

# Increasing Appropriate Vaccination: Immunization Information Systems

## Summary Evidence Table - Economic Evidence

Lead Author, Year, Study Design, Economic Method	Study Location, Sample Size, Population, Time Horizon	Intervention Description	Components	Program Costs/Savings	Economic Summary Measure
Bartlett 2006 Descriptive Cost Analysis	<b>Study Location/ Sample Size:</b> 24 IIS from sample of 56 states/cities  <b>Time:</b> Each IIS observed once per yr for 5 yrs.; 1998-2003	Data on IIS expenditures by source of funds collected (federal immunization grants under Public Health Service Act 317b, CDC, MCH block grants, VCP funds, CMS, state and local govt, private sector, in-kind contributions, fees from IIS subscribers)  Calculated addtl amount of resources needed to meet national health goals 2010 (95% of children < 6y.o. participate in fully operational population-based IIS.	<b>Personnel/ contractual costs:</b> Costs to develop and operate IIS, to enter data at central IIS, to evaluate IIS, marketing efforts to recruit parents and health providers to participate in IIS  -Labor costs (personnel salaries, fringe benefits) -Non-labor costs (non-personnel and indirect costs)  <b>Developmental costs:</b> Costs incurred prior to any iz data submission, or access by iz provider.  Software and hardware upgrade costs  <b>Operational costs:</b> Costs to maintain the current status of IIS after iz providers began	2002\$ <b>Estimated annual IIS costs by category of spending and IIS size</b> <b><u>IIS size in thousands of patient records</u></b> <b>0-860    860-1,720    1,720-2,580    2,580-3,440</b>  <b>3,440+</b>  <b>IIS years*</b> N    79                    12                    17                    10                    2 %    66                    10                    14                    8                    2  <b>Total</b> Mean    3,606,105    7,494,123    5,960,495    10,533,124    1,538,762 <b>Popul</b> (St. Dev) (3,150,708) (2,363,222) (4,422,892) (5,424,221) (280,246)  <b>Child</b> Mean    298,844    654,015    507,237    911,436    2,074,273 <b>Popul</b> (St. Dev) (260,203) (178,398) (429,933) (564,371) (49,338)  <b>Child.</b> Mean    29%                    63%                    72%                    59% 44% <b>Partic</b> (St. Dev) (0.54)                    (0.43)                    (0.29)                    (0.26) (0.14)  <b>Non Labor \$</b> Development <b>Mean</b> 285,509    142,031    163,740    291,374    0 (St. Dev) (578,487) (286,985) (337,863) (481,137)    0  Operations <b>Mean</b> 274,531    696,142    596,064    679,860    454,966 (St. Dev) (769,412) (541,044) (923,378) (1,029,998) (124,004)  Total Non Labor <b>Mean</b> 560,040    838,174    759,804    971,233    366,191 (St. Dev) (1,039,098) (629,139) (1,098,955) (1,192,329) (301,553)  <b>Labor \$</b> Development <b>Mean</b> 248,554    100,941    63,814    131,161    102,039 (St. Dev) (623,388) (159,685) (135,881) (370,508) (204,079)  Operations <b>Mean</b> 110,827    419,317    554,676    480,370    1,019,093 (St. Dev) (219,691) (559,807) (337,150) (534,342) (618,350)	Based on results from avg cost model: \$.20/patient record  \$75.6 million* (dict'ed) over 8 yrs. for all 56 IIS to meeting Healthy People 2010 goal.  \$56.4 million* (dict'ed) to meet 2010 goal and 95% provider participation.

Lead Author, Year Study Design Economic Method	Study Location Sample Size Population Time Horizon	Intervention Description	Components	Program Costs/Savings	Economic Summary Measure																									
			to submit data or access IIS records  Discount: 3%	<p>Total Labor <b>Mean</b> 59,381 520,258 618,490 611,531 1,121,132 (St. Dev) (600,991) (489,775) (304,919) (601,790) (414,271)</p> <p><b>Overall Costs</b></p> <p><b>Development Mean</b> 534,063 242,972 227,554 422,534 102,039 (St. Dev) (813,133) (394,978) (379,468) (700,865) (204,079)</p> <p><b>Operations Mean</b> 385,358 1,115,459 1,150,740 1,160,230 1,019,093 (St. Dev) (850,668) (914,221) (1,091,372) (1,234,443) (618,350)</p> <p><b>Total Mean</b> 919,421 1,358,431 1,378,294 1,582,764 1,487,324 (St. Dev) (1,121,652) (900,971) (1,237,504) (1,592,114) (715,824)</p> <hr/> <p>*IIS years connotes an observation for each of the 24 sampled IIS once per yr over a 5 yr period; therefore the sample for our analysis consisted of 120 data entries.</p>																										
Bartlett 2007	<p><b>Study Location:</b> Utah</p> <p><b>Sample Size:</b> Utah Dept of Health (UDOH); 72 private Vaccine for Children (VFC)practices</p> <p><b>Time:</b> Sept 2003 to March 2004</p>	Timed staff of UDOH to assess practice coverage levels and process VFC reports manually or via Utah IIS; timed private VFC practices to produce VFC reports (manually vs IIS)		<p>Assume 2003\$ Study measured annual time and costs to private practices to produce quarterly VFC report with and w/o IIS; reporting includes dose documentation (clinics using paper tally sheets to track VFC doses administered), report production, annual chart retrieval for vaccination assessments.</p> <p>VFC Practices: Cost difference between non-USIIS and USIIS reporting method: \$80.80 (\$15.82 to \$446.41); If applied to 218 enrolled private practices statewide: \$17,615.41 (\$3,447.82 to \$97,316.78)</p> <p>State Health Dept: Cost difference between non-USIIS and USIIS reporting method: \$7,276 (\$2,668 to \$11,740.42) (Estimated annual total cost for state; range)</p>	Potential cost savings: state health dept ~\$11,740/yr; Utah VFC practices~ \$446/yr per practice																									
