Access to Healthy Food and Neighborhood Walkability: Insights through Inter-Professional Curricula

SHANNON CRISS
MATT KLEINMANN
NIKKI NOLLEN
University of Kansas

Within the same university, the School of Preventive Medicine and Public Health and the School of Architecture, Design and Planning developed a cross-disciplinary collaboration to improve popula-tion health outcomes and health equity. This course was initiated through the production of two pro-fessional courses that share syllabi, methodology, literature and other resources, survey methods, and an online teaching site toward the development of a shared community-informed Design & Health Project in two neighborhood communities. This approach recognized that sharing these resources assisted both public health students and architecture students to acquire insights, tools and vocabular-ies of the other profession and to effectively learn through creative thinking and problem solving. Our program provided students the opportunity to sub-stantively integrate perspectives and approaches by overlapping portions of our respective courses in each department—while providing each student with a strong foundation in their primary field. This approach has fostered innovation and transforma-tive professional practice in both fields by creating a spectrum of opportunities for cross-disciplinary training that integrates population health concepts and concerns through community-based engaged scholarship.

INTRODUCTION

Over the last few years at KU, a set of faculty has developed a health and wellness program in our architecture department. We also have a well-respected Public Health Department at KU Med. However, teaching inter-professional courses has not been established between these two departments.

In 2015, the AIA/ACSA Design + Health Consortium prompted us to develop stronger relationships between the two programs. Then, the ASPPH offered grant support for development of inter-profes-sional projects. We applied and received a grant that allowed us to develop this course in the Fall of 2015 and implemented it in the Spring of 2016. I was a co-principal investigator with Dr. Nikki Nollen. We worked with Dr. Megha Ramaswamy and doctoral stu-dent assistants Matt Kleinmann and Christi Nance, in developing and implementing the course. As the title suggests, our efforts focused on the relationship between health and design through the built environment with emphasis on access to healthy food and neighbor-hood walkability.

Master of Public Health Program: The Public Health Program has concentrations in Epidemiology, Social & Behavioral Health and Public Health Management. Originally, the framework for this course was designed to be a core behavioral and health course taught by Dr. Nollen. The original course was focused on social and behavioral change health theory. The version that we developed together through this grant has transformed it with an empha-sis on health disparities and determinants of health in the built environment.

Keeping health theory as central to student learning, the public health faculty had struggled to find ways to incorporate the field experience so that students could see the determinants of health in action. A primary goal with this course development was to place students on the ground in the communities that they were studying.

Our university is uniquely situated in the state of KS that high-lights the incredible inequality that residents face. Two counties, Wyandotte County and Johnson County, abut one another. Yet, according to the Robert Wood Johnson health rankings, Wyandotte County is ranked 101 out of 101 counties as the unhealthiest; and Johnson County just adjacent is ranked # 1 in the state as the healthi-est. The location of our university places us in a unique position to see these health disparities first hand. This course addresses these very real socioeconomic and health inequality between these adja-cent counties.

Our project worked within Downtown Kansas City, Kansas (Wyandotte County), which is a low income, underserved commu-nity, and home to a population largely made up of Hispanic, African

American and Refugee citizens with limited healthcare resources, underemployment, a large number of under-utilized parks, open spaces, neglected public ways, and abandoned, deteriorating buildings. We explored two 1.5 mile diameter areas within Wyandotte County directly with community stakeholders to assess the built environment there. Specifically, we inventoried the areas that are food deserts and disconnected with broken or no sidewalks. While the city government, private non-profits, and diverse citizen-formed groups are very active in this area, they have developed multiple and highly varied improvement programs—sometimes in sync with one another and other times seemingly not. Thus, the goal of this proposal was to create a new framework that promotes an inter-professional curricula of public health and architectural professions toward bringing together community stakeholders. Ours was an approach that utilized coursework to engage a broad range of partnerships and coalitions among neighborhood organizations, public and private organizations, and city health department programs while aligning future initiatives around healthy food access and walk-able neighborhoods with specific needs and interests of the community members in Wyandotte County.

