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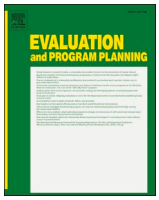

Leveraging secondary data for evaluation: Planning the expansion of the Illinois asthma partnership to reduce pediatric asthma related emergency department visits

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ABSTRACT

Government partnerships with community-based and healthcare organizations have historically increased the impact of public health programs. In order to strengthen and expand the Illinois Asthma Partnership (IAP), external evaluators determined the degree to which local rates of Pediatric Asthma Related Emergency Department (PARED) visits aligned with local hospital Community Health Needs Assessments (CHNA), asthma prioritization, and IAP engagement. The majority of counties with high PARED rates also had high levels of concentrated disadvantage. Combining these data enabled identification of 15 out of 102 counties where PARED visits were high and the program was not engaged. In these counties, there was an opportunity for the IAP to assist. Potential actions in these counties could include identification of a local asthma champion and development of a new program, actions to raise community awareness of asthma, and engagement with health care community leaders to discuss perceptions of need and competing priorities. This study provided a unique and cost-effective way of utilizing easily accessible data in order to plan the expansion of the IAP.

1. Introduction

Similar to other social services, public health programming and policy development rely on strong and ever-evolving partnerships in order to achieve sustainable change. The centrality of partnerships to public health is directly stated in the fourth of the ten Essential Public Health Services to "[m]obilize community partnerships and action to identify and solve health problems" (Centers for Disease Control and Prevention, 2020). Inter-organizational collaborations involve diverse groups of expert individuals who interact on varying levels through dynamic relationships to achieve a common set of goals (Centers for Disease Control and Prevention, 2015). Through these collaborative efforts, the potential to improve health outcomes is increased, especially over time, for the most vulnerable (Lachance et al., 2014). Sustained partnerships are, therefore, central to the success of program development, implementation and evaluation.

Partnership evaluation has previously been examined in the literature. Typically, the challenges encountered in evaluating partnerships are methodological, relating to both processes and outcomes. New approaches have been proposed in the existing literature on the topic of coalitions/collaboration evaluation and translational impact factors (Wolfe et al., 2020; Hicks et al., 2012). The latter encompasses various components such as tailoring needs, resources and priorities through a co-learning and decision-making process, utilizing feedback loops and enhancing partnership capacity to translate science into practice for better health. By engaging communities through democratic participation within trusted synergistic partnerships and leveraging secondary data, proactive changes can be made for real and sustainable impacts. Simply put, leveraging community resources leads to better health (Coombe et al., 2020). However, more research is needed, focusing on feasible and cost-effective approaches that can be easily applied with limited resources for better impact.

The current manuscript focuses on describing the methods employed to evaluate and improve the reach and impact of the Illinois Asthma

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Partnership (IAP). In pursuit of this aim, the specific objectives are to: 1) appraise the extent to which Illinois hospital systems have indicated an interest in addressing asthma health outcomes 2) identify a potential list of partners for the Illinois State Asthma Program (referred to from here on as "Program") to approach regarding building community-clinical linkages, opportunities for quality improvement projects, and membership in the IAP, and 3) examine the location of funded Program activities in counties where hospitals have already prioritized asthma as an important local health issue. Through this process, the Program sought to determine which communities throughout the state might benefit most from enhanced or new collaboration with the IAP.

2. Methods

2.1. Study design

The Illinois State Asthma Program was part of the Centers for Disease Control and Prevention (CDC) National Asthma Control Program (NACP) during the 2014–2019 funding cycle. One of the NACP objectives under the cooperative agreement was to improve asthma control by enhancing the infrastructure and strategic partnerships needed to increase asthma services, coordinate care and strengthen linkages to community resources. In this county-level evaluation, the Program leveraged four existing secondary data sources: hospital Community Health Needs Assessments (CHNAs), county-level pediatric asthma-related emergency department (PARED) visit rates, the location of existing Program activities, and the level of concentrated disadvantage of each county.

2.2. Data sources

2.2.1. Community Health Needs Assessment (CHNA) Reports for 2013–2016

Since 2010, under the Patient Protection and Affordable Care Act, federal law requires all not-for-profit (NFP) hospitals to perform a CHNA to retain their tax exempt status (Patient Protection and Affordable Care Act, 2010). A CHNA is a process involving the collection and analysis of data in order to understand the health needs of a given community. The CHNA should describe the community, prioritize community health needs, and create a strategy for the hospital to address high priority needs (Pennel et al., 2015). Data is collected through service area assessments, key informant interviews, local community group meetings, and county-level health outcomes data, which may include asthma rates. As a result of this process, each CHNA concludes with a list of the most highly prioritized selected health needs. Sharing information from a CHNA can mobilize community members to coalesce around common goals, thereby preventing disease and building a healthier community overall.

