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The Development of Insights on Priority Audiences and Awareness Messages for Child Lead Poisoning

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The Development of Insights on Priority Audiences and Awareness Messages for Child Lead Poisoning

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**A student group marketing research report submitted in partial fulfillment of BUSN324
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Executive Summary

The purpose of this project is to assist the Scott County Health department (SCHD) in gaining further insights into public opinion regarding child lead poisoning by investigating the public knowledge of lead poisoning and more specifically how knowledgeable members of Scott County are of the issue. To assist the SCHD to develop a marketing campaign regarding how to increase the perceived importance and knowledge of child lead poisoning for the average Scott County resident, we conducted research to explore why a large percentage of the population in Scott County doesn't know about the dangers of lead poisoning. Some of our hypotheses were low awareness, lack of education on the subject, and differing opinions among age groups.

We conducted both primary and secondary research for this report. Our secondary data consisted of a big data analysis where we looked at both YouTube comments and Twitter hashtags. Through the YouTube comments we found that there was an oddly large focus on politics opposed to the issue of lead poisoning while there was little or no sentiment from the overall public. The examined Twitter comments suggested that there were very minimal coverages on the issue within Scott County, while most of the conversation about lead poisoning only revolved around that of the Flint Water Crisis. Our primary research consisted of a ZIP code analysis, an interview with a pediatrician, and a survey released to the public designed to gauge their overall awareness, attitudes, and intentions on the issue of child lead poisoning.

Key Results:

- Our secondary data indicated a lack of education about the issue as well as a lack of conversation on social media about the issue.
- The top 5 ZIP codes in the area based on number of lead poisoning cases are as follows: 52803 (31 cases), 52802 (22 cases), 52722 (19 cases), 52804 (18 cases), and 52806 (17 cases).
- The renter occupancy in these ZIP codes is as follows: 39% (52803), 38% (52802), 23% (52722), 29% (52804), and 36% (52806) and we've concluded that the occupants of homes within these five zip codes are at risk of being exposed to lead since the average built year of the homes is 1958 and lead based building materials were not officially outlawed until 1980.
- There is a disconnect between the Scott County Health Department who wants to take a proactive approach and local health systems who tend to take a more reactive approach to the problem.
- Overall people don't have a strong attitude towards believing lead poisoning is an important issue in today's world. They also don't indicate a strong knowledge on the subject or a strong intention to act towards these issues.
- We found a statistically significant difference between age groups across awareness, attitude, and intention.

Recommendations:

- (1) Bridge the gap between the health department and the health system.
- (2) Design print, television, and radio campaigns to target the mid and older age groups
- (3) Design a social media campaign to better educate the younger age group on the dangers of lead poisoning.
- (4) Design a mailing campaign to target high risk homes specifically.
- (5) Incorporate a webpage on the Scott County Health Department website to outline the risks of lead poisoning and steps to take to reduce the risk.

Introduction

The Scott County Health Department (SCHD) dedicates itself to addressing daily and emerging health issues. One of the department's biggest concerns lately has been lead poisoning in children. This issue has grown to become a big problem for Scott County because many of the houses located throughout the area are aging and are deteriorating at a rapid rate. Lead is a poisonous metal that was once used in building materials for many years and can be found in and around homes across America (EPA 2017). Structures built before 1980 likely contain lead unless the home has been renovated. Lead seriously affects childhood development and can cause reduced attention span, learning ability and attitude issues (SCHD 2017). One of the main sources of lead poisoning is lead paint, which children are commonly exposed to in Davenport's aging homes. Children can be lead poisoned by chewing or eating paint chips, as well as putting dusty or dirty hands in their mouths.

Over 60% of all Iowa homes were built before 1960, so the potential of exposure to lead in the Scott County area is extremely high. The health department reports at least 50 childhood lead poisonings each year (SCHD 2017). Despite all of the available information about the dangers of lead poisoning, the Health Department continues to struggle with creating awareness of the issue. The county has many resources available to citizens such as free lead screenings to children under the age of six. However, it has been difficult to convince community members to take advantage of the resources.

Qualitative Big Data Study: Method

We executed a big data analysis to gauge the overall awareness of the dangers of lead poisoning in the public. We did an in depth analysis of YouTube comments on videos that discussed the topic of lead poisoning. We also analyzed hashtag campaigns that relate to lead poisoning that have been popular on Twitter. To gather this data, we utilized two tools, Talkwalker, a social media analytics platform and Semantria, a text analytics software.

Qualitative Big Data Study: Results

After doing a social media analysis, we learned that there are very few hashtag campaigns that are related to lead poisoning or awareness and we could not find that were specific to the Scott County area. Social media has become an essential tool for marketing in today's world (Agrawal 2016), and it would be detrimental to the Scott County Health Department's lead awareness campaign to not utilize this strategy. We believe that by developing a better social media presence through the use of a hashtag campaign, that the dangers of childhood lead poisoning would be better communicated on both a local and national level.