PURPOSE OF PROJECT

The purpose of this project was to form a cross-disciplinary collaboration between two University of Kansas departments, Preventive Medicine and Public Health and the School of Architecture, Design and Planning, by developing two professional courses, one Public Health and one Architecture, that facilitated a shared understanding of the interplay of design and health as it relates to neighborhood food access, walkability, and active living. From September 2015 – December 2015, Drs. Nollen (MPH) and Criss (Architecture), along with course GTAs, Christi Nance (MPH) and Matt Kleinmann (Architecture), met monthly to develop shared course syllabi for PRVM 818 Social and Behavioral Aspects of Health and ARCH 600/ ADS 560 Design Thinking and Ethical Choices. Our teaching philosophy centers on the importance of applied, place-based learning and, therefore, the developed courses utilized a three-pronged approach to facilitate students understanding of the interplay of design and health. The purpose of this project was to form a cross-disciplinary collaboration between two University of Kansas departments, Preventive Medicine and Public Health and the School of Architecture, Design and Planning, by developing two professional courses, one Public Health and one Architecture, that facilitated a shared understanding of the interplay of design and health as it relates to neighborhood food access, walkability, and active living.

This approach recognized that sharing these resources assisted both public health students and architecture students to acquire insights, tools and vocabularies of the other profession and to effectively learn through creative thinking and problem solving. We proposed a program that provides students the opportunity to substantively integrate perspectives and approaches by overlapping portions of our respective courses in each department—while providing each student with a strong foundation in their primary field. We believe that this approach fostered innovation and transformative professional practice in both fields by creating a spectrum of opportunities for cross-disciplinary training that integrates population health concepts and concerns through community-based engaged scholarship.

PLANNING OF A CROSS-DISCIPLINARY, COLLABORATIVE COURSE

One challenge we faced was one of distance. The Department of Architecture is in Lawrence, KS, and the Department of Public Health is located in Kansas City, KS—35 miles apart. Collaboration is difficult. With this grant, we developed and tested new ways of working together. We developed new materials and methods of sharing and doing the work:

1.) through the internet we created ways of sharing literature, videos, and online materials that students would review before class (a flipped teaching model);

2.) through the internet we shared lectures and discussions remotely through Adobe Connect software

3.) through established community places, we met with residents, engaging them in their spaces

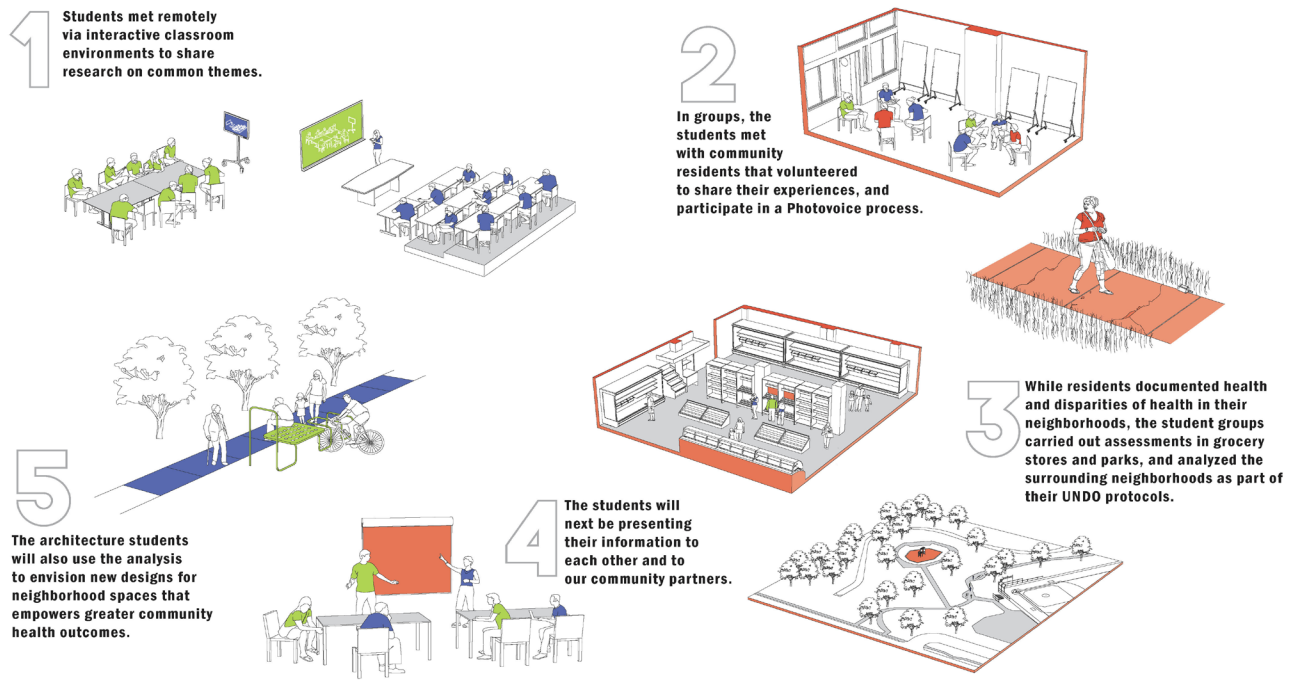
We adapted the community-based, participatory research approach. Although not a full-blown CBPR process, we certainly wanted to introduce the students to the idea of engaging community members in their spaces. Through trusting relationships with community stakeholders we had established prior to the course, we were able to arrange for opportunities for students to meet and talk with community residents to identify some of the problems and strengths they felt and understood.

