

**Developmental screenings of children insured by Medicaid in Illinois:  
An examination of training to facilitate referrals for Early Intervention services  
2002-2009**

Prepared by:

Jenifer Cartland, PhD  
Tracie L. Smith, MPH

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Child Health Data Lab  
Mary Ann and J. Milburn Smith Child Health Research Center  
Children's Memorial Research Center  
2300 Children's Plaza, #157  
Chicago, IL 60614

[jcartland@childrensmemorial.org](mailto:jcartland@childrensmemorial.org)  
312/573-7772

Since 2004, the State of Illinois has embarked on a number of measures to increase the number of children screened for developmental delays by primary care providers before the age of 3 (36 months). These efforts have involved attempts to assure developmental screening for all children, but the State of Illinois has exercised stronger influence over children insured by its Medicaid program (which includes youth covered by the Kid Care program and, starting in 2007, the All Kids program). One of the programs funded to expand developmental screening is the Enhancing Developmentally-Oriented Primary Care (EDOPC), a program that provides training to primary care providers in the methods of developmental screening. The current paper examines the changes in screenings and screening rates for Medicaid children in Illinois, how the changes in screening rates relate to the receipt of Early Intervention services, and, finally, the extent to which EDOPC training increases screening rates.

## METHODS

The analysis presented here links together three sources of data: Medicaid well child visit claims, Early Intervention recipients, and EDOPC provider training.

**Table 1:** Classification of Medicaid claims by age of child at the time of the visit

AAP periodicity schedule	Age range in claims database
<b>Within a few days of birth (Age 0)</b>	0-1 months
<b>2 months</b>	2-3 months
<b>4 months</b>	4-5 months
<b>6 months</b>	6-8 months
<b>9 months</b>	9-11 months
<b>12 months</b>	12-14 months
<b>15 months</b>	15-17 months
<b>18 months</b>	18-23 months
<b>24 months</b>	24-29 months
<b>30 months</b>	30-35 months
<b>36 months</b>	36 months or older

**Medicaid well child visits claims:** The first data source is the Medicaid claims file, which includes all Medicaid claims for a well-child visit (billing codes 99381, 99832, 99391, and 99392) or screening (billing codes 96110, 96111, and 99420) that were billed from 2002 through 2009. The claims data are analyzed at the visit level, and are aggregated to the child level and to the provider level for further analysis. In other words, we aggregated all the claims for each Medicaid recipient and also aggregated the claims for each Medicaid provider.

To simplify the analysis, we grouped claims for screening and well-child visits according to the American Academy

of Pediatrics periodicity schedule (Table 1).

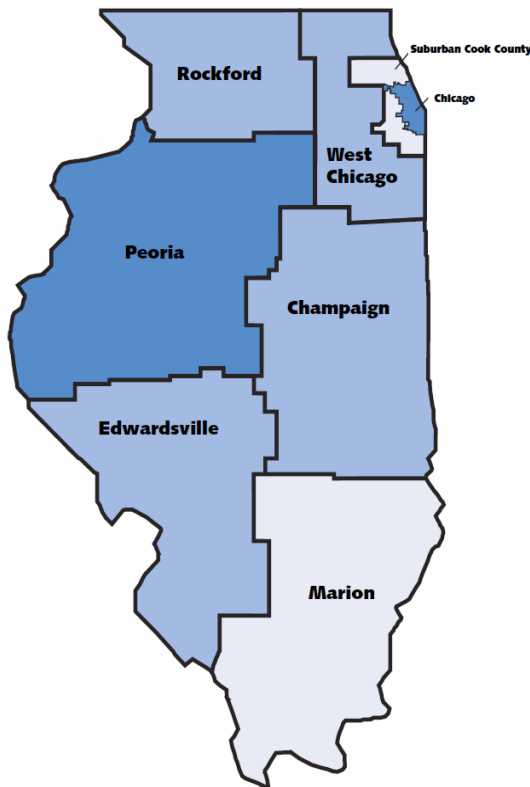
The vast majority of screenings were for developmental screening (97.1% in 2009). Additional screenings were for risk assessment for mental health services (2.5% in 2009) and post-natal depression (.4% in 2009). Screenings other than developmental screenings were approved for reimbursement later in time and appear not to be billed consistently. Thus, we include all screenings in the analysis realizing that developmental screenings comprise over 95% of the screenings provided.

To look at the Medicaid claims by child, we simply counted the number of screens for each child, the number of visits, and noted the earliest screen date and the earliest well child visit date for each child. This permitted us to examine the number of visits and screens in the context of the child’s age.

**Table 2:** Number of screens per year

Year	Develop-mental Screen	Mental Health Screen
2002	59,914	331
2003	72,104	820
2004	85,751	4,954
2005	101,430	5,914
2006	129,397	8,073
2007	155,957	10,730
2008	194,844	19,960
2009	240,004	25,892

**FIGURE 1: ILLINOIS DEPARTMENT OF PUBLIC HEALTH REGIONS**



**Early Intervention recipients:** The second database we used for analysis was a database of Early Intervention cases. The data file included all children receiving EI between 2002 and 2009, along with the date range of service delivery. Although we could not determine when the family approached EI, with the date range for services, we could examine whether services began before or after any screening was conducted by a primary care provider. The EI file was linked to the Medicaid child level file (aggregated child data) using encrypted identifiers provided in the Medicaid and EI files by the IDHS.

