so the Highmark data were used. The Highmark data reported the number of patient visits from each county in the region traveling to hospitals in Pittsburgh, Buffalo, and Cleveland according to subspecialty for the 2008 through 2009 time period. Highmark only covered 62 percent of the insured market in this region. In order to estimate the total number of insured professional visits for the region, the Highmark data were divided by 62 percent in order to estimate the total number of insured pediatric patients seeking professional services in the region. Based on estimates of Erie County, the insured market only constitutes 57 percent of all children. The remaining 43 percent of patients are covered by Medicaid or uninsured (APH (2010), p 17). Patients seeking professional services with Medicaid coverage or those that are uninsured were not taken into account in this project.

Patients in each subspecialty sought treatment at multiple different locations, but the majority in each case sought treatment at the major children’s hospitals in Pittsburgh, Cleveland, and Buffalo. These major children’s hospitals are Children’s Hospital of Pittsburgh, Rainbow Babies and Children’s

Hospital in Cleveland, and Women and Children’s Hospital of Buffalo. For this project an assumption was made that all patients seek treatment at the major children’s hospital in the city to which they are traveling rather than attempting to identify the location of each healthcare provider. This assumption should result in only a small difference in total cost, but allowed the total costs for the outmigration of pediatric patients to be calculated much more quickly and with less difficulty.

The vast majority of children sought professional services as opposed to inpatient and outpatient procedures. This can be seen in Table 4. Only 1,149, or thirteen percent of all the visits outside of the region sought inpatient procedures and 1,256, or fourteen percent sought outpatient procedures for the eight subspecialties. Meanwhile, 6,726 visits by children, or 74 percent of the total leaving the region for these subspecialties sought professional services.

Table 4 – Total Admissions and Visits of 8 Subspecialties by Type of Patient²

		Inpatient	Outpatient	Professional	Total
To	Pittsburgh				
From	Erie	655.0	712.1	2,008.1	3,375.2
	Crawford	253.0	271.0	1,212.9	1,736.9
	McKean	69.0	78.5	409.7	557.2
	Warren	64.0	58.8	182.3	305.0
	Total	1,041.0	1,120.4	3,812.9	5,974.3
To	Cleveland				
From	Erie	37.0	93.4	366.1	496.5
	Crawford	21.0	8.5	103.2	132.7
	McKean	2.0	5.7	9.7	17.3
	Warren	6.0	5.7	3.2	14.9
	Total	66.0	113.2	482.3	661.4
To	Buffalo				
From	Erie	4.0	1.9	82.3	88.2
	Crawford	-	-	17.7	17.7
	McKean	30.0	17.5	1,772.6	1,820.1
	Warren	8.0	3.2	558.1	569.3
	Total	42.0	22.6	2,430.6	2,495.3
Total		1,149.0	1,256.2	6,725.8	9,131.0

Table 5 provides a summary of the total number of inpatients, outpatients, and professional services provided from and to each location for each subspecialty. This table also provides totals of services for each subspecialty and also totals of patient visits that required traveling from each separate county to each different hospital. Cardiology is the largest subspecialty out of the eight examined with 2,266 patients³ out of the total of 9,131, or 24.8 percent. Dermatology is second with 1,976 patients, or 21.6 percent. ENT is third with 1,599 patients, or 17.5 percent. Allergy also has a large share of patients with 1,445, or 15.8 percent. Pulmonology has the smallest share of patients with only 347, or 3.8 percent.

² Outpatient data on pediatric patients traveling to Cleveland is limited because PHC4 does not track patients traveling to Cleveland and the Highmark data only include pediatric cardiology outpatients. The number of patients in reality is greater than those used.

³ The pediatric cardiology estimates for outpatient and professional visits were obtained directly from the insurer. The other pediatric subspecialty outpatient visits may be understated as the information for these subspecialties is not collected by the insurer nor PHC4.

Table 5 – Total Patient Admissions, Visits, and Services Summary

		Cardiology	Neurology	Pulmonology	Gastroenterology	Endocrinology	ENT	Dermatology	Allergy	Total
To	Pittsburgh									
	Erie	1,131.8	229.9	205.8	423.3	193.0	663.1	492.7	35.5	3,375.2
	Crawford	546.0	76.0	80.0	161.0	58.3	402.2	361.8	51.6	1,736.9
From	McKean	180.1	23.5	25.4	30.7	31.4	210.3	54.2	1.6	557.2
	Warren	59.0	26.6	12.8	34.0	7.0	116.8	42.4	6.5	305.0
	Total	1,917.0	355.9	324.0	649.0	289.6	1,392.4	951.2	95.2	5,974.3
To	Cleveland									
	Erie	210.9	24.0	3.0	4.0	66.5	9.1	171.0	8.1	496.5
	Crawford	38.9	6.0	3.0	6.0	2.6	2.0	74.2	-	132.7
From	McKean	13.7	2.0	-	-	-	-	-	1.6	17.3
	Warren	5.7	-	3.0	-	2.6	2.0	-	1.6	14.9
	Total	269.2	32.0	9.0	10.0	71.7	13.1	245.2	11.3	661.4
To	Buffalo									
	Erie	19.7	2.1	0.2	1.7	1.0	16.3	37.4	9.7	88.2
	Crawford	-	-	-	-	-	-	11.3	6.5	17.7
From	McKean	43.0	8.5	10.6	13.3	48.8	146.1	493.4	1,056.5	1,820.1
	Warren	16.7	3.4	3.2	2.0	9.1	31.3	237.6	266.1	569.3
	Total	79.3	14.1	14.0	17.0	58.8	193.7	779.7	1,338.7	2,495.3
Total		2,265.5	402.0	347.0	676.0	420.2	1,599.1	1,976.0	1,445.2	9,131.0

Note: Patient numbers include fractions due to the estimation procedure used due to the divided data sets.

Table 5 also shows that the great majority of children who left the region for treatment went to Pittsburgh, 5,974 visits out of 9,131, or 65.4%. Buffalo was the next most popular destination, with 2,495 visits, or 27.3%, followed by Cleveland with just 661, or 7.2%. While most of the Erie and Crawford County children traveled to Pittsburgh, the easternmost counties of McKean and Warren tended to have more children visit Buffalo, which was closer for them.

The numbers of patients leaving from each county are provided in Table 6. As might be expected from the population numbers, Erie County provided the largest number of children seeking treatment, 3,960 visits or 43.4% of the total. Surprisingly, McKean County provided the second largest group, with 2,395 or 26.2% of the total. Crawford County provided 1,887 or 20.7% and Warren County accounted for 889 or 9.7%. When these percentages are compared to the populations of the county, there are two unexpected differences. One is that Erie County contributes a smaller percentage of pediatric patients to the total outmigration of all four counties as compared to its percentage of the total population. Only 43.4 percent of all patients in the region leave from Erie County while Erie County accounts for 61.7 percent of the population. The second surprise is that McKean County accounts for 26.2 percent of all patients leaving the region for treatment, while it only accounts for 9.7 percent of the total population of the region.⁴ Crawford and Warren counties have just slightly higher percentages of pediatric patients leaving the region for treatment as compared to their populations.

⁴ This large percentage of patients leaving McKean County is caused in part by a high number of Allergy professional service visits leaving McKean County for treatment in Buffalo.

Table 6 – Patients Leaving Region by County and Total County Population for 8 Subspecialties

	# of Pediatric Patients		Total Population	
	Number	% of Total	Number	% of Total
Erie	3,960	43.4	279,370	61.7
Crawford	1,887	20.7	88,661	19.6
McKean	2,395	26.2	43,761	9.7
Warren	889	9.7	40,942	9.0
Total	9,131	100.0	452,734	100.0

The eight subspecialties are only a fraction of the total number of pediatric patients traveling outside of the region. The total number of pediatric patients for the eight subspecialties is compared to the total number of pediatric patients leaving the region for all subspecialties in Table 7. A majority of inpatients are accounted for by the eight subspecialties with 1,149 out of the total of 1,837, or 62.5 percent. A majority of outpatients are also accounted for by the eight subspecialties. 1,256 out of 2,056, or 61.1 percent of outpatients are seeking a subspecialty out of the eight examined. The eight subspecialties comprise a much smaller amount of the total of patients seeking professional services given the data available. The eight subspecialties only account for 6,726 out of 95,473, or 7 percent⁵. In total the 9,131 patients seeking treatment for the eight subspecialties are only 9.2 percent of the total of 99,366 patients leaving the region for treatment in Pittsburgh, Cleveland, and Buffalo.

Table 7 - Numbers and Percents of Patients from 8 Subspecialties Out of All Patients Leaving Region to Pittsburgh, Cleveland, and Buffalo for Treatment⁶

		Inpatient			Outpatient			Professional			Total		
		8 Sub.	Total	%	8 Sub.	Total	%	8 Sub.	Total	%	8 Sub.	Total	%
To	Pittsburgh												
	Erie	655.0	985.0	66.5	712.1	1,121.0	63.5	2,008.1	61,746.8	3.3	3,375.2	63,852.8	5.3
	Crawford	253.0	409.0	61.9	271.0	479.0	56.6	1,212.9	13,633.9	8.9	1,736.9	14,521.9	12.0
From	McKean	69.0	124.0	55.6	78.5	184.0	42.7	409.7	4,308.1	9.5	557.2	4,616.1	12.1
	Warren	64.0	130.0	49.2	58.8	109.0	53.9	182.3	3,232.3	5.6	305.0	3,471.3	8.8
	Total	1,041.0	1,648.0	63.2	1,120.4	1,893.0	59.2	3,812.9	82,921.0	4.6	5,974.3	86,462.0	6.9
To	Cleveland												
	Erie	37.0	62.0	59.7	93.4	93.4	100.0	366.1	3,037.1	12.1	496.5	3,192.5	15.6
	Crawford	21.0	34.0	61.8	8.5	8.5	100.0	103.2	933.9	11.1	132.7	976.4	13.6
From	McKean	2.0	4.0	50.0	5.7	5.7	100.0	9.7	185.5	5.2	17.3	195.1	8.9
	Warren	6.0	8.0	75.0	5.7	5.7	100.0	3.2	135.5	2.4	14.9	149.1	10.0
	Total	66.0	108.0	61.1	113.2	113.2	100.0	482.3	4,291.9	11.2	661.4	4,513.1	14.7
To	Buffalo												
	Erie	4.0	9.0	44.4	1.9	3.0	63.5	82.3	971.0	8.5	88.2	983.0	9.0
	Crawford	-	-	-	-	-	-	17.7	180.6	9.8	17.7	180.6	9.8
From	McKean	30.0	57.0	52.6	17.5	41.0	42.7	1,772.6	5,512.9	32.2	1,820.1	5,610.9	32.4
	Warren	8.0	15.0	53.3	3.2	6.0	53.9	558.1	1,595.2	35.0	569.3	1,616.2	35.2
	Total	42.0	81.0	51.9	22.6	50.0	45.3	2,430.6	8,259.7	29.4	2,495.3	8,390.7	29.7
Total		1,149.0	1,837.0	62.5	1,256.2	2,056.2	61.1	6,725.8	95,472.6	7.0	9,131.0	99,365.8	9.2

⁵ The insurer does not collect pediatric subspecialty data by all subspecialties for professional services. The consequence is that the “total” for professional service is understated. The total used is the sum of the patients given the available data.

⁶ The eight subspecialties account for 100 percent of outpatients traveling to Cleveland in these calculations. This is because with the available data, the only patients seeking treatment in Cleveland were cardiology patients.

Although it is estimated that these eight subspecialties account for 9.2 percent of all pediatric patients traveling outside the region, it is not possible to simply divide the total loss to the economy by these eight subspecialties by 9.2 percent in order to arrive at the total loss to the region from all subspecialties. This is not possible because the loss from each type of patient is calculated differently. Inpatients and outpatients contribute more to the total loss of the economy per patient than professional services and the eight subspecialties already include over 60 percent of all these patients.

C. Transportation

Transportation to and from the hospitals is provided in one of three forms for patients and their family members. These three modes of transportation are ambulance, air, and private car. In order to calculate the costs associated with each mode of transport, it is necessary to calculate the distances traveled, the cost of each mode of transport, and the percentages of patients utilizing each mode of transport.

1) Distances

For the transportation costs, distances first had to be determined. Distances between the location of pick up and drop off were calculated with the use of MapQuest and the addresses of the children’s hospitals in Pittsburgh, Cleveland, and Buffalo. Data are not available on the precise location of each patient, so the centers of major cities in each county were used to determine an approximate starting location. The starting locations used for each county were:

- Crawford County: Park Ave & Chestnut St, Meadville, PA
- Erie County: 12th St & State St, Erie, PA
- McKean County: US Hwy 219 & Main St, Bradford, PA
- Warren County: Pennsylvania Ave W & Market St, Warren, PA

The hospital addresses for Children’s Hospital of Pittsburgh, Rainbow Babies and Children’s Hospital, and Women and Children’s Hospital in Buffalo were used as destinations. Table 8 provides the distances used from the counties to each location. We note that the children generally went to the hospital that was closest, with the clear exception of Erie children going to Pittsburgh instead of either Buffalo or Cleveland, either of which would have been closer.

Table 8 – One-way Distances from Counties to Hospitals (in miles)

	Pittsburgh	Cleveland	Buffalo
Erie	129.63	100.42	94.22
Crawford	93.87	97.32	130.39
McKean	156.57	191.78	79.70
Warren	150.48	154.39	93.27

2) Transport Cost Rates

The cost of each mode of transportation was determined by the use of mileage and base rates. For car transportation, the rate of 50 cents per mile was the rate used. The IRS 1040 Forms and Instructions for 2010 uses this standard mileage rate. The rate for business use is 50 cents/mile (IRS Announces 2010 Standard Mileage Rates (2009)). This rate includes all the costs associated with operating a vehicle such as maintenance, repairs, insurance, and registration fees instead of just the obvious cost of gasoline. The local rates for ambulance and air transportation could not be obtained from the regional providers in Northwest Pennsylvania, however, a manager at Emergycare explained that the Centers for Medicare and Medicaid Services (CMS) provides publicly accessible reimbursement rates for ambulance and air transportation. The manager explained that these rates would be lower than the actual cost of transportation charged by the regional emergency services providers, but they would give the best estimate of the cost of transportation. This suggests that our estimates of the cost of ambulance and air costs in this report may be on the low side.