The "Illinois Hospital Report Card and Consumer Guide to Health Care" is a website maintained by the Illinois Department of Public Health (IDPH), which hosts a catalog for Illinois hospital CHNAs (Hospital Community Health Needs Assessments, n.d.; Illinois Department of Public Health, 2021). The catalog's web-links return either the CHNA itself (i.e. pdf) or the hospital's website where the CHNA may be found. All CHNAs from 2013 to 2016 were eligible for inclusion in this study, totaling 131 hospital system CHNAs. All 131 Illinois NFP hospitals were listed in the IDPH catalog. One of these had an inactive web-link and was excluded from the analysis for a final sample of 130 hospitals.

A single external evaluator systematically extracted the CHNAs from the online catalogue and used the search function to locate any mention of "A/asthma." Any CHNAs that included the word "asthma" were selected and placed in a spreadsheet that documented the specific asthma language referenced, page number, years of the CHNA and hospital information, such as name and service address.

After this original review, a second, more thorough appraisal of the remaining CHNAs included in the spreadsheet was performed, to identify the asthma priority level of each of the remaining hospital systems. This was completed by counts of CHNAs that identified asthma as a priority, i.e. asthma was among the final health needs that the hospital selected to address. Some examples of the criteria used to prioritize asthma in the CHNA included recommendations from public health experts that asthma prevention efforts increase, high number of hospitalizations for asthma relative to neighboring areas, increases in inpatient admissions and emergency department visits, high and increasing prevalence of asthma, high ranking by community healthcare leaders, and ranking of asthma as 2nd among reasons for hospitalization.

2.2.2. County Level Pediatric Asthma-Related Emergency Department (PARED) visit rates for 2011–2014

The IDPH Division of Patient Safety and Quality collects inpatient discharges, outpatient hospital visits (referred to as "discharges" for consistency), and emergency department visit data from all Illinois acute care and specialty hospitals licensed by IDPH (Condition Codes, n.d.). Data from state psychiatric hospitals and federal hospitals are not collected. Ambulatory surgical treatment centers licensed by IDPH are mandated to submit data for surgical cases. Data are coded according to the requirements set by the National Uniform Billing Committee, updated annually on October 1 with input from state Uniform Billing Committees. (Condition codes are data elements contained within the standard.)

Apart from the exceptions mentioned above, all hospitals report their data to the IDPH Division of Patient Safety and Quality. The numerators for 2011–2014 county-level PARED visit rates (ages 0–19) came from these Patient Safety and Quality files. They were computed based on counts of pediatric asthma related emergency department visit numbers by patient county of residence. Denominators consisted of county populations for the same years obtained from the U.S. Census. From these data, county-level PARED rates per 10,000 population were calculated for all 102 Illinois counties (Discharge Data, n.d.).

2.2.3. A List of state funded asthma control programs and their locations in the 2014–2019 Grant Cycle

Program engagement was defined through the State of Illinois list of state funded programs with the aim of helping people to control their asthma for the 2014–2019 grant cycle. The sponsored programs included large consortiums and coalitions, clinic-based programs, asthma self-management education programs, and home visiting programs. These programs exist for the purpose of helping parents and their children with poorly controlled asthma get their asthma under control in order to prevent emergency department visits.

2.2.4. A List of counties by quartile of concentrated disadvantage between 2008 and 2012

In addition, Illinois counties were split into quartiles of concentrated disadvantage (Illinois Department of Public Health, 2021) during 2008-2012.Concentrated disadvantage is based on the following indicators:

1) Percentage of people below the poverty line
2) Percentage of people on public assistance
3) Percentage of female-headed households
4) Percentage unemployed
5) Percentage of population under 18 years of age.

2.3. Analysis

This descriptive analysis relied on the examination of both congruent (counties where PARED visit rates are high and CHNAs prioritize asthma) and disparate counties (those where PARED rates do not align with prioritization of asthma in CHNAs). County-level PARED rates were split into quartiles of 25 or 26 counties each, color-coded based on these categories, and mapped using Arc-GIS.

The Illinois state map shown in Fig. 1 is a visual representation of the local pediatric asthma burden, and depicts part of the data for the determination of priority opportunities for expansion of comprehensive asthma control services. New potential IAP partners could be identified by reviewing PARED visit rates, specifically the top quartile for the State of Illinois, and then taking into consideration the locations of hospitals that prioritized asthma, as stated in their CHNAs, the presence of state-supported asthma control projects, and county quartile of concentrated disadvantage.