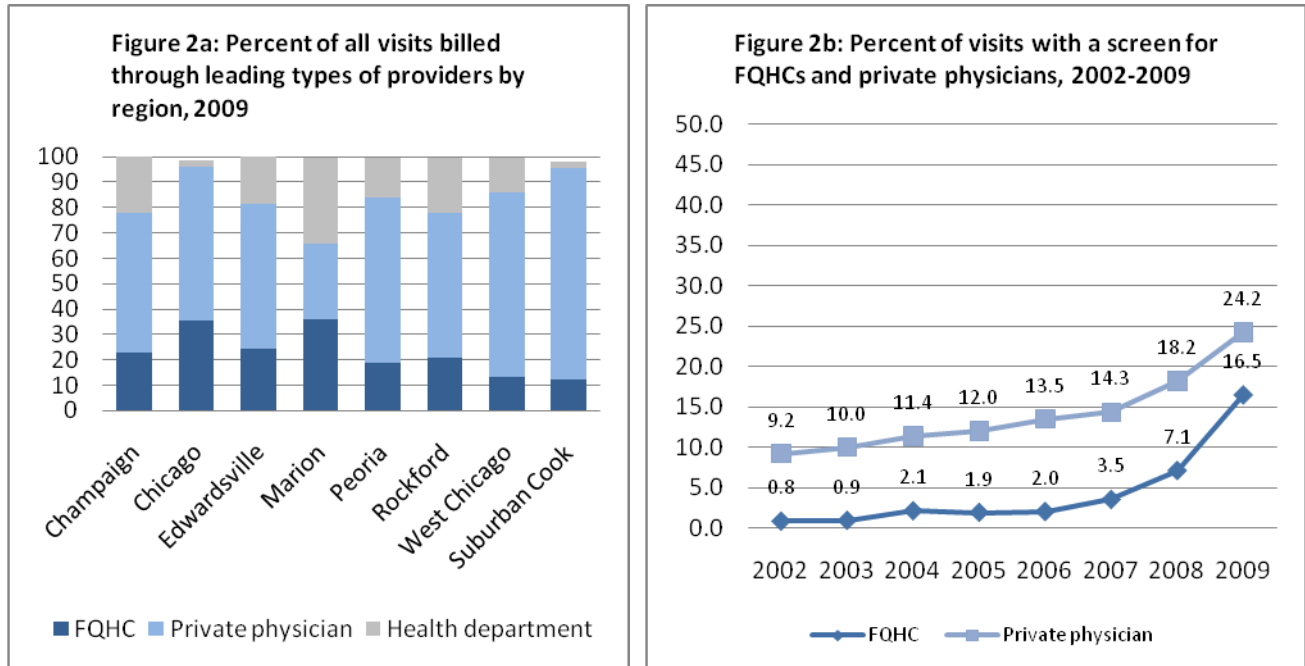
**EDOPC provider training:** The last data source employed for this analysis was a list of providers trained by EDOPC staff since 2005 when training began. We aggregated the Medicaid claims data by provider and linked the provider claims data to the list of providers trained. With this new file, we compared the claims patterns of trained providers with those who did not receive EDOPC in-person training.

**FQHCs:** Federally Qualified Health Centers (FQHCs) are leading providers of well child visits across Illinois, as can be seen in Figure 2a. In Chicago and the Marion region, they provide 35% of all well child visits.

Understanding the frequency of screening in FQHCs over time, however, is problematic because they do not bill for screens directly. The FQHC standard well-child visit fee includes the developmental screening fee. FQHCs may opt to check a box on the claim form indicating that a screen was conducted, but this has not been required. Beginning in the fall of 2008, providers were offered an incentive to screen a high percentage of their patients. FQHCs, then, were

incentivized to check the screening box on the claim form to increase their provider bonus. Figure 2b shows the effect of the change on the reporting of screening in the Medicaid claims database. Before 2009, FQHC screening rates fell far below the screening rates of private physicians. But coinciding with the implementation of provider bonuses, FQHC screening rates doubled in 2008 and again in 2009. We suspect that the claims data underreports FQHC screening prior to 2009 because there was no incentive

or requirement to check the box on the claim form indicating that a screening was performed. Thus, the longitudinal analysis of screening (presented in ‘Milestones in screening and over all trends’ and ‘Early Intervention for Medicaid children’) excludes FQHCs. Much of the training efforts of the EDOPC staff were targeted to FQHCs. Therefore, they are included in the EDOPC analysis (presented in ‘EDOPC training’).