Hashtag Analysis

We examined several hashtag campaigns that relate to lead poisoning that have generated a lot of engagement online, most of which were related to the lead contaminated water crisis in Flint, Michigan.

Flint Michigan

One popular hashtag, #flintwatercrisis, reached over 19 million people. This campaign has reached people all over the country with 92.2% of the conversation originating from the United States (Talkwalker 2017).

Most people that are using the hashtag are either posting a photo or status to declare their outrage over the government's lack of response to this crisis, some even using the hashtag #forgottencity to draw more attention to the issue. A popular post that has been circulating recently is a photo of a man holding a sign that reads, "It's 2017, Flint, Michigan has been without clean water since April 24, 2014." The potential reach for this image is estimated at 41,000 people (Talkwalker 2017). Another Twitter user, @eclectablog from Ann Arbor, Michigan, has been posting daily using #flintwatercrisis to document the number of days that Flint has been living with contaminated water. As of September 17, this Twitter user had posted 717 times using the hashtag. The potential reach for each of his posts averages at around 18,000 (Talkwalker 2017).

After reviewing hundreds of posts on Twitter using #flintwatercrisis and related hashtags, we found that the general consensus is that people are aware that lead contamination in Flint, Michigan is a grave issue. We noticed very few posts that actually displayed clear knowledge of the damaging effects lead has on the body, although users seemed to understand that lead is harmful, explaining why most people react with outrage over the subject. It's very impressive that, although the #flintwatercrisis hashtag is still being used over two years later, it continues to show how powerful and effective a hashtag campaign can be to create awareness about the dangers of lead poisoning (Semantria 2017).

YouTube Comment Analysis

We also looked at a variety of comments on YouTube videos in our big data analysis. We found an overwhelming amount of people were solely focused on politics. One user commented:

This is so sad... Democrats will do anything to produce more Democratic voters, ANYTHING.

Instead of being focused on the issues at hand and the dangers being discussed in these videos about lead poisoning, people are more concerned with trying to place blame on their opposing political party to make them look bad. Another comment reads:

I have little to no sympathy for Republican children suffering. Trump supporters should be exterminated.

The sins of the father shall be visited upon the children - Numbers 14:18.

Even though this comment was disturbing, this individual did not exactly ignore the problem that lead poisoning is causing but seemed to prefer doing nothing. As long as it was those who supported the political affiliation this individual doesn't support, they didn't care who was in danger or being harmed. Some other individuals completely ignored everything that was being explained and decided to attack the news source directly saying things such as:

Under Obama's watch. Name one thing Obama accomplished CNN just one. I mean besides pandering to liberals sensitivities.

The news report was addressing the issues of lead poisoning, this news station is historically considered to be liberal with their political affiliation, the station asked why president Trump wasn't acting on this issue. As opposed to listening to what the station was talking about and explaining, this person called out CNN and Obama (Semantria 2017).

These comments were just a small sample of some of the political connections and political topics that went on throughout these comment sections. These comments were very surprising because with the access to technology in our modern world, you would think people could become a bit more educated on the issue and care for it a little more. Instead it seemed that most of them completely ignored it and instead used this as a platform to attack each other, especially those who opposed their personal beliefs. We are uncertain whether it is due to their lack of understanding about lead poisoning and the dangers that goes along with it, or their lack of caring. It is obvious that on the larger scale, being that these comments were connected outside of Scott County, the problem of lead poisoning is not respected enough.

We also did an analysis on the YouTube videos to try and understand what the overall sentiment of lead dangers was. We could tell that there was a strong tie to politics when it came to this issue but we were interested in developing more insights about people's personal opinions on the issue. The data showed us that overall the sentiment on the issue was very neutral. This was rather shocking to us because after looking at the political aspect we expected that people would have a very negative view about lead poisoning. However, the findings only suggested that people really do not have an opinion one way or the other about the dangers of lead. We believe that this could be for multiple different reasons (Semantria 2017).

The first and biggest reason is that they just do not know about the dangers so they are not able to formulate an opinion without the knowledge. We touched on the Flint water issue earlier and we were able to see where a large number of people were involved in that conversation. But that only involves water, which is something people use daily. In the case of Scott County, we are trying to raise awareness of the dangers of lead paint. Lead paint is something that can just be out of sight and out of mind for most people. Homeowner's may not think that they are in danger even if their house was painted with paint, containing lead.