High PARED counties were then classified into the following categories:

- **Fully Engaged:** The county had PARED visit rates in the highest quartile, contained at least one hospital with asthma as a health priority, and contained state-supported asthma projects.
- **Lacking Program Engagement:** The county had PARED visit rates in the highest quartile and contained at least one hospital with asthma as a health priority, but did not contain any state-supported asthma projects.
- **Lacking Hospital Engagement:** The county had PARED visit rates in the highest quartile and contained at least one state-supported asthma project, but did not have any hospital which prioritized asthma in its CHNA.
- **Lacking both Program and Hospital Engagement:** The county had high PARED visit rates, but neither state-supported asthma projects nor any hospital that prioritized asthma in its CHNA.

Lower PARED counties were, by definition, those counties with PARED visit rates in the lower three quartiles. Most were expected to also be lacking both program and hospital engagement, due to relatively low need. However, it was possible that some would be:

- **Lower PARED Rates but Fully Engaged**: The county had PARED visit rates in the lower three quartiles, but contained state-supported asthma projects and included hospitals which prioritized asthma.
- **Lower PARED Rates but having Program Engagement**: The county had relatively low PARED visit rates, and lacked a hospital that prioritized asthma as a health concern, but had state-supported asthma projects.
- **Lower PARED Rates but having Hospital Engagement:** The county had relatively low PARED visit rates and no state-supported asthma projects, but did contain at least one hospital that prioritized asthma in its CHNA.

3. Results

Of the 130 CHNAs successfully extracted, approximately 12% ($n = 16$) reported that their organization, associated health system, or the community within their coverage area rated asthma as a high health priority.

PARED visit rates ranged from 21.56 to 315.62 per 10,000. The 102 counties were divided into four nearly equal quartiles. The 25 counties with the lowest rates, comprising the first quartile, had PARED visit rates ranging from 21.56 to 47.92 per 10,000, and were considered to be low burden or low risk counties. The 26 counties in the second lowest quartile experienced PARED visit rates between 47.96 and 59.57 per 10,000. The third quartile consisted of 26 counties with a range of 60.44–82.08 per 10,000, and the 25 counties in the highest quartile had PARED visit rates ranging from 85.08 to 315.62 per 10,000. For the purpose of this evaluation, these counties were considered to be high risk. Twelve of the 16 hospitals identified as prioritizing asthma in their CHNAs were located in one of these high-risk counties.

Among these 25 high-PARED counties, four (Cook, Knox, Peoria, and Sangamon) contained at least one hospital CHNA reporting that asthma was a high priority. The 12 hospitals prioritizing asthma in these four counties were not evenly distributed. The greatest concentration of hospitals was in the Cook County area ($n = 7$) and more specifically, Chicago, IL ($n = 6$), which is part of Cook County. Three of these counties–Cook, Peoria, and Sangamon–are considered *fully engaged* in that each had PARED visit rates in the highest quartile (114.96, 96.50 and 94.26 per 10,000 respectively), contained at least one hospital with asthma as a health priority, and contained state-supported asthma projects. Of these three counties, two were in the highest quartile of concentrated disadvantage, and the third was in the second highest quartile, meaning they were all above the median in concentrated disadvantage. One county (Knox) was *lacking program engagement* in that it had a PARED rate in the highest quartile (99.49 per 10,000), contained at least one hospital that indicated asthma as a priority, but had no local state-supported asthma projects (Table 1). Knox County was also above the median in concentrated disadvantage (3rd quartile).

Of the remaining 21 high-PARED counties without CHNAs identifying asthma as a high priority health issue, seven contained a state-supported asthma prevention program in the 2014–19 grant cycle, when this evaluation took place. These consisted of either a home-visiting program, clinic-based program, self-management education program, large consortium/coalition or some combination of these. These counties (Champaign, Jackson, Kankakee, Macon, Madison, St. Clair, and Winnebago) were *lacking hospital engagement* in that they had PARED visit rates in the top quartile (88.78, 92.90, 85.08, 120.40, 125.78, 174.08, and 100.67 per 10,000, respectively), and state supported asthma projects, but no hospital CHNA listing asthma as a priority. It is quite possible that, although pediatric asthma emergency department visit rates are high, asthma was outranked by high rates of other competing health problems. Five of the seven counties are also in the highest quartile of concentrated disadvantage, a sixth is in the third quartile, and only one (Champaign County) has a relatively low level of concentrated disadvantage. It is likely, therefore, that these counties have many other competing priorities in terms of health outcomes.