**Table 2:** Milestones in the expansion of developmental screening for Illinois Medicaid youth

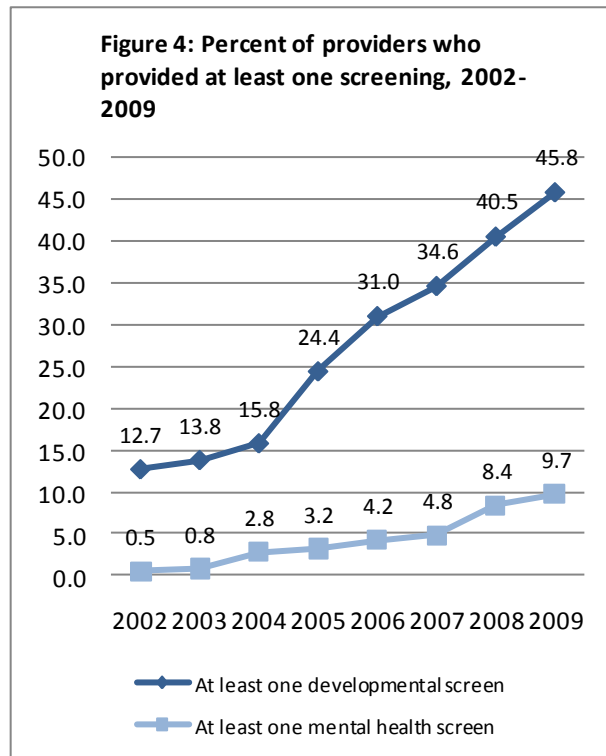
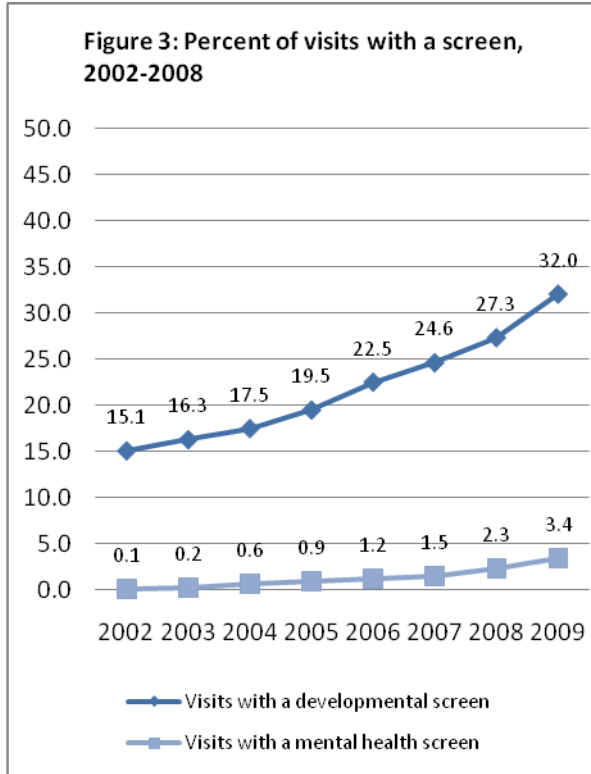
Year	Milestone
<b>2004</b>	Billing for developmental screening un-bundled from EPSDT billing, allowing providers to bill separately and at a higher rate for developmental screening STEPS and ABCD2 launch training efforts
<b>2005</b>	EDOPC launches training efforts Late in 2005, a consent decree is put into effect to increase provider reimbursements for primary care through Medicaid and thereby draw more providers into the system
<b>2006</b>	Medicaid begins reimbursement for post-partum depression screening
<b>2007</b>	All Kids is implemented, expanding Medicaid coverage to all children in Illinois with premiums set on a sliding scale
<b>2008</b>	EDOPC training website is launched Medicaid offers bonuses for providers who provide developmental screening for a high percentage of the clients Perinatal depression screening becomes billable

**MILESTONES IN SCREENING AND OVERALL TRENDS**

Table 2 details the major milestones that have been enacted to expand the screening rates for the Medicaid population in Illinois. As can be seen from the table, in addition to EDOPC training, a number

of significant efforts on the part of the Illinois Department of Human and Family Services have been undertaken to expand access to primary care and to increase screening rates.

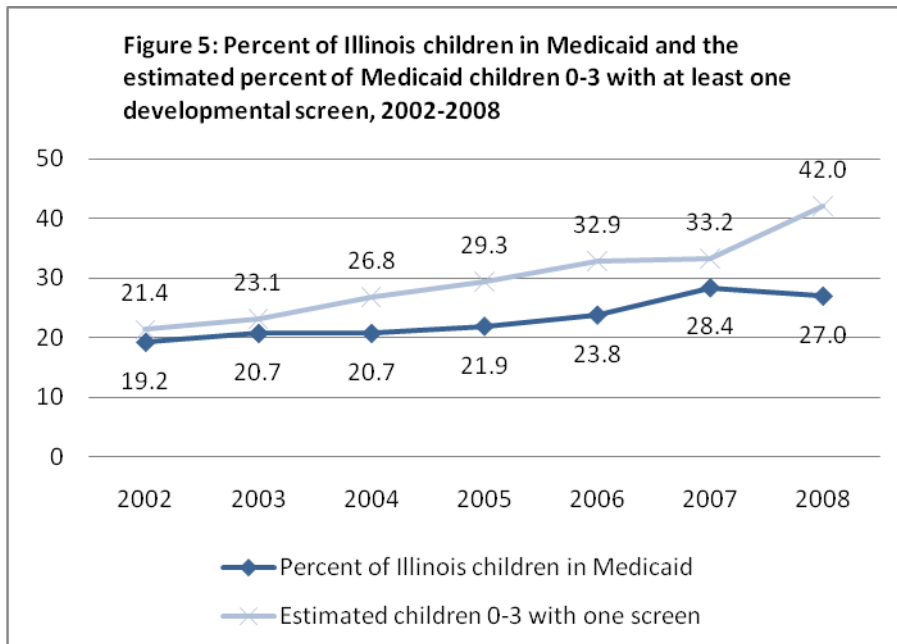
Figures 3 and 4 examine the overall trends in screening and billing for well-child visits in Illinois between 2002 and 2009. Since 2002, the percent of Medicaid well-child visits in which a developmental screen is performed has doubled. The rate of screening for mental health needs remains quite low, at 3.5%. When examining physicians who provide at least one screen in the calendar year, the percent for developmental screenings has almost quadrupled from 12.7% in 2002 to 45.8% in 2009. The percent of providers billing for at least one mental health screen has also risen steadily to almost 10%.



**Table 3:** Number and percent of Medicaid well child claims for screening, 2002 and 2009

Month of visit	2002		2009		2002-2009	
	Number of claims for screening	Percent of well child visits that involved a screen	Number of claims for screening	Percent of well child visits that involved a screen	Percent increase in the number of screens	Difference in the percent of visits involving screens
0	9,428	10.3	22,902	16.5	242%	6.2
2	5,698	9.5	17,691	23.7	310%	14.2
4	6,239	10.4	22,171	29.2	355%	18.8
6	10,374	17.7	35,856	37.2	347%	19.5
9	6,383	16.2	25,196	36.5	394%	20.3
12	6,332	13.7	26,095	31.9	412%	18.2
15	3,324	10.0	17,887	28.9	528%	18.9
18	4,489	12.3	29,585	37.8	659%	25.5
24	3,586	12.0	27,820	37.6	776%	25.6
30	2,047	12.4	15,419	39.0	753%	26.6
36	1,920	9.6	11,506	23.4	599%	13.8

Table 3 summarizes the trends in screening according to the AAP periodicity schedule. Several important observations must be taken from Table 3. First, the number of well-child and/or screening visits has increased substantially between 2002 and 2009. The size of the Medicaid program has expanded, due to the implementation of All Kids, and this change is noticeable in the overall screening numbers. Second, the percent of those visits that involve a developmental screening has also expanded, from 9-18% in 2002 (depending on the age of the child) to 16-40% of the visits in 2009. The largest changes occurred in the visits after the first 12 months of life, where the rate of screenings more than quadrupled. Since children over 12 months of age were the less likely to be screened in 2002, this brings the overall number of screens to children in the second and third year of life somewhat more in line with the percent of younger children being screened. Very young children (ages 0-1 months) remain the least likely to be screened.