This approach taught principles of participatory design, where we met people where they are in spaces in the city and as a result we were able to directly gain insight about their relationships to the built environment. This applied approach is more palpable and meaningful to all involved.

By seeking to Understand Neighborhood Determinants of Health, we have applied protocols that the Public Health partners had used before and adapted them to fit with the goals of this project. Our specific focus was on establishing ways to understand community walkability and nutritional food access through detailed survey prompts—I'll highlight the food access work we did in this presentation.

We transformed these protocols by adapting the Women Infant Children standards--examining what access to healthy food would mean in this setting. The standards specify exact quantities and types of food that grocery stores are supposed to supply in order to be certified to receive WIC vouchers.

Going beyond this, we adapted the food assessment protocol to incorporate tools to analyze the stores. We considered the layout of the built environment, the light and views and the means of wayfinding. This modified protocol introduced a new set of prompts and ways of representing the knowledge. We developed a set of



1 DISCOVER
- collaboration
- logistics
- research

Initial planning efforts for the class included identifying shared materials – such as readings and films that could be shared with the students – as well as assignments that the students would be able to collaborate on in small groups.

The first three classes were conducted remotely via online classroom conferencing software. An early challenge was finding appropriate technology to seamlessly blend the two classes taking place simultaneously on two different campuses.

In these first classes, the students were able to not only listen to presentations about public health disparities and how the built environment shapes health, but also present their own findings from articles posted on public health access relevant to the class content. These research presentations were shared in brief 'pecha kucha' style presentations that consisted of six minute slideshows with automatic transitions to keep students moving through the material.

2 ENGAGE
- presence
- vocabulary
- listening

Following the original class periods conducted remotely, students from the two campuses were brought together in one place – Dotte Agency, a community design center storefront space in downtown Kansas City, Kansas – to both meet each other in person, and meet with residents from the surrounding community.

In meeting each other, the students had an opportunity to share with each other their perspectives coming from the two fields of health and design. Developing a shared vocabulary was an important point of discussion, where the students could begin to develop an awareness of the worldview that their peers were coming from, and how to integrate that into their own perception of what health and design means.

Following their initial meeting as a unified class, the students then met with residents to listen to their stories about community health locally. The students were equipped with disposable cameras that they shared with the residents, and helped them to identify what types of photographs might be of interest for the next time the groups would meet in person to share the results of their Photovoice assignment.

