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The Property Health Report

Topher Castaneda
Bates College

Anna Helms
Bates College

Claire Sickinger
Bates College

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The Property Health Report
Completed in Conjunction with Healthy Homeworks, Lewiston

Topher Castaneda, Anna Helms, and Claire Sickinger
Bates College Program of Environmental Studies
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Executive Summary

Lewiston, Maine's aging housing stock and high demand for rental housing is cause for concern for those who know the health risks associated with poor property maintenance. The Property Health Report (PHR) is an online database that increases access to information about multi-family rental housing in downtown Lewiston, created by local non-profit Healthy Homeworks. Information includes active liens, notices of violation, lead inspection data, and other data regarding the environmental, legal, and financial health of each property. This compilation of objective, publicly available data makes it easy for non-expert renters and investors to make educated decisions about the properties they choose to rent or buy. Instead of contacting individual data holders, knowing what information to ask for, and being able to interpret these data, PHR users can view all property health information in one place.

The creation of the PHR began in 2018 with Healthy Homeworks founder Amy Smith. Our work with Healthy Homeworks picked up where three Bates students left off in December of 2018. Our role was to attend meetings with data holders and Smith, further clarify the details of the property rating system, and collect data for 30 properties of various conditions to be put into the beta version of the PHR. We collected, cleaned, and analyzed property health data from properties in Lewiston's Tree Street neighborhood and chose 30 properties representative of the dataset for Healthy Homeworks to input. Some of our key findings are the differences between data holders' databases and file storage, which makes it challenging for Healthy Homeworks to get updated data in an easy to input format. Further, there are limitations due to workflow in that domain experts and data collectors do not provide data holders with thorough data, meaning datasets provided to Healthy Homeworks are incomplete or do not tell a comprehensive story about a property.

Our work on the PHR will be continued by another Bates student through the Summer of 2019 and Healthy Homeworks has a goal to launch a public facing version of the PHR in January 2020. Some recommendations for next steps are to further clarify the rating system, establish methods and frequency of updates from remaining data holders, and to expand the PHR to include all of Lewiston, beyond the Tree Street neighborhood. Other future work includes logistical planning for integrating the PHR with Lewiston's new Rental Registry. The launch of the PHR will increase the health and well-being of the Lewiston community for a safe and sustainable future.

Table of Contents

List of Figures

Background

The aging housing stock in the United States raises questions about public health. Rental housing and multifamily affordable housing units can have inadequate heating, poor air circulation, no smoke detectors, fire extinguishers, or sprinklers, lack of safety equipment for multi-story buildings, lead in the pipes and paint, and other issues such as liens and other payments owed that could be cause for eviction (Nriagu et al. 2011). A resident's health and well-being can be severely impacted based on their housing conditions and where they live (Thomson et al. 2009). Factors of inequity based on race, socioeconomic status, age, immigration status and many more aspects of one's identity play a role in housing accessibility and related health issues. The sick, elderly, young, unemployed, and other marginalized communities tend to be at a higher risk of exposure to these hazardous living environments, especially in rental housing, where renters might not be fully aware of housing conditions or might not have the means to fix problems (Nriagu et al. 2011, Thomson et al. 2009). Renters often have no other choice for housing and little knowledge of a unit's condition due to the lack of organized information offered by the landowner. While there are websites like Zillow for potential renters and buyers to see the basic information about a property, the specifics of its physical and financial conditions and history are not included. Even if the tenants recognize that their living standards negatively affect their health they are often locked into a lease and have no choice but to remain in this situation. Moreover, they may not be able to afford different housing based on their financial situation.

Other than passing government inspections, there are few incentives present to motivate property owners to fix these harmful issues. It is expensive to de-lead an entire multi-family building and the landlords may find a cost-benefit analysis proves it is not worth it to change the state of the property. The lack of readily available and straightforward information for tenants or prospective buyers about the health of a home is alarming and must be addressed through the synthesis of open access data.

Accessibility to relevant information about the health of a property is dependant on one's ability to search through open access resources that can be difficult to navigate because of the amount of technical data one has to sift through (Boulard et al. 2018, Gurstein 2011, Johnson 2014). There are multiple rankings of open access data (in terms of housing condition information), grouped by how clear and accessible they are (Fig. 1). While all these data may be available to the public, they may not be easy to understand, even if people know where to find them. Deciphering these data on government or non-profit websites takes a certain level of understanding of the information, as the intended audience for these raw data is typically specialists in the field (Gurstein 2011). Even if these data are easy to understand and obtain, there is so much information that it is hard for one to know what is important and how much of this public information is legitimate and up to date. Along with this issue, these data may be available but not online. Instead, an individual may have to go in person to the different sectors that hold this information. An individual would have to go to multiple different entities to find the information

they need to make an expert decision to buy or rent a property. Some organizations may only have one piece of the information, while others may hold many (Fig. 2). Many critics have emerged in response to the open access to resources, for they technically are available to everyone but are only understood by those educated on the content (Johnson 2014).