The reimbursement rates of ambulance and air transportation are set by the Centers for Medicaid and Medicare Services (CMS) in the Ambulance Fee Schedule Public Use Files available online at cms.gov. This fee schedule determines a mileage and base rate to be used in determining the reimbursement rates for providers of ambulance and air transportation. The mileage and base rates are determined by several different factors, including: locality, the type of transport determined by a Healthcare Common Procedure Coding System (HCPCS) code, whether the location of pickup is considered a rural or urban area, and the distance that transportation is provided. The transportation cost is only for loaded distances traveled. Loaded distances are those in which the patient is actually being transported. Service providers are presumed to take their own return trip costs into account when they establish costs for service (CMS (2010), sec. 20.2, p 22). The fee schedule is revised by CMS on a yearly basis. The rates used for estimating the transportation costs in this project were the average fees for 2007 and 2008.

The National Breakout of the Geographic Area Definitions by Zip Code, which is available from CMS provides the localities that all counties fall under. The locality that a county falls under determines which reimbursement rates are used. The four counties studied all fell under the same locality and thus have the same reimbursement rates.⁷

The type of transport is defined by HCPCS codes. HCPCS codes are used to define items and services provided to patients for billing purposes (CMS (2010), sec. 30, p 26). The codes and definitions used in the Ambulance Fee Schedule Public Use Files are as shown in Table 9.

Table 9 – CMS HCPCS Code Definitions

⁷ In Pennsylvania there are two localities used by CMS. These areas are designated as “01” or “99.” The four counties studied all fall under the “99” designation.

HCPCS	Definition
A0425	Ambulance ground mileage, per statute mile
A0426	Ambulance service, advanced life support, non-emergency transport, level 1 (als 1)
A0427	Ambulance service, advanced life support, emergency transport, level 1 (als1-emergency)
A0428	Ambulance service, basic life support, non-emergency transport, (bls)
A0429	Ambulance service, basic life support, emergency transport (bls-emergency)
A0430	Ambulance service, conventional air services, transport, one way (fixed wing)
A0431	Ambulance service, conventional air services, transport, one way (rotary wing)
A0432	Paramedic intercept (pi), rural area, transport furnished by a volunteer ambulance company which is prohibited by state law from billing third party payers
A0433	Advanced life support, level 2 (als 2)
A0434	Specialty care transport (sct)
A0435	Fixed wing air mileage, per statute mile
A0436	Rotary wing air mileage, per statute mile

(CMS (2010), sec. 30, p 26)

Transportation cost for both the base rates and mileage are different based on whether the location of pickup is considered to be rural or urban. All locations are considered urban unless they meet the standards of the rural definition. CMS defines a rural area in the Medicare Claims Processing Manual:

“For the purpose of all categories of ground ambulance services except paramedic intercept, a rural area is defined as a U.S. Postal Service (USPS) ZIP Code that is located, in whole or in part, outside of either a Metropolitan Statistical Area (MSA) or in New England, a New England County Metropolitan Area (NECMA), or is an area wholly within an MSA or NECMA that has been identified as rural under the “Goldsmith modification.” (The Goldsmith modification establishes an operational definition of rural areas within large counties that contain one or more metropolitan areas. The Goldsmith areas are so isolated by distance or physical features that they are more rural than urban in character and lack easy geographic access to health services.)

For Paramedic Intercept, an area is a rural area if:
It is designated as a rural area by any law or regulation of a State;
It is located outside of an MSA or NECMA; or
It is located in a rural census tract of an MSA as determined under the most recent Goldsmith modification” (CMS (2010), sec. 20.1.4, p 11).

According to these rules, all Erie County locations of ambulance and air pickup in the Emergycare and Emmco West data are considered urban, and all pickup locations in the three other counties are considered rural.

The CMS fee schedule also determines different rates for mileage based on distances traveled. For rural pickup locations, the mileage rate is higher for the first 17 miles. Also for both urban and rural transportation, the mileage rate increases after the first 50 miles (CMS (2010), sec. 20.1.4, p 11).

There were several different types of ambulance transportation in the fee schedule and each has a different base rate assigned. Because the data from Emergycare and Emmco West did not specifically detail what type of transportation was utilized for each transport, an average was used for all

ambulance transport for rural and urban areas. The ambulance transport data did include zip codes, however, so the numbers of transport that are categorized as urban and rural could be determined. To create mileage and base rate fees to be used for all ambulance transportation costs, a weighted average of these rates was used. This weighted average was calculated by taking the sum of the percentage of urban transports multiplied by the average urban transport rates and adding it to the percentage of rural transports multiplied by the rural transport average rates.

The base rate for air transports was calculated from the CMS fee schedules. Because there were rural and urban rates for the calculations in this project, a weighted average was used to determine an appropriate rate. From the Emergycare and Emmco West data sets, there were sixteen reported air transports. Eleven of these originated from Erie County and five originated from Crawford County. All Crawford County zip codes were considered rural according to CMS, while Erie County zip codes were urban. The appropriate rates were used for each county and the weighted average was used as the base rate in the calculated air transportation costs. The calculated costs for each mode of transport are provided in Table 10. The total car transportation cost is the mileage multiplied by the total distance. The total cost for ambulance and air transport is base cost plus the cost per mile multiplied by the distance traveled.

Table 10 – Cost per Mode of Transportation

Transportation Costs	Mileage	Base Cost
Car	\$ 0.50 per mile	
Ambulance	\$ 8.00 per mile	\$688.84
Air	\$23.39 per mile	\$3,431.29

3. Percentages of Transport

In addition to the distances traveled and costs of each mode of transport, the number of patients traveling by each mode of transport was needed in order to calculate the transportation costs.

a. Ambulance

The percentage of patients transported by ambulance was determined with the use of the Emergycare and Emmco West data. There were 724 ground ambulance transfers from the four county region to hospitals in Pittsburgh, Cleveland, and Buffalo for the years 2007 and 2008. The data did not specify what subspecialty the patient was being treated for that required transportation, so the percentage for each subspecialty had to be estimated. The number of patients transferred was divided by the total number of pediatric patients reported to seek treatment in Pittsburgh, Cleveland, and Buffalo for all subspecialties as determined by the PHC4 and Highmark data. This percentage was then used to estimate the number of patients in each subspecialty that utilized ambulances for treatment.

b. Air

The percentage of patients transported by air was also determined with the use of the Emergycare and Emmco West data. There were sixteen transfers by air from the four county region to hospitals in Pittsburgh, Cleveland, and Buffalo. As with the ambulance transfers, the subspecialty was not reported so this was estimated using the same procedure as for ambulance transfers.

c. Car

There were no data on the number of patients that utilized private car transportation to seek treatment in Pittsburgh, Cleveland, or Buffalo. In order to estimate how many patients used this mode of transport, it was necessary to assume that all patients that did not use ambulance or air transportation traveled by car. The number of patients that traveled by air and ambulance were subtracted from the total number of patients traveling in each subspecialty in order to obtain the number of patients that traveled by car. The percentages of transport are provided in Table 11 along with the total number of patients of all eight subspecialties traveling by each mode.⁸

Table 11 – Percent and Total Number of Patients for Each Transportation Mode

	Car	Ambulance	Air	Total
Percent	99.254	0.729	0.016	100.000
Number of Patients	9062.91	66.61	1.47	9130.99

d. MATP

There is a program available to medical assistance recipients in Pennsylvania that helps with transportation required for medical services. This program is called the Medical Assistance Transportation Program (MATP). This program reimburses clients for transportation requiring them to travel for medical services. The reimbursement is made in two different ways. One reimbursement is for transportation by car. Patients travel in their own cars or have others drive them and then the patients are reimbursed at a rate of 25 cents per mile. The MATP program also reimburses clients for the cost of bus tickets if bus transportation is cheaper than the mileage reimbursement. From discussions with workers in charge of the MATP program in each county, however, it appears that most transportation is done by car as compared to bus. Unfortunately, exact data are not available for pediatric patients in order to determine the number of patients traveling by each method. Because of this uncertainty, an assumption was made in this project that all MATP clients traveling to hospitals in Pittsburgh, Buffalo, and Cleveland use the mileage reimbursement method.

As stated, this method reimburses clients at a rate of 25 cents per mile. This may be the cost that medical assistance believes individuals spend on transportation, but it is not the total economic cost. The actual economic cost would be the same cost as car transportation because it would include the total cost of the transportation. This total cost includes not only gas, but the cost of insurance, maintenance, and other costs. The actual cost to the overall economy by traveling with MATP assuming

⁸ There were no inpatient or outpatient records for Allergy and Dermatology patients using ambulance or air transportation, however it could not be determined that they were never used. Because of this uncertainty and the fact that the percentages are small, the same percentages were used for Allergy and Dermatology as the other subspecialties.

car transportation is the same as individuals traveling by car without MATP. Because this is the same cost, these transports fell under the car transportation category for this project and separate calculations were not needed to find the economic cost.

4. Transport Calculations⁹

a. Car

The transportation cost for patients that traveled by car for each subspecialty was calculated by multiplying the total number of patients that traveled to each hospital by the roundtrip mileage and the mileage cost of car transportation. This calculation was done for all patients traveling in each subspecialty examined. For example, the total cost of cardiology patient medical transport by car from Erie to Pittsburgh is calculated as:

Cost of transport for cardiology patients from Erie to Pittsburgh by car

$$\begin{aligned}
 &= \# \textit{ patients} \times \textit{ roundtrip distance} \times \textit{ car mileage rate} \\
 &= 1,123.37 \times (129.63 \times 2) \times \$.50 \\
 &= \$145,622.45
 \end{aligned}$$

b. Ambulance

The cost for transportation by ambulance for each subspecialty was calculated by multiplying the total number of patients that traveled to each hospital by the distance and the mileage cost for ambulance transportation. Added to this value was the base cost of ambulance transportation multiplied by the number of patients traveling.

The patients also had to return home. There was not any information available as for the type of transportation used for return trips. Because of this lack of information, an assumption was made that return transportation by car was used for all patients. This roundtrip transportation by car was calculated the same as “car only” transportation, but it is added into the total cost of ambulance transportation. Roundtrip mileage is used instead of just return mileage, because for most people a car would have to be brought from their home to the hospital before the patient could return home in that car. An example calculation of the cost of ambulance transportation is below.

Cost of transport for cardiology patients from Erie to Pittsburgh by ambulance

$$\begin{aligned}
 &= (\# \textit{ patients} \times \textit{ distance} \times \textit{ ambulance mileage rate}) + (\# \textit{ patients} \\
 &\quad \times \textit{ ambulance base cost}) + (\# \textit{ patients} \times \textit{ roundtrip distance} \\
 &\quad \times \textit{ car mileage rate}) \\
 &= (8.26 \times 129.63 \times \$8) + (8.26 \times \$688.84) + (8.26 \times (129.63 \times 2) \times \$.50) \\
 &= \$15,326.51
 \end{aligned}$$

c. Air

⁹ There are small differences in the answers for example calculations as compared to tables because of rounding differences.

The procedure for estimating air transportation cost was similar to that for ambulance transportation costs. The cost for air transportation was calculated by multiplying the total number of patients that traveled to each hospital by the mileage to the hospital and the mileage cost. Added to this value is the base cost for air transportation.

As with ambulance transportation, the patient must also return home. There was not any information as for the type of transportation used to return the patient, so an assumption was made that return transportation by car was used for all patients, the same as for ambulance transport. An example calculation for cardiology patients transported by air is below.

Cost of transport for cardiology patients from Erie to Pittsburgh by air

$$\begin{aligned}
 &= (\# \text{ patients} \times \text{distance} \times \text{air mileage rate}) + (\# \text{ patients} \times \text{air base cost}) \\
 &\quad + (\# \text{ patients} \times \text{roundtrip distance} \times \text{car mileage rate}) \\
 &= (.18 \times 129.63 \times \$23.39) + (.18 \times \$3,431.29) + (.18 \times (129.63 \times 2) \times \$.50) \\
 &= \$1,186.73
 \end{aligned}$$

Table 12 on the next page provides a summary of the transportation costs by subspecialty to and from each location. Cardiology treatment creates the largest cost while ENT, Dermatology, and Allergy are also large cost contributors. The total cost of transportation for all eight subspecialties was \$1.12 million for 2007 through 2008.

Table 12 – Summary of Transportation Costs

		Cardiology	Neurology	Pulmonology	Gastroenterology	Endocrinology	ENT	Dermatology	Allergy	Total
To	Pittsburgh									
	Erie	\$162,145	\$32,932	\$29,484	\$60,645	\$27,649	\$95,003	\$70,589	\$5,083	\$483,530
	Crawford	\$57,486	\$8,001	\$8,422	\$16,950	\$6,133	\$42,343	\$38,091	\$5,434	\$182,861
From	McKean	\$30,955	\$4,031	\$4,374	\$5,279	\$5,389	\$36,140	\$9,320	\$277	\$95,766
	Warren	\$9,763	\$4,397	\$2,116	\$5,625	\$1,158	\$19,313	\$7,013	\$1,067	\$50,453
	Total	\$260,350	\$49,361	\$44,396	\$88,499	\$40,329	\$192,799	\$125,013	\$11,862	\$812,610
To	Cleveland									
	Erie	\$23,670	\$2,694	\$337	\$449	\$7,466	\$1,017	\$19,189	\$905	\$55,726
	Crawford	\$4,239	\$654	\$327	\$654	\$285	\$218	\$8,083	\$0	\$14,458
From	McKean	\$2,872	\$419	\$0	\$0	\$0	\$0	\$0	\$338	\$3,628
	Warren	\$960	\$0	\$509	\$0	\$443	\$339	\$0	\$273	\$2,524
	Total	\$31,741	\$3,766	\$1,172	\$1,103	\$8,193	\$1,574	\$27,272	\$1,516	\$76,337
To	Buffalo									
	Erie	\$2,085	\$225	\$20	\$178	\$106	\$1,726	\$3,951	\$1,022	\$9,315
	Crawford	\$0	\$0	\$0	\$0	\$0	\$0	\$1,627	\$929	\$2,556
From	McKean	\$3,876	\$771	\$952	\$1,199	\$4,401	\$13,181	\$44,521	\$95,323	\$164,224
	Warren	\$1,742	\$358	\$336	\$208	\$949	\$3,272	\$24,860	\$27,848	\$59,573
	Total	\$7,704	\$1,353	\$1,308	\$1,585	\$5,456	\$18,180	\$74,959	\$125,123	\$235,668
Total		\$299,794	\$54,481	\$46,877	\$91,187	\$53,978	\$212,553	\$227,244	\$138,501	\$1,124,614

The number of patients traveling by each mode of transport to and from each location as well as the cost of this travel is presented in Table 13. The majority of patients travel by car and this mode of transport has the highest total cost. It can also be seen that patients traveling from Erie to Pittsburgh contribute the highest amount to the total transportation cost out of each county and destination. Another important note is the high number of patients traveling from McKean County to Buffalo as

compared to other counties and hospitals. 76 percent of all McKean County patients seek outside medical treatment in Buffalo, less than one percent seeks treatment in Cleveland, and 23 percent of patients seek outside treatment in Pittsburgh.