3 ASSESS
- perspective
- measure
- participatory

While the residents' participation in the Photovoice assignment allowed them weeks to take photographs of what they considered to be 'health' in their neighborhood, the students worked in teams to visit grocery stores and parks in surrounding neighborhoods as part of their UNDO assessment.

The students compared the assessments done near their own homes – designated as 'resource rich' – with locations in Kansas City, Kansas, which were defined as 'resource poor' neighborhoods. From these visits, students were presented with the evidence for how the built environment shapes choices that influence behaviors of health.

In addition to the site visits, and as part of the UNDO assessment, the students measured the quality of food access available in grocery stores that were not WIC-Approved (The Special Supplemental Nu-trition Program for Women, Infants, and Children). By collecting data on the availability of healthy food within these small community grocery stores, the students' assessments will be shared with the local WIC office to encourage greater access to WIC food items within the community.

4 REPORT
- analyze
- community-based
- visualize

In order to share with the class, the community, and the local WIC-program the results of their UNDO assessments of local food access points and nearby parks, the student teams will prepare presentations that emphasize the health disparities present in the built environment.

The assessments will also be coupled with a summary of the Photovoice assignment, where the students will have documented what they heard, and how the community-based perspective of the residents they met with correlates with their neighborhood food and park assessments.

Using this point as a benchmark for design, the architectural students will begin work envisioning how the different aspects of health might be improved upon in regards of food access and park improvements. The goal of this exercise will be to adapt what was heard and what was heard into possible design interventions that can directly support greater health outcomes in the community.

5 REFLECT
- empower
- improve
- design

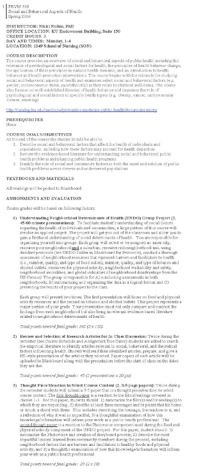
At the end of the semester, the students will be offered an opportunity to reflect on how the semester progressed, and ways upon which it can be improved upon for future collaborations between classes focused on public health and architecture.

In addition, the finished work of the students at the end of the semester will be shared with community partners, neighborhood associations, and city departments. The intent is to provide this knowledge as a resource for future community health interventions, equipping neighborhood leaders with an inventory of the existing infrastructure and possible ways it can be improved.

The architecture students will ultimately have an opportunity to translate what the public health students have researched into visions for how the design of specific spaces and networks could possibly begin to move the needle on health, designing the system so that the healthy option is the best option. Students will provide alternative design solutions by exploring and documenting local solutions as well as documenting published models and providing this material in document that will be exhibited and shared with community-resident participants and policy makers in the community.

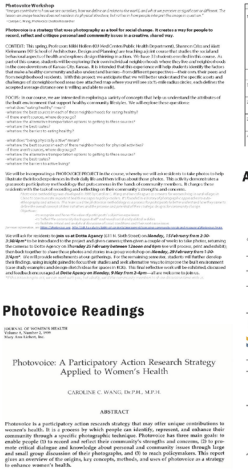
COURSE MATERIAL EXAMPLES

Syllabus (Public Health)



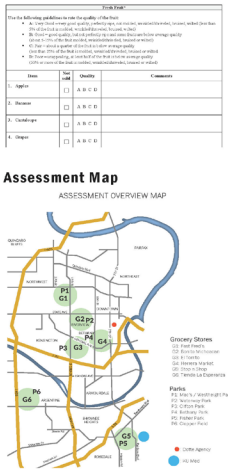
Schedule (Architecture)

Photovoice Assignment

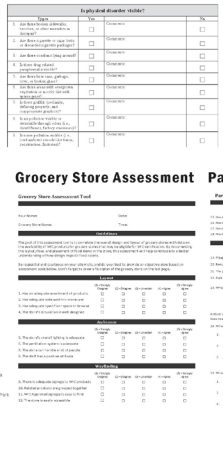


Photovoice Readings

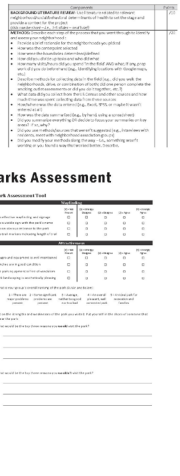
UNDO Protocols: Food



UNDO Protocols: Parks



UNDO Grading Rubric



Assessment Map

Grocery Store Assessment

Parks Assessment

Figure 1: The course was comprised of five stages that required students from the Preventive Medicine and Public Health School to work with students from the Department of Architecture in various settings with community members. This poster was created and presented by doctoral student, Matt Kleinmann, at the National ASPPH Conference.