For these reasons, the price of a rental unit offers the most information to non-expert renters and potential buyers. One assumes a higher price equals a unit in better condition, which is not a reliable method of evaluation. This growing concern is making nations and cities question how to combat the problem of misinformation and the lack of useful housing information. A resource that allows one to see all these data at once and is tailored for non-expert comprehension is crucial to developing safer and healthier communities.

Efforts to bridge the information gap on housing hazards have manifested across communities to varying degrees; some are simple neighborhood efforts while others involve city governments. The goal of such initiatives is to inform residents of housing conditions, as well as potential renters and buyers, and give them the opportunity to make an informed choice about where to live or invest. Countries like New Zealand and the United Kingdom have poured resources into investigating the relationship between the health of a rental property and its effect on the health of the renters (Telfar et al. 2017, Thomson 2013). This work aims to show data that could influence policymakers to see housing hazards as a public health epidemic. Only once the problem is recognized can one attempt to fix it. Efforts in states such as New York use a similar approach by facilitating healthy home programs for residents to arm them with the knowledge necessary to make informed decisions (Dixon et al. 2017). Similar to New York, there is an increasing effort to increase access to information about rental properties in Lewiston, Maine. By giving the potential renters and buyers property health information, their autonomy is dramatically increased. An article from the Portland Press Herald detailed the suggestion of a single database called a Rental Registry in Portland, Maine, in which the city will soon require property owners and landlords to be transparent about who they are and how to contact them, but it is a point of contention among the landlords in concern of their privacy (Rice, 2018). This Rental Registry program has been proposed to Lewiston. Another program in Lewiston is the Community Development Project, a study conducted by Harvard University, which worked to unify the residents in the area with landlords and workers. One of the study's suggestions was for previous housing code violations to be waived as a gesture to encourage these landlords to participate in city programs (Harvard University, 2014).

Lewiston is part of the U.S. Department of Housing and Urban Development's program titled the Choice Neighborhood Grant. This program has goals in creating well-managed housing, improving the lives of those living in the target housing, and creating public and private investments (Choice Neighborhoods - HUD). Lewiston is currently a beneficiary of the Choice Neighborhood Grant, receiving $1.4 million. The goal is to create a safer and healthier

community with a large emphasis on the improvement of housing. Meeting the expectations of the grant would make Lewiston a national leader of change for a healthier community.

One of the most notable housing initiatives in Lewiston is through Healthy Homeworks, a non-profit founded in Lewiston, to create an online database called the Property Health Report (PHR). Amy Smith is the creator of the nonprofit Healthy Homeworks. The PHR will allow potential renters and investors to see the various health and economic hazards of rental properties so they can make better-informed decisions when renting a unit or buying a building. In addition to the price of the unit and name of the management company, the past and existing violations will be at the viewer's disposal. The final product of the PHR will be an online website where a map of the Lewiston properties is available for viewers to click on each unit and have access to all these data for that property. The beta version of the PHR will include 600 multi-family homes in the Tree Streets neighborhood of downtown Lewiston (Table 1) and it will be tied to the new Rental Registry. To help Healthy Homeworks reach this goal a group of three students from the Bates College Environmental Studies Community Engaged Capstone course worked with Healthy Homeworks to create a foundation for the PHR in the Fall of 2018. This group identified these data holders and the properties within Lewiston to include in the beta site for the PHR. They also worked with Healthy Homeworks to create a rating system that will be used as an initial way to grade a property based on the status of its financial, structural, legal, and environmental conditions (Fig. 3). This system makes the PHR accessible to all users and allows for an initial view into the status of the properties in Lewiston, Maine. The PHR will streamline the process for individuals who wish to learn about the state of a property by compiling it into a singular place (Fig. 4).

Research Aims and Objectives
The aim of this project was to continue developing a property health report for the rental properties in downtown Lewiston to increase information flows and allow prospective renters and buyers to make informed and sophisticated decisions about their investments based on the environmental, legal, financial, and structural health of Lewiston's rental properties. There are four objectives that helped achieve the aim of this project.