Table 13 – Number of Patients and Cost by Mode of Transport

		Car		Ambulance		Air		Total	
		Patients	Cost	Patients	Cost	Patients	Cost	Patients	Cost
To	Pittsburgh								
From	Erie	3,349.99	\$ 434,260	24.62	\$ 45,683	0.54	\$ 3,587	3,375.16	\$ 483,530
	Crawford	1,723.95	\$ 161,828	12.67	\$ 19,431	0.28	\$ 1,602	1,736.90	\$ 182,861
	McKean	553.03	\$ 86,588	4.06	\$ 8,527	0.09	\$ 651	557.18	\$ 95,766
	Warren	302.75	\$ 45,558	2.22	\$ 4,546	0.05	\$ 349	305.02	\$ 50,453
	Total	5,929.73	\$ 728,233	43.58	\$ 78,187	0.96	\$ 6,189	5,974.27	\$ 812,610
To	Cleveland								
From	Erie	492.81	\$ 49,488	3.62	\$ 5,768	0.08	\$ 471	496.51	\$ 55,726
	Crawford	131.73	\$ 12,820	0.97	\$ 1,515	0.02	\$ 124	132.71	\$ 14,458
	McKean	17.21	\$ 3,300	0.13	\$ 305	0.00	\$ 23	17.34	\$ 3,628
	Warren	14.77	\$ 2,281	0.11	\$ 226	0.00	\$ 17	14.89	\$ 2,524
	Total	656.51	\$ 67,888	4.82	\$ 7,814	0.11	\$ 635	661.44	\$ 76,337
To	Buffalo								
From	Erie	87.51	\$ 8,245	0.64	\$ 988	0.01	\$ 81	88.16	\$ 9,315
	Crawford	17.61	\$ 2,296	0.13	\$ 241	0.00	\$ 19	17.74	\$ 2,556
	McKean	1,806.50	\$ 143,978	13.28	\$ 18,669	0.29	\$ 1,577	1,820.07	\$ 164,224
	Warren	565.05	\$ 52,703	4.15	\$ 6,347	0.09	\$ 524	569.30	\$ 59,573
	Total	2,476.67	\$ 207,222	18.20	\$ 26,245	0.40	\$ 2,201	2,495.28	\$ 235,668
Total		9,062.91	\$ 1,003,343	66.61	\$ 112,246	1.47	\$ 9,025	9,130.99	\$ 1,124,614

D. Length of Stay

For inpatients, a length of stay was needed in order to calculate all other costs besides transportation. The data for the length of stay in hospitals for inpatients was taken from PHC4 data of admissions of Erie County patients in Pittsburgh and Cleveland hospitals. These data had to be used for all counties and also for patients seeking care in Buffalo, because specific data were not available on the length of stays at these locations. The average length of stays for each subspecialty are displayed below in Table 14. There were few admissions overall for subspecialties in Cleveland hospitals and this small amount may explain the much higher length of stays for pulmonology and ENT. There were also few admissions in Buffalo hospitals, but the data did not include the length of stays for these admissions. In order to have an estimate, the average length of stay for all patients was used for Buffalo inpatients. The length of stay for the dermatology and allergy subspecialties are zero, because there are no inpatient records in the data for admissions in these subspecialties.

Table 14 – Average Length of Stay by Subspecialty and Hospital (days)

	Pittsburgh	Cleveland	Buffalo
Cardiology	8.94	4.67	8.75
Neurology	3.86	3.84	3.86
Gastroenterology	6.76	3.25	6.60
Pulmonology	10.80	29.50	11.34
Endocrinology	5.56	5.50	5.45
ENT (Otolaryngology)	3.62	23.00	3.91
Dermatology	0.00	0.00	0.00
Allergy	0.00	0.00	0.00

E. Parking

Parking costs were calculated next. Data on the costs for parking at Children’s Hospital of Pittsburgh and Women’s and Children’s Hospital of Buffalo were determined from their respective websites. The costs for parking at Rainbows Babies and Children’s Hospital were determined by calling its parking office.

The cost for parking for each subspecialty was calculated in two parts. An assumption was made that inpatients and outpatients require at least eight hours for parking a day and the respective rate for more than eight hours was used. For professional visits the assumption was made that these visits only required 2.5 to 3 hours of parking and they are charged at the rate for this amount of time. Table 15 provides the parking costs used in the calculations.

Table 15 – Parking Costs

	>8 Hours	2.5-3 Hour
Pittsburgh	\$20.00	\$3.00
Cleveland	\$10.00	\$6.00
Buffalo	\$3.75	\$3.75

The cost for inpatient parking was calculated by multiplying the cost to park by the number of patients and by the average length of stay. The outpatient parking cost was calculated by multiplying the number of outpatients traveling to the hospital from each county by the cost to park for more than eight hours. The cost for professional visit parking was calculated by multiplying the number of professional visits traveling to the hospital from each county by the cost to park for 2.5 to 3 hours. These costs are then added together to determine the total parking cost for all patients. The summary of parking costs is provided in Table 16. Parking costs alone are estimated to cost \$191,419 in 2007 and 2008.

Table 16 – Summary of Parking Costs

		Cardiology	Neurology	Pulmonology	Gastroenterology	Endocrinology	ENT	Dermatology	Allergy	Total
To	Pittsburgh									
	Erie	\$17,245	\$15,077	\$30,372	\$27,711	\$5,050	\$7,834	\$3,411	\$106	\$106,807
	Crawford	\$6,746	\$4,956	\$13,552	\$9,558	\$2,806	\$3,997	\$1,697	\$155	\$43,468
From	McKean	\$1,544	\$1,672	\$3,252	\$1,421	\$1,393	\$1,658	\$399	\$5	\$11,343
	Warren	\$1,393	\$1,620	\$2,019	\$2,524	\$779	\$1,029	\$272	\$19	\$9,655
	Total	\$26,928	\$23,325	\$49,196	\$41,214	\$10,027	\$14,517	\$5,780	\$285	\$171,273
To	Cleveland									
	Erie	\$1,761	\$922	\$885	\$130	\$497	\$278	\$1,026	\$48	\$5,547
	Crawford	\$389	\$230	\$885	\$195	\$65	\$460	\$445	\$0	\$2,670
From	McKean	\$105	\$77	\$0	\$0	\$0	\$0	\$0	\$10	\$191
	Warren	\$57	\$0	\$885	\$0	\$65	\$460	\$0	\$10	\$1,476
	Total	\$2,312	\$1,229	\$2,655	\$325	\$626	\$1,198	\$1,471	\$68	\$9,884
To	Buffalo									
	Erie	\$74	\$29	\$1	\$27	\$20	\$61	\$140	\$36	\$390
	Crawford	\$0	\$0	\$0	\$0	\$0	\$0	\$42	\$24	\$67
From	McKean	\$190	\$118	\$350	\$218	\$216	\$581	\$1,850	\$3,962	\$7,485
	Warren	\$62	\$45	\$128	\$28	\$51	\$117	\$891	\$998	\$2,321
	Total	\$327	\$192	\$479	\$274	\$287	\$759	\$2,924	\$5,020	\$10,262
Total		\$29,567	\$24,746	\$52,330	\$41,813	\$10,941	\$16,475	\$10,174	\$5,373	\$191,419

F. Housing

Estimates of housing costs for those staying overnight were based on two different options for housing in each city. Pittsburgh, Buffalo, and Cleveland all have Ronald McDonald Houses near the children’s hospitals and there are also hotels available. Ronald McDonald Houses are places that family members can stay for a small nightly donation while their children are receiving treatment at nearby children’s hospitals (Ronald McDonald House (2010)). For housing in hotels in each city, an average cost was established by taking the average nightly cost for representative hotels near the children’s hospitals in each city. The housing costs are provided in Table 17.

Table 17 – Housing Costs

	McDonald House		Hotel		Total Number	Weighted Average Cost per Night
	Cost	Number	Cost	Number		
Pittsburgh	\$15.00	415	\$109.14	1233	1648	\$85.43
Cleveland	\$20.00	37	\$120.00	71	108	\$85.74
Buffalo	\$15.00	12	\$143.91	69	81	\$124.81

1. Cleveland

To calculate the cost of housing in Cleveland, information was used from the Family Services Manager at the Cleveland Ronald McDonald House. The manager was able to provide exact data on the number of visits, number of room nights, and also the number of different families from Pennsylvania. In addition, the suggested donation per night of twenty dollars and the cost of local hotels was also provided.

The number of people using hotels was calculated by taking the total number of inpatients traveling to each city and subtracting the number of families staying at the Ronald McDonald House. The number of families staying at the Cleveland Ronald McDonald House was for patients from all of

Pennsylvania. Because this study is only concerned with patients from Crawford, Erie, McKean, and Warren counties, only half of the reported families were used. This was based on the distances required to travel to Rainbows Babies and Children’s Hospital and the presence of other children’s hospitals that would compete with Rainbows for Pennsylvania residents.

Using this information, a weighted average cost for housing was estimated. This weighted average was calculated by multiplying the number of families staying at the Cleveland Ronald McDonald House by the suggested donation of twenty dollars. This cost was then added to the cost of private hotel stays, calculated as the number of families staying at hotels multiplied by the average cost of hotels in the area. The total was then divided by the total number of people staying in Cleveland in order to find the weighted average cost of housing. This average cost for housing is used in the housing cost calculations for Cleveland.

2. Buffalo

Housing in the Ronald McDonald House in Buffalo is available to families of pediatric patients for a suggested donation of \$15 per night. The House Manager was able to provide information on the number of families from Pennsylvania staying at the Buffalo Ronald McDonald House. For 2007 and 2008 there were about 24 Pennsylvania families that stayed there. As with the Cleveland Ronald McDonald House, this number included all Pennsylvania residents and for this study half of these families were used for housing at the Ronald McDonald house from the four counties of Northwest Pennsylvania.

A weighted average cost for housing was used for housing in Buffalo as well. This is calculated the same way as the Cleveland housing cost.

3. Pittsburgh

There is also a Ronald McDonald house in Pittsburgh. The Housing Coordinator at Pittsburgh Children’s Hospital helps find housing for families of children receiving treatment. The Coordinator, however, does not collect information on where in Pennsylvania families come from. The only qualification is that families must live more than forty miles from the hospital. This made it impossible to know the exact number of families staying at this Ronald McDonald House from the four counties being studied. Because of this, an estimate of 25 percent was used. This percent is between the percentages of Pennsylvania residents that stayed at Ronald McDonald Houses in Buffalo and Cleveland. The suggested donation at the Pittsburgh Ronald McDonald House was \$15 per night, according to the Housing Coordinator.

A weighted average cost for housing was used for housing in Pittsburgh as well. This is calculated the same way as the Cleveland and Buffalo housing costs.

To calculate the cost of housing for each location, the average cost of housing around each hospital location was multiplied by the number of people staying in each location and the average length of stay for each subspecialty. The total housing costs for each subspecialty to and from each location are summarized in Table 18. There are not any housing costs for dermatology and allergy patients because there were no admissions for dermatology or allergy patients in the data used.

Table 18 – Housing Cost Summary

		Cardiology	Neurology	Pulmonology	Gastroenterology	Endocrinology	ENT	Dermatology	Allergy	Total
To	Pittsburgh									
	Erie	\$49,636	\$60,400	\$123,602	\$96,473	\$19,478	\$20,076	\$0	\$0	\$369,666
	Crawford	\$19,091	\$19,803	\$56,267	\$31,772	\$11,402	\$8,648	\$0	\$0	\$146,983
From	McKean	\$3,818	\$6,931	\$12,914	\$4,044	\$5,701	\$3,089	\$0	\$0	\$36,496
	Warren	\$4,582	\$6,271	\$8,302	\$9,243	\$3,326	\$2,162	\$0	\$0	\$33,885
	Total	\$77,126	\$93,406	\$201,084	\$141,532	\$39,907	\$33,976	\$0	\$0	\$587,031
To	Cleveland									
	Erie	\$1,200	\$7,902	\$7,588	\$1,115	\$943	\$1,972	\$0	\$0	\$20,720
	Crawford	\$1,200	\$1,975	\$7,588	\$1,672	\$472	\$3,944	\$0	\$0	\$16,851
From	McKean	\$0	\$658	\$0	\$0	\$0	\$0	\$0	\$0	\$658
	Warren	\$0	\$0	\$7,588	\$0	\$472	\$3,944	\$0	\$0	\$12,004
	Total	\$2,401	\$10,536	\$22,764	\$2,787	\$1,886	\$9,860	\$0	\$0	\$50,234
To	Buffalo									
	Erie	\$0	\$964	\$0	\$824	\$681	\$0	\$0	\$0	\$2,469
	Crawford	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
From	McKean	\$1,092	\$3,855	\$11,326	\$6,592	\$1,362	\$1,464	\$0	\$0	\$25,691
	Warren	\$0	\$1,446	\$4,247	\$824	\$681	\$0	\$0	\$0	\$7,198
	Total	\$1,092	\$6,264	\$15,574	\$8,241	\$2,723	\$1,464	\$0	\$0	\$35,357
Total		\$80,619	\$110,206	\$239,422	\$152,559	\$44,517	\$45,299	\$0	\$0	\$672,622

G. Food

The cost for food is also part of the total cost of treatment outside the area. To determine the cost of food, the cost per meal was established. These costs are based on the costs for food items in the hospitals and some assumptions. According to the Pittsburgh Children's Hospital's website, there are a variety of options for parents to choose from for meals. The cost for a basic meal consisting of a sandwich, side, and beverage was approximately eight to ten dollars depending on the choices made. In addition there is an option for parents to purchase a guest tray voucher for five dollars, which allows them to eat with their child. One other option for parents is a free bagged meal that is available for parents who may not be able to afford meals in the hospital (Food Services (2010)). Because of this variety of options, a cost of seven dollars was used for breakfast and a cost of eight dollars was used for lunch and dinner in the food cost estimations. This creates a total cost of 23 dollars a day for food. These calculations also assume that there is only one parent or guardian on the trip, and that the cost of food for the patient is covered by the hospital charge. By assuming there is only one parent with the children seeking treatment, this provides a conservative estimate and avoids speculation as to the actual number of parents that are with their children since there are no data that provide actual numbers. There is, however, an alternative estimate provided in the Alternative Assumptions section that does assume that there are two parents for every child and provides a potential maximum cost for food as a reference.