The second reason for this neutral sentiment about lead paint could be contributed to the age demographic of who we are dealing with. Lead paint was banned in the 1978 (CDC 2017), that was nearly 50 years ago. The people who were probably most impacted by that ban and the ones who were the most educated are now probably approaching their 60s and 70s. As the younger

generations start to grow up and buy houses they probably are not as educated about the dangers of lead paint and they more than likely do not even know what to look for. This is another reason that we stress the importance of a social media campaign in order to reach this younger demographic who use social media to get their news.

Limitations

We experienced some limitations to our research while conducting the big data analysis. When searching for social media conversations about childhood lead poisonings in the Scott County area, we were unable to locate any conversations that were relevant to the local area. We also tried gathering data about the state of Iowa in general, but that was also nonexistent. It was also difficult to analyze the data on the health department's Facebook and Twitter handles because users don't frequently interact with the posts. While conducting our research, we tried to stay within the Midwest with the hope of increasing the reliability of our study, however, this could be viewed as a limitation to our analysis because the big data analysis does not involve Scott County at all.

Primary Data Collection: Methods

Our methods for collecting primary data for this study include an interview with a local pediatrician, an analysis of city data for various zip codes in Scott County, and a survey of the local population to gauge awareness of the dangers of lead poisoning. The interview with the local pediatrician was conducted by our instructor, Dr. Hyeong-Gyu Choi, and the information was then relayed back to our team. The zip codes for our analysis were chosen based upon a study done by Genesis Health System. The data that they provided us allowed us to see the number of documented lead poisoning cases over the last 18 months. From that list, we selected the top five zip codes in the county with the highest number of reported lead poisonings and gathered demographic information provided by the U.S. Census Bureau.

Our final and most extensive method of primary data collection was our survey. We developed our survey with the goal to gauge the public's knowledge of the dangers of lead poisoning, especially in children. Our survey questions were developed specifically to measure the survey participants' intention, attitude, involvement, and awareness regarding lead related issues. The survey was delivered via campus email to all students, faculty, and staff at Augustana College. Genesis Health Systems publicized our survey by placing a Facebook ads online and the Scott County Health Department publicized our survey via its social media channels and external contacts as well. The results of the survey were collected via Google Form and analyzed with SPSS statistical software.

Primary Data Collection: Results

Zip code, demographic, and housing analysis

We began our primary data collection with an analysis of those zip codes in the Scott County area that had reported lead poisonings. Genesis Health Systems provided us with data that

allowed us to see the number of documented lead poisoning cases over the last 18 months. We then selected the top five zip codes with the most recorded poisonings to do a more thorough analysis and to see if we could observe any common trends in the demographics of the cities. The list of zip codes and associated data are as follows:

	<u>52802</u>	<u>52803</u>	<u>52804</u>	<u>52806</u>	<u>52722</u>
City	Davenport	Davenport	Davenport	Davenport	Bettendorf
Reported Cases	22	31	18	17	19
Median Income*	\$47,343	\$47,343	\$47,343	\$47,343	\$75,373
Poverty %*	16.6%	16.6%	16.6%	16.6%	5.5%
Renter %	38%	39%	29%	36%	23%

* Data was reported by city, not specifically by individual ZIP Code

We’ve concluded that the occupants of homes within these five zip codes are at risk of being exposed to lead due to the fact that the average built year of the homes is 1958 and lead based building materials were not officially outlawed until 1979 (CDC 2017).

A recent article that was published by the Quad City Times documenting a lead based paint study of the Scott County area in partnership with Augustana College states that “priority one homes [the highest risk priority for lead in homes] were found to have been built on average around 1902 and were in areas that were 60% African-American and renter-occupied,” however, this is inconsistent with the data that we found (Patel 2017). Within the top five zip codes, there was not a single city that had a 60% African-American population. The populations across the board were primarily White and none of the African American populations surpassed 12.38%, with the lowest reported African-American population being 3.3% (Census 2017). For that reason, we believe that race is not as significant as the article leads readers to believe. We agree with the statements made that the age of the home and number of renter occupied housing units is significant. However, the average age of the homes for the zip codes we observed was 1958 versus the article’s reported 1902 average (Patel 2017).

Physician Interview

An interview with a local pediatrician was also conducted in order to gain a better understanding about how physicians educate parents on this issue and what process they follow once a child is found to be poisoned with lead. We offered our instructor a number of questions, he then conducted the interview with the pediatrician and reported the information back to us.

The pediatrician explained that they begin educating the parents about the dangers of lead poisoning when their child reaches their first birthday. The conversation rarely occurs before that time because it is unlikely that an infant would come into contact with lead due to his/her limited mobility. The risk is much higher once the child becomes more mobile and starts putting their hands in their mouths. Physicians also tend to avoid bringing up this issue early on because they don't want to instill fear in the parents. New parents especially have enough things to worry about when their child is born. Thus, due to the safer conditions that the child is kept in during the first year of life, physicians choose to delay the conversation until the child reach an age of one.