Boom 2007  Descriptive  Cost Analysis	<p><b>Study Location/Sa mple Size:</b> Houston, Texas and Louisiana</p> <p>Houston-Harris County Immunization registry (HHCIR) site</p>	2 IIS (Houston and Louisiana) were linked to provide access of immunization records for ~200,000 evacuees from greater New Orleans area who went to Houston Texas.	<p>No discussion of direct/indirect systems cost.</p> <p>Costs to implement HHCIR-LINKS connection (technical fees and training of add'l personnel to use IIS)</p>	<p>Assume 2005\$; Savings associated with overimmunization*</p> <ul style="list-style-type: none"> <li>Readministration of vaccine for every LINKS record found through HHCIR-LINKS connection: \$1.6 million</li> <li>Vaccine costs+admin fee= \$3.04 million</li> </ul> <table border="1"> <thead> <tr> <th>Vaccine</th> <th>N</th> <th>VaccPrice (\$)</th> <th>ReadminVacc(\$)</th> <th>ReadminVacc</th> </tr> </thead> <tbody> <tr> <td colspan="5"><hr/></td> </tr> <tr> <td>DTaP</td> <td>22,638</td> <td>12.25</td> <td>277,316</td> <td>613,490</td> </tr> <tr> <td>DTaP-HepB-IPV</td> <td>544</td> <td>43.75</td> <td>23,800</td> <td>31,878</td> </tr> <tr> <td>DTaP-Hib</td> <td>621</td> <td>24.94</td> <td>15,488</td> <td>24,710</td> </tr> </tbody> </table>	Vaccine	N	VaccPrice (\$)	ReadminVacc(\$)	ReadminVacc	<hr/>					DTaP	22,638	12.25	277,316	613,490	DTaP-HepB-IPV	544	43.75	23,800	31,878	DTaP-Hib	621	24.94	15,488	24,710	Cost savings of ~3.04 million due to IIS
Vaccine	N	VaccPrice (\$)	ReadminVacc(\$)	ReadminVacc																										
<hr/>																														
DTaP	22,638	12.25	277,316	613,490																										
DTaP-HepB-IPV	544	43.75	23,800	31,878																										
DTaP-Hib	621	24.94	15,488	24,710																										

Lead Author, Year Study Design Economic Method	Study Location Sample Size Population Time Horizon	Intervention Description	Components	Program Costs/Savings	Economic Summary Measure																																																							
	Louisiana Immunization Network for Kids Statewide (LINKS) site—Astrodome and George R. Brown Convention Center	Both IIS were following Health Level Seven (HL7) standards, a nationally recognized standard for electronic exchange of health-related info between computer systems.  Study evaluates the benefits of IIS in a public health emergency		<table border="0"> <tr> <td>Hep A</td> <td>131</td> <td>12.10</td> <td>1585</td> <td>3530</td> </tr> <tr> <td>Hep B</td> <td>13,636</td> <td>9.10</td> <td>1,240,088</td> <td>326,582</td> </tr> <tr> <td>Hib</td> <td>14,990</td> <td>7.92</td> <td>118,721</td> <td>341,322</td> </tr> <tr> <td>Hib-Hep B</td> <td>2292</td> <td>26.25</td> <td>60,165</td> <td>94,201</td> </tr> <tr> <td>M,R,MMR,Mu,M/R</td> <td>9731</td> <td>17.28</td> <td>168,152</td> <td>312,657</td> </tr> <tr> <td>Meningococcal</td> <td>18</td> <td>68.00</td> <td>1224</td> <td>1491</td> </tr> <tr> <td>Pneumococcal</td> <td>5551</td> <td>57.59</td> <td>319,682</td> <td>402,114</td> </tr> <tr> <td>Polio</td> <td>19,841</td> <td>10.82</td> <td>214,680</td> <td>509,318</td> </tr> <tr> <td>DT,Td</td> <td>2131</td> <td>16.62</td> <td>35,417</td> <td>67,063</td> </tr> <tr> <td>Varicella</td> <td>4374</td> <td>56.90</td> <td>248,881</td> <td>313,835</td> </tr> <tr> <td><b>Total</b></td> <td><b>96,482</b></td> <td><b>----</b></td> <td><b>1,609,197</b></td> <td><b>3,042,192</b></td> </tr> </table> <p>Other potential savings:</p> <ul style="list-style-type: none"> <li>• Vaccine shipment, storage, and handling</li> <li>• Hiring of additional personnel</li> <li>• Allocation of physical space to administer shot to a large number of children</li> <li>• Provider time/resources used to contact Louisiana medical homes or schools when IIS records not avail.</li> <li>• Pain and inconvenience to children of reimmunization; parents save frustrations and costs assoc with reiz (lost work time, missed school)</li> </ul> <p>*cost savings are a high estimate because not all children for whom records were found would need to be revaccinated; some vaccines are not administered to older children/adults</p>	Hep A	131	12.10	1585	3530	Hep B	13,636	9.10	1,240,088	326,582	Hib	14,990	7.92	118,721	341,322	Hib-Hep B	2292	26.25	60,165	94,201	M,R,MMR,Mu,M/R	9731	17.28	168,152	312,657	Meningococcal	18	68.00	1224	1491	Pneumococcal	5551	57.59	319,682	402,114	Polio	19,841	10.82	214,680	509,318	DT,Td	2131	16.62	35,417	67,063	Varicella	4374	56.90	248,881	313,835	<b>Total</b>	<b>96,482</b>	<b>----</b>	<b>1,609,197</b>	<b>3,042,192</b>	
Hep A	131	12.10	1585	3530																																																								
Hep B	13,636	9.10	1,240,088	326,582																																																								
Hib	14,990	7.92	118,721	341,322																																																								
Hib-Hep B	2292	26.25	60,165	94,201																																																								
M,R,MMR,Mu,M/R	9731	17.28	168,152	312,657																																																								
Meningococcal	18	68.00	1224	1491																																																								
Pneumococcal	5551	57.59	319,682	402,114																																																								
Polio	19,841	10.82	214,680	509,318																																																								
DT,Td	2131	16.62	35,417	67,063																																																								
Varicella	4374	56.90	248,881	313,835																																																								
<b>Total</b>	<b>96,482</b>	<b>----</b>	<b>1,609,197</b>	<b>3,042,192</b>																																																								
Fontanesi 2002  Descriptive Cost Analysis (Parametric)	<b>Study Location:</b> California  <b>Sample Size/Popul:</b> 3 IIS in California  1 HMO database with 17 mill. records on 6 mill patients in	Predict cost of developing and maintaining IIS  DOD MIL SPEC 881-B parametric model used  Review of 3 IIS: Developed work breakdown structure (WBS) <sup>1</sup> to create model of cost structure,	Cost elements obtained for first 3 years of registry's operation.	1998\$ <b>Technical Personnel Cost Structures:</b> Technical staff: 4 man-years (4 FTEs) for planning and developing the application, ¾ man-years (.75 FTE) for annual maintenance, 1.5 man-years (1.5 FTE) to rewrite application code after 3 years (in response to new legislation, iz schedules, improve operational performance)  Total development costs fixed at \$250,000 in 1998 dollars.  <b>Technical Infrastructure Cost Structures:</b> Telecommunications: Dial-up (\$4,100/mth for <450 records, avg 3 min/inquiry) and ISDN lines were more costly over the study period than higher speed options (T-1 lines- \$12,300 for 74,000 records, avg 35 milliseconds).	-Database development costs: \$250,000  -Costs to maintain registry~\$5,100/ end user/3-yr period.																																																							

<sup>1</sup> Work breakdown structure (WBS) is a format for collecting and converting technical and cost information to common denominators.