Of the remaining 14 high-PARED counties, 12 were *lacking both hospital and program engagement*, as none of their hospitals listed asthma as a priority and they had no local state-supported asthma projects (See Table 1). Finally, the two remaining high-PARED counties (Alexander and Pope) did not have any NFP hospitals, nor state-supported asthma projects. Nine of the 14 counties were above the state median in concentrated disadvantage, five of these in the highest quartile. Only five of the 14 counties were below the median, with only one (Pope County) in the lowest (best off) quartile.

Of the 24 counties in the highest quartile of concentrated disadvantage, 13 of them also had PARED rates in the highest quartile, and a further five had PARED rates in the second highest quartile, leaving only six with PARED rates below the median.

Four hospitals which did prioritize asthma as a health priority in their CHNAs were not located in counties with PARED visit rates in the top quartile. One of these counties, Livingston (with a PARED visit rate of 27.72 per 10,000), had a state supported asthma program, and thus, was fully engaged, although not categorized as high-risk. The other three (DeKalb, Warren and Grundy, with PARED visit rates of 58.69, 47.5 and 41.09 per 10,000 respectively) did not have a state supported program. Although none were in the highest quartile of concentrated disadvantage, the last three counties were above the median.

Eight additional counties (Adams, Franklin, Kane, McLean, Mercer, Ogle, Whiteside and Williamson) had state-supported programs, but their PARED visit rates were below the top quartile, and they did not contain a hospital listing asthma as a priority. None of these were in the highest quartile of concentrated disadvantage, but three were in the second highest (3rd quartile).

Finally, the 65 remaining counties have PARED rates below the highest quartile, no state funded asthma control programs, and asthma was not a priority of local NFP hospitals. Of these 65 counties, nine were in the lowest quartile for concentrated disadvantage and 13 more were in the second lowest, meaning that 43 were not classified as high in concentrated disadvantage. Although there were exceptions, high

