IDS CASE STUDY:
Allegheny County

Allegheny County's Data Warehouse: Leveraging Data to Enhance Human Service Programs and Policies

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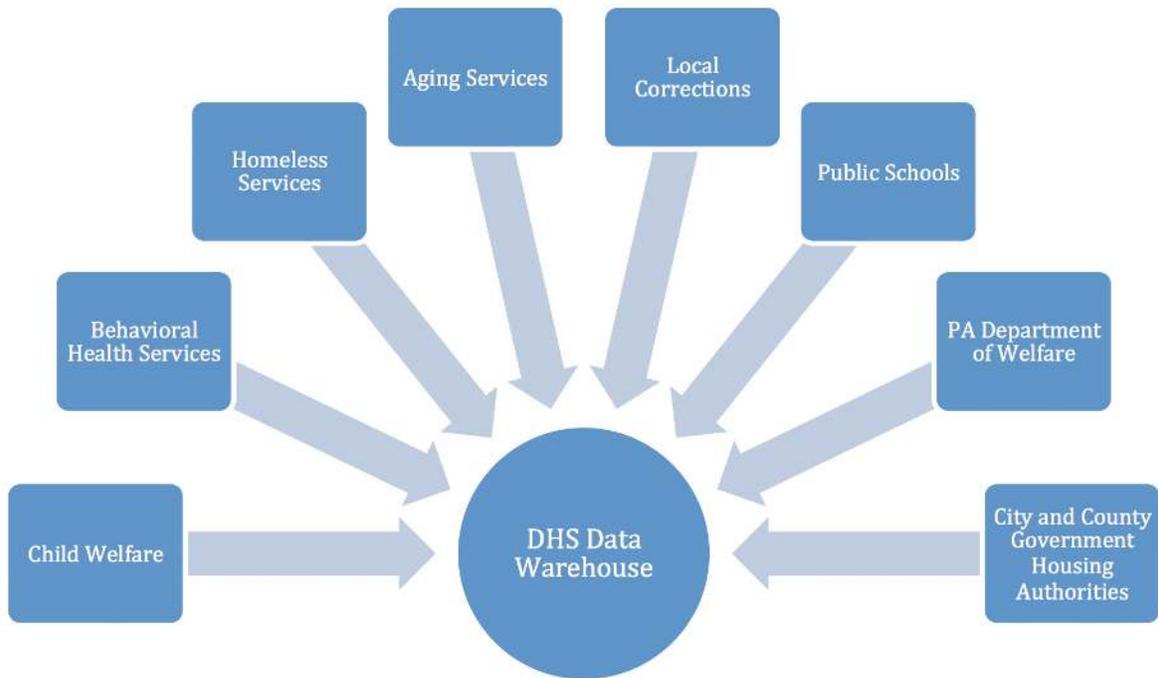
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Allegheny County's Department of Human Services (DHS) launched its data warehouse in 1999 with initial start-up funds from the Human Services Integration Fund (HSIF), a coalition of local foundations that funded the initial phase of the data warehouse and has supported periodic improvements.[1] Since its development, the DHS data warehouse has served as a central repository that brings together human service and other client data to support a wide range of administrative, decision-making and policy activities within and external to DHS. DHS initially focused on consolidating its own internal data including those for behavioral health, child welfare and homeless services. Over time, the department expanded these efforts and added data sources from other agencies such as the Department of Public Welfare and the Pittsburgh Public Schools. It also began to use its data warehouse for policy analysis and research purposes. Like other integrated data systems in the AISP Network, Allegheny County Department of Human Services' data warehouse aims to improve service to DHS clients, enhance the ability of caseworkers to perform their jobs, enrich the capacity of individuals to manage and administer DHS programs and services, and evaluate the effectiveness and quality of DHS policies and operations. Currently, the DHS Data Warehouse connects data from DHS programs and a number of external sources including the 10 local public school systems, the Courts and Jail, and the Housing Authorities of both Allegheny County and the City of Pittsburgh.

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1   In 1997, when the Department of Human Services (DHS) was created by consolidating four separate departments into one unified department, a group of local foundations came together to provide flexible funding to DHS for projects that foster integration and support innovation in ways that were not possible with public sector dollars. HSIF's member foundations have contributed more than $12 million since the fund was established.