Lead Author, Year Study Design Economic Method	Study Location Sample Size Population Time Horizon	Intervention Description	Components	Program Costs/Savings	Economic Summary Measure						
	<p>Southern CA.</p> <p>1 County PH dept database in urban county in Northern CA with 78,000 active records from 13 PH clinics, 3 hospitals, 15 private providers</p> <p>1 County PH dept. database in rural area with &gt;23,000 active records from County hospitals, and 23 private providers</p> <p><b>Time:</b> data for 1<sup>st</sup> 3yrs of IIS operations</p>	<p>and to determine key predictors of cost, also known as cost estimating relationships (CER)</p>		<p>Hardware/software central repository: Computation/storage costs: \$5000 per MIP (mill. of instructions per sec) (i.e., used to produce coverage level reports)</p> <p>End-User Processor: IIS using PCs at the user level produced a yearly cost of \$1400 “per seat” (includes all end-user needs, i.e. PC, printers, software, telecommunication devices)</p> <p><b>Administrative Cost Structures:</b></p> <ul style="list-style-type: none"> <li>-Each IIS allocated ~28% of total budget to admin costs.</li> <li>- Registry that spent \$177/year/end user had no significant improvement in coverage rates(2%), while 2 registries w/significant increases (28-33%) spent btw \$1,700-1,800.</li> <li>-Significant admin efforts (~\$5,100 per end user per 3-yr period) needed to “re-engineer” iz practices using functions of IIS.</li> <li>-Admin costs/end user was dominant CER (94% total cost) in predicting 3-yr registry costs (rather than cost per child per year)</li> </ul> <p><b>Data Entry:</b> Data entry required 82.7 man-hours per 1,000 record entries. Much cheaper to use data entry personnel (vs nurses and MDs).</p>							
<p>Glazner 2004 Before-After Cost Analysis</p>	<p><b>Study Location:</b> Colorado; select areas</p> <p><b>Sample Size/Popul:</b> <u>Pre-period:</u> Rural: 6 private practices; 4 PH depts. or county nursing services; 3 CHC Urban: 3 pediatric practices</p>	<p>Evaluation of differences in providers’ labor cost of delivering vaccinations before participating in an IIS (Colorado Rural Immunization Services Project (CRISP) and after its implementation.</p>	<p><b>Practice Staff:</b> -Time spent on vaccination activities during and before each visit when an iz was administered. -Time spent on IIS-related activities in post-period -Non-physician salary and benefits data</p> <p><b>Physicians:</b> -Physicians were</p>	<p>2001\$</p> <p><b>Vaccinations Administered:</b> Pre-period: 1335 shots to 610 children Post-period: 2244 to 991 children</p> <p><b>Cost of Providing Vaccinations:</b> <b>Increase from 1997 to 2001</b></p> <table border="0"> <tr> <td>Private</td> <td>+\$0.56 per shot</td> </tr> <tr> <td>CHC</td> <td>+\$0.56 per shot</td> </tr> <tr> <td>PH depts.</td> <td>+\$0.38 per shot</td> </tr> </table> <p>Cost per shot formula: Sum (time spent by each health professional involved in giving immunization X applicable salary and benefits)/# shots provided</p> <p><b>Avg Cost/Shot (Before-After) (2001)</b></p>	Private	+\$0.56 per shot	CHC	+\$0.56 per shot	PH depts.	+\$0.38 per shot	<p>IIS may provide net benefit to Priv/CHC by making vacc process more efficient and less costly (absent above avg salary increases)</p> <p>PH depts. may realize efficiency through IIS if they eschew use of paper vacc records</p>
Private	+\$0.56 per shot										
CHC	+\$0.56 per shot										
PH depts.	+\$0.38 per shot										

Lead Author, Year Study Design Economic Method	Study Location Sample Size Population Time Horizon	Intervention Description	Components	Program Costs/Savings	Economic Summary Measure																																														
	<p><u>Post-period:</u> Rural: 2 private practices; 2 CHCs; 2 PH depts./county nursing services (4 practices declined; 1 closed; 2 eliminated due to IIS pre-period) Urban: 3 pediatric practices</p> <p><b>Time:</b> 1997 and 2001 (data collection periods)</p>		interviewed once pre/ once post, about standard vaccination activities during a well-child visits	<table border="1"> <thead> <tr> <th rowspan="2">Practice Type</th> <th colspan="2">Nonroutine Iz Activ</th> <th colspan="2">Iz Admin (Nursing)</th> <th colspan="2">Physc Activ</th> <th colspan="2">Registry Activ.</th> <th colspan="2">Total Var. Costs</th> <th rowspan="2">Diff</th> </tr> <tr> <th>Pre</th> <th>Post</th> <th>Pre</th> <th>Post</th> <th>Pre</th> <th>Post</th> <th>Pre</th> <th>Post</th> <th>Pre</th> <th>Post</th> </tr> </thead> <tbody> <tr> <td>Priv/CHC</td> <td>0.82</td> <td>0.64</td> <td>1.95</td> <td>1.64</td> <td>1.59</td> <td>1.77</td> <td>0</td> <td>0.87</td> <td>4.37</td> <td>4.93</td> <td>0.56</td> </tr> <tr> <td>PH depts</td> <td>1.06</td> <td>1.12</td> <td>2.73</td> <td>1.96</td> <td>0</td> <td>0</td> <td>0</td> <td>1.09</td> <td>3.79</td> <td>4.17</td> <td>0.38</td> </tr> </tbody> </table>	Practice Type	Nonroutine Iz Activ		Iz Admin (Nursing)		Physc Activ		Registry Activ.		Total Var. Costs		Diff	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Priv/CHC	0.82	0.64	1.95	1.64	1.59	1.77	0	0.87	4.37	4.93	0.56	PH depts	1.06	1.12	2.73	1.96	0	0	0	1.09	3.79	4.17	0.38	
Practice Type	Nonroutine Iz Activ		Iz Admin (Nursing)			Physc Activ		Registry Activ.		Total Var. Costs		Diff																																							
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post																																									
Priv/CHC	0.82	0.64	1.95	1.64	1.59	1.77	0	0.87	4.37	4.93	0.56																																								
PH depts	1.06	1.12	2.73	1.96	0	0	0	1.09	3.79	4.17	0.38																																								