The total food cost for each location was based on types and numbers of patients. For inpatients, the cost of food was determined by multiplying the cost of three meals per day by the number of inpatients and then multiplying that number by the average length of stay for patients in each subspecialty plus one day to take travel time into consideration. The food cost for outpatients was calculated by multiplying the cost of three meals by the number of outpatients at each hospital. The food cost for professional visits was calculated multiplying the number of professional visits at each hospital by two and by the cost of lunch. This was to take into account that these families not only incurred the time required for the appointment, but also the time it takes to travel to each hospital and that both the child and parent would need to eat. The total food costs for each hospital by county is the

sum of the inpatient, outpatient, and professional visits food costs. Table 19 summarizes the food costs for each subspecialty based on county origin and hospital location.

Table 19 – Food Cost Summary

		Cardiology	Neurology	Pulmonology	Gastroenterology	Endocrinology	ENT	Dermatology	Allergy	Total
To	Pittsburgh									
From	Erie	\$31,430	\$17,339	\$34,928	\$31,868	\$19,478	\$15,527	\$8,680	\$568	\$159,818
	Crawford	\$13,770	\$5,699	\$15,585	\$10,992	\$11,402	\$8,665	\$6,041	\$826	\$72,981
	McKean	\$3,881	\$1,922	\$3,740	\$1,634	\$5,701	\$4,173	\$965	\$26	\$22,043
	Warren	\$2,148	\$1,863	\$2,322	\$2,903	\$3,326	\$2,418	\$738	\$103	\$15,821
	Total	\$51,230	\$26,824	\$56,575	\$47,396	\$39,907	\$30,783	\$16,423	\$1,523	\$270,661
To	Cleveland									
From	Erie	\$4,302	\$2,120	\$2,036	\$299	\$943	\$658	\$2,735	\$129	\$13,222
	Crawford	\$956	\$530	\$2,036	\$449	\$472	\$1,058	\$1,187	\$0	\$6,687
	McKean	\$259	\$177	\$0	\$0	\$0	\$0	\$0	\$26	\$462
	Warren	\$130	\$0	\$2,036	\$0	\$472	\$1,058	\$0	\$26	\$3,721
	Total	\$5,647	\$2,826	\$6,107	\$748	\$1,886	\$2,774	\$3,923	\$181	\$24,091
To	Buffalo									
From	Erie	\$318	\$180	\$4	\$168	\$681	\$263	\$601	\$155	\$2,370
	Crawford	\$0	\$0	\$0	\$0	\$0	\$0	\$181	\$103	\$284
	McKean	\$884	\$723	\$2,146	\$1,336	\$1,362	\$2,590	\$7,916	\$16,903	\$33,860
	Warren	\$270	\$276	\$787	\$175	\$681	\$505	\$3,804	\$4,258	\$10,756
	Total	\$1,473	\$1,179	\$2,938	\$1,679	\$2,723	\$3,357	\$12,502	\$21,419	\$47,270
Total		\$58,350	\$30,829	\$65,619	\$49,822	\$44,517	\$36,915	\$32,848	\$23,123	\$342,023

H. Lost Wages

Parents who take children out of the area for medical services may be missing work to do so, and it is necessary to estimate the value of their lost wages. As with the food costs, there are no data as to the number of parents that travel with their children while seeking treatment. Because of this, these lost wage estimates are for only one parent or guardian in order to provide a conservative estimate. There are, however, additional estimates that provide a maximum loss in the Alternative Assumptions section. The lost wages are determined using data on the yearly average wages for the four counties from the U.S. Bureau of Economic Analysis. The average wages of each county for the years 2007 and 2008 are averaged to determine the rate during the entire period. This rate is then divided by 260 working days in order to establish the daily income by an average worker.

The number of working days used to establish the daily income by an average worker was established by assuming a five day work week. Five working days a week multiplied by 52 weeks gives 260 working days. Parents may be able to use sick days or vacation leave to cover the personal cost of not working, but there is still a cost to the economy. The cost to the economy is what is being measured by this study, so vacations and sick days were not taken into account. Table 20 provides the yearly wages and the daily incomes calculated.

Table 20 – Average Yearly Wage and Daily Income by County

	2007	2008	Daily Income
Erie	\$34,263	\$35,426	\$134.02
Crawford	\$30,664	\$32,038	\$120.58
McKean	\$32,488	\$33,502	\$126.90
Warren	\$33,841	\$33,586	\$129.67

Not all people work, so it was necessary to adjust the number of parents by the percent of people employed in each county. This gave an estimate of the number of people who lost wages while caring for their children. The percent of the population employed come from the Census Bureau’s American Community Survey three year estimates for the years 2006 through 2008 found on census.gov. Table 21 below gives these percentages of the population employed for each county that were used in the calculations of how many people lost wages.

Table 21 – Percent of Population in Labor Force Employed for 2006 – 2008

Erie	57.8%
Crawford	55.4%
McKean	54.1%
Warren	57.3%

The wages lost were calculated depending on the type of patient. For inpatients, the lost wages for each county were determined by multiplying the number of parents employed by the average wage for that county and by the average length of stay required by that subspecialty plus one day to take travel time into consideration. The lost wages for outpatients and professional visits were calculated by multiplying the number of employed parents by the average wage per county. This assumes that the outpatients and professional visits only required one day of lost wages on the behalf of a parent. The lost wages for inpatients, outpatients, and professional visits were added together to determine the total lost wages for each location based on county. Table 22 on the next page summarizes the lost wages by patient origin and destination for each subspecialty.

Table 22 – Lost Wages Summary

		Cardiology	Neurology	Pulmonology	Gastroenterology	Endocrinology	ENT	Dermatology	Allergy	Total
To	Pittsburgh									
From	Erie	\$132,678	\$72,572	\$128,014	\$120,264	\$32,611	\$69,572	\$38,168	\$2,749	\$596,627
	Crawford	\$51,404	\$20,562	\$49,341	\$35,599	\$12,807	\$33,630	\$24,169	\$3,448	\$230,959
	McKean	\$15,433	\$7,180	\$12,125	\$5,358	\$6,734	\$16,918	\$3,723	\$111	\$67,583
	Warren	\$8,370	\$7,429	\$8,170	\$10,565	\$3,412	\$10,556	\$3,150	\$479	\$52,133
	Total	\$207,885	\$107,743	\$197,650	\$171,787	\$55,565	\$130,676	\$69,210	\$6,787	\$947,302
To	Cleveland									
From	Erie	\$17,421	\$8,998	\$7,088	\$1,317	\$6,005	\$2,484	\$13,244	\$625	\$57,180
	Crawford	\$3,534	\$1,940	\$6,112	\$1,703	\$542	\$3,206	\$4,956	\$0	\$21,995
	McKean	\$942	\$665	\$0	\$0	\$0	\$0	\$0	\$111	\$1,718
	Warren	\$420	\$0	\$6,798	\$0	\$603	\$3,566	\$0	\$120	\$11,508
	Total	\$22,318	\$11,602	\$19,999	\$3,020	\$7,149	\$9,257	\$18,200	\$855	\$92,400
To	Buffalo									
From	Erie	\$1,529	\$763	\$15	\$642	\$500	\$1,266	\$2,897	\$750	\$8,361
	Crawford	\$0	\$0	\$0	\$0	\$0	\$0	\$754	\$431	\$1,185
	McKean	\$3,550	\$2,707	\$6,954	\$4,538	\$4,098	\$10,834	\$33,876	\$72,531	\$139,089
	Warren	\$1,237	\$1,114	\$2,767	\$638	\$1,079	\$2,323	\$17,651	\$19,773	\$46,583
	Total	\$6,316	\$4,584	\$9,736	\$5,819	\$5,677	\$14,424	\$55,178	\$93,484	\$195,218
Total		\$236,519	\$123,930	\$227,385	\$180,626	\$68,391	\$154,356	\$142,588	\$101,126	\$1,234,921

There is an economic value to having people in the region even if they do not work to bring in income. This value is in the form of household production, which includes all the activities people do to take care of themselves, their families, and also their homes. We did not include this in our estimate, because we believe that the household production value is small compared to the lost wages. There is, however, an unadjusted estimate included in the Alternative Assumptions section for lost wages. This unadjusted estimate assumes that every patient has a family member that loses wages while the patient seeks treatment.

I. Notes on Other Costs

There are other additional costs that individual families may encounter that were not taken into account in this project. These could include laundry, telephone calls, or other miscellaneous costs associated with traveling to another city. There is also the possibility that parents may have other children that do not travel with them. These children could require sitters to watch over them while their parents are away. The cost for these sitters and other costs are not taken into account in this project. Parents may also have the option of staying with their child in the hospital after procedures. This may eliminate the need for parents to find housing while they are away from home.

The time period in which most of the data in this project are taken are the years 2007 through 2009. This time period may affect the data used because of the recession that occurred in these years. There were lower wages and a smaller workforce during this time than a period of economic growth may have had. This could result in less people being able to travel outside of the region in order to receive treatment. Another effect the recession could have on the data is in creating more serious conditions in patients. More families may not have been able to afford preventive treatment during this time which could have led to the patients that did have to travel outside of the region requiring more intensive or longer treatments.

IV. Summary Tables

A. Estimated Total Cost to Regional Economy

This section provides summary tables for the total cost to the regional economy from all eight subspecialties during the two year period. These tables include the total loss by type and also the total loss by subspecialty. In addition, tables for the total cost of transportation, housing, lost wages, food, and parking for all eight subspecialties are provided.

1. Total Loss to Economy from the Eight Subspecialties

The total estimated loss calculated for the economy is 3.57 million dollars over the two year period. Table 23 below provides a summary of the total loss to the regional economy based on the type of loss. The total expense column is the total of the costs of transportation, parking, housing, and food by patients and family members traveling outside of the region to seek treatment. The total loss column takes into account both the total expenses by families and also the lost wages of parents losing work while out of town. The total loss is the total estimated impact on the regional economy.

Patients seeking treatment in Pittsburgh account for the majority of the region's loss with 78.2 percent of the total loss accrued from there. Buffalo accounts for 14.7 percent and Cleveland 7.1 percent. An interesting note is that although McKean County has only 10 percent of the population in the region, the county accounts for 17.1 percent of the total loss to the economy. McKean County provides more of the total loss than Warren County which provides 9.0 percent of the loss and almost as much as Crawford County, which has 20.9 percent of the loss. Patients from Erie County contribute 53.1 percent of the loss.

Table 23 – Estimated Total Loss to Economy from 8 Subspecialties by Type of Cost/Loss (2007-2008)

		Transportation	Parking	Housing	Food	Total Expense	Lost Wages	Total Loss
To	Pittsburgh							
From	Erie	\$483,530	\$106,807	\$369,666	\$159,818	\$1,119,820	\$596,627	\$1,716,447
	Crawford	\$182,861	\$43,468	\$146,983	\$72,981	\$446,293	\$230,959	\$677,252
	McKean	\$95,766	\$11,343	\$36,496	\$22,043	\$165,648	\$67,583	\$233,231
	Warren	\$50,453	\$9,655	\$33,885	\$15,821	\$109,813	\$52,133	\$161,946
	Total	\$812,610	\$171,273	\$587,031	\$270,661	\$1,841,575	\$947,302	\$2,788,877
To	Cleveland							
From	Erie	\$55,726	\$5,547	\$20,720	\$13,222	\$95,215	\$57,180	\$152,395
	Crawford	\$14,458	\$2,670	\$16,851	\$6,687	\$40,666	\$21,995	\$62,661
	McKean	\$3,628	\$191	\$658	\$462	\$4,940	\$1,718	\$6,657
	Warren	\$2,524	\$1,476	\$12,004	\$3,721	\$19,725	\$11,508	\$31,232
	Total	\$76,337	\$9,884	\$50,234	\$24,091	\$160,546	\$92,400	\$252,946
To	Buffalo							
From	Erie	\$9,315	\$390	\$2,469	\$2,370	\$14,543	\$8,361	\$22,904
	Crawford	\$2,556	\$67	\$0	\$284	\$2,906	\$1,185	\$4,092
	McKean	\$164,224	\$7,485	\$25,691	\$33,860	\$231,260	\$139,089	\$370,349
	Warren	\$59,573	\$2,321	\$7,198	\$10,756	\$79,848	\$46,583	\$126,431
	Total	\$235,668	\$10,262	\$35,357	\$47,270	\$328,557	\$195,218	\$523,776
Total		\$1,124,614	\$191,419	\$672,622	\$342,023	\$2,330,678	\$1,234,921	\$3,565,599

It is also important to note the individual types of costs in Table 23. Lost wages comprise 34.6 percent of the total loss to the economy. The next largest segment of the total loss is in transportation costs. Transportation costs are 31.5 percent of the total loss to the economy. These two sections alone account for 66.1 percent of the total loss to the regional economy. Parking, housing, and food costs create the remaining 33.9 percent of the loss.

Table 24 provides details on the loss to the region based on the type of subspecialty. The top three subspecialties that contribute to the loss of the region are cardiology, pulmonology, and gastroenterology. The total loss from cardiology patients are 19.8 percent of the total of all eight subspecialties. Pulmonology accounts for 17.7 percent and gastroenterology accounts for 14.5 percent.