Objective 1: Meet with data holders in the public and private sectors to secure accurate data on each property and to establish the frequency of updates for these data in the report.

Objective 2: Merge these collected data in a way that is easy to access and understand. Address the language and technology limitations of the database as well as feedback and concerns from data holders.

Objective 3: Differentiate between landlords who are working to improve their properties and those who are not. This can be addressed by clarifying the current red, yellow, and green rating system and defining levels within the "yellow" rating.

Objective 4: Create the PHR as a model for other communities who are looking to improve and track housing health.

Methodology

The success of our project largely depended on our collaboration with Amy Smith, the Founder and Executive Director of Healthy Homeworks. We kept in frequent contact with her to schedule meetings, clarify our understanding of the project, and make sure we were doing the tasks most helpful to her work. Figure 5 shows a simplified timeline of the two semesters spent working with Healthy Homeworks on the PHR and identities overlaps in work done (Fig. 5)

1. **Contextualize**: We began our research by reading the report *Healthy Homeworks' Property Health Report* authored by a group of Bates College students who worked on the project in the Fall of 2018. These students worked with Amy Smith to create a foundation of the PHR and, in their report, they include recommended next steps for the future of the project. We read the report before meeting with Smith for background on the project and to gain an idea of the deliverables expected from us. Next, we met with Smith to better understand the goals and scope of the project. During this meeting, she explained the basics of the PHR, further clarified the work done in the previous semester, and laid out her expectations for our role in the project.

2. **Collect**: Our goal was to populate the PHR with data for 30 properties in the Tree Street neighborhood. Smith scheduled the meetings with data holders and was present for each of them. She contacted the data holders responsible for Lewiston property data and informed us of the meeting times and locations. We attended meetings with Smith at the Lewiston Management Information Systems (MIS) and Androscoggin Registry of Deeds. In addition, we attended a presentation about the PHR by Smith to the Maine Department of Health and Human Services. We took notes of new information we learned about the PHR, data holder proposals for methods of updating data, major concerns of data holders, and roadblocks identified during these meetings. The exact structure of these meetings was different depending on how much each data holder already knew about the PHR. However, there were some basic points that were always discussed:
   a. What the PHR is, including the rating system used to score individual properties' health;
   b. Why the PHR is important and who can use it;
   c. Incentives for data holders to share their data;
   d. The relationship between the Rental Registry and the PHR;
   e. The data needed from this data holder, how easy it is to access, and how it fits into the PHR;

    f. The record system this data holder uses and its capacity to output spreadsheets for the PHR;

    g. Methods and frequency of providing Healthy Homeworks with updated data; and

    h. Political, logistical, and privacy concerns of data holders

3. **Categorize**: Last semester's group of Bates students developed the previously mentioned rating system for the multi-family homes in the PHR (Figure 3). We discussed the rating system with the experts who collect and currently hold these data because they have a sense of the severity of various violations and conditions. Using the knowledge from these conversations, Healthy Homeworks updated the yellow rating to include a number inside the triangle that indicates the number of known issues for that property.

4. **Update**: After obtaining updated data on active abatements, assessor data, and inspections, we cleaned these data and identified missing information. Cleaning these data consisted of narrowing down these data sets to properties that were within the Tree Street neighborhood, removing columns that had the same data in every row, and re-ordering the columns so the first three from left to right were parcel identification number, street number, and street name. Us and Smith decided on 30 properties that would be representative of the entire data set to put into the live demo of the PHR. Once the properties were chosen we searched each address to gather lien data from the Registry of Deeds website. For the 30 properties, we made sure some had to liens, notices of violations, abatement orders, and other common issues. We also made sure properties that had no known issues were represented. Healthy Homeworks then applied an algorithm to normalize the data and input these 30 properties into the beta site.

5. **Share**: At the end of the semester, we presented our work to Healthy Homeworks along with other stakeholders and data holders (Table 2). There, we demonstrated how and why one might use the PHR, along with a description of our process with and our recommendations for Healthy Homeworks' next steps.

Results and Discussion

The Property Health Report is a large project which extends beyond the work we did this semester. We joined Healthy Homeworks in the middle of the data collection process. The current goal is for the PHR website to launch on January 1, 2020. In the meantime, work to be done consists of meetings, data collection, and analysis.