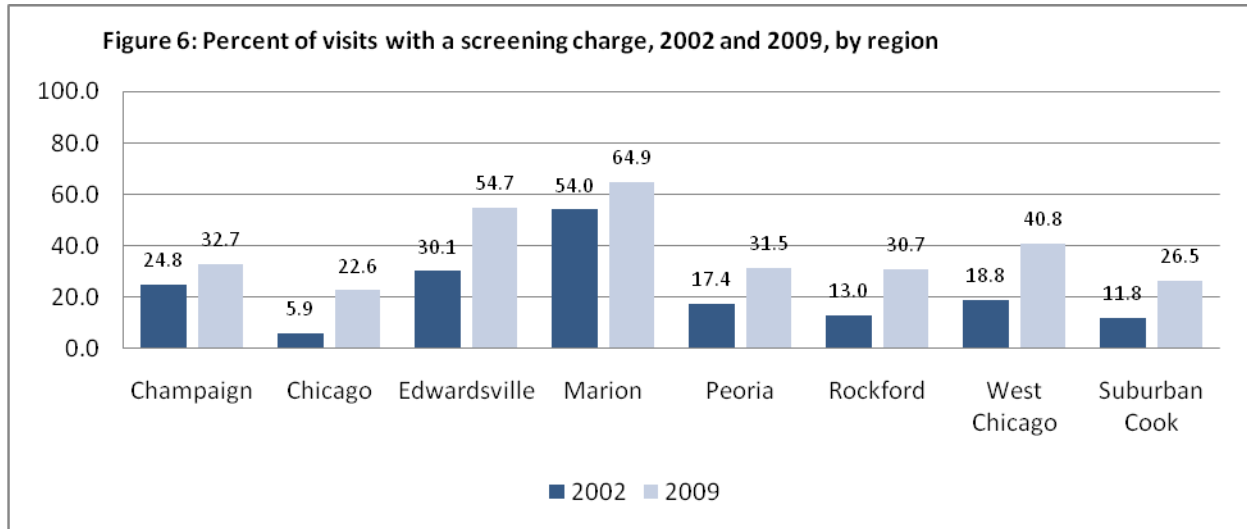


A final look at rates attempts to examine the percent of Medicaid enrollees under 36 months of age who have had a screen. Because the number of Medicaid enrollees cannot be imputed from well child claims data (some children do not receive even one well child visit and some children receive many more than one visit in a year), we estimated the number of Medicaid

enrollees ages 0-3 using Current Population Survey data for Illinois (available for 2002-2008, but not yet available for 2009). For the numerator, we computed the number of children in the well child visit database with at least one screening claim. The resulting percentages are provided in Figure 5, along with the changes in the size of the Medicaid population overall. Between 2002 and 2006, Medicaid children experienced a steady increase in the likelihood of being screened at least once during the year, from 21.4% to 32.9%. In 2008, the percent of children who were screened jumped from 33.2% to 42.0%.

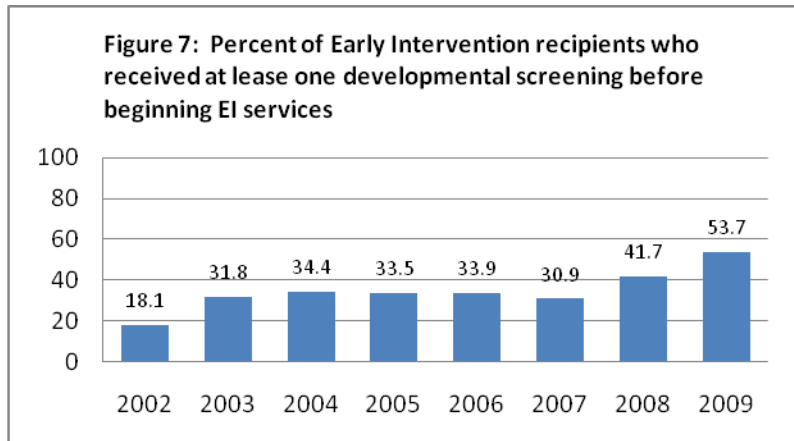
## SCREENING BY REGION

Screening rates for Medicaid youth varies substantially by the IDPH health region. Figure 6 examines overall screening rates and screening rates by the age of the child for each IDPH health region for 2002 and 2009. All IDPH regions show a sizeable increase in screening rates over time. Marion consistently shows the highest level of screening, while Chicago and Suburban Cook show the lowest screening rates.