We found that there can be a potentially crucial disconnect between the Scott County Health Department and medical professionals. The health department strongly advocates for taking a proactive approach for tackling the lead poisoning issue. They have been working towards this goal recently by identifying homes that are located in high risk areas and making efforts to remove lead-based poisons from the homes before children can come into contact with them.

Nonetheless, medical professionals seem to be taking a more reactive approach. This is an issue that health care systems are frequently accused of, that is addressing the issue once it surfaces as opposed to taking more preventative measures to begin with. As it stands, physicians only intervene once a child is brought in for testing and the child has significant lead poisoning levels. The Scott County Health Department is working actively to be proactive and create awareness of the dangers of lead poisoning to childhood development, but this is too large a task to complete alone. With the combined proactive effort of both the health department and local health care systems in creating awareness, we believe that the number of childhood lead poisoning cases will significantly decrease.

Data Analysis Results

To get an idea of our typical survey respondents, we collected demographic data in the survey. Our average respondent can be described as the following:

- Female (73.5%)
- 35-64 years old (47.5%)
- Employed (60.8%)
- Caucasian (86.3%)
- College degree or higher (58.4%)
- Annual Income of \$30,000-\$90,000 (43.3%)
- More than 1 child (61.1%)
- Home built before 1980 (53.9%)

The data tables presented in Appendix B shows complete information on these demographic variables.

Raising awareness is a top priority to the Scott County Health Department regarding the dangers of childhood lead poisoning. Thus, we set out to determine the public's attitude toward the issue, awareness of the issue, and intention to act towards the issue. We designed the survey with

questions that allowed us to collect this information. In the next few sections we present our findings. All questions that are reported were found to be statistically significant above the level of .05.

(A) Familiarity with Lead Poisoning

- (1) **Dangers:** Overall, 92.3% of our respondents said they had heard about the dangers of lead poisoning prior to taking our survey. Further analysis revealed that the largest group of respondents that said they had heard about the dangers of lead poisoning were between the age of 18-24. However, distribution of ages across the board seemed to be fairly consistent. Out of the 265 respondents that said they had heard about the dangers of lead poisoning, 63.3% of them had at least 1 child.
- (2) **Tested:** 57.1% of respondents indicated that either they had their own child tested for lead poisoning, they had been tested for lead poisoning themselves, or have family members that have been tested. Of those that stated that they had their children tested, none were below the age of 25. 82.8% of respondents that said they had been tested themselves were between the age of 18-24. The data was also consistent with the number of children that respondents reported.
- (3) **Frequency of Testing:** Only 33.1% of respondents that indicated that they had children, also indicated that the child had been tested for lead poisoning at least once.

(B) Attitude Towards Lead Poisoning

On a scale of 1-7 (Strongly Disagree-Strongly Agree) we asked respondents if they thought lead poisoning was an important issue in today's world. We had an average response of 5.55 with a standard deviation of 1.31. With this data we can see that respondents are more than neutral on this issue and have an idea that lead poisoning is an issue. Series of analysis of variance (ANOVA) test via SPSS were conducted. Overall, it appeared to be that there is no influence of gender and presence of child.

- (1) **Age:** There is a significant difference between the younger (18-24) age group and the mid (25-44) age group as well as the younger age group and the older (45-75) age group. The younger age group had an average response of 5.03 while the mid and older had average responses of 5.72 and 5.78 respectively.
- (2) **Year Home Was Built:** For those that indicated that they were unaware of the year their home was built, the results indicate a lower level of attitude towards the seriousness of the issue. More specifically, the comparison between respondents that indicated they were unaware vs those that indicated they were aware that either their house was built before 1980 or after 1980, shows that those who know when their house was built tend to have a stronger attitude towards the issue. This result was significant at the level of .05.

We also asked respondents if they were motivated to learn more about the dangers of childhood lead poisoning on a scale of 1-7 (Not interested at all-interested). On this question we had an average response of 4.41 with a standard deviation of 1.67. Based on this we can see that respondents indicated that they are pretty neutral on wanting to learn more about this issue.

- (1) **Age:** We ran a one way ANOVA test using SPSS statistical software for attitude based on gender. At a significance level of .05 we failed to reject the null hypothesis that there is no difference in attitude based on age groups. This means that for this particular question we cannot draw any conclusion that the age groups are different.

(C) Awareness of Issue

On a scale of 1-7 (not at all- very knowledgeable) we asked respondents how knowledgeable they were of the dangers and sources of lead poisoning. Our average response was 4.66 with a standard deviation of 1.74. With this we can see that on average our respondents have some knowledge when it comes to this issue, but not a ton.