Figure 2: Student teams meet with community members from a variety of neighborhoods in local community spaces. Credit: Matt Kleinmann

online-tutorials that teach how to draw a three-dimensional form and analysis of a store through SketchUp.

Through this tool, both public health and architecture students were thinking about the building in spatial ways such as: the relationship of the building to the outside city; the interior relationships between shelving casework and the built form; and examining food storage space to imagine what could be done to better optimize access to healthy food.

ESTABLISHING SIX DIVERSE TEAMS

Focused on the highest, most dense area of highest at-risk population for Diabetes Type II and chronic heart disease, we chose to identify this area that represents half of the county's population (approximately 80,000 people). Through our community partners, we identified six neighborhoods that have an equally distributed population of African American, Latino and Caucasian residents. Each team of students was comprised of a balance of public health and architecture students. We assigned parks and grocery stores in each of these neighborhoods. And, as part of the study, students also chose grocery stores and parks in their own Johnson County and Lawrence communities for comparison between resource-dis-advantaged and resource-advantaged neighborhoods. In implementing this course, we identified 5 phases:

#1: Discover: First, we created spaces where students discovered each other and the differences between their professional disciplines. Students shared their unique disciplinary approaches to the research through an interactive classroom environment. It was challenging to figure out how to create a personal connection through the internet as they presented their assigned reading analyses to one another from remote locations. However, logistically this is what made teaching together possible. From the start, they heard and learned vocabulary and ideas that were unique to their disciplinary studies.

#2: Engage: At this stage, students met each other for the first time in a storefront space for community engagement events—central to the six neighborhoods. Following this initial meeting, we introduced a Photovoice process to self-selected residents from the six neighborhoods, where the students and residents got to know one another. Students started to hear the residents' stories of their communities and we began the Photovoice process by giving out cameras to our resident partners.