<p>Horne 2000 Descriptive Cost Analysis</p>	<p><b>Study Location:</b> 16 All Kids Count (AKC) IIS sites; <b>Sample Size:</b> 16 IIS vs 15 clinics w/o IIS (manual); 14 clinics HMO in West and 1 large clinic in Midwest <b>Time:</b> Annual (1 yr)</p>	Measured development, operational, maintenance costs to operate IIS compared to cost of manually reviewing records	<p><b>IIS costs</b> 1. <b>Personnel costs:</b> In-house and contractual; costs to plan, coordinate and operate IIS, enter data, and recruit providers 2. <b>Equipment:</b> Software and communications 3. <b>Indirect costs:</b> Rent, overhead 4. <b>In-kind contributions</b>  <b>Costs of Manually Reviewing</b></p>	<p>Assume 1997\$ <b>Annual costs/child once IIS becomes fully operational</b> (i.e. containing, at a min, iz histories, in addition to the first hepatitis B iz administered in the hospital) for at least 95% of children&lt;25 mo for defined geographic area.  \$1.60 to \$6.23, mean \$3.91, IQ range \$2.91-\$4.81  <b>Annual costs and cost offsets for a nationwide of iz registries(\$ millions)</b></p> <table border="1"> <thead> <tr> <th></th> <th>Costs</th> <th>Cost Offsets</th> </tr> </thead> <tbody> <tr> <td>Registry Operations</td> <td>\$78.2</td> <td></td> </tr> <tr> <td>Manual record pull for school/day care entry</td> <td></td> <td>\$58.0</td> </tr> <tr> <td>Manual record pull for change in provider</td> <td></td> <td>\$16.2</td> </tr> <tr> <td>Duplicative Iz</td> <td></td> <td>\$26.5</td> </tr> <tr> <td>Record pulls for HEDIS reports</td> <td></td> <td>\$2.0</td> </tr> <tr> <td>National Iz Survey</td> <td></td> <td>\$11.1</td> </tr> <tr> <td><b>Totals</b></td> <td><b>\$78.2</b></td> <td><b>\$113.8</b></td> </tr> </tbody> </table>		Costs	Cost Offsets	Registry Operations	\$78.2		Manual record pull for school/day care entry		\$58.0	Manual record pull for change in provider		\$16.2	Duplicative Iz		\$26.5	Record pulls for HEDIS reports		\$2.0	National Iz Survey		\$11.1	<b>Totals</b>	<b>\$78.2</b>	<b>\$113.8</b>	<p><b>Potential net savings:</b> \$201.8 million</p>																						
	Costs	Cost Offsets																																																	
Registry Operations	\$78.2																																																		
Manual record pull for school/day care entry		\$58.0																																																	
Manual record pull for change in provider		\$16.2																																																	
Duplicative Iz		\$26.5																																																	
Record pulls for HEDIS reports		\$2.0																																																	
National Iz Survey		\$11.1																																																	
<b>Totals</b>	<b>\$78.2</b>	<b>\$113.8</b>																																																	

Lead Author, Year Study Design Economic Method	Study Location Sample Size Population Time Horizon	Intervention Description	Components	Program Costs/Savings	Economic Summary Measure																																																						
			<b>Records</b> 1. Personnel time to manually retrieve medical chart 2. Review iz records 3. Provide iz data to nurse/phys for evaluation and action 4. Record iz in chart 5. Return chart to file	Follow-up commentary by author estimated savings of 168 million from the education system perspective (school personnel in addition to individual perspective)  113.8 million + 168 million=280 million																																																							
McKenna 2002  Descriptive  Cost Analysis	<b>Study Location:</b> Boston  <b>Setting:</b> community health centers, hospitals, private practice  <b>Sample Size:</b> 23 IIS versus groups w/o IIS (manual)  63,420 "all children group" (aged<23)  34,572 "active users" (children<8 y.o.)  <b>Time:</b> Data collected June 1998-May 1999	Measured costs of developing, maintaining, and operating IIS  Compare IIS costs with non-IIS (performing same functions manually)  Data collected from 23 Boston Immunization Information System sites. 13 control sites chosen randomly for a manual immunization audit by Massachusetts Department of Public Health.	1. <b>Development costs:</b> a. Investments: software, hardware, personnel, tech support, training,  b. Maintenance: personnel, tech support, training  2. <b>Operating costs:</b> costs of operating IIS output functions, such as "behind" list (summary report that identifies children not utd), vaccine usage report, coverage level report, immunization history, immunization	1998\$ <b>Development and Operating Costs for IIS (1998)</b>  <table border="1" data-bbox="877 824 1793 1451"> <thead> <tr> <th colspan="2">Costs</th> <th>Central IIS*</th> <th>IIS site</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Investment</td> <td>Amortized annual cost (1994)*</td> <td>48,057</td> <td>76,843</td> <td>124,900</td> </tr> <tr> <td>Amortized annual cost (1998)*</td> <td>11,606</td> <td>3,539</td> <td>15,145</td> </tr> <tr> <td rowspan="3">Maintenance</td> <td>Personnel</td> <td>26,582</td> <td>87,072</td> <td>113,654</td> </tr> <tr> <td>Technical Support</td> <td>61,000</td> <td></td> <td>61,000</td> </tr> <tr> <td>Training</td> <td>687</td> <td>3,828</td> <td>4,515</td> </tr> <tr> <td colspan="4">Total Development Costs</td> <td>319,214 (92%)</td> </tr> <tr> <td rowspan="5">Operating</td> <td>Immunization History</td> <td></td> <td>9,915</td> <td>9,915</td> </tr> <tr> <td>Immunization Assessment</td> <td></td> <td>13,085</td> <td>13,085</td> </tr> <tr> <td>"Behind List" Coverage-Level Reports</td> <td>675</td> <td>130</td> <td>675</td> </tr> <tr> <td>Vaccine usage Reports</td> <td></td> <td>2,538</td> <td>2,538</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Costs		Central IIS*	IIS site	Total	Investment	Amortized annual cost (1994)*	48,057	76,843	124,900	Amortized annual cost (1998)*	11,606	3,539	15,145	Maintenance	Personnel	26,582	87,072	113,654	Technical Support	61,000		61,000	Training	687	3,828	4,515	Total Development Costs				319,214 (92%)	Operating	Immunization History		9,915	9,915	Immunization Assessment		13,085	13,085	"Behind List" Coverage-Level Reports	675	130	675	Vaccine usage Reports		2,538	2,538						"all child" cohort (n=62,420) <b>Average cost=\$5.45/child/yr</b>  "active user" cohort (n=34,572) <b>Average cost=\$10/child/yr</b>  <b>Net savings of \$26,768 (1998)</b> compared to Non-IIS  Non-IIS system unable to identify iz status of children w/o apt. Cost of underiz children is \$7,520. Generating "behind list" in IIS cost \$0.49/report.