- (1) **Age:** We ran a one way ANOVA test using SPSS statistical software for awareness based on age. At a significance level of .05 we the results yielded suggest there is a significant difference between the younger age group and mid age group, younger age group and older age group, and the mid age group and older age group. The younger age group seemed to be less knowledgeable about this issue with an average response of 3.5. The mid age group seemed to have some knowledge but not a ton with an average response of 4.75. And the older age group was the most knowledgeable about the subject with an average response of 5.40.
- (2) **Kids:** We ran a one way ANOVA test using SPSS statistical software for awareness based on the number of kids a respondent indicated they had. At a significance level of .05 we failed to reject the null hypothesis. This means that we can not draw any conclusions based on the number of kids the respondent indicated they had affecting their awareness of the issue. At the same significance level we did find however that one section there was a significant difference. This was a difference in the awareness level from respondents that indicated they had no children and respondents that indicated they had 2 children. However, no other set of children indicated was significantly different from those who indicated no children so this could just be a fluke in the data.
- (3) **Year Home Was Built:** For those that indicated that they were unaware of the year their home was built, the results indicate a lower level of awareness towards the dangers and sources of the issue. This was compared against those that indicated that either their house was built before 1980 or after 1980. This result was significant at the level of .05.

(D) Intention to Act on the Issue

On a scale of 1-7 (strongly disagree- strongly agree) we asked respondents if they would recommend to their friends and neighbors to learn more about the dangers of lead poisoning. The

average response was 5.27 with a standard deviation of 1.44. With this we can see that people would more often times than not recommend their friends and neighbors to learn more about the issue.

- (1) **Age:** We ran a one way ANOVA test using SPSS statistical software for intention based on age. At the significance level of .05 we reject the null hypothesis that there is no difference in intention based on age and conclude that there is a significant difference between the younger age group and the older age group. The younger age group had an average response of 4.89 while the older age group's average response was 5.45.

(E) Level of Concern

We divided all of our respondents up into two separate groups. Those who have kids (parents) and those who don't have kids. We then ran a independent t-test to compare the data based on the respondents awareness, attitude, and intention towards the issue. We found that parents have a higher attitude and awareness towards lead poisoning, but when it came to intention to act the groups were almost the same. Recommending lead testing was high among both groups but the intention to ask physicians for more information was relatively low. Although attitude and awareness were statistically and significantly different.

(F) Media Usage

We also asked respondents to indicate which media source they used most for their news. A cross tabulation between age groups and media choice shows some difference in the three groups for what they prefer for media. The younger age group (18-24) tend to lean more towards social media, and mobile news. Word of mouth was also popular among this group. The mid age group (25-44) indicated they get most of their news from the radio, as well as social media, television, and mobile. The older age group (45-77) get their news from print, radio, and television.

Limitations

Limited access to individuals residing within Scott County made it difficult to receive a large amount of survey results from them, since we had no direct way of reaching or contacting them. We also felt that a limitation was we needed to turn to the members of our college to also answer the survey to provide us with more data to help make our results more significant. This was a great option for us in collecting data on overall awareness of the issue, even though a shortcoming of it was these students were not from Scott County and did not face some of the issue of having low access to different media sources of which we hypothesized was a cause of the low awareness of lead poisoning. In many cases they also did not have a child or even a sibling that they were able to look at in the same way as a child, hence they were somewhat naïve about the dangers of this issue.

Conclusions and Recommendations

Based on our big data analysis, we conclude that the general public is not well educated on the dangers of lead poisoning and that overall there is very little conversation about lead poisoning on a national level. The only stories about childhood lead poisonings that have been reported and headlined across the country are those of the children of Flint, Michigan. We believe that the national conversation was launched by social media users. The Twitter hashtag, #flintwatercrisis, has brought the dangers of lead to light and has been an essential tool in the community's effort to bring attention to the crisis. Flint's story is also circulating widely in video form on YouTube. Although these findings are not specific to Scott County, we believe that the knowledge of lead on the national level is similar to Scott County locals. Therefore, we believe that our findings can be applied to the Scott County community. We recommend that the Scott County Health Department makes a greater effort to increase their social media presence. Social media has the power to create both conversation and awareness about the dangers of lead, which are both key elements to make the community more knowledgeable on the subject.

Our primary research in turn supports some of our findings in our big data analysis. We saw that overall people did not have a strong attitude towards believing lead poisoning is an important issue in today's world. They also didn't indicate a strong knowledge on the subject or a strong intention to act towards these issues. We were able to see, however, that across all three categories of attitude, awareness, and intention, that there was a significant difference in responses from the various age groups. This is important information to have as the health department develops a marketing campaign to increase awareness of the issue. All of these things combined with our physician interview and ZIP code analysis lead us to provide the following recommendations to the Scott County Health Department on how to better raise awareness on such a crucial issue today.