The meetings with MIS for the City of Lewiston and the Androscoggin Registry of Deeds yielded useful information about workflow issues, missing data, and updating methods. MIS identified that the column in the data titled "reason for inspection" is vague with entries such as Property Maintenance or Building/Property Code. Therefore, if the property failed its inspection, the data gives no context. The MIS team suggested that the inspectors could utilize the comments section while in the field. This would allow clarification on why a particular property did not pass an inspection by giving some details. This workflow issue was identified during the initial

meeting with MIS, but Healthy Homeworks does not know if it has been addressed at this time. MIS will send updated data to Healthy Homeworks by posting the spreadsheets on the public MIS website once per month.

The Androscoggin Registry of Deeds can provide information on liens, when a property has transferred owners, and soon will be able to provide data on lead abatement orders in accordance with a bill proposed to the Maine State Lesgislature. During our meeting we discovered that all deeds in Lewiston do not have parcel identification numbers on the documents and sometimes do not even contain the street address. This realization means that data pertaining to transfer of owners could not be efficiently matched with properties in the PHR as the unique identifier for each property that is used in the PHR algorithm is the parcel identification number. While there is a slot to input the parcel identification number on the Registry of Deeds interface, legislative action would be necessary to make it a requirement to provide this information. All these data on liens required for the PHR were accessed by going onto the Androscoggin Registry of Deeds website and searching for properties by street name. No current system exists where the Registry of Deeds can output a comma separated value or Excel spreadsheet to easily update Healthy Homeworks.

Once data was sent to Healthy Homeworks, it was processed through their algorithm. Parcel identification numbers were the unique identifier for each property in connecting data for each property sent by each of the data holders. If Parcel identification number was missing, then the street address was used to match up data from different data holders about the same property. In collaboration with Healthy Homeworks, 30 properties were chosen for the sample site. The goal was to show a representative sample of the neighborhood while also showing each of the aspects of the PHR. We includeded properties with each of the ratings, some with lead abatements, others with liens and code violations, and some with no known issues. The data on these 30 properties were then input into the PHR beta site by Healthy Homeworks, both in the map view, as well as the report-card-style list view.

While the work of sorting through these data to include only the target area had to be done manually and was therefore time intensive, in the future, this will not be necessary as the PHR expands to include data from all of Lewiston. Additionally, there has been mention of data holders creating a systems for sending updated data in a format already compatible with the needs of the PHR to relieve some of the work on Healthy Homeworks' end of data cleaning and analysis.

The key to the success of the Property Health Report lies in Healthy Homeworks' loyalty to objective ratings and updated data. Along with this, the clarity of what each abbreviation, symbol, rating, and all terminology means will increase accessibility of information to non-

experts. Our work with the PHR revolved around the collection of these data and the identification of each of the properties to be included in the focused sample set.

Recommendations for Next Steps
While there are now 30 properties in the Property Health Report, much more work is required before the site can launch to the public. Healthy Homeworks aims to launch the PHR January 1, 2020. We have a few suggestions for next steps in regard to the clarity and success of the PHR.

First, continue to clarify the yellow rating so that the system remains objective while also giving as much information in as straightforward a way as possible. Along with this, defining how the switching between ratings would occur. For example, if a notice of violation is given to the landlord with a 30-day notice, does the property that was previously green change to yellow once the notice is given, or does the property go to yellow after 31 days of inaction? Questions like these need to have definitive answers in order for the PHR to be as reliable as possible.

Second, which is similar to the last point, define a concrete update schedule. Currently, the aim for the PHR is to be updated monthly. In an ideal situation, the PHR would be updated on a live basis. The key to the PHR's success lies having current and valid information. In the meantime, using disclaimers alongside the data is crucial, stating when the information was last updated.

Third, the PHR is currently focused on the Tree Streets neighborhood. While this is an incredible database to have for this area, eventually the PHR could expand to all of Lewiston. The Property Health Report is beneficial to everyone and therefore it would be ideal to extend the scope beyond the current sample area.

While we completed our work with Healthy Homeworks, work on the PHR will continue. A Bates College student will intern for Healthy Homeworks towards further progress of the database. A focal point of this work will surround addressing the logistics that are required to successfully roll out the rental registry to the public and tie in this information to the PHR. The rental registry is a proposed new program in Lewiston that would tie in information about landlords and contact information to the PHR. Beyond this, the intern will continue inputting and organizing all the data relevant to the 600 properties in the neighborhood.

In our time working with Healthy Homeworks to further the production of the PHR, we have seen a great deal of promise and cooperation within the Lewiston community and Androscoggin country and we look forward to seeing how the PHR continues to develop.