**Table 4:** Number and estimated percent of Medicaid children 0-3 who received EI services, 2002-2008

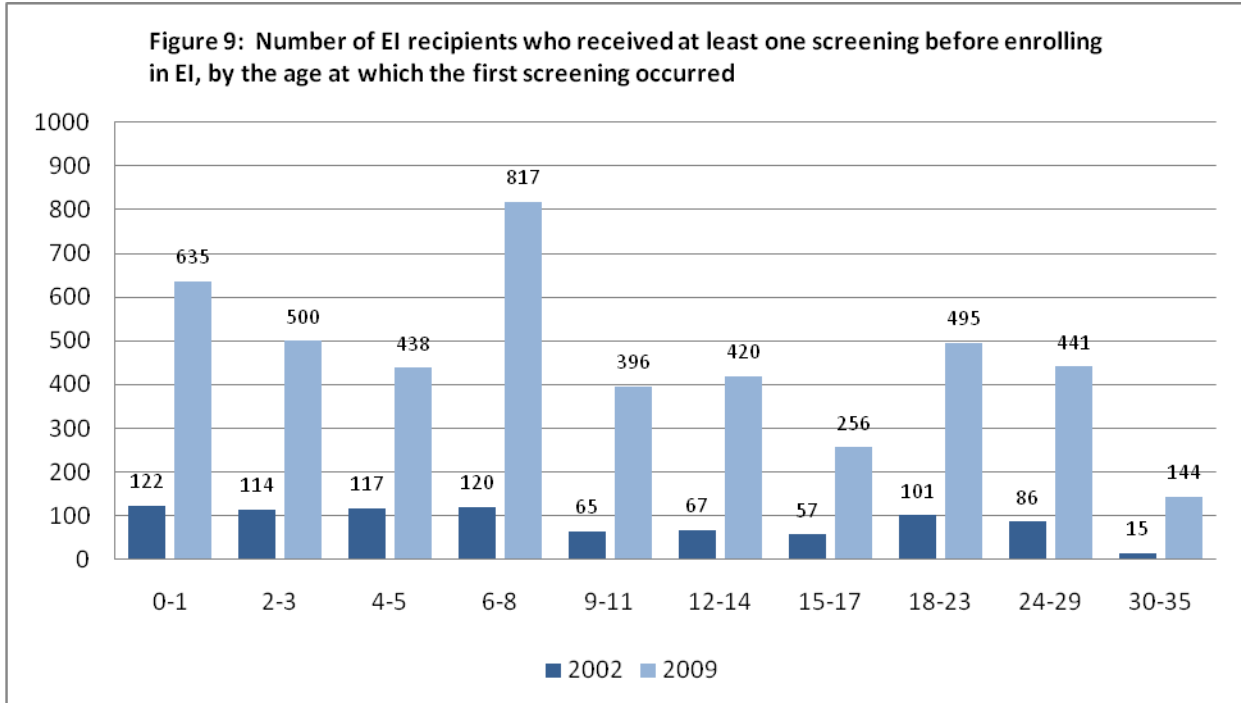
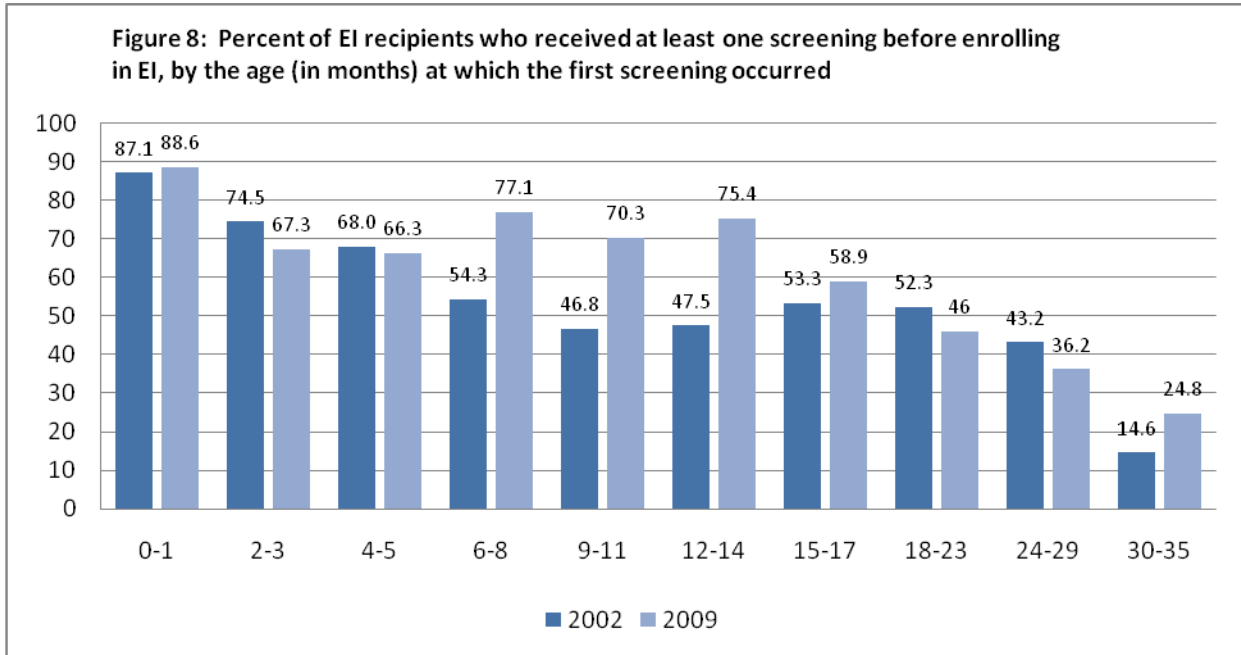
Year	Number	Percent
2002	6527	6.4
2003	7066	6.4
2004	7638	7.0
2005	9265	8.0
2006	12393	9.8
2007	17305	11.5
2008	10199	7.1
2009	10412	7.3



## EARLY INTERVENTION FOR MEDICAID CHILDREN

The purpose of EDOPC is not only to expand screening, but to facilitate prompt referral of children for Early Intervention (EI) services. Table 4 results from matching the EI recipient database to the Medicaid well child claims database. The table reflects the trend in the number of children receiving well child visits who also receive Early Intervention services. Using the Current Population Survey data, Table 4

also includes the estimate of the percent of Medicaid enrollees ages 0-3 who receive EI services (again, 2009 Current Population Survey data are not yet available). The trend shows that, with the exception of 2007 (when Illinois expanded the Medicaid program substantially) the percent of Medicaid enrollees receiving EI services has remained somewhat steady.