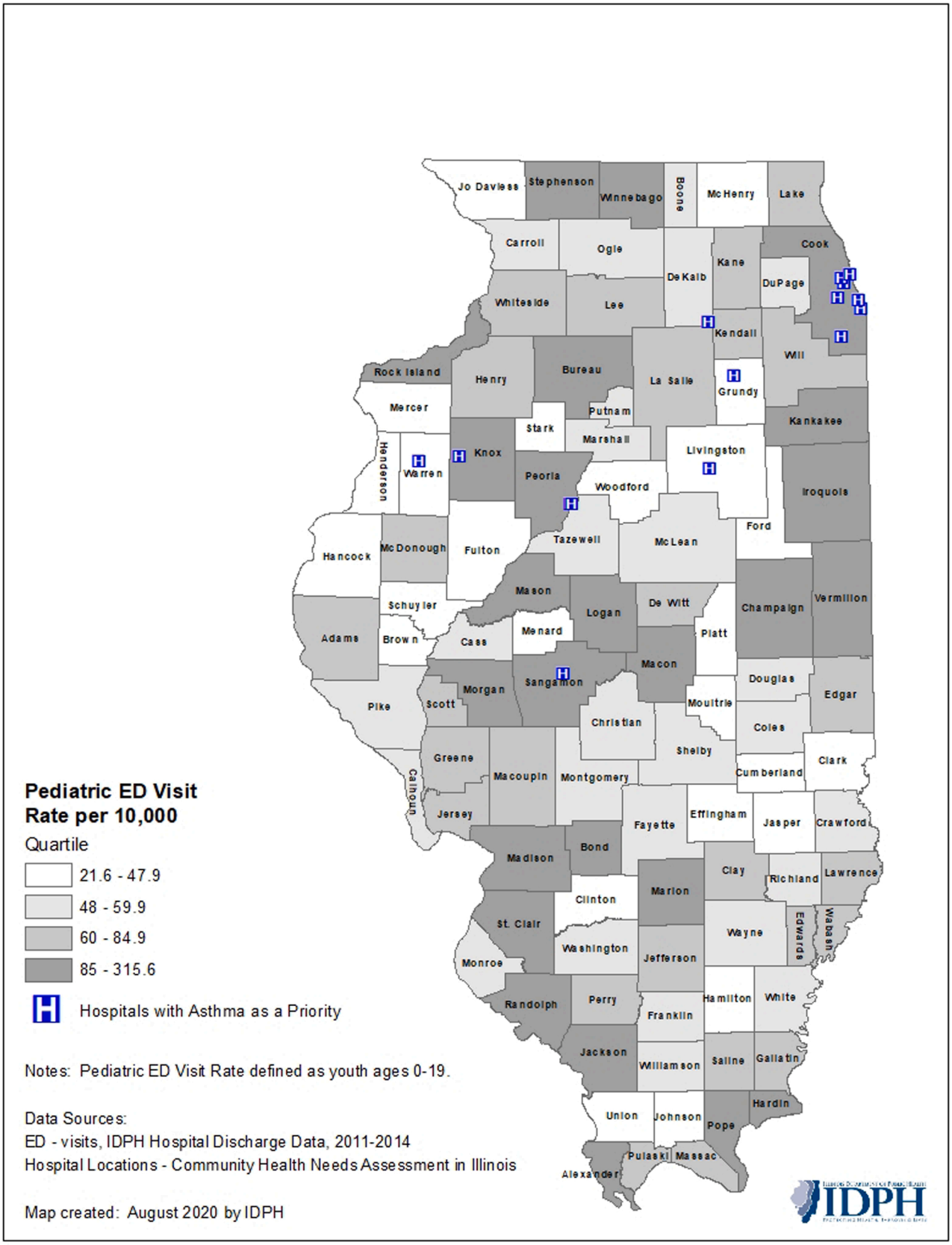

Fig. 1. Map of Illinois Counties by Pediatric Asthma Related Emergency Department Rates (per 10,000), 2011–2014.

Table 1
Illinois Counties according to PARED Quartile, Extent of Engagement and Quartile of Concentrated Disadvantage (N = 102).

County	PARED Quartile, 2011–14 (4th = highest)	CHNA Lists Asthma as Priority, 2013–16	State-Supported Asthma Program	Quartile of Concentrated Disadvantage, 2008–12 (4th = Highest)
High PARED and Fully Engaged (N = 3)				
Cook	***4th***	***Yes***	***Yes***	***4th***[a]
Peoria	***4th***	***Yes***	***Yes***	***4th***
Sangamon	4th	Yes	Yes	3rd
High PARED, but Lacking Program Engagement (N = 1)				
Knox	4th	Yes	No	3rd
High PARED, but Lacking Hospital Engagement (N = 7)				
Champaign	4th	No	Yes	2nd
Jackson	***4th***	***No***	***Yes***	***4th***
Kankakee	***4th***	***No***	***Yes***	***4th***
Macon	***4th***	***No***	***Yes***	***4th***
Madison	4th	No	Yes	3rd
St. Clair	***4th***	***No***	***Yes***	***4th***
Winnebago	***4th***	***No***	***Yes***	***4th***
High PARED, but Lacking both Hospital and Program Engagement (N = 14)				
Alexander	***4th***	***No Hospital***	***No***	***4th***
Bond	4th	No	No	3rd
Bureau	4th	No	No	2nd
Hardin	***4th***	***No***	***No***	***4th***
Iroquois	4th	No	No	2nd
Logan	4th	No	No	2nd
Marion	***4th***	***No***	***No***	***4th***
Mason	***4th***	***No***	***No***	***4th***
Morgan	4th	No	No	3rd
Pope	4th	No Hospital	No	1st
Randolph	4th	No	No	2nd
Rock Island	4th	No	No	3rd
Stephenson	***4th***	***No***	***No***	***4th***
Vermilion	***4th***	***No***	***No***	***4th***
Lower PARED but Fully Engaged (N = 1)				
Livingston	1st	Yes	Yes	2nd
Lower PARED, but has Hospital Engagement (N = 3)				
DeKalb	2nd	Yes	No	3rd
Grundy	1st	Yes	No	3rd
Warren	1st	Yes	No	3rd
Lower PARED, but has Program Engagement (N = 8)				
Adams	3rd	No	Yes	2nd
Franklin	2nd	No	Yes	2nd
Kane	3rd	No	Yes	3rd
McLean	2nd	No	Yes	1st
Mercer	1st	No	Yes	1st
Ogle	2nd	No	Yes	3rd
Whiteside	3rd	No	Yes	3rd
Williamson	2nd	No	Yes	2nd
Lower PARED and Lacking both Hospital and Program Engagement (N = 65)				
Boone	***2nd***	***No***	***No***	***4th***
Brown	1st	No Hospital	No	1st
Calhoun	2nd	No Hospital	No	2nd
Carroll	2nd	No Hospital	No	2nd
Cass	***2nd***	***No Hospital***	***No***	***4th***
Christian	2nd	No	No	3rd
Clark	1st	No Hospital	No	3rd
Clay	***3rd***	***No***	***No***	***4th***
Clinton	1st	No	No	1st
Coles	2nd	No	No	3rd
Crawford	2nd	No	No	3rd
Cumberland	1st	No Hospital	No	2nd
De Witt	3rd	No	No	2nd
Douglas	2nd	No Hospital	No	1st
DuPage	2nd	No	No	1st
Edgar	***3rd***	***No***	***No***	***4th***
Edwards	3rd	No Hospital	No	2nd
Effingham	1st	No	No	1st
Fayette	***2nd***	***No***	***No***	***4th***
Ford	1st	No	No	2nd
Fulton	1st	No	No	3rd
Gallatin	3rd	No Hospital	No	3rd
Greene	3rd	No	No	2nd
Hamilton	1st	No	No	1st
Hancock	1st	No	No	2nd
Henderson	1st	No Hospital	No	1st
Henry	3rd	No	No	1st
Jasper	1st	No Hospital	No	1st
Jersey	3rd	No	No	1st
Johnson	1st	No Hospital	No	2nd
Jo Daviess	1st	No	No	1st
Johnson	1st	No Hospital	No	2nd
Kendall	3rd	No	No	2nd
Lake	3rd	No	No	3rd
La Salle	3rd	No	No	3rd
Lawrence	3rd	No	No	1st
Lee	3rd	No	No	2nd
Macoupin	3rd	No	No	2nd
Marshall	2nd	No Hospital	No	1st
Massac	***3rd***	***No***	***No***	***4th***
McDonough	3rd	No	No	2nd
McHenry	1st	No	No	2nd
Menard	1st	No Hospital	No	1st
Monroe	2nd	No	No	1st
Montgomery	2nd	No	No	2nd
Moultrie	1st	No Hospital	No	1st
Perry	3rd	No	No	3rd
Piatt	1st	No	No	1st
Pike	2nd	No	No	3rd
Pulaski	***3rd***	***No Hospital***	***No***	***4th***
Putnam	2nd	No Hospital	No	3rd
Richland	2nd	No	No	2nd
Saline	***3rd***	***No***	***No***	***4th***
Schuyler	1st	No	No	1st
Scot	3rd	No Hospital	No	2nd
Shelby	2nd	No	No	1st
Stark	1st	No Hospital	No	2nd
Tazewell	2nd	No	No	1st
Union	***1st***	***No***	***No***	***4th***
Wabash	3rd	No	No	2nd
Washington	2nd	No	No	2nd
Wayne	2nd	No	No	1st
White	2nd	No	No	3rd
Will	3rd	No	No	3rd
Woodford	1st	No	No	1st