(1) Bridge the gap between the health department and the health system.

- As we stated in our analysis of the pediatrician interview, we know that the health system tends to take a reactive approach as opposed to a proactive approach to the problem of child lead poisoning. One example of this as provided by a parent who shared their personal experience on this issue is that the health system will send out a letter to the parents indicating that they found some level of lead in the child's blood. However, the letter goes on to state that it isn't a large enough quantity to be of any concern and that they will just continue to monitor the blood level and take action when appropriate. At this point the parents will probably do one of two things. They will either ignore the problem because the health system said it wasn't important to worry about right now, or they will start searching on the internet for things that could cause lead to get into their child's blood. Both of these things can be bad as we know because ignoring an issue until it gets worse is never a good idea, and there can be a lot of false information on the web that parents may believe. This can be a place where the Scott County Health Department could step in and design a page on their website that solely focuses on child lead poisoning. Items to be featured on the page can range from potential dangers of lead poisoning, to popular sources of lead poisoning, to just overall general information. This

web page could then be incorporated into a link that is given in the letter so parents have an easy way of accessing important information from a proven source.

(2) Design print, television, and radio campaigns to target the mid and older age groups

- We know that across the board the mid and older age groups have a higher attitude towards the issue, a higher awareness of the issue, and a higher intention to act on the issue than the younger age group. It is important then to tap into these individuals to get the conversation started. By designing campaigns on these three media sources the Scott County Health Department would be targeting these age groups and stirring up conversations about it. This could be as simple as running a news story on the issue that is put out in the newspaper, televised on the news, and also mentioned in some fashion on the radio.

(3) Design a social media campaign to better educate the younger age group on the dangers of lead poisoning.

- It is very crucial that we do not leave this age group out of the campaign as they are the next generation of up and coming parents. If the Scott County Health Department can get to them early, it can eliminate a lot of problems down the road. We know that the younger age group likes to get their news from social media, so this is a perfect platform to leverage to get to them. A campaign for this age group should be solely focused on educating young people about the dangers so they know about it for the future. Young people tend to be eager to learn so this is the perfect storm of opportunity to reach these individuals. This could also be leveraged by keeping a close relationship with Augustana College and developing a relationship with St. Ambrose and Black Hawk College to tap into the captive audience of students they have that could potentially become parents of children in this area.

(4) Design a mailing campaign to target high risk homes specifically.

- As we mentioned above in our results, there was a strong relationship between people who didn't know when their house was built and a low attitude and awareness on the issue. This is where the Scott County Health Department could play a big role in specifically identifying the homes that were built before 1980, and sending those addresses a letter directly. This letter could contain information advising the current resident of the risk they could potentially face, and steps to reduce that risk. A link to the webpage could also be incorporated into this letter.

References

- Agrawal, AJ (2016), "It's not all bad: The social good of social media," Forbes. Accessed on October 28, 2017 [<https://www.forbes.com/sites/ajagrawal/2016/03/18/its-not-all-bad-the-social-good-of-social-media/#4860d3ca756f>].
- Center for Disease Control and Prevention (CDC), "Prevention Tips," CDC. Accessed on October 22, 2017 [<https://www.cdc.gov/nceh/lead/tips.htm>].
- CNN. "Flint children still suffering effects of lead". YouTube, published on January 31, 2017. Accessed on October 24, 2017 [<https://www.youtube.com/watch?v=-uc6mr3rrcg>].
- United States Environmental Protection Agency (EPA) (2017), "Protect your family from exposures to lead," EPA [<https://www.epa.gov/lead/protect-your-family-exposures-lead>].
- Gross Science (2017), "What Does Lead Poisoning Do To Your Brain?". YouTube, published on May 20, 2017. Accessed on October 24, 2017 [<https://www.youtube.com/watch?v=76RKSQgduVQ>].
- Health Department: Scott County, Iowa (2017) [<https://www.scottcountyiowa.com/health>].
- Lexalytics: Text Analytics Software SaaS & On-premise: Semantria API for Micro Soft Excel (2017) [<https://www.lexalytics.com/>].
- Patel, Devan (2017), "Lead-Based Paint Study Finds 5,000 Davenport Homes at High Risk," The Quad City Times [http://qctimes.com/news/local/government-and-politics/lead-based-paint-study-finds-davenport-homes-at-high-risk/article_e5ff4ab4-5a31-5055-a081-045e1a3f8f28.html].
- Personal interview with a physician. October 11, 2017.
- Professional Research Consultants, Inc (2015). Executive Report 2015 Community Health Needs Assessment: Scott County, Iowa & Rock Island County, Illinois. [<http://quadcities.healthforecast.net/2015%20Community%20Health%20Assessment%20Report%20-%20Quad%20Cities%20Area.pdf>].
- Talkwalker: The Social Media Analytics & Monitoring Platform (2017) [<https://www.talkwalker.com/>].
- United States Census Bureau (2017) [<https://www.census.gov/>].