During the site visit, I conducted semi-structured interviews with staff members who manage and work with Allegheny County's data warehouse. These individuals included Marc Cherna, the Director of Allegheny County Department of Human Services; Erin Dalton, Deputy Director, Allegheny County Department of Human Services, Office of Data Analysis, Research and Evaluation (DARE); and Randolph Brockington, Deputy Director, Allegheny County Department of Human Services, Office of Administrative and Information Systems Management (AIMS). In addition, I interviewed Lisa Caldwell and Brian Bell, two of DARE's managers (Brian is also Allegheny County's Privacy Officer). I also met with key staff from one of DHS's technology consultants. The interviews were based on an interview protocol developed with the University of Pennsylvania's *Actionable Intelligence for Social Policy* (AISP) team. Using

standard qualitative methods, I coded these interviews for four themes—securing and maintaining legal agreements, establishing governance processes, implementing data analytics management and processes, and creating economic and political realities to sustain operations.

❖ DHS Data Warehouse Pipeline: Matching, Storing, and Using Data

Currently, the data warehouse includes more than 640 million records from almost one million clients that provide demographic information (e.g. client name, social security number, date of birth, and address); service information (past and present services that clients and/or their families receive, and service cost); and provider information (e.g., name, location, type of providers, and services delivered). DHS works with the external agencies to draft data sharing agreements. These data sharing agreements comply with federal, state, and local legislation and are designed to ensure that data are used in legal and ethical ways (DHS staff, interview, March 17).

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Data are extracted from external data sources and transmitted through secure file transfer protocols (FTPs) or external database links, and then, loaded into the DHS Data Warehouse. After the data have been loaded, the technicians begin the process of matching clients. Matched clients are uniquely identified using the Master Client Index

(MCI) number, which links all clients' county level records together. Because datasets have varying degrees of data quality, DHS has developed an in-house algorithm that matches basic demographic information and identifies duplicate matches. In addition, DHS has created a source priority identification system, which determines the degree of trust given to data fields from a particular data source (DHS staff, interview, March 18).

Data are utilized by both internal and external entities for a variety of purposes. In addition to DHS's internal research agenda, DHS also receives and processes requests for data from researchers, academics, students, providers and others interested in data analysis. Before external research requests are approved, DHS requires institutional review board (IRB) approval from the researcher's institution and from DHS's Department Review Board (DRB) to ensure ethical data use and practice. DHS staff members work closely with external researchers to revise their work so that it includes sound and feasible research questions and leverages the strengths of the data housed in the warehouse. DHS asks external researchers to write a policy brief about their study and findings for a general audience and posts these briefs on their public website: http://www.alleghenycounty.us/dhs/research.aspx. (DHS staff, interview, March 17)

❖ Integrating Data between the DHS Data Warehouse and the Pittsburgh Public Schools: A Groundbreaking Partnership

An analysis of data from the Pittsburgh Public Schools (PPS) demonstrated that approximately half of PPS students used DHS services at some point in their lives, and that as a group, the individuals who used DHS services generally showed signs of lower academic achievement and school performance. PPS and DHS officials knew that homelessness, abuse, neglect, and other factors that bring youth into DHS have clear implications for learning, but they lacked a mechanism for understanding the factors that fell outside of their system's jurisdiction. Even though officials in both systems were keenly aware of this shortcoming, legal barriers in federal and state confidentiality mandates prevented data sharing on these youth.   PPS and DHS addressed these legal

barriers, which still exist in many parts of the nation, and together implemented a groundbreaking Memorandum of Understanding (MOU) that legally allowed them to integrate DHS and PPS data and enhance service outcomes for the youth under their shared jurisdiction.