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Appendix

Democratized Data
- Data that is accessible and presented so non-specialists can understand the information

Open data
- Data that is easily accessible and well maintained

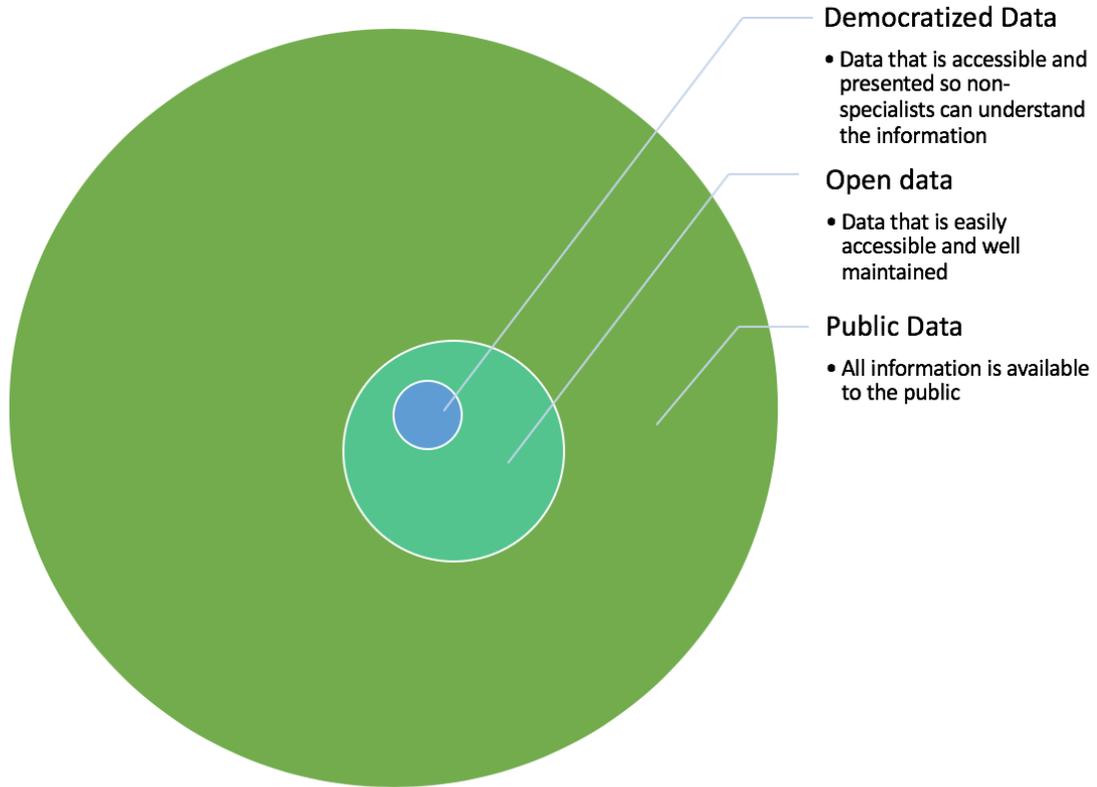Public Data
- All information is available to the public