Table 24 – Estimated Total Loss to Economy from 8 Subspecialties by Subspecialty (2007 – 2008)

To		Cardiology	Neurology	Pulmonology	Gastroenterology	Endocrinology	ENT	Dermatology	Allergy	Total
From	Pittsburgh									
	Erie	\$393,134	\$198,321	\$346,401	\$336,960	\$104,266	\$208,012	\$120,847	\$8,506	\$1,716,447
	Crawford	\$148,497	\$59,022	\$143,167	\$104,871	\$44,551	\$97,283	\$69,999	\$9,862	\$677,252
	McKean	\$55,632	\$21,737	\$36,405	\$17,737	\$24,918	\$61,978	\$14,407	\$419	\$233,231
	Warren	\$26,257	\$21,579	\$22,929	\$30,860	\$12,000	\$35,477	\$11,174	\$1,669	\$161,946
	Total	\$623,519	\$300,659	\$548,902	\$490,428	\$185,735	\$402,751	\$216,426	\$20,456	\$2,788,877
From	Cleveland									
	Erie	\$48,354	\$22,635	\$17,933	\$3,309	\$15,853	\$6,410	\$36,194	\$1,707	\$152,395
	Crawford	\$10,319	\$5,329	\$16,948	\$4,673	\$1,834	\$8,886	\$14,671	\$0	\$62,661
	McKean	\$4,178	\$1,995	\$0	\$0	\$0	\$0	\$0	\$484	\$6,657
	Warren	\$1,567	\$0	\$17,816	\$0	\$2,054	\$9,368	\$0	\$429	\$31,232
	Total	\$64,418	\$29,959	\$52,696	\$7,982	\$19,742	\$24,664	\$50,865	\$2,620	\$252,946
From	Buffalo									
	Erie	\$4,006	\$2,161	\$40	\$1,839	\$1,989	\$3,316	\$7,589	\$1,963	\$22,904
	Crawford	\$0	\$0	\$0	\$0	\$0	\$0	\$2,604	\$1,488	\$4,092
	McKean	\$9,593	\$8,174	\$21,728	\$13,884	\$11,438	\$28,649	\$88,164	\$188,719	\$370,349
	Warren	\$3,312	\$3,239	\$8,266	\$1,874	\$3,440	\$6,218	\$47,206	\$52,878	\$126,431
	Total	\$16,912	\$13,573	\$30,034	\$17,597	\$16,866	\$38,183	\$145,563	\$245,047	\$523,776
Total		\$704,849	\$344,192	\$631,633	\$516,007	\$222,343	\$465,598	\$412,854	\$268,123	\$3,565,599

2. Economic Loss Tables for Eight Subspecialties

This section provides summary tables for the total cost to the economy from each of the eight subspecialties examined. These summary tables display the total cost of transportation, parking, housing, food, and lost wages for each subspecialty. The total expense is the sum of the transportation, parking, housing, and food costs and the total loss is the sum of the total expense and lost wages.

Many of the patterns observed in the total loss to the economy table can also be observed in the loss in each subspecialty. Transportation, housing, and lost wages are the largest components in most subspecialties. Erie County patients also contribute the most to the loss, while Pittsburgh receives most it, except for the allergy subspecialty. This difference is explained with Table 32, which displays the total costs for patients seeking allergy treatment.

There are locations with no costs associated with them. These locations are ones in which there were no patients recorded in the data traveling from for the subspecialty being examined. An example in Table 25 for the cardiology subspecialty is from Crawford County to Buffalo. There are no costs because there were no patient records in the two year period for any patients seeking treatment in that category. Other important details are explained by each individual table.

Table 25 summarizes the total loss to the regional economy from patients seeking treatment in the cardiology subspecialty. There are no housing costs for some categories because there were no inpatient data in those categories.

Table 25 – Total Cardiology Loss

To		Transportation	Parking	Housing	Food	Total Expense	Lost Wages	Total Loss
To	Pittsburgh							
From	Erie	\$162,145	\$17,245	\$49,636	\$31,430	\$260,456	\$132,678	\$393,134
	Crawford	\$57,486	\$6,746	\$19,091	\$13,770	\$97,093	\$51,404	\$148,497
	McKean	\$30,955	\$1,544	\$3,818	\$3,881	\$40,199	\$15,433	\$55,632
	Warren	\$9,763	\$1,393	\$4,582	\$2,148	\$17,886	\$8,370	\$26,257
	Total	\$260,350	\$26,928	\$77,126	\$51,230	\$415,634	\$207,885	\$623,519
To	Cleveland							
From	Erie	\$23,670	\$1,761	\$1,200	\$4,302	\$30,933	\$17,421	\$48,354
	Crawford	\$4,239	\$389	\$1,200	\$956	\$6,785	\$3,534	\$10,319
	McKean	\$2,872	\$105	\$0	\$259	\$3,236	\$942	\$4,178
	Warren	\$960	\$57	\$0	\$130	\$1,146	\$420	\$1,567
	Total	\$31,741	\$2,312	\$2,401	\$5,647	\$42,100	\$22,318	\$64,418
To	Buffalo							
From	Erie	\$2,085	\$74	\$0	\$318	\$2,478	\$1,529	\$4,006
	Crawford	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	McKean	\$3,876	\$190	\$1,092	\$884	\$6,043	\$3,550	\$9,593
	Warren	\$1,742	\$62	\$0	\$270	\$2,075	\$1,237	\$3,312
	Total	\$7,704	\$327	\$1,092	\$1,473	\$10,595	\$6,316	\$16,912
Total		\$299,794	\$29,567	\$80,619	\$58,350	\$468,330	\$236,519	\$704,849

The total loss to the economy for neurology pediatric patients is displayed in Table 26. Housing costs are greater than transportation costs in this subspecialty because inpatients are 81.6 percent of all the patients seeking treatment in the neurology subspecialty.

Table 26 – Total Neurology Loss

To		Transportation	Parking	Housing	Food	Total Expense	Lost Wages	Total Loss
To	Pittsburgh							
From	Erie	\$32,932	\$15,077	\$60,400	\$17,339	\$125,749	\$72,572	\$198,321
	Crawford	\$8,001	\$4,956	\$19,803	\$5,699	\$38,460	\$20,562	\$59,022
	McKean	\$4,031	\$1,672	\$6,931	\$1,922	\$14,556	\$7,180	\$21,737
	Warren	\$4,397	\$1,620	\$6,271	\$1,863	\$14,150	\$7,429	\$21,579
	Total	\$49,361	\$23,325	\$93,406	\$26,824	\$192,916	\$107,743	\$300,659
To	Cleveland							
From	Erie	\$2,694	\$922	\$7,902	\$2,120	\$13,637	\$8,998	\$22,635
	Crawford	\$654	\$230	\$1,975	\$530	\$3,389	\$1,940	\$5,329
	McKean	\$419	\$77	\$658	\$177	\$1,330	\$665	\$1,995
	Warren	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Total	\$3,766	\$1,229	\$10,536	\$2,826	\$18,357	\$11,602	\$29,959
To	Buffalo							
From	Erie	\$225	\$29	\$964	\$180	\$1,398	\$763	\$2,161
	Crawford	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	McKean	\$771	\$118	\$3,855	\$723	\$5,467	\$2,707	\$8,174
	Warren	\$358	\$45	\$1,446	\$276	\$2,124	\$1,114	\$3,239
	Total	\$1,353	\$192	\$6,264	\$1,179	\$8,989	\$4,584	\$13,573
Total		\$54,481	\$24,746	\$110,206	\$30,829	\$220,262	\$123,930	\$344,192

The loss to the economy from the pulmonology subspecialty is similar to the neurology subspecialty, as displayed in Table 27. Housing costs are much greater than transportation costs because 68.6 percent of all pediatric pulmonology patients in the data are inpatients. In addition, pulmonology has the highest length of stay for inpatients. Inpatients average eleven days in hospitals for both Pittsburgh and Buffalo, while inpatients in Cleveland average 30 days.

Table 27 – Total Pulmonology Loss

To		Transportation	Parking	Housing	Food	Total Expense	Lost Wages	Total Loss
From	Pittsburgh							
	Erie	\$29,484	\$30,372	\$123,602	\$34,928	\$218,387	\$128,014	\$346,401
	Crawford	\$8,422	\$13,552	\$56,267	\$15,585	\$93,827	\$49,341	\$143,167
	McKean	\$4,374	\$3,252	\$12,914	\$3,740	\$24,280	\$12,125	\$36,405
	Warren	\$2,116	\$2,019	\$8,302	\$2,322	\$14,759	\$8,170	\$22,929
	Total	\$44,396	\$49,196	\$201,084	\$56,575	\$351,252	\$197,650	\$548,902
From	Cleveland							
	Erie	\$337	\$885	\$7,588	\$2,036	\$10,845	\$7,088	\$17,933
	Crawford	\$327	\$885	\$7,588	\$2,036	\$10,835	\$6,112	\$16,948
	McKean	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Warren	\$509	\$885	\$7,588	\$2,036	\$11,017	\$6,798	\$17,816
	Total	\$1,172	\$2,655	\$22,764	\$6,107	\$32,698	\$19,999	\$52,696
From	Buffalo							
	Erie	\$20	\$1	\$0	\$4	\$25	\$15	\$40
	Crawford	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	McKean	\$952	\$350	\$11,326	\$2,146	\$14,774	\$6,954	\$21,728
	Warren	\$336	\$128	\$4,247	\$787	\$5,499	\$2,767	\$8,266
	Total	\$1,308	\$479	\$15,574	\$2,938	\$20,298	\$9,736	\$30,034
Total		\$46,877	\$52,330	\$239,422	\$65,619	\$404,248	\$227,385	\$631,633

Table 28 displays the costs associated with pediatric patients seeking treatment in the gastroenterology subspecialty. As with the pulmonology and neurology subspecialties, housing is again the second highest cost because of the high number of inpatients. Inpatients account for 39.2 percent in the gastroenterology subspecialty.

Table 28 – Total Gastroenterology Loss

To		Transportation	Parking	Housing	Food	Total Expense	Lost Wages	Total Loss
From	Pittsburgh							
	Erie	\$60,645	\$27,711	\$96,473	\$31,868	\$216,696	\$120,264	\$336,960
	Crawford	\$16,950	\$9,558	\$31,772	\$10,992	\$69,272	\$35,599	\$104,871
	McKean	\$5,279	\$1,421	\$4,044	\$1,634	\$12,378	\$5,358	\$17,737
	Warren	\$5,625	\$2,524	\$9,243	\$2,903	\$20,295	\$10,565	\$30,860
	Total	\$88,499	\$41,214	\$141,532	\$47,396	\$318,641	\$171,787	\$490,428
From	Cleveland							
	Erie	\$449	\$130	\$1,115	\$299	\$1,993	\$1,317	\$3,309
	Crawford	\$654	\$195	\$1,672	\$449	\$2,969	\$1,703	\$4,673
	McKean	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Warren	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Total	\$1,103	\$325	\$2,787	\$748	\$4,962	\$3,020	\$7,982
From	Buffalo							
	Erie	\$178	\$27	\$824	\$168	\$1,197	\$642	\$1,839
	Crawford	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	McKean	\$1,199	\$218	\$6,592	\$1,336	\$9,345	\$4,538	\$13,884
	Warren	\$208	\$28	\$824	\$175	\$1,236	\$638	\$1,874
	Total	\$1,585	\$274	\$8,241	\$1,679	\$11,778	\$5,819	\$17,597
Total		\$91,187	\$41,813	\$152,559	\$49,822	\$335,381	\$180,626	\$516,007

The loss to the regional economy for pediatric patients with endocrinology medical problems is summarized in Table 29. The housing cost is lower in the subspecialty, because inpatients account for only 21.9 percent of total patients. Most patients only seek professional visits.

Table 29 – Total Endocrinology Loss

To		Transportation	Parking	Housing	Food	Total Expense	Lost Wages	Total Loss
From	Pittsburgh							
	Erie	\$27,649	\$5,050	\$19,478	\$7,690	\$59,867	\$32,611	\$92,478
	Crawford	\$6,133	\$2,806	\$11,402	\$3,632	\$23,973	\$12,807	\$36,781
	McKean	\$5,389	\$1,393	\$5,701	\$1,845	\$14,327	\$6,734	\$21,061
	Warren	\$1,158	\$779	\$3,326	\$895	\$6,157	\$3,412	\$9,570
	Total	\$40,329	\$10,027	\$39,907	\$14,061	\$104,325	\$55,565	\$159,890
From	Cleveland							
	Erie	\$7,466	\$497	\$943	\$1,285	\$10,191	\$6,005	\$16,196
	Crawford	\$285	\$65	\$472	\$152	\$973	\$542	\$1,515
	McKean	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Warren	\$443	\$65	\$472	\$152	\$1,132	\$603	\$1,734
	Total	\$8,193	\$626	\$1,886	\$1,590	\$12,296	\$7,149	\$19,445
From	Buffalo							
	Erie	\$106	\$20	\$681	\$126	\$933	\$500	\$1,433
	Crawford	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	McKean	\$4,401	\$216	\$1,362	\$999	\$6,978	\$4,098	\$11,076
	Warren	\$949	\$51	\$681	\$254	\$1,935	\$1,079	\$3,013
	Total	\$5,456	\$287	\$2,723	\$1,379	\$9,846	\$5,677	\$15,522
Total		\$53,978	\$10,941	\$44,517	\$17,031	\$126,466	\$68,391	\$194,857

The ENT subspecialty has an even smaller percentage of inpatients with only 7.4 percent. Table 30 below summarizes the costs of the ENT subspecialty.