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When DHS and PPS began their conversations, many worried that the legal barriers, particularly those mandates that protect educational information (FERPA) and health information (HIPAA) were insurmountable. In addition to these legal challenges, officials from the Pittsburgh Public Schools were wary about releasing data to individuals outside of PPS. They, like officials in school districts around the country, felt that urban schools are often revolving doors for researchers. Before creating the MOU, PPS and DHS had several conversations about how they might make this shared data system useful to both entities. Finally, DHS and PPS had to figure out the technological details of linking tens of thousands of PPS students with data from a variety DHS programs and services. Any one of these challenges might have presented insurmountable obstacles. DHS officials noted that support from Pittsburgh's foundation community was once again key to the success of these initial conversations. The foundations had already provided Pittsburgh Public Schools with funds to create programs aimed at increasing student achievement. They also used their influence and knowledge to forge connections between DHS and PPS officials to promote the integrated data initiative (DHS staff, interview, March 17).

Another local initiative, the Youth Futures Commission (YFS), catalyzed conversations about the DHS/PPS system and was instrumental in the process leading to the MOU. The establishment of this new commission, which was led by Frederick Thieman,

former U.S. Attorney for the Western District of Pennsylvania who now runs the Pittsburgh-based Buhl Foundation, provided a forum for discussions about the value of integrating school and human services data.

Using the resources that DHS had already established in its data warehouse and funds that local foundations had provided through HSIF, DHS and PPS attorneys focused on issues of confidentiality inherent in sharing student and client data, including the issue of how to legally obtain consent to use student records. After thinking through various options, the attorneys found a solution in a 2008 FERPA amendment that permitted the release of personally identifiable student data without consent to organizations interested in conducting research to improve student achievement as long as these organizations had a signed MOU that outlined confidentiality parameters and data use protocols. By tying the use of the data to actionable research, these attorneys found an innovative way to draft a legal agreement that met all of the requirements of FERPA and HIPAA.

Since DHS already has the technology to integrate these data through the data warehouse, it manages the process of integrating and analyzing the DHS and PPS data. The integrated data system provided the tools to conduct a range of analyses on youth who both attend PPS and receive DHS services. These analyses indicated glaring gaps in achievement between the group of students who are involved in human services as compared to their peers who are not involved in human services. Specifically, the first analysis revealed that the population of youth who attend PPS and also come into contact with DHS included a group of youth who performed well on standardized tests but poorly in school attendance and/or grades.[2] In response, PPS and DHS focused on creating programs and policies to help these youth improve their grades and attendance. In addition, this information generated through the data warehouse has promoted ongoing conversations with community members (for example, County judges and foundation members) about improving conditions for youth in and out of school. Perhaps most importantly, the DHS/PPS integrated data agreement has

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2   These criteria were established by Pittsburgh Promise (www.pittsburghpromise.org)

enhanced the relationships between DHS and PPS officials and sparked new channels of collaboration among other individuals who work with youth throughout the County—child welfare caseworkers, social workers, guidance counselors, and juvenile justice staff. Based on the success of this partnership, DHS has also signed similar agreements with several other Allegheny County school districts that serve youth in DHS's jurisdiction (Fraser, 2012).

❖ Using the Data Warehouse to Improve Client Care and Student Achievement

DHS caseworkers use the data warehouse to look up information about children and family members to gather as much data as possible before they respond to any activity regarding potential maltreatment. The information in the data warehouse can help caseworkers determine if any of the children or family members have received other county services, such as drug and alcohol treatment or involvement with the corrections system. Caseworkers can also gather information from other departments, including the State Department of Public Welfare that manages the TANF and SNAP programs. Allegheny County caseworkers said that the data warehouse has helped them provide more efficient and effective services. The data warehouse has helped caseworkers find information on individual households before conducting a home visit, and, in some cases, to support the process of identifying and contacting relatives who might be supports for the child and/or family. While this case study and the mission of AISP is primarily focused on IDS for policy analysis and research, it is important to note that Allegheny County's IDS was not built with this in mind. Rather, it was initially built to make sure that care was integrated across DHS agencies and, over time, evolved to also include policy analysis and research.