Appendices

Appendix A: Data Collection Form

Survey Questionnaires for the Scott County Health Department (SCHD)

The Scott County Health Department dedicates itself to addressing everyday and emerging health issues. One of the department's biggest concerns lately has been lead poisoning in children. This issue has grown to become a big problem for Scott County because many of the houses located throughout the area are starting to become older and are deteriorating at a rapid rate. Lead is a poisonous metal that was once used in building materials for many years and can be found in and around homes across America. Structures built before 1980 likely contain lead unless the home has been renovated. Lead seriously affects childhood development and can cause reduced attention span, learning ability and attitude issues. Over 60% of all Iowa homes were built before 1960, so the potential of exposure to lead in the Scott County area is extremely high. The health department reports at least 50 childhood lead poisonings each year. This survey is designed to gauge the public's overall knowledge of this issue.

1. Have you ever heard about the potential dangers of child lead poisoning prior to the information provided in the paragraph above? (Y/N)
2. Have you ever had your child/children tested for lead poisoning? (Y/N)
 - a. Yes, my child was tested for lead poisoning
 - b. No, my child was not tested for lead poisoning
 - c. I don't have a child, but I had been tested for lead poisoning
 - d. I don't have a child, but I never tested for lead poisoning
 - e. My family members (e.g., younger siblings, relatives, etc.) were tested for it
3. If you answered yes to the previous question, how many times have you had your child/children tested for lead poisoning?
 - a. Once
 - b. Twice
 - c. Three times
 - d. Four times
 - e. Five times or more
4. Is childhood lead poisoning personally relevant to you?
Not at all 1 2 3 4 5 6 7 Very relevant to me
5. How knowledgeable are you of the dangers and sources of lead poisoning?
Not at all 1 2 3 4 5 6 7 Very knowledgeable
6. Do you feel there has been significant media coverage of lead poisoning in your area?
(AWS)
Not at all 1 2 3 4 5 6 7 Strongly feel so
7. Are you motivated to learn more about the dangers of childhood lead poisoning?
Not at all interested 1 2 3 4 5 6 7 Very interested
8. Do you agree that lead poisoning is an important issue in today's world?

- Strongly disagree 1 2 3 4 5 6 7 Strongly agree
9. Do you believe you could benefit from learning more about lead poisoning?
Strongly disagree 1 2 3 4 5 6 7 Strongly agree
10. Are you likely to ask your child's physician for more information regarding lead poisoning at their next doctor visit?
Extremely unlikely 1 2 3 4 5 6 7 Extremely likely
11. Would you recommend that your friends and neighbors learn more about lead poisoning?
Strongly disagree 1 2 3 4 5 6 7 Strongly agree
12. Which media source do you use most for your news?
- TV News (e.g., CNN, Fox, CNBC, etc.)
 - Mobile News App (e.g., Times, USA Today, etc.)
 - Print Media (e.g., Newspapers, Magazine, etc.)
 - Friends, family, and/or relatives
 - Radio
 - Social Media
 - Other (please specify)
13. What is your gender?
- Male
 - Female
 - Prefer not to say
14. What is your age?
- 18-24 years old
 - 25-34 years old
 - 35-44 years old
 - 45-54 years old
 - 55-64 years old
 - 65-74 years old
 - 75 years or older
15. What is your employment status?
- Unemployed
 - Employed
 - Self employed
 - Homemaker
 - Student
 - Retired
 - Unable to work
16. What is your ethnicity?
- White
 - Hispanic or Latino
 - Black or African American
 - Native American or American Indian
 - Asian / Pacific Islander
 - Other

17. What was your total household income before taxes during the past 12 months?
 - a. under \$30,000
 - b. \$30,000 - \$49,999
 - c. \$50,000 - \$69,999
 - d. \$70,000 - \$89,999
 - e. \$90,000 - \$109,999
 - f. \$110,000+
18. How many children do you have?
 - a. 0
 - b. 1
 - c. 2
 - d. 3
 - e. 4
 - f. 5
 - g. 6 or more
19. What is the approximate age of your home?
 - a. Before 1980
 - b. After 1980
 - c. Unknown
20. What is the highest level of school you have completed?
 - a. Some high school, no diploma
 - b. High school graduate or the equivalent
 - c. Some college, no diploma
 - d. College degree
 - e. Graduate degree & higher
21. What is your zip code?