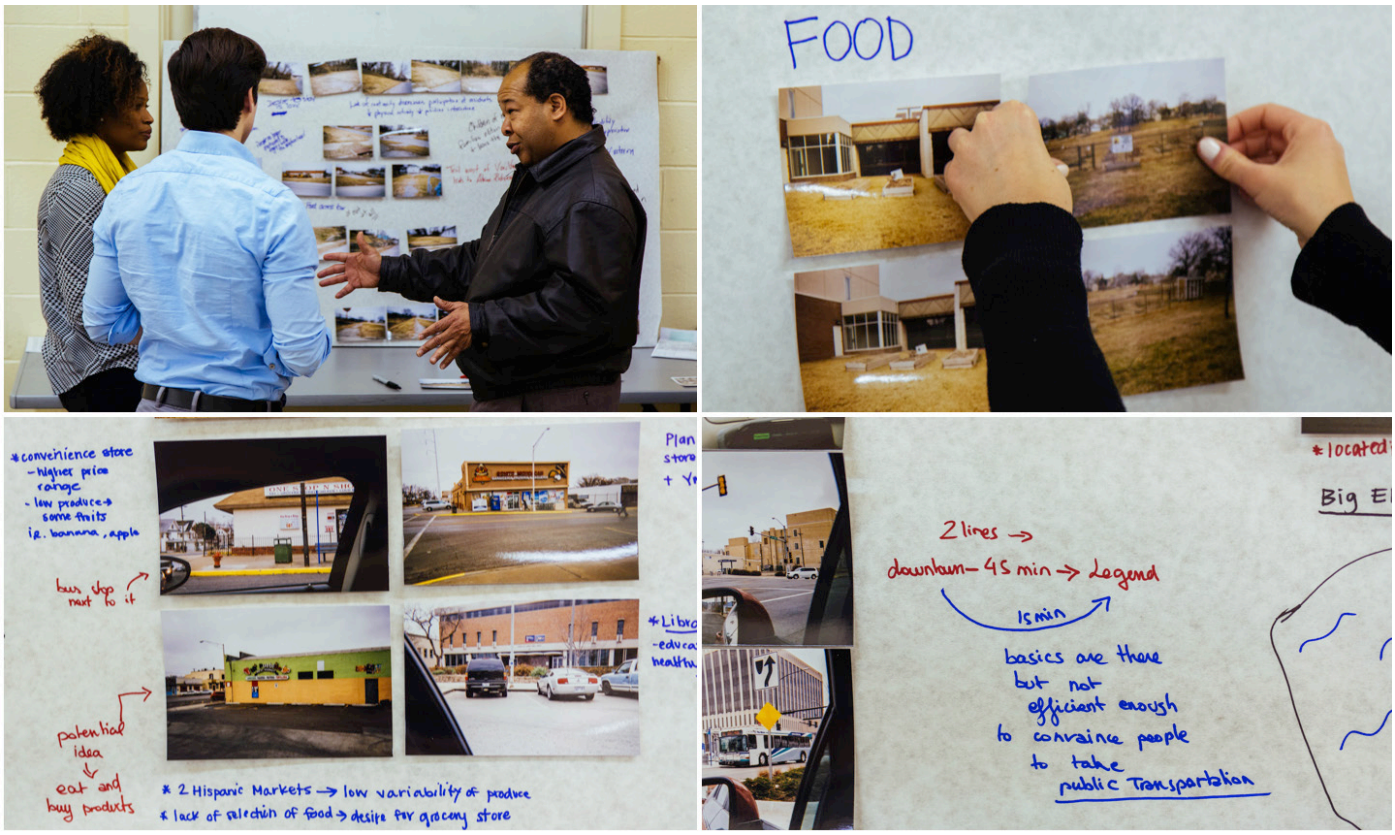


Figure 3: The residents shared their photos and stories with the students, where information was processed through discussion and notations. Credit: Matt Kleinmann

#3: Assess: Over the next three or four weeks, residents went out into their communities to document health disparities they found in the built environment where they found assets and challenges of their own communities. Simultaneously, students used the UNDO protocols to go out and observe, carefully and respectfully determining what the factors of the built environment were and reflecting upon the issues they found on the ground regarding walkability in parks and access to healthy food.

#4: Report: The students then presented their results of the surveys and documented work to each other in class. The residents shared their photos and stories with the students, where information was processed through discussion and notations. The students understood the challenges the community residents faced and began to compare the research, their own observations and the residents' insight. They were able to begin to correct and expand their thinking because of this engagement.

#5: Reflect: At the end of the semester, the students were able to gather the data, insight and graphic documentation into a class-wide document. This document was displayed as an exhibit that drew over 100 visitors from the community—including those residents that had participated, civic leaders, foundation representatives and policy makers—in an environment where good food and beautiful spring weather was conducive to conversations about the work.

CREATING NEW TOOLS

Architecture students were able to generate graphic representations of the findings—demonstrating the analysis of the existing built environment in comparison to proposed changes. They explored simple 'small change' options such as reconfiguring the shelving and casework, developing alternative display systems, and installing new refrigeration elements. They also proposed deeper investments such as re-thinking the storefront systems to improve visibility, branding and better daylight quality.