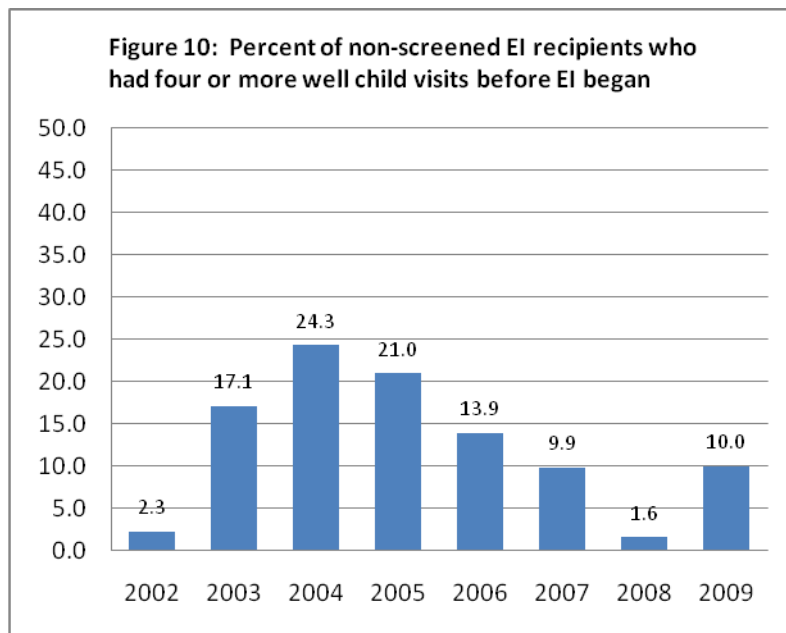


More important for EDOPC than examining the growth of the EI program itself is understanding the role of screenings in assuring that youth receive EI services promptly. Figure 7 examines the changes in the percent of EI recipients whose primary care provider submitted at least one claim for a developmental

screening before the beginning of EI services. The fact that a screening occurred before EI services began suggests that the developmental screen could have identified the child as one who would benefit from services. As the chart shows, the percent of EI recipients who had a developmental screen prior to receiving EI services has increased steadily since 2002, from 18.1% to 53.7%. It is possible, then, that the screen is instrumental in starting services for half of the children receiving EI services.

Figures 8 and 9 examine promptness of screening for children in the EI program in more depth. Figure 8 displays the percent of EI Medicaid recipients who received at least one developmental screening before EI services began by the age of the child at the first screening. The most noteworthy changes occur for children who enter EI after a well-child visit between the ages of 6 and 14 months. These children are 50% more likely in 2009 than in 2002 to have received a screening before entry into EI.

Figure 9 examines these changes from the perspective of overall volume. With the increase in screening rates for providers and the increase in the number of children in the Medicaid program, Figure 9 emphasizes that the number of children entering EI in 2002 and 2009 for each age group increased



markedly, most notably for children who first screening occurred at the 6 month well child visits.

Finally, we look at the EI recipients who did NOT receive a developmental screening before beginning EI services. Did these recipients have an opportunity to get a screen? Did they receive any well child visits? Because Medicaid children may be moved between practices and primary care providers, providers may not have an opportunity to observe the child over time. Thus, we defined

‘missed opportunities’ for developmental screening very narrowly. Children are identified as having missed an opportunity to be screened if they received four or more well child visits but not a single developmental screen prior to the beginning of EI services.

Figure 10 reveals that in 2002, 4% of children who did not receive a screen prior to beginning EI did in fact have four or more well child visits prior to beginning EI. In 2008, the percentage is 8.0%. However, in between 2002 and 2008, the percentage rose significantly to a high of 24.3% in 2004 and then dropped again through 2008; the percent increases in 2009 to 10.0%. The absolute number of children who did not receive a screen and who received four or more well child visits decreases substantially over time (Table 5), with a rise in 2009.

**Table 5:** EI recipients screened by a primary care provider before EI services began and missed opportunities for screening

Year	Began EI services	Screened before EI services began		Not screened AND had than four well child visits	
	N	N	%	N	%
<b>2002</b>	6527	864	53.1	129	2.3
<b>2003</b>	7066	1815	75.1	1075	17.1
<b>2004</b>	7638	2225	66.4	1688	24.3
<b>2005</b>	9265	2662	57.1	1787	21.0
<b>2006</b>	12393	3654	53.1	1613	13.9
<b>2007</b>	17305	4629	54.6	1615	9.9
<b>2008</b>	10199	3349	43.6	157	1.6
<b>2009</b>	10412	4542	59.7	1012	10.0

EDOPC TRAINING

Beginning in 2005, EDOPC staff began offering training to primary care providers to facilitate performing developmental screenings. Between 2005 and 2008, 67 trainings were held, reaching 411 individuals (Table 6). The trainings took a holistic approach, inviting all employees of each practice to join the training. Seventy-five of the trained primary care providers billed Medicaid during this period for at least one well child visit. Figure 15 indicates where the trainings occurred across Illinois. Chicago, West Chicago (the far western suburbs of Chicago) and Suburban Cook County had the highest number of providers trained.

**Table 6:** EDOPC trainings and individuals trained

Year	Number Trainings	Number Individuals Trained	Number (%) of Trained Individuals Who Bill Medicaid
<b>2005</b>	8	58	19 (32.8)
<b>2006</b>	35	428	81 (18.9)
<b>2007</b>	23	237	80 (33.8)
<b>2008</b>	31	324	71 (21.9)
<b>2009</b>	21	173	65 (37.8)
<b>Total</b>	118	1220	316 (25.9)

For this analysis, all Medicaid providers were placed into one of three categories. The first category includes providers who received ‘intense’ EDOPC training. Training is considered intense if the provider received more than one module *and* received training and technical assistance for more than one year. Providers are categorized as ‘touched’ by EDOPC if they received only one training, or more trainings, but only in one year. For providers with multiple locations, all locations were

categorized as having received the training if any training for that provider was document at any location. Since physicians and nurses may move between locations, and since providers with multiple

locations generally employ uniform care giving standards, this assumption seemed more appropriate than assuming that some locations received no training.