Table 30 – Total ENT Loss

To		Transportation	Parking	Housing	Food	Total Expense	Lost Wages	Total Loss
From	Pittsburgh							
	Erie	\$95,003	\$7,834	\$20,076	\$15,527	\$138,440	\$69,572	\$208,012
	Crawford	\$42,343	\$3,997	\$8,648	\$8,665	\$63,654	\$33,630	\$97,283
	McKean	\$36,140	\$1,658	\$3,089	\$4,173	\$45,060	\$16,918	\$61,978
	Warren	\$19,313	\$1,029	\$2,162	\$2,418	\$24,922	\$10,556	\$35,477
	Total	\$192,799	\$14,517	\$33,976	\$30,783	\$272,076	\$130,676	\$402,751
From	Cleveland							
	Erie	\$1,017	\$278	\$1,972	\$658	\$3,926	\$2,484	\$6,410
	Crawford	\$218	\$460	\$3,944	\$1,058	\$5,680	\$3,206	\$8,886
	McKean	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Warren	\$339	\$460	\$3,944	\$1,058	\$5,801	\$3,566	\$9,368
	Total	\$1,574	\$1,198	\$9,860	\$2,774	\$15,407	\$9,257	\$24,664
From	Buffalo							
	Erie	\$1,726	\$61	\$0	\$263	\$2,051	\$1,266	\$3,316
	Crawford	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	McKean	\$13,181	\$581	\$1,464	\$2,590	\$17,815	\$10,834	\$28,649
	Warren	\$3,272	\$117	\$0	\$505	\$3,894	\$2,323	\$6,218
	Total	\$18,180	\$759	\$1,464	\$3,357	\$23,760	\$14,424	\$38,183
Total		\$212,553	\$16,475	\$45,299	\$36,915	\$311,242	\$154,356	\$465,598

The dermatology and allergy subspecialties are different from the other subspecialties examined because there are no inpatient records in the data. The result of this can be observed below in Table 31, which provides the costs associated with patients in the dermatology subspecialty. There are no housing costs because patients and parents are not required to stay out of town overnight.

Table 31 – Total Dermatology Loss

To		Transportation	Parking	Housing	Food	Total Expense	Lost Wages	Total Loss
To	Pittsburgh							
From	Erie	\$70,589	\$3,411	\$0	\$8,680	\$82,679	\$38,168	\$120,847
	Crawford	\$38,091	\$1,697	\$0	\$6,041	\$45,829	\$24,169	\$69,999
	McKean	\$9,320	\$399	\$0	\$965	\$10,684	\$3,723	\$14,407
	Warren	\$7,013	\$272	\$0	\$738	\$8,024	\$3,150	\$11,174
	Total	\$125,013	\$5,780	\$0	\$16,423	\$147,216	\$69,210	\$216,426
To	Cleveland							
From	Erie	\$19,189	\$1,026	\$0	\$2,735	\$22,950	\$13,244	\$36,194
	Crawford	\$8,083	\$445	\$0	\$1,187	\$9,715	\$4,956	\$14,671
	McKean	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Warren	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Total	\$27,272	\$1,471	\$0	\$3,923	\$32,665	\$18,200	\$50,865
To	Buffalo							
From	Erie	\$3,951	\$140	\$0	\$601	\$4,692	\$2,897	\$7,589
	Crawford	\$1,627	\$42	\$0	\$181	\$1,850	\$754	\$2,604
	McKean	\$44,521	\$1,850	\$0	\$7,916	\$54,288	\$33,876	\$88,164
	Warren	\$24,860	\$891	\$0	\$3,804	\$29,555	\$17,651	\$47,206
	Total	\$74,959	\$2,924	\$0	\$12,502	\$90,384	\$55,178	\$145,563
Total		\$227,244	\$10,174	\$0	\$32,848	\$270,266	\$142,588	\$412,854

The costs from the allergy subspecialty are below in Table 32. This subspecialty is different from the others because of the large number of patients seeking treatment in Buffalo from McKean County. These patients account for 71.7 percent of the total loss to the region in the allergy subspecialty. This makes patients from McKean County the highest contributors to the loss in this subspecialty with Buffalo receiving 92.4 percent of the loss to the region in total.

Table 32 – Total Allergy Loss

To		Transportation	Parking	Housing	Food	Total Expense	Lost Wages	Total Loss
To	Pittsburgh							
From	Erie	\$5,083	\$106	\$0	\$568	\$5,758	\$2,749	\$8,506
	Crawford	\$5,434	\$155	\$0	\$826	\$6,414	\$3,448	\$9,862
	McKean	\$277	\$5	\$0	\$26	\$308	\$111	\$419
	Warren	\$1,067	\$19	\$0	\$103	\$1,190	\$479	\$1,669
	Total	\$11,862	\$285	\$0	\$1,523	\$13,670	\$6,787	\$20,456
To	Cleveland							
From	Erie	\$905	\$48	\$0	\$129	\$1,083	\$625	\$1,707
	Crawford	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	McKean	\$338	\$10	\$0	\$26	\$373	\$111	\$484
	Warren	\$273	\$10	\$0	\$26	\$309	\$120	\$429
	Total	\$1,516	\$68	\$0	\$181	\$1,765	\$855	\$2,620
To	Buffalo							
From	Erie	\$1,022	\$36	\$0	\$155	\$1,214	\$750	\$1,963
	Crawford	\$929	\$24	\$0	\$103	\$1,057	\$431	\$1,488
	McKean	\$95,323	\$3,962	\$0	\$16,903	\$116,188	\$72,531	\$188,719
	Warren	\$27,848	\$998	\$0	\$4,258	\$33,104	\$19,773	\$52,878
	Total	\$125,123	\$5,020	\$0	\$21,419	\$151,563	\$93,484	\$245,047
Total		\$138,501	\$5,373	\$0	\$23,123	\$166,997	\$101,126	\$268,123

3. Cost to Regional Economy of All Subspecialties

This report specifically examined the eight subspecialties that Allied Pediatric Health believes are most needed by the children in Northwest Pennsylvania. There are, however, many other specialties that children may seek care for. Some of these specialties are: urology, neonatology, ophthalmology, orthopedics, dentistry, and podiatry among many others. In order to give a reference on the size of the cost of the eight subspecialties, the total cost of all the subspecialties was estimated. This estimation uses all of the subspecialties listed in the data from PHC4 for inpatients and outpatients and also all the subspecialties listed in the Highmark data for professional services. The calculations were made the same way as with the eight subspecialties. The one difference is that for inpatients, an average length of stay was used from all inpatient admissions instead of specific length of stays for each subspecialty.

A summary of the costs of all the subspecialties is provided below in Table 33. The cost of transportation is the single largest component at \$13.4 million, or 52.7 percent. Lost wages compose 33.1 percent of the total with \$8.4 million lost. The total loss to the region from children seeking outside care in all the subspecialties is \$25.4 million. The total cost estimated for only the eight subspecialties is \$3.57 million. The eight subspecialties contribute 14.1 percent of the total cost of all subspecialties.

Table 33 – Total Additional Loss to Economy from All Subspecialties

To		Transportation	Parking	Housing	Food	Total Expense	Lost Wages	Total Loss
From	Pittsburgh							
	Erie	\$9,147,637	\$350,001	\$608,019	\$1,177,423	\$11,283,080	\$5,497,463	\$16,780,543
	Crawford	\$1,528,859	\$109,585	\$252,467	\$297,128	\$2,188,039	\$1,167,498	\$3,355,538
	McKean	\$793,386	\$34,523	\$76,542	\$93,768	\$998,220	\$378,427	\$1,376,647
	Warren	\$574,169	\$30,663	\$80,246	\$75,827	\$760,906	\$327,702	\$1,088,607
	Total	\$12,044,052	\$524,772	\$1,017,274	\$1,644,146	\$15,230,245	\$7,371,090	\$22,601,335
From	Cleveland							
	Erie	\$358,313	\$23,636	\$38,410	\$61,045	\$481,403	\$281,997	\$763,400
	Crawford	\$106,369	\$8,145	\$21,063	\$20,787	\$156,364	\$81,633	\$237,998
	McKean	\$40,838	\$1,459	\$2,478	\$3,763	\$48,537	\$15,382	\$63,919
	Warren	\$25,289	\$1,448	\$4,956	\$3,627	\$35,320	\$15,376	\$50,696
	Total	\$530,808	\$34,687	\$66,907	\$89,222	\$721,625	\$394,388	\$1,116,012
From	Buffalo							
	Erie	\$103,852	\$3,896	\$8,117	\$17,100	\$132,965	\$81,180	\$214,145
	Crawford	\$26,025	\$677	\$0	\$2,890	\$29,593	\$12,067	\$41,660
	McKean	\$506,268	\$22,372	\$51,405	\$98,622	\$678,667	\$413,492	\$1,092,158
	Warren	\$169,119	\$6,411	\$13,528	\$28,153	\$217,211	\$128,132	\$345,343
	Total	\$805,265	\$33,356	\$73,049	\$146,766	\$1,058,435	\$634,872	\$1,693,307
Total		\$13,380,125	\$592,815	\$1,157,230	\$1,880,134	\$17,010,304	\$8,400,350	\$25,410,654

This total is not simply a percentage increase of the total loss to the economy from the eight subspecialties. Based solely on the total of \$3.57 million lost due to the eight subspecialty categories and the total percentage of patients accounted for by the eight subspecialties of 9.2 percent, the remaining subspecialties would be projected to create a loss of \$38.8 million. This is not a correct assumption, however, because of the number of inpatients contained within the eight subspecialties out of the total. 62.5 percent of all inpatients are in the eight subspecialties in total. This is a large percentage and inpatients also contribute more to the total loss to the economy through lost wages, food, housing, and parking because of the extended duration they are out of the region. This large percentage that contributes more to the total loss of the economy is the reason that the total loss to the economy from the other subspecialties is only \$25.4 million instead of a greater number.

B. Estimated Loss Using Alternative Assumptions

Throughout this project assumptions had to be made in order to develop an appropriate estimate for the cost to the regional economy from the outmigration of pediatric patients seeking medical treatment. These assumptions include return transportation by car, that only one parent travels with the child, and that wages are lost for only those in the labor force. All three of these assumptions were made in order to provide a conservative estimate for the loss to the region.

There are, however, other alternative assumptions that could be made. These different assumptions create different estimations for the loss to the region. One alternative is that return transportation for ambulance patients is by ground ambulance and another is that every parent who travels with their child creates a loss to the economy through lack of productivity. One last alternative is that there are two parents or guardians that travel with the child seeking treatment in hospitals outside of the region. The following sections explain these alternatives and provide the resulting loss to the region under the alternatives as compared to the original estimate.

1. Return Transportation by Ambulance

This option assumes that all patients that travel out of the region by ground or air ambulance return home by ground ambulance. The original method for transportation costs was calculated by having all patients return home by car transportation. The cost was calculated this way because there were no data available to determine which type of transportation was used by patients returning home. We believed that there would only be a small difference in cost by calculating this way, because the majority of patients do return home by car transportation.

The alternative of having patients return home by ground ambulance if they arrived at hospitals in an ambulance does increase the cost to the region, but not by a large amount. Table 34 below displays the costs under this assumption along with the total transportation cost of almost \$1.23 million.

Table 34 – Patients Requiring Air or Ground Ambulance Return Home by Ground Ambulance

		Car		Ambulance		Air		Total	
		Patients	Cost	Patients	Cost	Patients	Cost	Patients	Cost
To	Pittsburgh								
From	Erie	3,349.99	434,260	24.62	84,983	0.54	4,456	3,375.16	523,698
	Crawford	1,723.95	161,828	12.67	36,484	0.28	1,979	1,736.90	200,290
	McKean	553.03	86,588	4.06	15,781	0.09	812	557.18	103,181
	Warren	302.75	45,558	2.22	8,422	0.05	435	305.02	54,415
	Total	5,929.73	728,233	43.58	145,671	0.96	7,681	5,974.27	881,584
To	Cleveland								
From	Erie	492.81	49,488	3.62	10,809	0.08	655	496.51	60,952
	Crawford	131.73	12,820	0.97	2,841	0.02	151	132.71	15,812
	McKean	17.21	3,300	0.13	562	0.00	25	17.34	3,888
	Warren	14.77	2,281	0.11	418	0.00	21	14.89	2,720
	Total	656.51	67,888	4.82	14,630	0.11	853	661.44	83,371
To	Buffalo								
From	Erie	87.51	8,245	0.64	1,856	0.01	116	88.16	10,217
	Crawford	17.61	2,296	0.13	448	0.00	20	17.74	2,765
	McKean	1,806.50	143,978	13.28	35,221	0.29	2,651	1,820.07	181,850
	Warren	565.05	52,703	4.15	11,918	0.09	812	569.30	65,433
	Total	2,476.67	207,222	18.20	49,443	0.40	3,599	2,495.28	260,264
Total		9,062.91	1,003,343	66.61	209,744	1.47	12,133	9,130.99	1,225,220

The transportation costs associated with the original calculations used in this report are provided below in Table 35. The total under this calculation is \$1.12 million. The alternative assumption only increases the total transportation costs by a little more than \$100,000, which is an increase of about 8 percent. The total cost of ambulance transportation almost doubled under the alternative assumption, but it did not have a large impact on the total transportation cost because of the small percent of patients that travel by ground ambulance as compared to car. Air ambulance costs only increased by about \$3,000 because of the small number of patients traveling by air ambulance.

Table 35 – Original Assumption: All Patients Return by Car

		Car		Ambulance		Air		Total	
		Patients	Cost	Patients	Cost	Patients	Cost	Patients	Cost
To	Pittsburgh								
From	Erie	3,349.99	\$ 434,260	24.62	\$ 45,683	0.54	\$ 3,587	3,375.16	\$ 483,530
	Crawford	1,723.95	\$ 161,828	12.67	\$ 19,431	0.28	\$ 1,602	1,736.90	\$ 182,861
	McKean	553.03	\$ 86,588	4.06	\$ 8,527	0.09	\$ 651	557.18	\$ 95,766
	Warren	302.75	\$ 45,558	2.22	\$ 4,546	0.05	\$ 349	305.02	\$ 50,453
	Total	5,929.73	\$ 728,233	43.58	\$ 78,187	0.96	\$ 6,189	5,974.27	\$ 812,610
To	Cleveland								
From	Erie	492.81	\$ 49,488	3.62	\$ 5,768	0.08	\$ 471	496.51	\$ 55,726
	Crawford	131.73	\$ 12,820	0.97	\$ 1,515	0.02	\$ 124	132.71	\$ 14,458
	McKean	17.21	\$ 3,300	0.13	\$ 305	0.00	\$ 23	17.34	\$ 3,628
	Warren	14.77	\$ 2,281	0.11	\$ 226	0.00	\$ 17	14.89	\$ 2,524
	Total	656.51	\$ 67,888	4.82	\$ 7,814	0.11	\$ 635	661.44	\$ 76,337
To	Buffalo								
From	Erie	87.51	\$ 8,245	0.64	\$ 988	0.01	\$ 81	88.16	\$ 9,315
	Crawford	17.61	\$ 2,296	0.13	\$ 241	0.00	\$ 19	17.74	\$ 2,556
	McKean	1,806.50	\$ 143,978	13.28	\$ 18,669	0.29	\$ 1,577	1,820.07	\$ 164,224
	Warren	565.05	\$ 52,703	4.15	\$ 6,347	0.09	\$ 524	569.30	\$ 59,573
	Total	2,476.67	\$ 207,222	18.20	\$ 26,245	0.40	\$ 2,201	2,495.28	\$ 235,668
Total		9,062.91	\$ 1,003,343	66.61	\$ 112,246	1.47	\$ 9,025	9,130.99	\$ 1,124,614

2. Unadjusted Lost Wages

The estimates for lost wages provided previously only consider the losses from those who hold jobs outside the home. There are, however, other benefits to the region besides those measured by wages earned through jobs. These benefits include household productivity by those parents who choose not to work or by those unemployed. This productivity includes many types of activities including taking care of children, maintaining homes, taking care of spouses, and any other activity that would have to be completed by another if that person were not there.