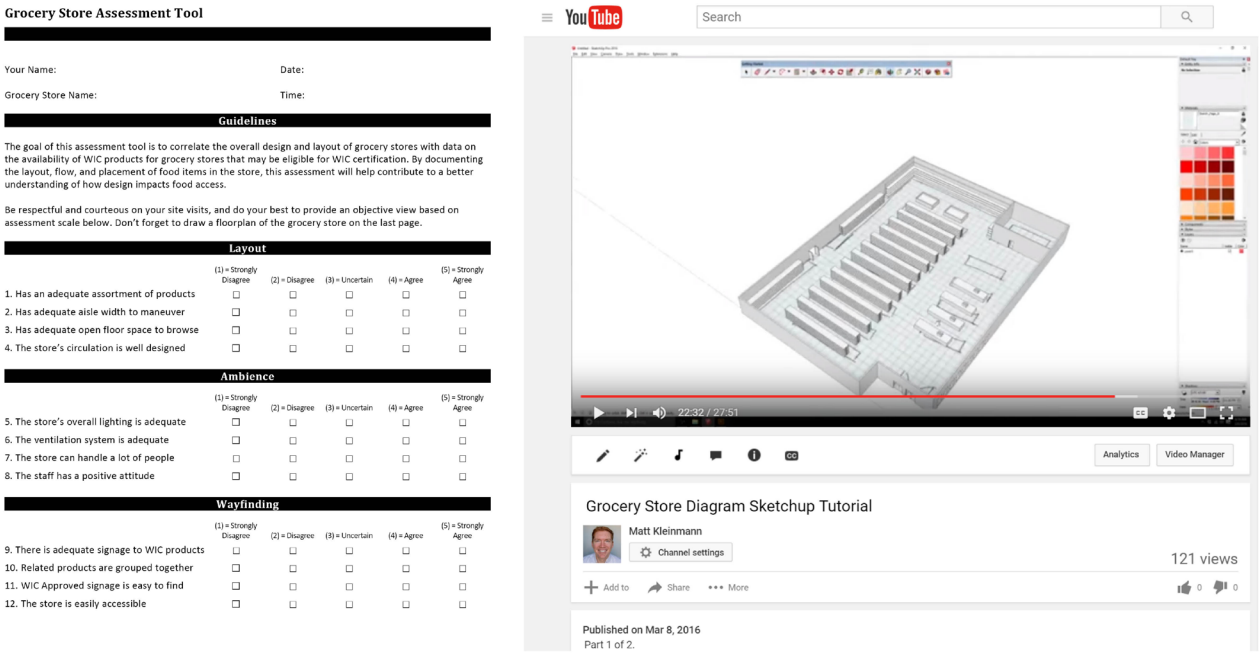
Since the course was taught, Matt through a CDC grant-funded position was able to go further and leverage the student findings to generate conversations with the WIC Program representatives to identify stores that could become WIC eligible. In this work we found that there were 16 WIC eligible stores in Wyandotte County but only 3 available in our defined area with the highest population of those at greatest risk. This work allowed us to identify some of the barriers and opportunities to help policy makers reconsider the corner store bodegas in the area as potential WIC eligible stores.

STUDENT REFLECTION

One student realized that her engagement with residents helped her identify and learn new things about their community and for her to think differently about her own community as a result of this project. Another student wished that she had been better prepared on appropriate ways to collect data in communities. She became sensitive and self-aware of her presence in communities as a result of this work.

Grocery Store Assessments + Online Tutorials

Developing tools that connect assessments to architectural design



Grocery Store Assessment Tool

Your Name: Date:

Grocery Store Name: Time:

Guidelines

The goal of this assessment tool is to correlate the overall design and layout of grocery stores with data on the availability of WIC products for grocery stores that may be eligible for WIC certification. By documenting the layout, flow, and placement of food items in the store, this assessment will help contribute to a better understanding of how design impacts food access.

Be respectful and courteous on your site visits, and do your best to provide an objective view based on assessment scale below. Don't forget to draw a floorplan of the grocery store on the last page.