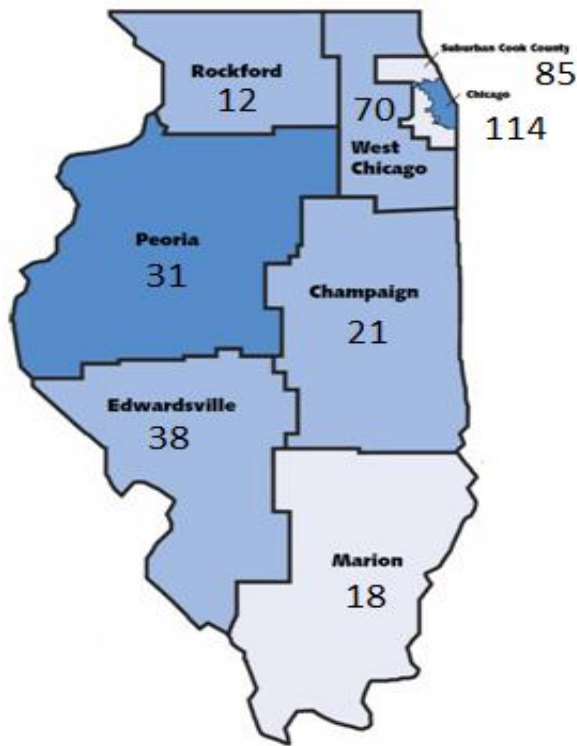


Figure 15: Number of Medicaid providers trained by EDOPC by Illinois Health Planning Region

FQHC providers will be examined separately from non-FQHC providers in this analysis. As mentioned earlier, FQHCs are reimbursed for screenings differently than are other providers. FQHC providers do not have to document screenings on the Medicaid claim forms in order to be paid, but non-FQHC providers do, indeed, have to document that a screening was performed on the claim form. In the end of 2008, all providers began to be eligible for bonuses based on the rate at which they provide screenings. As a result, FQHCs began to document that screenings were provided on the claim forms. This shift makes suspect any trend analysis of screening rates for FQHCs. It is not possible to determine the difference between a screening NOT being performed and being performed but not reported.

The problem is additionally complicated in that FQHC providers who received training by EDOPC staff were told in the training to document their screenings before the provider bonuses were put into place.

This results in the trained providers appearing to conduct more screenings. But, based on the documentation we have, we cannot determine whether the untrained practices did not screen, or simply did not document conducting a screen.

Table 7: Visits by Training Status, FQHCs and non-FQHCs, 2009 Medicaid visits

	FQHC	Non-FQHC
Visits conducted by a provider who had <i>intense</i> EDOPC training	26.7%	3.4%
Visits conducted by a provider who was <i>touched</i> by EDOPC training	25.6%	7.1%
Visits conducted by a provider who had no EDOPC training	47.4%	89.5%

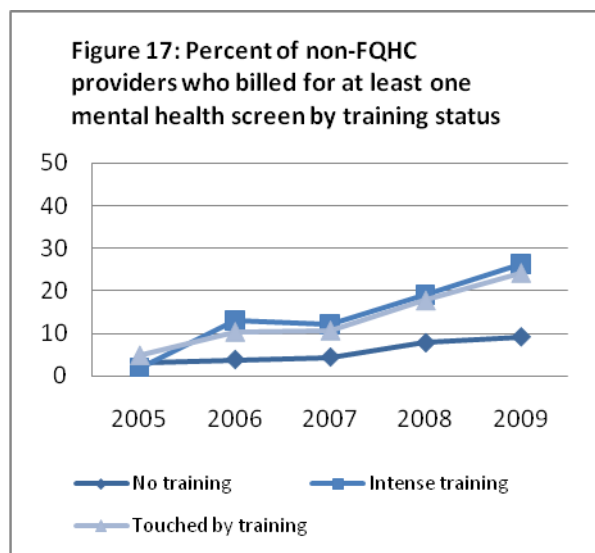
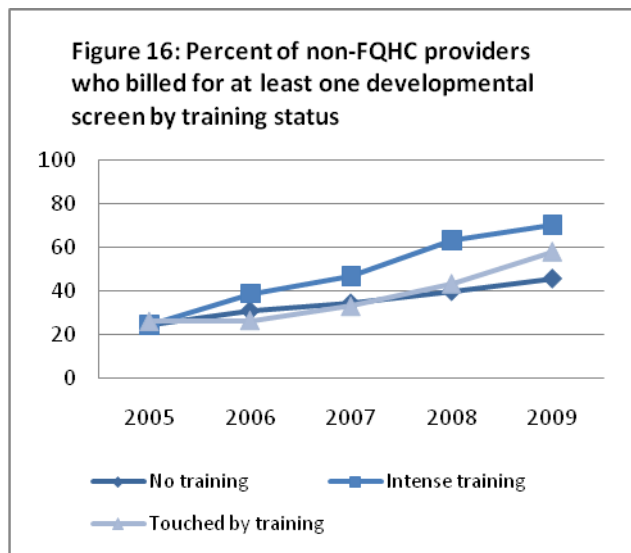
Before looking at the screening data, Table 7 documents the potential reach of EDOPC across Illinois youth by the type of provider. Over 25% of the well-child visits to FQHCs in 2009 were conducted by providers who received intense training by EDOPC; an additional 25% were conducted by providers who were ‘touched’ by EDOPC training. For non-FQHC providers, a far smaller percent of visits were to providers who received intense training or were touched by EDOPC.

Table 8 examines the percent of FQHC and non-FQHC providers who billed for at least one screening during 2009 by training status. Both FQHC and non-FQHC providers who received intense training were more likely to bill for developmental and mental health screening than were providers who received no training and providers who were touched by EDOPC. 93.3% of FQHC providers who received intense training billed for at least one developmental screening, compared to just less than 50% of other FQHC providers. About 70% of non-FQHC providers who received intense training report at least one developmental screen in 2009, compared to almost 60% of providers who did were touched by EDOPC and 45% of those with no training.