Costs		Central IIS*	IIS site	Total																																																							
Investment	Amortized annual cost (1994)*	48,057	76,843	124,900																																																							
	Amortized annual cost (1998)*	11,606	3,539	15,145																																																							
Maintenance	Personnel	26,582	87,072	113,654																																																							
	Technical Support	61,000		61,000																																																							
	Training	687	3,828	4,515																																																							
Total Development Costs				319,214 (92%)																																																							
Operating	Immunization History		9,915	9,915																																																							
	Immunization Assessment		13,085	13,085																																																							
	"Behind List" Coverage-Level Reports	675	130	675																																																							
	Vaccine usage Reports		2,538	2,538																																																							

Lead Author, Year Study Design Economic Method	Study Location Sample Size Population Time Horizon	Intervention Description	Components	Program Costs/Savings	Economic Summary Measure																																																							
			assessment  (Hourly costs) X (Time required to complete each function)  <b>3. Manual costs</b> derived from findings of survey conducted at control site.	<p>Total Operating Costs 26,343 (8%)</p> <p>Total Costs 345,557</p> <p>*Development investments amortized over 5 yrs when actual costs incurred (5.5% in 1994 and 4.5% in 1998)</p> <p><b>Comparison of the costs of IIS and non-IIS (manual)</b></p> <table border="1" data-bbox="877 548 1793 834"> <thead> <tr> <th rowspan="2">Function</th> <th colspan="2">IIS</th> <th colspan="2">Non-IIS</th> <th rowspan="2">Savings</th> </tr> <tr> <th>Min/Task</th> <th>Total Cost*</th> <th>Min/Task</th> <th>Total Cost**</th> </tr> </thead> <tbody> <tr> <td>Imm. History</td> <td>1</td> <td>130,061</td> <td>30</td> <td>297,455</td> <td>167,394</td> </tr> <tr> <td>Imm Assment</td> <td>3</td> <td>171,643</td> <td>10</td> <td>43,616</td> <td>-128,027</td> </tr> <tr> <td>"Behind" List</td> <td>1</td> <td>1,705</td> <td>3</td> <td>7,520</td> <td>5,815</td> </tr> <tr> <td>Vaccine usage Reports</td> <td>30</td> <td>33,292</td> <td>90</td> <td>7,614</td> <td>-25,678</td> </tr> <tr> <td>Coverage Level Reports</td> <td>1500</td> <td>8,854</td> <td>960</td> <td>26,118</td> <td>7,264</td> </tr> <tr> <td><b>Total</b></td> <td></td> <td><b>345,555</b></td> <td></td> <td><b>372,323</b></td> <td><b>26,768</b></td> </tr> </tbody> </table> <p>*Total Cost= Direct operating costs + allocated indirect cost (development costs treated as indirect costs; allocated among 5 registry functions in proportion to their direct operating costs)                      ** Without IIS, allocated indirect costs are zero</p> <p><b>Childhood immunization-related costs (1998-1999)</b></p> <table border="1" data-bbox="877 992 1793 1073"> <thead> <tr> <th></th> <th>1998*</th> <th>1999**</th> </tr> </thead> <tbody> <tr> <td>IIS</td> <td>345,555</td> <td>577,919</td> </tr> <tr> <td>Non-IIS</td> <td>372,323</td> <td>1,267,322</td> </tr> </tbody> </table> <p>*<b>Net overall savings of \$26,768</b> compared with Non-IIS; most savings related to generation of immunization histories (\$167,294).                      **1999 costs are total annual projected costs of a hypothetical expanded IIS. <b>Net overall savings of \$689,403.</b>                      -Development costs (\$359,068) and Operating costs (\$218,851).                      Following assumptions made:                      a. IIS would expand to 59 sites citywide                      b. All sites would use IIS to its full potential for children&lt;=10 yrs                      c. Annual city cohort would remain at approx 8,000                      d. Expanded database management would be provided to keep data accurate and current</p>	Function	IIS		Non-IIS		Savings	Min/Task	Total Cost*	Min/Task	Total Cost**	Imm. History	1	130,061	30	297,455	167,394	Imm Assment	3	171,643	10	43,616	-128,027	"Behind" List	1	1,705	3	7,520	5,815	Vaccine usage Reports	30	33,292	90	7,614	-25,678	Coverage Level Reports	1500	8,854	960	26,118	7,264	<b>Total</b>		<b>345,555</b>		<b>372,323</b>	<b>26,768</b>		1998*	1999**	IIS	345,555	577,919	Non-IIS	372,323	1,267,322	
Function	IIS		Non-IIS			Savings																																																						
	Min/Task	Total Cost*	Min/Task	Total Cost**																																																								
Imm. History	1	130,061	30	297,455	167,394																																																							
Imm Assment	3	171,643	10	43,616	-128,027																																																							
"Behind" List	1	1,705	3	7,520	5,815																																																							
Vaccine usage Reports	30	33,292	90	7,614	-25,678																																																							
Coverage Level Reports	1500	8,854	960	26,118	7,264																																																							
<b>Total</b>		<b>345,555</b>		<b>372,323</b>	<b>26,768</b>																																																							
	1998*	1999**																																																										
IIS	345,555	577,919																																																										
Non-IIS	372,323	1,267,322																																																										

Lead Author, Year Study Design Economic Method	Study Location Sample Size Population Time Horizon	Intervention Description	Components	Program Costs/Savings	Economic Summary Measure																																																								
<p>O'Connor 2007 Descriptive Cost Analysis</p>	<p><b>Study Location:</b> Michigan  <b>Sample Size:</b> 1 health plan (Priority Health) and Michigan IIS*  *Michigan Care Improvement Registry (MCIR)  Time: 2003-2007</p>	<p>Evaluated use of state IIS as a primary data source for HEDIS and physician incentive programs (PIP) and quality programs as opposed to claims data.</p>	<p>-Labor (\$38.08 for computer software engineers, systems software, compiled by BLS) -Administrative, overhead, and fringe expenses -cost of chart reviews, including costs for pulling and refilling (\$14.50/review, conducted by RN subcontractor)</p>	<p>2007\$ -IIS data reduced chart reviews for HEDIS and physician quality and incentive programs by ~20,000* reviews in 2004-2007 * # of charts reviewed for HEDIS declined from 582 in 2003 to 51 in 2007; the administration of the health plan's physician incentive program had 18,881 fewer chart reviews from 2004-2007 when IIS was used compared to not used.  -Total costs of using IIS data were estimated to be \$14,318 -3.5 weeks of labor effort by network engineers and software programmers to program Priority Health's systems to receive data from MCIR, a one-time cost of \$10,662. Ongoing support accept IIS data was ~1 hour/month (\$914/year). -Net Benefits were \$107,854 -Benefit to cost ratio of 8.01  Benefits: 1. Reduced chart reviews 2. IIS is a single point of electronic data entry which enables health plan to leverage providers' legal obligations to record childhood iz in IIS. 3. Reduces reporting burden and unreported iz. 4. Enables health plan to acquire iz data on members who receive iz outside provider network. 5. Using same reporting data (HEDIS-based benchmarks) for HEDIS and PIP improved transparency goals by allowing providers to update data via supplemental submissions and providing tools for providers to monitor their progress toward achieving benchmarks.</p>	<p>Benefit-to-Cost ratio: 8.01</p>																																																								