Appendix B Data Summaries

Q#1 Have you ever heard about the potential dangers of child lead poisoning prior to the information provided in the paragraph above? (n=287)

Response	Count	Percentage
Yes	265	92.3%
No	22	7.7%

Q#2 Have you ever had your child/children tested for lead poisoning? (n=287)

Response	Count	Percentage
Yes, my child was tested for lead poisoning	96	33.4%
No, my child was not tested for lead poisoning	68	23.7%
I don't have a child, but I had been tested for lead poisoning	64	22.3%
I don't have a child, but I never tested for lead poisoning	55	19.2%
My family members (e.g., siblings, relatives, etc.) were tested for it	4	1.4%

Q#3 If you have a child, how many times have you had your child/children tested for lead poisoning? (n=95)

Response	Count	Percentage
Once	64	67.3%
Twice	18	18.9%
Three Times	8	8.4%
Four Times	0	0
Five or More Times	5	5.3%

Q#3-10 Do you agree that lead poisoning is an important issue in today's world? (n=287)

Survey Questions	Mean	Std. Deviation
Q#3 Do you agree that lead poisoning is an important issue in today's world?	5.55	1.31
Q#4 Is childhood lead poisoning personally relevant to you?	3.60	2.09
Q#5 Are you motivated to learn more about the dangers of childhood lead poisoning?	4.41	1.68

Q#6 Do you believe you could benefit from learning more about lead poisoning?	4.58	1.70
Q#7 Would you recommend that your friends and neighbors learn more about lead poisoning?	5.27	1.44
Q#8 How knowledgeable are you of the dangers and sources of lead poisoning?	4.66	1.74
Q#9 Are you likely to ask your doctor (or a pediatrician if you have children) for more information regarding lead poisoning at your next doctor visit?	3.05	1.83
Q#10 Do you feel there has been significant media coverage of lead poisoning in your area?	2.87	1.55

Q#11 Which media source do you use most for your news? (n=287)

Response	Count	Percentage
TV News	78	27.2%
Mobile News	77	26.8%
Social Media	74	25.8%
Print Media	23	8%
Radio	22	7.7%
Friends, Family and/or Relatives	9	3.1%
Others	4	1.4%

Q#12 What is your gender? (n=287)

Response	Count	Percentage
Male	69	24%
Female	211	73.5%
Prefer not to say	7	2.4%

Q#13 What is your age? (n=287)

Response	Count	Percentage
Under 18	1	.3%
18-24	78	27.2%
25-34	56	19.5%
35-44	45	15.7%
45-54	52	18.1%
55-64	38	13.2%
65-74	15	5.2%
75 and older	2	.7%

Q#14 What is your employment status? (n=287)

Response	Count	Percentage
Employed	174	60.6%
Student	68	23.7%
Homemaker	15	5.1%
Retired	14	4.9%
Self-Employed	9	3.1%
Unemployed	5	1.7%
Unable to Work	2	.7%

Q#15 What is your ethnicity? (n=287)

Responses	Count	Percentage
White	249	86.8%
Hispanic or Latino	11	3.8%
Black or African American	7	2.4%
Asian/Pacific Islander	11	3.8%
Other	9	3.1%

Q#16 What was your total household income before taxes during the past 12 months? (n=287)

Responses	Count	Percentage
Under \$30,000	39	13.6%
\$30,000-\$49,999	30	10.5%
\$50,000-\$69,999	39	13.6%
\$70,000-\$89,000	57	19.9%
\$90,000-\$109,000	36	12.5%
% 110,000 or more	86	30%

Q#17 How many children do you have? (n=287)

Response		Count	Percentage
No children (39.4%)	0	113	39.4%
Have children (60.6%)	1	45	15.6%
	2	62	21%
	3	41	13.9%
	4	23	7.8%
	5	3	1%
	6 or more	6	2%

Q#18 What is the approximate age of your home? (n=287)

Response	Count	Percentage
Before 1980	154	53.7%
After 1980	104	36.2%
Unknown	29	10.1%

Q#19 What is the highest level of education you have completed? (n=287)

Response	Count	Percentage
Some high school credits, no diploma	5	1.7%
High school diploma or the equivalent	20	7%
Some college credits, no diploma	94	32.8%
College degree	87	30.3%
Graduate degree or higher	81	28.2%

Q#20 What is your zip code? (n=287)

City	Count	Percentage
Rock Island	129	44.9%
Davenport	80	27.9%
Bettendorf	53	18.5%
Moline	17	5.9%
Neighboring cities *52726 Blue Grass *61254 Geneseo	6	2.1%
Missing	2	.7%