Figure 1. Diagram depicts the relative amounts of public housing data available for renters/investors based on the measurement of accessibility. This graph builds on an earlier version created by Amy Smith.
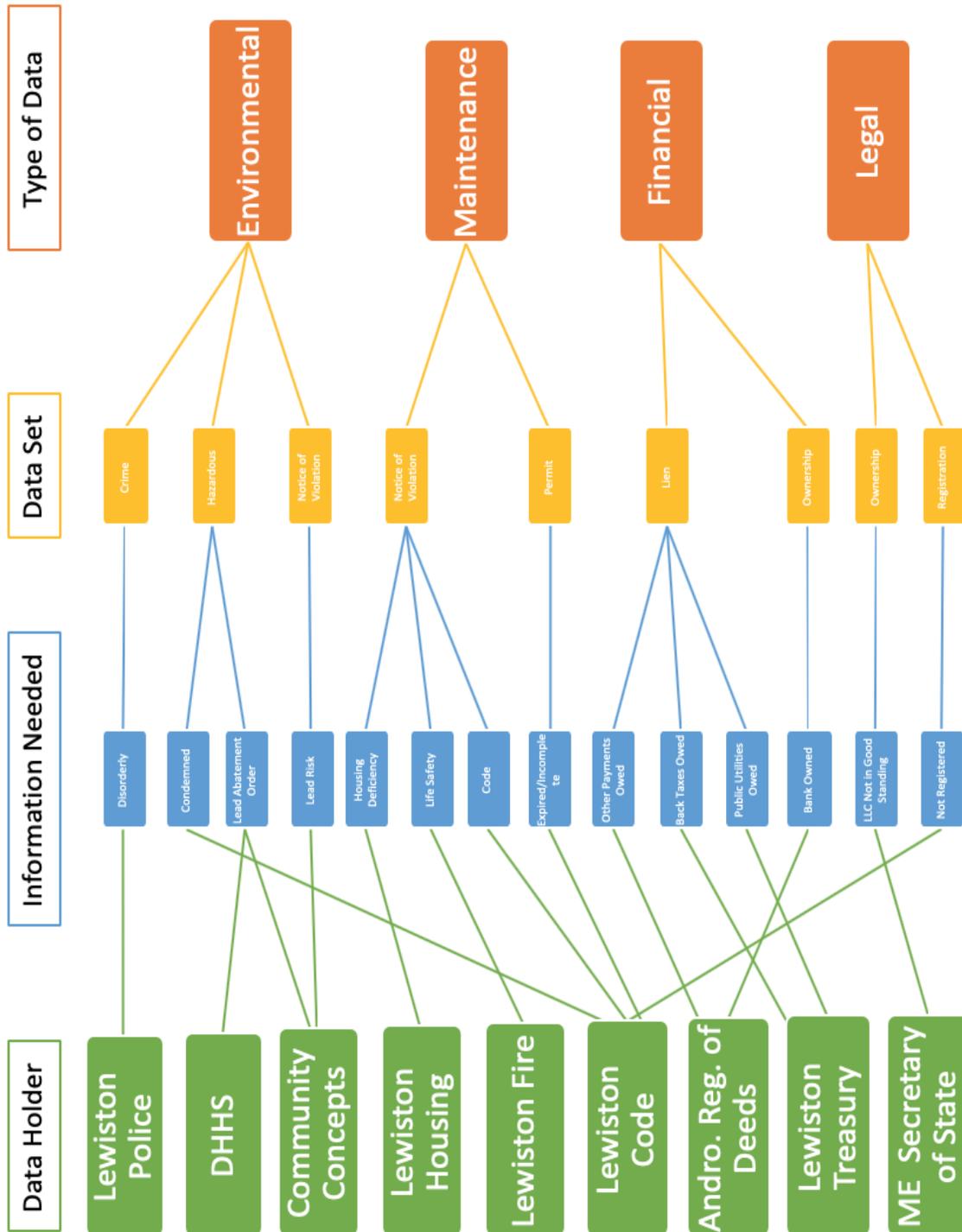
Figure 2. Web displaying the connections between data holders, information needed, data sets, and types of data. This is to identify the relevancy of relationships in the data collection process for the Property Health Report.
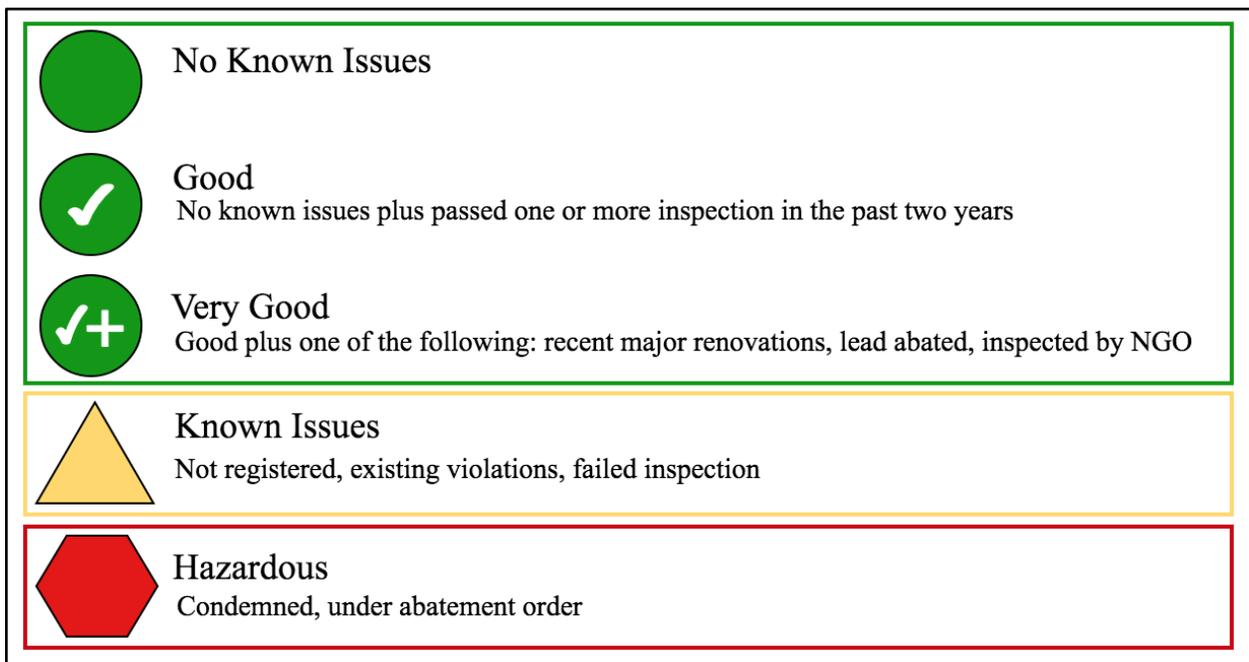
Figure 3. Breakdown of the rating system (red, yellow, and green) given to each property and the basic requirements of each.
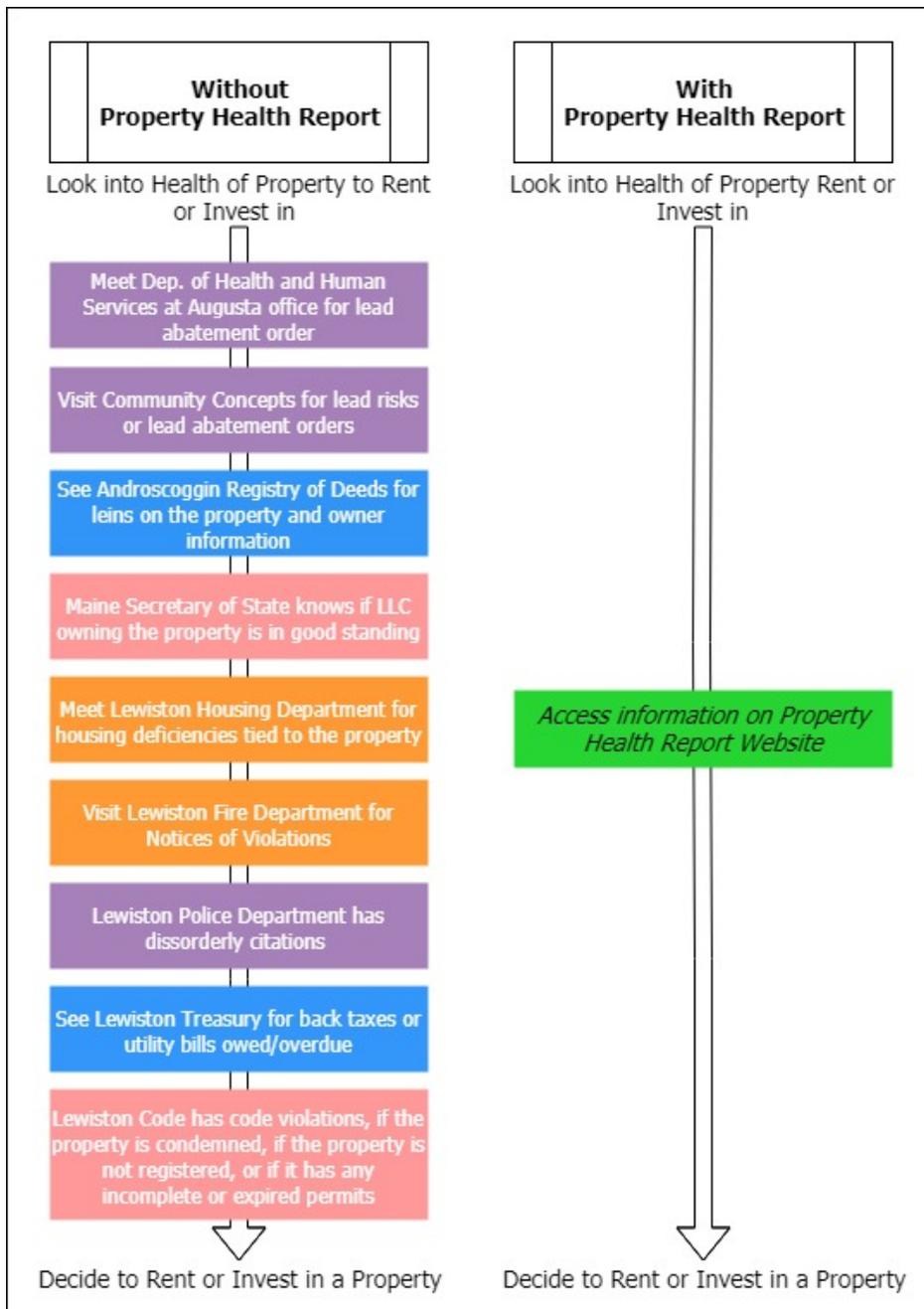