DHS staff recently used the data warehouse to examine the effects of chronic school absenteeism on students who attend Pittsburgh Public Schools. They chose this topic because research suggests that chronic school absenteeism has adverse effects on school achievement and graduation: it is associated with lower grade point averages

and higher school dropout rates. Allegheny County's analysis demonstrated that nearly one quarter of Pittsburgh Public School students were chronically absent, meaning that they missed over 18 days of school annually. Furthermore, the results indicated that GPAs of 2.5 or higher are found at much lower rates among chronically absent students than among those who attend more regularly. Only 19 percent of students who missed at least 20 percent of school days had a GPA of 2.5 or above—compared to 75 percent of students who missed fewer than five percent of school days. Moreover, students with DHS involvement were at particular risk of having high absenteeism rates, accounting for 58 percent of students who missed at least 20 percent of school days. Students who were active in the mental health and/or child welfare systems and/or were receiving public benefits were the most likely to miss at least 10 percent of school days, and nearly half of the middle and high school students in an out-of-home placement were chronically absent. The department used these findings to begin countywide discussions and create partnerships to address chronic absenteeism among these youth. Collaborations among PPS, the Allegheny County Courts, and DHS resulted in a pilot early intervention program at two K–8 schools on the North Side of Pittsburgh, designed to prevent future involvement with DHS or the justice system (The Allegheny County Department of Human Services, 2013).

❖ Addressing the Political and Economic Realities to Sustain Data Use and Practice

The Allegheny County data warehouse is funded primarily through DHS funds, which are generated largely through federal and state allocations. One staffer said that Allegheny County manages its integrated data system as if were "part of the cost of running the department…we chose to invest in it [the data warehouse]." This staff member argues that DHS chooses to "prioritize and invest" in its data warehouse because the agency believes it is critical to its work (DHS staff, interview, March 18). Another staff member agreed and reported that the county agencies that contribute data have found that they "are much more efficient." Even though there is a cost to maintaining the warehouse, its existence actually saves the county

money. These cost savings, in turn, gives DHS "more money to spend on programs. It's an investment to get there. You have to make that investment" (DHS staff, interview, March 18). This approach provides sustainability across administrations and helps the department forecast the data warehouse's operational expenses as integral to the department's needs.

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DHS also relies on an array of local foundations as well as some federal and state funds, such as grants from the Pennsylvania Commission on Crime and Delinquency and the Health and Human Services Children's Bureau, to support its work. DHS staff members understand the importance of these funds and the relationships that they have with these foundations. As one staff member said, relationships are critical to the success of this work.

Although these sources provide additional funds, the agency cannot depend on foundation or grant support alone to cover the data warehouse's operational costs on an annual basis. As one staff member suggested, Pittsburgh's local foundations are more than willing to fund programs and evaluations, but they are not willing to provide funds to finance the data warehouse's operational costs. Yet, at the same time, this staff member acknowledged that Allegheny County's integrated data system makes the organization much more competitive when applying for foundation and federal grants (DHS staff, interview, March 18).

Like other Network sites, individuals in Allegheny County stressed that successful data sharing use and practice takes time—both to develop the trusting relationships necessary to execute MOUs and data sharing agreements and to gather the data from its own program

staff and external agencies. While the MOU between DHS and PPS has been touted as the first of its kind in the nation, it took over 18 months to develop and complete. DHS officials remember these challenges, but agreed that they found it important to remain focused on the larger goal and possibilities of integrated data when they began the process of creating the data warehouse. This long-view, long-term perspective sustained them as they navigated the legal terrain and security issues related to doing this kind of work.

DHS staff members believe that the data warehouse promotes greater transparency and collaboration between DHS caseworkers, their clients, and the community partners who are vested in validating the work that DHS does throughout the County. More than a decade after DHS officials began to discuss building a data warehouse, DHS officials know that it has undoubtedly enhanced service delivery and program outcomes for thousands of residents throughout the County.

❖ About AISP

AISP is an initiative funded by the John D. and Catherine T. MacArthur Foundation through a grant to University of Pennsylvania Professors Dennis Culhane, School of Social Policy and Practice, and John Fantuzzo, Graduate School of Education. The principal aim of AISP is to improve the quality of education, health and human service agencies' policies and practices through the use of integrated data systems. Quality integrated data systems are designed to help executive leaders in municipal, county, and state government evaluate and establish effective programs for the people they serve.

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❖ Recommended Citation

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