[a] Counties in bold and italics are in the fourth quartile of concentrated disadvantage.

PARED rates were more common in counties with high levels of concentrated disadvantage, and vice versa.

4. Discussion

This partnership evaluation was conducted as part of a broader evaluation of the IAP, since one of the goals of the Program was to enhance infrastructure and leverage partnerships to increase control of moderate and severe asthma in Illinois. Emphasis was placed on building public health and health care collaborations in order to ensure that statewide asthma efforts were sustained and improved through higher quality, integrated, and comprehensive asthma control services. The Program sought to improve these efforts, in part, by expanding the IAP. Identifying counties with both high PARED visit rates and local prioritization of asthma is ideal, as concurrent engagement of the population, professionals, and existing organizations are thought to have the greatest impact on clinical outcomes (Clark et al., 2010; Pinnock et al., 2015).

This evaluation found that of the 25 counties in the highest quartile of PARED rates, only three were *fully engaged* (existing program

engagement and hospital CHNA asthma prioritization). The secondary data for counties not classified as *fully engaged* provided clear and relevant insights about important next steps for the IAP. For instance, there was one county identified that might benefit from the identification of a local asthma champion and development of a new program. This county included asthma as a priority in its CHNA but was *lacking program engagement*, because it lacked a state-supported project. Seven counties included in this high-risk category might benefit from IAP efforts to raise community/health care awareness of asthma. These counties had a state-supported program, but were *lacking hospital engagement*, because they lacked a CHNA prioritization.

Insights from the data suggested that the remaining 14 counties could benefit from the IAP reaching out to health care and community leaders in these counties to discuss perceptions of need and competing priorities. These counties were *lacking both hospital and program engagement*, due to the absence of asthma prioritization and a state-supported program. In 12 of these counties, the local hospital did not list asthma as a priority in their CHNA. In two, there was no CHNA, because no hospital existed in the county.

Because the county is the unit of analysis, this is an ecologic evaluation. Evaluations at the group, rather than the individual level, are well suited to the aims of this study, where the purpose is to make programmatic decisions at the county level. Secondary data analysis is also particularly suitable for descriptive exploratory studies, such as this one (Weston et al., 2019).