Table 36 on the following page provides a summary of the costs to the region calculated under the assumption that the region loses productivity from all adults leaving the region to be with the children seeking treatment. The total lost wages under this assumption is \$2.18 million over the two year period. This is an increase of almost \$950,000, or 76.7%, over the adjusted lost wage estimate, which is also provided on the next page in Table 37. Clearly, this assumption makes quite a difference in the total costs. The percent changes in the lost wages for each county location are slightly different because of the differences in employment levels in each county that were used in the original calculation.

Table 36 – Unadjusted Lost Wages (for One Parent)

		Cardiology	Neurology	Pulmonology	Gastroenterology	Endocrinology	ENT	Dermatology	Allergy	Total
To	Pittsburgh									
	Erie	\$229,546	\$125,557	\$221,478	\$208,069	\$56,421	\$120,367	\$66,034	\$4,755	\$1,032,227
	Crawford	\$92,786	\$37,115	\$89,063	\$64,258	\$23,118	\$60,703	\$43,627	\$6,224	\$416,894
From	McKean	\$28,527	\$13,272	\$22,412	\$9,905	\$12,448	\$31,272	\$6,881	\$205	\$124,922
	Warren	\$14,608	\$12,965	\$14,259	\$18,439	\$5,955	\$18,422	\$5,498	\$837	\$90,982
	Total	\$365,468	\$188,910	\$347,211	\$300,670	\$97,941	\$230,764	\$122,040	\$12,020	\$1,665,025
To	Cleveland									
	Erie	\$30,140	\$15,567	\$12,263	\$2,278	\$10,389	\$4,297	\$22,913	\$1,081	\$98,927
	Crawford	\$6,380	\$3,502	\$11,033	\$3,075	\$978	\$5,788	\$8,946	\$0	\$39,702
From	McKean	\$1,742	\$1,228	\$0	\$0	\$0	\$0	\$0	\$205	\$3,175
	Warren	\$734	\$0	\$11,865	\$0	\$1,052	\$6,224	\$0	\$209	\$20,084
	Total	\$38,995	\$20,298	\$35,160	\$5,353	\$12,419	\$16,309	\$31,859	\$1,495	\$161,887
To	Buffalo									
	Erie	\$2,645	\$1,320	\$26	\$1,111	\$866	\$2,190	\$5,012	\$1,297	\$14,466
	Crawford	\$0	\$0	\$0	\$0	\$0	\$0	\$1,361	\$778	\$2,139
From	McKean	\$6,563	\$5,004	\$12,855	\$8,389	\$7,574	\$20,027	\$62,617	\$134,068	\$257,095
	Warren	\$2,159	\$1,945	\$4,829	\$1,114	\$1,883	\$4,055	\$30,805	\$34,508	\$81,297
	Total	\$11,367	\$8,268	\$17,709	\$10,614	\$10,322	\$26,271	\$99,795	\$170,651	\$354,998
Total		\$415,829	\$217,476	\$400,081	\$316,637	\$120,682	\$273,345	\$253,695	\$184,166	\$2,181,911

Table 37 – Adjusted Lost Wages (for One Parent)

		Cardiology	Neurology	Pulmonology	Gastroenterology	Endocrinology	ENT	Dermatology	Allergy	Total
To	Pittsburgh									
	Erie	\$132,678	\$72,572	\$128,014	\$120,264	\$32,611	\$69,572	\$38,168	\$2,749	\$596,627
	Crawford	\$51,404	\$20,562	\$49,341	\$35,599	\$12,807	\$33,630	\$24,169	\$3,448	\$230,959
From	McKean	\$15,433	\$7,180	\$12,125	\$5,358	\$6,734	\$16,918	\$3,723	\$111	\$67,583
	Warren	\$8,370	\$7,429	\$8,170	\$10,565	\$3,412	\$10,556	\$3,150	\$479	\$52,133
	Total	\$207,885	\$107,743	\$197,650	\$171,787	\$55,565	\$130,676	\$69,210	\$6,787	\$947,302
To	Cleveland									
	Erie	\$17,421	\$8,998	\$7,088	\$1,317	\$6,005	\$2,484	\$13,244	\$625	\$57,180
	Crawford	\$3,534	\$1,940	\$6,112	\$1,703	\$542	\$3,206	\$4,956	\$0	\$21,995
From	McKean	\$942	\$665	\$0	\$0	\$0	\$0	\$0	\$111	\$1,718
	Warren	\$420	\$0	\$6,798	\$0	\$603	\$3,566	\$0	\$120	\$11,508
	Total	\$22,318	\$11,602	\$19,999	\$3,020	\$7,149	\$9,257	\$18,200	\$855	\$92,400
To	Buffalo									
	Erie	\$1,529	\$763	\$15	\$642	\$500	\$1,266	\$2,897	\$750	\$8,361
	Crawford	\$0	\$0	\$0	\$0	\$0	\$0	\$754	\$431	\$1,185
From	McKean	\$3,550	\$2,707	\$6,954	\$4,538	\$4,098	\$10,834	\$33,876	\$72,531	\$139,089
	Warren	\$1,237	\$1,114	\$2,767	\$638	\$1,079	\$2,323	\$17,651	\$19,773	\$46,583
	Total	\$6,316	\$4,584	\$9,736	\$5,819	\$5,677	\$14,424	\$55,178	\$93,484	\$195,218
Total		\$236,519	\$123,930	\$227,385	\$180,626	\$68,391	\$154,356	\$142,588	\$101,126	\$1,234,921

3. Two Parents Traveling with Child

This option assumes that there are two adults traveling with the children seeking medical treatment outside of the region. Under many serious circumstances, two parents or guardians may travel with the child seeking medical care if it is financially possible. This could not be taken into consideration in the original calculations though, because data were not available on the numbers of children that have two adults accompanying them rather than one. In order to provide a conservative estimate amid this uncertainty, only one parent was assumed to travel with the children seeking medical services. Calculations using the assumption of two parents provide for ranges to be established though, and offer an estimated maximum value of lost wages and food costs incurred by the region.

a. Lost Wages

Lost wages is one calculation affected by the assumption of how many adults are traveling with children leaving the region for treatments. Under the alternative assumption of two adults, the lost wages simply double. Table 38 provides a summary of the adjusted lost wages for two parents. This calculation does take into account the original assumption that only adults in the labor force lose wages.

Table 38 – Adjusted Lost Wages for Two Parents

		Cardiology	Neurology	Pulmonology	Gastroenterology	Endocrinology	ENT	Dermatology	Allergy	Total
To	Pittsburgh									
	Erie	\$265,356	\$145,144	\$256,028	\$240,528	\$65,222	\$139,144	\$76,335	\$5,497	\$1,193,255
	Crawford	\$102,807	\$41,124	\$98,682	\$71,198	\$25,615	\$67,259	\$48,339	\$6,896	\$461,919
From	McKean	\$30,866	\$14,360	\$24,250	\$10,717	\$13,468	\$33,837	\$7,446	\$221	\$135,166
	Warren	\$16,741	\$14,858	\$16,341	\$21,131	\$6,825	\$21,111	\$6,301	\$959	\$104,265
	Total	\$415,770	\$215,486	\$395,300	\$343,573	\$111,130	\$261,351	\$138,420	\$13,573	\$1,894,604
To	Cleveland									
	Erie	\$34,842	\$17,996	\$14,176	\$2,634	\$12,009	\$4,968	\$26,487	\$1,249	\$114,360
	Crawford	\$7,069	\$3,880	\$12,225	\$3,407	\$1,084	\$6,413	\$9,913	\$0	\$43,990
From	McKean	\$1,884	\$1,329	\$0	\$0	\$0	\$0	\$0	\$221	\$3,435
	Warren	\$841	\$0	\$13,597	\$0	\$1,206	\$7,133	\$0	\$240	\$23,016
	Total	\$44,636	\$23,205	\$39,997	\$6,041	\$14,299	\$18,513	\$36,400	\$1,711	\$184,800
To	Buffalo									
	Erie	\$3,058	\$1,525	\$30	\$1,284	\$1,001	\$2,531	\$5,794	\$1,499	\$16,723
	Crawford	\$0	\$0	\$0	\$0	\$0	\$0	\$1,508	\$862	\$2,370
From	McKean	\$7,101	\$5,414	\$13,909	\$9,077	\$8,195	\$21,669	\$67,752	\$145,061	\$278,177
	Warren	\$2,474	\$2,229	\$5,534	\$1,277	\$2,158	\$4,647	\$35,302	\$39,546	\$93,167
	Total	\$12,633	\$9,169	\$19,472	\$11,638	\$11,353	\$28,847	\$110,356	\$186,969	\$390,437
Total		\$473,038	\$247,860	\$454,770	\$361,251	\$136,782	\$308,712	\$285,176	\$202,253	\$2,469,841

Table 39 assumes both the alternative assumption of two parents and that every adult leaving the region loses wages or productivity. It can be seen that this is also just double the lost wages of Table 36, which assumes unadjusted wages for one parent.

Table 39 – Unadjusted Lost Wages for Two Parents

		Cardiology	Neurology	Pulmonology	Gastroenterology	Endocrinology	ENT	Dermatology	Allergy	Total
To	Pittsburgh									
	Erie	\$459,093	\$251,115	\$442,955	\$416,138	\$112,841	\$240,734	\$132,068	\$9,511	\$2,064,455
	Crawford	\$185,572	\$74,230	\$178,126	\$128,516	\$46,236	\$121,407	\$87,254	\$12,447	\$833,788
From	McKean	\$57,055	\$26,544	\$44,824	\$19,809	\$24,895	\$62,545	\$13,763	\$409	\$249,844
	Warren	\$29,216	\$25,930	\$28,518	\$36,877	\$11,910	\$36,843	\$10,996	\$1,673	\$181,964
	Total	\$730,936	\$377,820	\$694,423	\$601,340	\$195,883	\$461,528	\$244,081	\$24,040	\$3,330,051
To	Cleveland									
	Erie	\$60,280	\$31,135	\$24,525	\$4,557	\$20,777	\$8,594	\$45,825	\$2,162	\$197,854
	Crawford	\$12,759	\$7,003	\$22,066	\$6,150	\$1,957	\$11,576	\$17,893	\$0	\$79,404
From	McKean	\$3,483	\$2,457	\$0	\$0	\$0	\$0	\$0	\$409	\$6,349
	Warren	\$1,468	\$0	\$23,729	\$0	\$2,104	\$12,448	\$0	\$418	\$40,167
	Total	\$77,990	\$40,595	\$70,321	\$10,706	\$24,837	\$32,618	\$63,718	\$2,989	\$323,775
To	Buffalo									
	Erie	\$5,290	\$2,639	\$52	\$2,222	\$1,731	\$4,380	\$10,025	\$2,594	\$28,932
	Crawford	\$0	\$0	\$0	\$0	\$0	\$0	\$2,723	\$1,556	\$4,279
From	McKean	\$13,125	\$10,008	\$25,710	\$16,777	\$15,148	\$40,053	\$125,234	\$268,136	\$514,191
	Warren	\$4,318	\$3,890	\$9,657	\$2,229	\$3,765	\$8,110	\$61,609	\$69,016	\$162,594
	Total	\$22,733	\$16,537	\$35,418	\$21,227	\$20,645	\$52,543	\$199,591	\$341,302	\$709,996
Total		\$831,659	\$434,952	\$800,162	\$633,274	\$241,365	\$546,689	\$507,389	\$368,331	\$4,363,821

b. Food Costs

Food costs also increase under the assumption of two parents traveling with their child. Table 40 displays the food costs for two parents. The total is \$575,267, which is about a \$233,000, or 68.2%, increase from the original total as displayed in Table 41. The food costs are not simply double under the assumption of two adults traveling with the children, because for the food cost calculations the cost for meals for children also had to be taken into account for those who were only seeking professional services and did not have meals included into the cost of their treatment.