<p>Rask 2000 Cross-sectional Cost-analysis</p>	<p><b>Location:</b> Atlanta and Chatham County, GA  <b>Sample Size:</b> 4 sites with Providers participating in either the Atlanta (MATCH) or Chatham county (All Kids Count) IIS.  4 sites selected because:</p>	<p>Compared 2 IIS systems to determine provider costs of participating in the system.  Focus was to determine if: -Costs vary by method used to enter and retrieve data from IIS  -Participation costs vary across IIS.  Interviews and</p>	<p>Estimated salaries for clinic personnel using public labor statistics and fixed benefits rate of 22.8%, hardware costs amortized over 5 yrs at 5% discount rate with 10% scrap value</p>	<p>1997\$ <table border="1" data-bbox="877 1003 1793 1166"> <thead> <tr> <th>Site</th> <th># Pts.</th> <th># shots</th> <th>IIS \$</th> <th>Cost/pt</th> <th>Cost/shot</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>18500</td> <td>50800</td> <td>\$12065</td> <td>0.65</td> <td>0.24</td> </tr> <tr> <td>B</td> <td>1800</td> <td>4300</td> <td>\$13938</td> <td>7.74</td> <td>3.24</td> </tr> <tr> <td>C</td> <td>4000</td> <td>9900</td> <td>\$16377</td> <td>4.09</td> <td>1.65</td> </tr> <tr> <td>BC</td> <td>6600</td> <td>16500</td> <td>\$24246</td> <td>3.67</td> <td>1.47</td> </tr> <tr> <td>D</td> <td>1400</td> <td>2400</td> <td>\$6083</td> <td>4.35</td> <td>2.53</td> </tr> </tbody> </table>  <p>Lowest costs at Site A where they use automated data entry. This would be true even if substantially less than 100% of shots entered in automated system. Personnel time and fixed equipment costs drove costs at clinic w/manual data entry.  <b>Yearly data entry cost (1998 \$)</b>  <table border="1" data-bbox="877 1344 1793 1484"> <thead> <tr> <th>Type of cost</th> <th>#pts</th> <th>Annual Cost</th> <th>Annual cost/pts</th> </tr> </thead> <tbody> <tr> <td colspan="4"><b>Sites B&amp;C</b> 6600 pts</td> </tr> <tr> <td>Labor</td> <td></td> <td>\$7951</td> <td>\$1.21</td> </tr> <tr> <td>Equip</td> <td></td> <td>\$2030</td> <td>\$0.31</td> </tr> <tr> <td>Tot</td> <td></td> <td>\$9981</td> <td>\$1.51</td> </tr> </tbody> </table></p> </p>	Site	# Pts.	# shots	IIS \$	Cost/pt	Cost/shot	A	18500	50800	\$12065	0.65	0.24	B	1800	4300	\$13938	7.74	3.24	C	4000	9900	\$16377	4.09	1.65	BC	6600	16500	\$24246	3.67	1.47	D	1400	2400	\$6083	4.35	2.53	Type of cost	#pts	Annual Cost	Annual cost/pts	<b>Sites B&amp;C</b> 6600 pts				Labor		\$7951	\$1.21	Equip		\$2030	\$0.31	Tot		\$9981	\$1.51	<p>Annual costs range: \$6083-24,246 Annual costs/patient range: \$.65-\$7.74  Annual/patient costs were least expensive for IIS w/ automated data entry interface.</p>
Site	# Pts.	# shots	IIS \$	Cost/pt	Cost/shot																																																								
A	18500	50800	\$12065	0.65	0.24																																																								
B	1800	4300	\$13938	7.74	3.24																																																								
C	4000	9900	\$16377	4.09	1.65																																																								
BC	6600	16500	\$24246	3.67	1.47																																																								
D	1400	2400	\$6083	4.35	2.53																																																								
Type of cost	#pts	Annual Cost	Annual cost/pts																																																										
<b>Sites B&amp;C</b> 6600 pts																																																													
Labor		\$7951	\$1.21																																																										
Equip		\$2030	\$0.31																																																										
Tot		\$9981	\$1.51																																																										

Lead Author, Year Study Design Economic Method	Study Location Sample Size Population Time Horizon	Intervention Description	Components	Program Costs/Savings	Economic Summary Measure																																																															
	<p>- consistently participated in one of the IIS, as reported by IIS activity logs - used different IIS interfaces (automated and manual entry)</p>	<p>direct observation at 4 sites to determine: -IIS processes -Evaluate patient flow in the clinics -Determine the method of entering and retrieving data from IIS</p>		<p><b>Site D</b>                      1400 pts</p> <table border="0"> <tr> <td>Labor</td> <td>\$688</td> <td>\$0.49</td> </tr> <tr> <td>Equip</td> <td>\$1015</td> <td>\$0.72</td> </tr> <tr> <td>Tot</td> <td>\$1703</td> <td>\$1.22</td> </tr> </table> <p>Costs higher at sites B&amp;C due to longer time required for data entry and retrieval.</p>	Labor	\$688	\$0.49	Equip	\$1015	\$0.72	Tot	\$1703	\$1.22																																																							
Labor	\$688	\$0.49																																																																		
Equip	\$1015	\$0.72																																																																		
Tot	\$1703	\$1.22																																																																		
<p>Rask  2000  Descriptive  Cost Analysis</p>	<p><b>Location:</b> Atlanta, GA</p> <p><b>Setting:</b> Public health clinics (county HDs, public hospitals, and CHCs) in Atlanta, GA</p> <p><b>Study population:</b> IIS staff</p> <p><b>Time:</b> 1995-1997</p>	<p>Measuring direct IIS costs (development and maintenance)</p> <p>Directly observed and interviewed IIS personnel to identify technical and admin activities</p> <p>Data collected at MATCH (Metro Atl Team for Child Health) IIS. Services include: -Record look-ups -Clinical data interface or batch data entry interface -R/R capability (thru autodialer or postcard)</p>	<p>1) Administrative (rent, financial admin, and ops mgmt) 2) Equipment (computers, printers, phone lines) 3) System devel. and maintenance (personnel time, system and manual upgrades, addressing data qual. Issues) 4) IIS outreach functions (R/R and report generation)</p>	<p>1997\$</p> <p><b>Costs for maintaining IIS</b></p> <table border="1"> <thead> <tr> <th rowspan="2">Type of expense</th> <th colspan="2">Start-up costs</th> <th colspan="2">Maintenance costs</th> </tr> <tr> <th>Year 1 (1995)</th> <th>Year 2 (1996)</th> <th>Year 3 (1997)</th> <th></th> </tr> </thead> <tbody> <tr> <td>Admin expenses</td> <td>\$76,237 (60%)</td> <td>\$77,929 (62%)</td> <td>\$118,589 (63%)</td> <td></td> </tr> <tr> <td>Staffing</td> <td>\$62,232</td> <td>\$62,232</td> <td>\$104,432</td> <td></td> </tr> <tr> <td>Donated