Other strengths of this evaluation method include a low-cost, straightforward approach to the evaluation of potential opportunities for program partnerships throughout the state. For the Program, these data were free. The data were either publicly available or part of the Program's administrative records. The work of the external evaluators was funded by CDC through the IDPH. The standard rate is approximately 10% of the size of the total grant. Nevertheless, it would have taken much longer and been more expensive if primary data had been collected.

Evaluators often face challenges in identifying means to examine the effectiveness of partnerships. In resource-constrained environments, it is important to continue to pursue methods for evaluation that are cost-effective, those that provide accurate, meaningful, and actionable findings with minimal expense. The current evaluation leveraged existing data sources. By using secondary data that is readily available on the internet (i.e. CHNAs) along with other secondary data regularly used for the purpose of public health surveillance (PARED visit rates) and existing programmatic information, evaluation efforts were clearly cost-effective.

Because this evaluation involved the use of secondary data, which were originally collected for other purposes, the use of these data for our own aims, could, itself, be a limitation (Hashimoto et al., 2014; Weston et al., 2019) . While specific limitations of these data are listed below, in a general sense, they do fit the purposes of this study by providing an indicator of need, of local perception of that need, and of the presence or absence of a state funded program in the area.

Specific limitations included lack of hospital-specific data regarding existing emergency departments, respiratory health providers, or inpatient only services, and lack of data on out-of-state hospitals which serve Illinois residents.

Another limitation is that NFP hospitals are left free to determine how they arrive at their priority health issues. Although these methods vary hospital to hospital, they all made use of one or more of the following procedures: key community informant interviews, ranking for inpatient, emergency department and urgent care rates, surveys of public health experts, increasing prevalence, prevalence compared to the state average, incidence, and ranking in the number disease diagnoses compared to other diseases. These hospitals have been required by the Patient Protection and Affordable Care Act of 2010 to conduct a community health needs assessment that takes into account community input every three years (Illinois Department of Public Health, 2021).

A third limitation was that, due to resource constraints, IDPH was unable to follow-up in the short term with possible IAP expansion efforts. At the time that this evaluation was carried out, the funding cycle was ending. A year later another funding cycle with a shifted focus began. As a result, action directly based on these results was not taken at that time. However, the Illinois State Asthma Program has recently been allocated additional funds for the future, and has therefore begun to make plans to expand its reach. Since both adult and pediatric asthma will be targeted, additional criteria are being included in this process of decision making. PARED rates, and the potential to form local partnerships, were included as part of the criteria in this future program expansion. As such, this analysis did provide part of the road map to future action.

A final possible limitation is that counties do not align exactly with NFP hospital catchment areas. However, county level PARED rates were calculated based on the residence of the patient, rather than hospital location.

5. Conclusions

The use of CHNAs along with PARED rates was a novel method for identifying potential common interest in asthma outcomes, and possible hidden opportunities to develop new partnerships and expand current partnerships. It is a straightforward way of evaluating the need for asthma programs, and community and clinical awareness of the importance of this chronic health condition throughout the state. As such, it can inform future programmatic decisions.

Evaluating partnerships provides an opportunity for all partners to be accountable to the community via awareness and support. It is an opportunity for capacity building and partnership expansion while maintaining evaluation standards of feasibility, utility, accuracy and propriety (American Evaluation Association, n.d). The results of this study can help guide strategic conversations for improving state plans for monitoring, evaluating and sharing lessons learned. These findings could aid in ascertaining the potential partner's level of readiness for collaboration in state-sponsored asthma management and control programs, informing plans to expand the reach of the Program.

6. Lessons learned

By utilizing existing data sources indicating community recognition of a health problem, statistically validated need, and level of programmatic engagement, the Program conducted a highly efficient, timely and inexpensive appraisal of the need for asthma programs and local readiness to address this need. The use of these data sources garnered information that the Program could use to improve its outcomes, without overburdening busy healthcare practitioners and administrators, as more traditional evaluation methods have the potential to do.

CRediT authorship contribution statement

Sarah Dee Geiger: Conceptualization, Visualization, Writing – review & editing. **Arlene Keddie** : Writing – original draft, Conceptualization, Visualization, Analysis, Validation. **Cassandra Johnson:** Writing – review & editing. **Wiley Jenkins:** Writing – review & editing, Project administration. **David Crumly:** Writing – review & editing, Investigation, Resources. **Nancy Amerson:** Writing – original draft, Writing – review & editing, Conceptualization, Methodology.

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Competing interests

The authors have no competing interests to declare.