Table 40 – Food Costs for Two Parents

		Cardiology	Neurology	Pulmonology	Gastroenterology	Endocrinology	ENT	Dermatology	Allergy	Total
To	Pittsburgh									
	Erie	\$55,467	\$34,678	\$69,856	\$63,735	\$14,180	\$26,899	\$14,327	\$852	\$279,994
	Crawford	\$23,708	\$11,399	\$31,170	\$21,984	\$7,006	\$14,737	\$9,475	\$1,239	\$120,718
From	McKean	\$6,420	\$3,845	\$7,480	\$3,268	\$3,534	\$6,901	\$1,607	\$39	\$33,095
	Warren	\$3,948	\$3,725	\$4,644	\$5,805	\$1,791	\$4,049	\$1,205	\$155	\$25,323
	Total	\$89,543	\$53,647	\$113,150	\$94,792	\$26,510	\$52,586	\$26,615	\$2,284	\$459,129
To	Cleveland									
	Erie	\$7,688	\$4,239	\$4,071	\$598	\$2,054	\$1,252	\$4,103	\$194	\$24,199
	Crawford	\$1,693	\$1,060	\$4,071	\$897	\$292	\$2,116	\$1,781	\$0	\$11,909
From	McKean	\$454	\$353	\$0	\$0	\$0	\$0	\$0	\$39	\$846
	Warren	\$260	\$0	\$4,071	\$0	\$292	\$2,116	\$0	\$39	\$6,778
	Total	\$10,095	\$5,652	\$12,213	\$1,495	\$2,638	\$5,484	\$5,884	\$271	\$43,731
To	Buffalo									
	Erie	\$482	\$361	\$9	\$335	\$251	\$397	\$904	\$232	\$2,972
	Crawford	\$0	\$0	\$0	\$0	\$0	\$0	\$271	\$155	\$426
From	McKean	\$1,446	\$1,446	\$4,292	\$2,673	\$1,624	\$4,070	\$11,910	\$25,355	\$52,815
	Warren	\$411	\$552	\$1,575	\$349	\$444	\$764	\$5,712	\$6,387	\$16,195
	Total	\$2,339	\$2,359	\$5,875	\$3,357	\$2,320	\$5,231	\$18,797	\$32,129	\$72,407
Total		\$101,977	\$61,659	\$131,239	\$99,645	\$31,468	\$63,300	\$51,296	\$34,684	\$575,267

Table 41 – Food Costs for One Parent

		Cardiology	Neurology	Pulmonology	Gastroenterology	Endocrinology	ENT	Dermatology	Allergy	Total
To	Pittsburgh									
	Erie	\$31,430	\$17,339	\$34,928	\$31,868	\$19,478	\$15,527	\$8,680	\$568	\$159,818
	Crawford	\$13,770	\$5,699	\$15,585	\$10,992	\$11,402	\$8,665	\$6,041	\$826	\$72,981
From	McKean	\$3,881	\$1,922	\$3,740	\$1,634	\$5,701	\$4,173	\$965	\$26	\$22,043
	Warren	\$2,148	\$1,863	\$2,322	\$2,903	\$3,326	\$2,418	\$738	\$103	\$15,821
	Total	\$51,230	\$26,824	\$56,575	\$47,396	\$39,907	\$30,783	\$16,423	\$1,523	\$270,661
To	Cleveland									
	Erie	\$4,302	\$2,120	\$2,036	\$299	\$943	\$658	\$2,735	\$129	\$13,222
	Crawford	\$956	\$530	\$2,036	\$449	\$472	\$1,058	\$1,187	\$0	\$6,687
From	McKean	\$259	\$177	\$0	\$0	\$0	\$0	\$0	\$26	\$462
	Warren	\$130	\$0	\$2,036	\$0	\$472	\$1,058	\$0	\$26	\$3,721
	Total	\$5,647	\$2,826	\$6,107	\$748	\$1,886	\$2,774	\$3,923	\$181	\$24,091
To	Buffalo									
	Erie	\$318	\$180	\$4	\$168	\$681	\$263	\$601	\$155	\$2,370
	Crawford	\$0	\$0	\$0	\$0	\$0	\$0	\$181	\$103	\$284
From	McKean	\$884	\$723	\$2,146	\$1,336	\$1,362	\$2,590	\$7,916	\$16,903	\$33,860
	Warren	\$270	\$276	\$787	\$175	\$681	\$505	\$3,804	\$4,258	\$10,756
	Total	\$1,473	\$1,179	\$2,938	\$1,679	\$2,723	\$3,357	\$12,502	\$21,419	\$47,270
Total		\$58,350	\$30,829	\$65,619	\$49,822	\$44,517	\$36,915	\$32,848	\$23,123	\$342,023

4. Total Loss to Economy with All Alternative Assumptions

The total loss to the economy with all alternative assumptions taken into account is displayed in Table 42. The total loss to the economy is \$7.03 million. This is an increase of \$3.46 million, or 97.1%, over the original estimates. Lost wages comprise 62.1 percent of this total loss with \$4.36 million.

Table 42 – Total Loss to Economy with All Alternative Assumptions

		Transportation	Parking	Housing	Food	Total Expense	Lost Wages	Total Loss
To	Pittsburgh							
From	Erie	\$523,698	\$106,807	\$369,666	\$279,994	\$1,280,164	\$2,064,455	\$3,344,619
	Crawford	\$200,290	\$43,468	\$146,983	\$120,718	\$511,460	\$833,788	\$1,345,248
	McKean	\$103,181	\$11,343	\$36,496	\$33,095	\$184,115	\$249,844	\$433,959
	Warren	\$54,415	\$9,655	\$33,885	\$25,323	\$123,277	\$181,964	\$305,241
	Total	\$881,584	\$171,273	\$587,031	\$459,129	\$2,099,016	\$3,330,051	\$5,429,067
To	Cleveland							
From	Erie	\$60,952	\$5,547	\$20,720	\$24,199	\$111,418	\$197,854	\$309,272
	Crawford	\$15,812	\$2,670	\$16,851	\$11,909	\$47,242	\$79,404	\$126,645
	McKean	\$3,888	\$191	\$658	\$846	\$5,583	\$6,349	\$11,933
	Warren	\$2,720	\$1,476	\$12,004	\$6,778	\$22,977	\$40,167	\$63,144
	Total	\$83,371	\$9,884	\$50,234	\$43,731	\$187,221	\$323,775	\$510,995
To	Buffalo							
From	Erie	\$10,217	\$390	\$2,469	\$2,972	\$16,047	\$28,932	\$44,979
	Crawford	\$2,765	\$67	\$0	\$426	\$3,257	\$4,279	\$7,536
	McKean	\$181,850	\$7,485	\$25,691	\$52,815	\$267,841	\$514,191	\$782,032
	Warren	\$65,433	\$2,321	\$7,198	\$16,195	\$91,147	\$162,594	\$253,741
	Total	\$260,264	\$10,262	\$35,357	\$72,407	\$378,291	\$709,996	\$1,088,287
Total		\$1,225,220	\$191,419	\$672,622	\$575,267	\$2,664,528	\$4,363,821	\$7,028,349

Table 43 – Total Loss to Economy with All Original Assumptions

		Transportation	Parking	Housing	Food	Total Expense	Lost Wages	Total Loss
To	Pittsburgh							
From	Erie	\$483,530	\$106,807	\$369,666	\$159,818	\$1,119,820	\$596,627	\$1,716,447
	Crawford	\$182,861	\$43,468	\$146,983	\$72,981	\$446,293	\$230,959	\$677,252
	McKean	\$95,766	\$11,343	\$36,496	\$22,043	\$165,648	\$67,583	\$233,231
	Warren	\$50,453	\$9,655	\$33,885	\$15,821	\$109,813	\$52,133	\$161,946
	Total	\$812,610	\$171,273	\$587,031	\$270,661	\$1,841,575	\$947,302	\$2,788,877
To	Cleveland							
From	Erie	\$55,726	\$5,547	\$20,720	\$13,222	\$95,215	\$57,180	\$152,395
	Crawford	\$14,458	\$2,670	\$16,851	\$6,687	\$40,666	\$21,995	\$62,661
	McKean	\$3,628	\$191	\$658	\$462	\$4,940	\$1,718	\$6,657
	Warren	\$2,524	\$1,476	\$12,004	\$3,721	\$19,725	\$11,508	\$31,232
	Total	\$76,337	\$9,884	\$50,234	\$24,091	\$160,546	\$92,400	\$252,946
To	Buffalo							
From	Erie	\$9,315	\$390	\$2,469	\$2,370	\$14,543	\$8,361	\$22,904
	Crawford	\$2,556	\$67	\$0	\$284	\$2,906	\$1,185	\$4,092
	McKean	\$164,224	\$7,485	\$25,691	\$33,860	\$231,260	\$139,089	\$370,349
	Warren	\$59,573	\$2,321	\$7,198	\$10,756	\$79,848	\$46,583	\$126,431
	Total	\$235,668	\$10,262	\$35,357	\$47,270	\$328,557	\$195,218	\$523,776
Total		\$1,124,614	\$191,419	\$672,622	\$342,023	\$2,330,678	\$1,234,921	\$3,565,599

The original estimate as displayed in Table 43 provides the conservative estimate as made with the data available. The alternative calculations provided offer potential maximum losses to the region over the two year period.

V. Conclusion

This report analyzed the additional costs beyond treatment to the counties of Erie, Crawford, McKean, and Warren in Northwest Pennsylvania for pediatric patients seeking outside subspecialty treatment for the full years of 2007 through 2008. The majority of this outside treatment is conducted in the major children's hospitals in the region. The three main hospitals are Children's Hospital of Pittsburgh, Rainbows Babies and Children's Hospital in Cleveland, and Women and Children's Hospital in Buffalo. Eight specific subspecialties were examined because they were deemed most important to the region by Allied Pediatric Health. These subspecialties were: cardiology, neurology, pulmonology, gastroenterology, endocrinology, otolaryngology (ENT), dermatology, and allergy.

In order to estimate the additional loss to the regional economy, specific costs were analyzed. These costs included transportation to and from the hospital locations, parking at the locations, housing for parents of inpatients, and food costs. In addition, the lost wages of the parents traveling outside of the region had to be determined in order to find the true impact on the economy.

Throughout the project some assumptions had to be made and in each case they were made in order to provide a conservative estimate of the loss to the region. Alternative assumptions are useful, however, and they are included in order to provide potential maximum amounts of loss to the regional economy.

In the end, it was estimated that the total additional loss to the regional economy beyond the cost of treatment for patients in the eight subspecialties to be approximately \$3.57 to \$7.03 million over the two years. These eight subspecialties account for only about 9.2 percent of all pediatric patients traveling outside of the region though, so the total loss for all subspecialties could be several times as large as the estimates above.

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THE ECONOMIC RESEARCH INSTITUTE OF ERIE

Background

The purpose of Penn State Behrend's Economic Research Institute of Erie (ERIE) is to collect, analyze, interpret and disseminate data and information on the Erie regional economy. Another important goal of ERIE is to provide our students with relevant experience with applied economic research and data analysis. Established in late 1982, the Institute is an applied research unit of Penn State Behrend's Sam and Irene Black School of Business.

We do not wish to duplicate the activities of other Erie-area organizations. Rather, we seek to use our collective training and experience in the areas of data handling and technical analysis to provide support to those whose expertise falls in different fields.

ERIE's continuing research program helps the local community better understand the regional economy and its linkages to the national economy. ERIE provides a source of information for local leaders and media who have questions about the local, national and international economies. ERIE compiles data on the local economy from a wide range of sources, and helps local users access and evaluate these data.

Some of the studies that ERIE has undertaken include:

- estimates of the impact of a split-rate property tax.
- estimates of the amount that would be raised by a county-wide 1% additional sales tax.
- estimates of productivity of Erie's workers through time and across industries, compared to the nation, and why productivity varies from place to place.
- estimates of brain drain and brain gain for Penn State graduates, from Erie County.
- creation of a model to forecast total Erie employment, as well as employment in several component industries.
- three studies of philanthropic giving in the Erie area sponsored by leading non-profit agencies;
- a model to estimate the cost of living in all 67 counties of PA for a state agency;
- an examination of the effect of Erie's changing industrial structure on the severity of its business cycle.

ERIE staff have approximately 100 presentations in the local community since 2000, speaking to audiences at the Manufacturer and Business Association of Northwest Pennsylvania, the Erie Ambassadors, the Erie Community Foundation, the Erie Chapter of the National Association of Purchasing Management, the Erie Conference on Community Development, and Leadership Erie classes, among many others. ERIE regularly provides information for the print and electronic media in the community.

In addition, ERIE's work has resulted in an enhanced awareness of the Erie regional economy among national and international audiences. This stems from the over 90 technical paper presentations made by Institute staff members at national and international conferences. Among these are presentations in Amsterdam, Cambridge (England), Marseilles, Montreal, Paris, Quebec City, Reading (England), Toronto, Wellington (New Zealand), and Vancouver, as well as numerous major U.S. cities. Articles based on the Erie economy, written by members of the Institute staff, have appeared in *Economic Development Quarterly*, *Environment and Planning A*, the *International Journal of Forecasting*, the *Journal of Forecasting*, *Regional Studies*, *Systems Research*, the *Pennsylvania Economic Review* and other academic journals.

ERIE'S Activities

❖ **The ERIE Economic Conference**

Held each year on the Behrend campus, the ERIE Conference overviews the national and regional economies and provides forecasts for the coming year. In addition, each conference focuses on a theme of importance to the local area. Information on previous conferences is available on our website in the AboutUs section.

❖ **The ERIE Leading Index (ELI)**

Sponsored by Marquette Savings Bank, the ERIE Leading Index uses data on several local, state and national economic variables to provide an indicator of where the Erie economy is likely to go in the next few months—an early warning system for up- and downturns in local employment. Released quarterly, ELI is available free on the ERIE website and you can sign up there to receive ELI via email.

❖ **The ERIE web site: www.ERIEdata.org**

Released to the public in the fall of 2003, the ERIE website provides access to important information about ERIE and Erie. These include:

- An on-line library of reports and studies on the local economy over the last few decades performed by ERIE and others, most downloadable directly from the site for free;
- The latest edition of ELI and ERIE's forecasts for the local economy;
- The latest economic data for several key variables for Erie and the U.S. economies;
- Free access to the ACCRA Cost of Living Index Calculator, which allows comparison of the cost of living for hundreds of metro areas around the U.S.;
- Information about ERIE, including ways in which we can help regional firms and agencies;
- Links to other important and relevant sites;
- Fun econ stuff (no, really!) and
- Other useful information as it is developed.

The Erie Regional Chamber and Growth Partnership provided initial funds for the site's construction, and the Erie Community Foundation provided important seed money to get this project started initially.

❖ ***The ERIE Guide to the Erie Economy***

The *ERIE Guide* is released every couple of years at the ERIE Conference. It provides quick information on the Erie area economy on a wide range of economic and demographic variables in user-friendly language. It's colorful, too!

❖ **Employment forecasts for the Erie economy**

Year over year employment changes, both in percentage and number of jobs, are released for total Erie employment, goods-producing and services-providing industry employment, and employment in several subcategories.

❖ **Targeted research projects, as needed for the local economy**

Based on discussions with community leaders and economic development officials, ERIE undertakes selected research projects of local importance. If YOU have a project idea and some funding, we'd be happy to talk with you!