effort</td> <td>\$62,232</td> <td>\$62,232</td> <td>\$62,232</td> <td></td> </tr> <tr> <td>Rent/Supplies</td> <td>\$14,005</td> <td>\$15,697</td> <td>\$14,157</td> <td></td> </tr> <tr> <td>System Design &amp; Maintenance</td> <td>\$33,198 (26%)</td> <td>\$37,136 (30%)</td> <td>\$56,933 (30%)</td> <td></td> </tr> <tr> <td>Equipment Exp</td> <td>\$18,032 (14%)</td> <td>\$9,823 (8%)</td> <td>\$11,355 (6%)</td> <td></td> </tr> <tr> <td>Personnel costs*</td> <td>\$95,430 (75%)</td> <td>\$99,368 (80%)</td> <td>\$161,365 (86%)</td> <td></td> </tr> <tr> <td>Non-personnel costs</td> <td>\$32,037 (25%)</td> <td>\$25,520 (20%)</td> <td>\$25,512 (14%)</td> <td></td> </tr> <tr> <td><b>Total Costs</b></td> <td><b>\$127,467</b></td> <td><b>\$124,888</b></td> <td><b>\$186,877**</b></td> <td></td> </tr> </tbody> </table> <p>* Personnel costs account 75-86% of yearly registry costs; 2/3 was for staff conducting admin or operational tasks, 1/3 personnel costs were for technical support functions. ** Increase in 1997 b/c administrative personnel requirements increased from 1.5 to 3 FTEs.</p> <p><b>IIS costs to bring a provider online (Oct 97-May 98)</b></p> <table border="1"> <thead> <tr> <th>Resource</th> <th># hours</th> <th>Total cost</th> </tr> </thead> <tbody> <tr> <td><b>Personnel</b></td> <td></td> <td></td> </tr> <tr> <td>Computer consultant</td> <td>17.5</td> <td>\$1050</td> </tr> </tbody> </table>	Type of expense	Start-up costs		Maintenance costs		Year 1 (1995)	Year 2 (1996)	Year 3 (1997)		Admin expenses	\$76,237 (60%)	\$77,929 (62%)	\$118,589 (63%)		Staffing	\$62,232	\$62,232	\$104,432		Donated effort	\$62,232	\$62,232	\$62,232		Rent/Supplies	\$14,005	\$15,697	\$14,157		System Design & Maintenance	\$33,198 (26%)	\$37,136 (30%)	\$56,933 (30%)		Equipment Exp	\$18,032 (14%)	\$9,823 (8%)	\$11,355 (6%)		Personnel costs*	\$95,430 (75%)	\$99,368 (80%)	\$161,365 (86%)		Non-personnel costs	\$32,037 (25%)	\$25,520 (20%)	\$25,512 (14%)		<b>Total Costs</b>	<b>\$127,467</b>	<b>\$124,888</b>	<b>\$186,877**</b>		Resource	# hours	Total cost	<b>Personnel</b>			Computer consultant	17.5	\$1050	<p>Estimated direct cost for maintaining IIS for 3 yrs: \$439,232</p> <p>Estimated yearly range: 124,888-186,877</p> <p>Annual cost/child: \$5.26 (186,877/35,550 children who received immunizations in 1997)</p>
Type of expense	Start-up costs		Maintenance costs																																																																	
	Year 1 (1995)	Year 2 (1996)	Year 3 (1997)																																																																	
Admin expenses	\$76,237 (60%)	\$77,929 (62%)	\$118,589 (63%)																																																																	
Staffing	\$62,232	\$62,232	\$104,432																																																																	
Donated effort	\$62,232	\$62,232	\$62,232																																																																	
Rent/Supplies	\$14,005	\$15,697	\$14,157																																																																	
System Design & Maintenance	\$33,198 (26%)	\$37,136 (30%)	\$56,933 (30%)																																																																	
Equipment Exp	\$18,032 (14%)	\$9,823 (8%)	\$11,355 (6%)																																																																	
Personnel costs*	\$95,430 (75%)	\$99,368 (80%)	\$161,365 (86%)																																																																	
Non-personnel costs	\$32,037 (25%)	\$25,520 (20%)	\$25,512 (14%)																																																																	
<b>Total Costs</b>	<b>\$127,467</b>	<b>\$124,888</b>	<b>\$186,877**</b>																																																																	
Resource	# hours	Total cost																																																																		
<b>Personnel</b>																																																																				
Computer consultant	17.5	\$1050																																																																		

Lead Author, Year Study Design Economic Method	Study Location Sample Size Population Time Horizon	Intervention Description	Components	Program Costs/Savings	Economic Summary Measure																																																																																					
				Ops manager 38.5 \$1152 <b>Equip/Supplies</b> Software manual \$10 <b>Total \$2212</b>																																																																																						
Slifkin 1999 Descriptive Cost Analysis	<b>Study Location: ?</b>  <b>Sample Size:</b> 4IIS from All Kinds Count I Initiative  <b>Site A:</b> covers one small health district, which includes 2 counties; part of computer system that contains WIC data & lead exposure tracking  <b>Site B:</b> covers 1 city and located in the local health dept  <b>Site C:</b> collaborative IIS btw 2 counties; public/private partnership  <b>Site D:</b> state-wide system focused initially on children seen at public health depts..	Measured costs of developing, maintaining, and operating IIS.  Data collected from 4 sites participating in the All Kids count I initiative, a national cohort of projects funded by the Robert Wood Johnson Foundation (RWJF).  On-site data collected through interviews with key personnel; when possible, requested documentation to verify data provided	<b>Personnel:</b> <u>Administrative/program development tasks-</u> overall development of registry and keeping the registry running  <u>Computer/technical tasks-</u> system architecture, programming, conversion of electronic data, data entry, and system maintenance  <u>Registry function tasks-</u> report generation, reminder/recall activities, follow-up, and outreach  <b>Non-personnel:</b> Administrative  Computer-related- i.e external contract for software development	1997\$ <b>IIS costs over the first 5 years (in thousands)</b> <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>Cost</th> <th>Site A</th> <th>Site B</th> <th>Site C</th> <th>Site D</th> </tr> </thead> <tbody> <tr> <td colspan="5"><b>Personnel</b></td> </tr> <tr> <td>Administrative</td> <td>\$373</td> <td>\$212</td> <td>\$1,774</td> <td>\$629</td> </tr> <tr> <td>(% of personnel)</td> <td>(18%)</td> <td>(11%)</td> <td>(48%)</td> <td>(24%)</td> </tr> <tr> <td>Computer/ Technical</td> <td>\$1,350</td> <td>\$881</td> <td>\$1,798</td> <td>\$1,959</td> </tr> <tr> <td>(% of personnel)</td> <td>(66%)</td> <td>(45%)</td> <td>(48%)</td> <td>(76%)</td> </tr> <tr> <td><b>Total</b></td> <td><b>\$2,043</b></td> <td><b>\$1,972</b></td> <td><b>\$3,727</b></td> <td><b>\$2,588</b></td> </tr> <tr> <td>(% of total 5-year costs)</td> <td>(85%)</td> <td>(76%)</td> <td>(54%)</td> <td>(70%)</td> </tr> <tr> <td colspan="5"><b>Non-Personnel</b></td> </tr> <tr> <td>Administrative</td> <td>\$93</td> <td>\$162</td> <td>Not Avail</td> <td>\$221</td> </tr> <tr> <td>(% of non-personnel)</td> <td>(25%)</td> <td>(26%)</td> <td>Not Avail</td> <td>(20%)</td> </tr> <tr> <td>Computer/ Technical</td> <td>\$279</td> <td>\$449</td> <td>Not