Figure 4. Two processes describing the entities required to gather data on property health: one without and the other with the Property Health Report. The process with the Property Health Report is significantly streamlined.
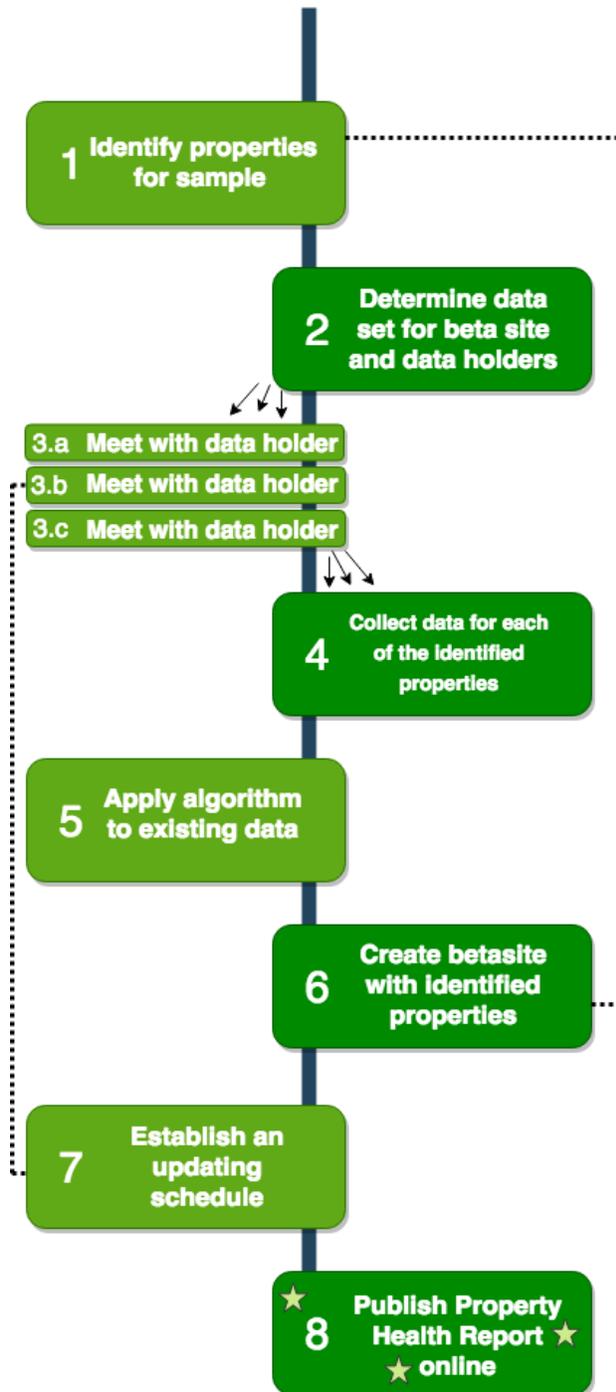
Figure 5. Outline of the production process for the Property Health Report. The Fall 2018 Capstone group addressed steps 1 to 6. Winter 2019 Capstone group has completed steps 3 to 7.

Table 1. List of roads in downtown Lewiston that are included in the beta version of the PHR.

Roads in Downtown Lewiston Included in Beta PHR
Ash Street
Bartlett Street
Bates Street
Birch Street
Blake Street
Horton Street
Howard Street
Howe Street
Jefferson Street
Knox Street
Maple Street
Oak Street
Park Street
Pierce Street
Pine Street
Shawmut Street
Walnut Street

Table 2. A list of personnel invited to our project presentation. This is to provide insight into the range of people and entities that have stake in and would benefit from the PHR.

1. Central Maine Healthcare
2. City Councilor, Lewiston
3. City Manager, Lewiston
4. Deputy City Administrator
5. Head of Lewiston Assessing
6. Head of Lewiston Housing Authority
7. Healthy Androscoggin, Lewiston
8. Lead Inspector, Community Concepts Inc.
9. Lewiston Code Enforcement
10. Management Information System, Lewiston
11. Potential Lewiston investor
12. Real Estate Loan Officer