References

American Evaluation Association. (n.d.) The Program Evaluation Standards. ⟨https://www.eval.org/About/Competencies-Standards/Program-Evaluation-Standards⟩.

Centers for Disease Control and Prevention. (2015, April). Learning and Growing Through *Evaluation: State Asthma Program Evaluation Guide*. ⟨https://www.cdc.gov/asthma/program_eval/guide.htm⟩.

Centers for Disease Control and Prevention. (2020, May 21). The Public Health System and the 10 Essential Public Health Services. https://www.cdc.gov/publichealthgateway/publichealthservices/essentialhealthservices.html.

Clark, N. M., Lachance, L., Doctor, L. J., Gilmore, L., Kelly, C., Krieger, J., … Wilkin, M. (2010). Policy and system change and community coalitions: outcomes from allies against asthma. *American Journal of Public Health, 100*(5), 904–912. https://doi.org/10.2105/AJPH.2009.180869

, 2020Condition Codes. (n.d.). National Uniform Claim Committee. Retrieved June 5, 2020, from http://www.nucc.org/index.php/code-sets-mainmenu-41/condition-codes-mainEmenu-38.

Coombe, C. M., Schulz, A. J., Guluma, L., Allen, A. J., 3rd, Gray, C., Brakefield-Caldwell, W., … Israel, B. A. (2020). Enhancing capacity of community-academic partnerships to achieve health equity: results from the CBPR partnership academy. *Health promotion practice, 21*(4), 552–563. https://doi.org/10.1177/1524839918818830

, 2020Discharge Data. (n.d.). Illinois Department of Public Health. Retrieved June 13, 2020, from https://www.dph.illinois.gov/topics-services/prevention-wellness/patient-safety-quality/discharge-data.

Hashimoto, R. E., Brodt, E. D., Skelly, A. C., & Dettori, J. R. (2014). Administrative database studies: goldmine or goose chase? *Evidence Based Spine Care Journal, 5*, 74–76.

Hicks, S., Duran, B., Wallerstein, N., Avila, M., Belone, L., Lucero, J., … Hat, E. W. (2012). Evaluating community-based participatory research to improve community-partnered science and community health. *Progress in community health partnership: research, education, and action, 6*(3), 289–299. https://doi.org/10.1353/cpr.2012.0049

, 2017Hospital Community Health Needs Assessments. (n.d.). Illinois Hospital Report Card and Consumer Guide to Health Care. Retrieved September 5, 2017, from http://www.healthcarereportcard.illinois.gov/contents/view/community_health_assessmnts.

Illinois Department of Public Health. *Concentrated Disadvantage by County, 2008–2012.* Retrieved July 27, 2021, from https://dph.illinois.gov/topics-services/life-stages-populations/infant-mortality/toolkit/data.

Illinois Department of Public Health. *Illinois Hospital Report Card and Consumer Guide to Healthcare.* Retrieved August 2, 2021, from http://www.healthcarereportcard.illinois.gov/contents/view/community_health_assessments.

Lachance, L., Benedict, M. B., Doctor, L. J., Gilmore, L. A., Kelly, C., Krieger, J., … Clark, N. M. (2014). Asthma coalition effects on vulnerable sub groups of children: the most frequent users of health care and the youngest. *Journal of Asthma, 51*(5), 474–479. https://doi.org/10.3109/02770903.2014.891608

Patient Protection and Affordable Care Act, Pub. L. No. 111–148, 42 U.S.C. (2010). https://www.congress.gov/111/plaws/publ148/PLAW-111publ148.pdf.

Pennel, C. L., McLeroy, K. R., Burdine, J. N., Matarrita-Caante, D., & Wang, J. (2015). Community health needs assessment: potential for population health improvement. *Population Health Management, 19*(3), 178–186. https://doi.org/10.1089/pop.2015.0075

Pinnock, H., Epiphaniou, E., Pearce, G., Parke, H., Greenhalgh, T., Sheikh, A., … Taylor, S. J. C. (2015). Implementing supported self-management for asthma: a systematic review and suggested hierarchy of evidence of implementation studies. *BMC Medicine, 13*(1), 127. https://doi.org/10.1186/s12916-015-0361-0

Weston, S. J., Ritchie, S. J., Rohrer, J. M., & Przybylski, A. K. (2019). Recommendations for increasing the transparency of analysis of preexisting data sets. *Advances in Methods and Practices in Psychological Science, 2*(3), 214–227.

Wolfe, S. M., Price, A. W., & Brown, K. K. (2020). Evaluating Community Coalitions and Collaboratives [Special issue] (Ed.). In *New Directions for Evaluation, 2020*.

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