Avail</td> <td>\$890</td> </tr> <tr> <td>(% of non-personnel)</td> <td>(75%)</td> <td>(74%)</td> <td>Not Avail</td> <td>(80%)</td> </tr> <tr> <td><b>Total</b></td> <td><b>\$371</b></td> <td><b>\$611</b></td> <td><b>\$3,221</b></td> <td><b>\$1,111</b></td> </tr> <tr> <td>(% of total 5-yr costs)</td> <td>(15%)</td> <td>(24%)</td> <td>(46%)</td> <td>(30%)</td> </tr> <tr> <td><b>Grand Total, 5-yr costs</b></td> <td><b>\$2,414</b></td> <td><b>\$2,583</b></td> <td><b>\$6,948</b></td> <td><b>\$3,700</b></td> </tr> <tr> <td colspan="5"><b>Iz Registry Cost/Child (under different scenarios)</b></td> </tr> </tbody> </table>	Cost	Site A	Site B	Site C	Site D	<b>Personnel</b>					Administrative	\$373	\$212	\$1,774	\$629	(% of personnel)	(18%)	(11%)	(48%)	(24%)	Computer/ Technical	\$1,350	\$881	\$1,798	\$1,959	(% of personnel)	(66%)	(45%)	(48%)	(76%)	<b>Total</b>	<b>\$2,043</b>	<b>\$1,972</b>	<b>\$3,727</b>	<b>\$2,588</b>	(% of total 5-year costs)	(85%)	(76%)	(54%)	(70%)	<b>Non-Personnel</b>					Administrative	\$93	\$162	Not Avail	\$221	(% of non-personnel)	(25%)	(26%)	Not Avail	(20%)	Computer/ Technical	\$279	\$449	Not Avail	\$890	(% of non-personnel)	(75%)	(74%)	Not Avail	(80%)	<b>Total</b>	<b>\$371</b>	<b>\$611</b>	<b>\$3,221</b>	<b>\$1,111</b>	(% of total 5-yr costs)	(15%)	(24%)	(46%)	(30%)	<b>Grand Total, 5-yr costs</b>	<b>\$2,414</b>	<b>\$2,583</b>	<b>\$6,948</b>	<b>\$3,700</b>	<b>Iz Registry Cost/Child (under different scenarios)</b>					Total cost of planning and implementing central IIS ranged from \$2.4-7million over first 5 years
Cost	Site A	Site B	Site C	Site D																																																																																						
<b>Personnel</b>																																																																																										
Administrative	\$373	\$212	\$1,774	\$629																																																																																						
(% of personnel)	(18%)	(11%)	(48%)	(24%)																																																																																						
Computer/ Technical	\$1,350	\$881	\$1,798	\$1,959																																																																																						
(% of personnel)	(66%)	(45%)	(48%)	(76%)																																																																																						
<b>Total</b>	<b>\$2,043</b>	<b>\$1,972</b>	<b>\$3,727</b>	<b>\$2,588</b>																																																																																						
(% of total 5-year costs)	(85%)	(76%)	(54%)	(70%)																																																																																						
<b>Non-Personnel</b>																																																																																										
Administrative	\$93	\$162	Not Avail	\$221																																																																																						
(% of non-personnel)	(25%)	(26%)	Not Avail	(20%)																																																																																						
Computer/ Technical	\$279	\$449	Not Avail	\$890																																																																																						
(% of non-personnel)	(75%)	(74%)	Not Avail	(80%)																																																																																						
<b>Total</b>	<b>\$371</b>	<b>\$611</b>	<b>\$3,221</b>	<b>\$1,111</b>																																																																																						
(% of total 5-yr costs)	(15%)	(24%)	(46%)	(30%)																																																																																						
<b>Grand Total, 5-yr costs</b>	<b>\$2,414</b>	<b>\$2,583</b>	<b>\$6,948</b>	<b>\$3,700</b>																																																																																						
<b>Iz Registry Cost/Child (under different scenarios)</b>																																																																																										

Lead Author, Year Study Design Economic Method	Study Location Sample Size Population Time Horizon	Intervention Description	Components	Program Costs/Savings	Economic Summary Measure																														
	Time: Nov 1992- Oct 1997			<table border="1"> <thead> <tr> <th>Cost per Child</th> <th>Site A</th> <th>Site B</th> <th>Site C</th> <th>Site D</th> </tr> </thead> <tbody> <tr> <td>Currently enrolled w/ record&amp;iz history</td> <td>\$217</td> <td>\$81</td> <td>\$122</td> <td>\$56</td> </tr> <tr> <td>Currently enrolled w/record, w/w/o iz history</td> <td>\$217</td> <td>\$23</td> <td>\$44</td> <td>\$35</td> </tr> <tr> <td>In target population*</td> <td>\$213</td> <td>\$22</td> <td>\$35</td> <td>\$21</td> </tr> <tr> <td>In target population over next 5-yrs</td> <td>\$80</td> <td>\$11</td> <td>\$19</td> <td>\$6</td> </tr> <tr> <td>In target population over next 10-yrs</td> <td>\$49</td> <td>\$7</td> <td>\$13</td> <td>\$3</td> </tr> </tbody> </table> <p>*Based on 1990 census</p> <p>-average cost/child decreases as cohort of children increases</p>	Cost per Child	Site A	Site B	Site C	Site D	Currently enrolled w/ record&iz history	\$217	\$81	\$122	\$56	Currently enrolled w/record, w/w/o iz history	\$217	\$23	\$44	\$35	In target population*	\$213	\$22	\$35	\$21	In target population over next 5-yrs	\$80	\$11	\$19	\$6	In target population over next 10-yrs	\$49	\$7	\$13	\$3	
Cost per Child	Site A	Site B	Site C	Site D																															
Currently enrolled w/ record&iz history	\$217	\$81	\$122	\$56																															
Currently enrolled w/record, w/w/o iz history	\$217	\$23	\$44	\$35																															
In target population*	\$213	\$22	\$35	\$21																															
In target population over next 5-yrs	\$80	\$11	\$19	\$6																															
In target population over next 10-yrs	\$49	\$7	\$13	\$3																															
Urquhart 2007  Descriptive Cost Analysis	<p><b>Study Location:</b> Nationwide</p> <p><b>Sample Size:</b> 21,295 children/adole scent iz queries made to IIS</p> <p><b>Study population:</b> All children (aged 0-18) displaced by Hurricane Katrina.</p> <p>Time: Aug 29, 2005 to Oct. 11, 2005.</p>	Study evaluated IIS use for a 13 month period following a public health emergency and costs savings related to prevention of revaccination	<p><b>National mean costs for VFC vaccines and vaccine admin</b></p> <p><b>VFC vaccine Vaccine admin cost/dose cost/dose</b></p> <p>DTAP=13.40 \$8.89 Polio=\$11.32 \$8.89 MMR=\$16.67 \$8.89 Hib=\$9.33 \$8.89 HepB=\$10.06 \$8.89 Varicella=\$52.25 \$8.89 PCV=\$54.12 \$8.89 Meningococcal=\$68.00 \$8.89</p> <p>Vaccine Costs/Admin— 2005</p>	<p>Assume 2005\$</p> <p><b>Estimated revaccination costs if LINKS data not avail:</b> 9.8 mill (vaccine)+3.8 mill (admin fee)= 13.6 million</p> <p><b>Estimated revaccination savings</b> due to vaccination data in LINKS=4.6 million</p> <p>Participation rate of private provider rates is 51%; with more complete iz histories, IIS can save more money in revaccination costs</p>	Approx \$4.6 mill saved in revaccination expenses																														