For mental health screening, the percent of providers billing decreases substantially. About 36% of FQHC providers with intense training billed for at least one mental health screen; 28.6% of providers touched by EDOPC billed for at least one screen; and fewer than 10% of non-trained FQHC providers billed for at least one mental health screen. The percentages for non-FQHC providers are similar, though lower.

**Table 8:** Percent of providers who billed for at least one screening by screening type, 2009

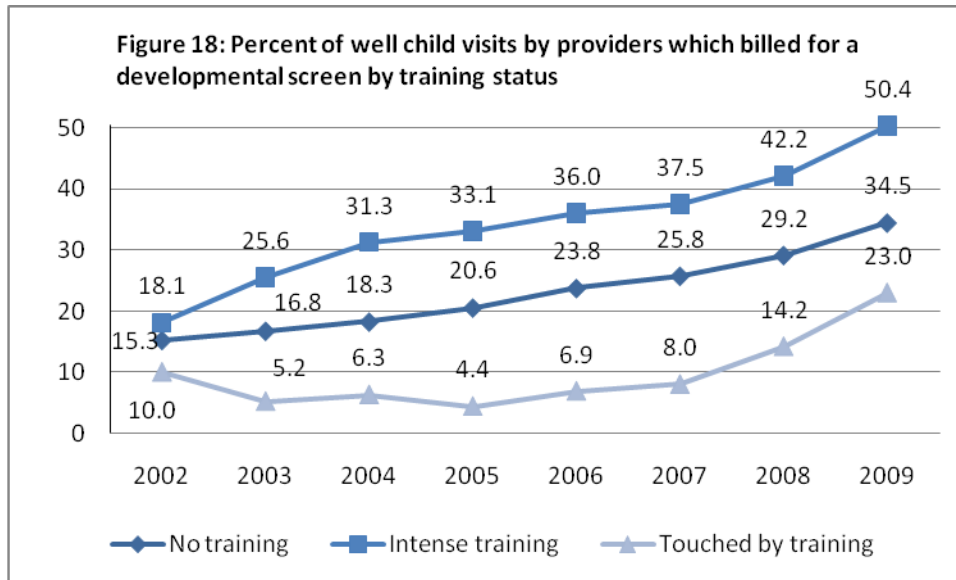
	FQHC	Non-FQHC
<b>Developmental screening</b>		
Intense training	83.3%	70.5%
Touched by training	49.0%	58.3%
No training	46.3%	45.8%
<b>Mental health screening</b>		
Intense training	36.1%	26.2%
Touched by training	28.6%	24.1%
No training	9.1%	9.2%



Figures 16 and 17 examine screening trends for non-FQHC providers (we cannot do trend analysis with FQHC providers for the reasons mentioned earlier). For developmental screening, the providers who

received intense training show a different trend in screening than those who received no training. Providers who were touched by EDOPC showed modest improvement in 2009, though not earlier. For mental health screening, providers who received intense training or who were touched by EDOPC follow a very similar trajectory and are more likely than non-trained providers to bill for at least one screen.

Turning to the percent of visits which involved a screen, Figure 18 indicates three different trajectories for non-FQHC providers depending on the level of training they received. Only a small percent of visits with providers with no training involved a screen, until 2008 and 2009 when the percent tripled to 23.0% of the visits. Providers who received intense training saw substantial growth in screening rates between 2002 and 2005 (before EDOPC was active). The screening rate for this group continued to grow steadily, though modestly, until 2008 when the rate began to increase more markedly. The group of visits provided by those who were touched by EDOPC shows a slow and steady increase throughout the study period.



## CONCLUSIONS

The current analysis provides an overview of the expansion of developmental screening in the Illinois Medicaid program, how screening relates to receiving Early Intervention services, and to the role of EDOPC in expanding screening rates. Major findings are summarized here:

- (1) The largest proportion of well child visits in Illinois is offered through non-FQHC providers. FQHC providers conduct between 10% and 35% of well child visits, depending on the geographic regions.
- (2) The percent of well child visits that include a developmental screen has risen from 15.1% in 2002 to 32.0% in 2009.
- (3) The percent of providers that conduct at least one developmental screen in a year has increase dramatically from 12.7% in 2002 to 45.8% in 2009.
- (4) It is estimated that the percent of all Medicaid children from 0-36 months of age receive at least once a year has doubled, from 21.4% in 2002 to 42.0% in 2008.
- (5) Children living in the Marion region are the most likely to receive a developmental screen, followed by children in the Edwardsville and West Chicago regions of Illinois. Children in Chicago and Suburban Cook County are the least likely to receive a developmental screen.
- (6) The percent of EI recipients who have received a developmental screen from their primary care provider before beginning EI services has grown steadily to 59.7% in 2009.
- (7) Very young children (under two months of age) are the most likely to have received a developmental screen before entering EI. In general, about 70% of the children who enter EI in the first year of life receive a developmental screen prior to beginning EI services.
- (8) The percent of EI recipients whose primary care provider appears to have missed an opportunity to screen the child before entry into EI rose substantially during the study period, but then came back down to 10% in 2009.
- (9) Providers who received intense EDOPC training, whether they were FQHC providers or non-FQHC providers, were the most likely to bill for a developmental or mental health screen in 2009.
- (10) Providers who received intense EDOPC training were more likely to have a higher screening rate than providers with no or little EDOPC training.

Although it is difficult to attribute the increase in screening and the increase in screening prior to EI enrollment to any of the several specific efforts to expand developmental screening, it is clear that developmental screening rates have increased substantially since 2002 and that children who need these screenings most are getting them. However, even with these substantial gains in screening, based on the best estimates, the majority of Medicaid children under age 3 do NOT have at least one developmental screen per year. With continuing efforts being made to expand screening rates, future analyses may help explore the most effective methods to expand developmental screening.