Layout

	(1) = Strongly Disagree	(2) = Disagree	(3) = Uncertain	(4) = Agree	(5) = Strongly Agree
1. Has an adequate assortment of products	☐	☐	☐	☐	☐
2. Has adequate aisle width to maneuver	☐	☐	☐	☐	☐
3. Has adequate open floor space to browse	☐	☐	☐	☐	☐
4. The store's circulation is well designed	☐	☐	☐	☐	☐

Ambience

	(1) = Strongly Disagree	(2) = Disagree	(3) = Uncertain	(4) = Agree	(5) = Strongly Agree
5. The store's overall lighting is adequate	☐	☐	☐	☐	☐
6. The ventilation system is adequate	☐	☐	☐	☐	☐
7. The store can handle a lot of people	☐	☐	☐	☐	☐
8. The staff has a positive attitude	☐	☐	☐	☐	☐

Wayfinding

	(1) = Strongly Disagree	(2) = Disagree	(3) = Uncertain	(4) = Agree	(5) = Strongly Agree
9. There is adequate signage to WIC products	☐	☐	☐	☐	☐
10. Related products are grouped together	☐	☐	☐	☐	☐
11. WIC Approved signage is easy to find	☐	☐	☐	☐	☐
12. The store is easily accessible	☐	☐	☐	☐	☐

Figure 4: This modified protocol introduced a new set of prompts and ways of representing the knowledge. We developed a set of online tutorials that teach how to draw a three-dimensional form and analysis of a store through SketchUp. Credit: Matt Kleinmann

As taught, we provided a pre-designed process of guided instruction: taking students step by step through pre-defined protocols, an engagement process, guiding students through design proposals and exploring WIC Store rankings in pre-specified locations. With further iteration, we could imagine a community-guided process where us faculty support the process with inter-professional facilitation. So, like the design thinking process, we modify the course along the way, engaging the students and community residents in the process.

LESSONS LEARNED

1. Be Flexible in letting students mentor each other—create more opportunities for students to get to know each other at a personal level, across disciplines and provide spaces for inter-professional mentoring. Also, be wiling to disrupt the class schedule by holding engagement activities at times and locations more fitting to the community's schedule—meet people where they are.
2. Be Playful by allowing for more iterations and time for students to digest and reflect.
3. Transfer Knowledge between undergraduate and graduate students, design and health cultures and between academia and the community. Online sharing of resources and the online classroom exchanges were often technically difficulty to pull off.
4. Think Strategically about how to engage the design thinking process as a tool in designing the class methodologies. The design of this course is a work in progress that we will continue to develop.

THE COURSE AFTER THE COURSE

The purpose of this project was to form a cross-disciplinary collaboration between two University of Kansas departments, Preventive Medicine and Public Health and the School of Architecture, Design and Planning, by developing two professional courses, one public health and one architecture, that facilitated a shared understanding of the interplay of design and health as it relates to neighborhood food access, walkability, and active living. Through an approach that centered on both didactic and experiential learning, students learned about each other's respective disciplines as they relate to the built environment and health and completed an applied project that included neighborhood assessments and interaction with community members. The culminating experience was a community exhibition in which students presented back to the represented communities a summary of their findings and attainable design solutions for improving food access and walkability.

As a result of the generative work in the course and the public visibility we provided, we have been able to find grant funds to 1.) further develop engagement with community residents and policy makers; 2.) generate design/build prototypes for discussion and development;

Content Beyond the Course

Leveraging the students' work into real-world applications

Fast Fred's Market (Convenience Store) 1806 N 18th St, Kansas City, KS 66104 (913) 371-4124

Food Type	*Brand*	*Packaging*	*Cost/Notes*
Milk (Store Brand or Least Expensive Brand Available)			
Whole	Superior	1 Gallon & Pint sizes	$4.29 Gallon
Skim, Low-Fat	None	n/a	
Cheese (Store Brand or Least Expensive Brand Available)			
Longhorn, American, Pepper Jack, & Swiss	There are more than 2 varieties	Pound (?)	$4.59 Pound
Eggs (Store Brand or Least Expensive Brand Available)			
Large White A	At least 4 cartons	Carton (12)	$2.89 Carton
Juice (See WIC Program Booklet for brand information)			
Ready to Drink (Orange)	Pure, Ocean Spray, Sunny D, Minute Maid	1 Gallon	$1.69 Ocean Spray $1.59 Minute Maid
Ready to Drink (Apple)	Minute Maid, Ocean Spray	15.2 Fl oz.	-
Concentrate	None		
Peanut Butter			
None available			
Canned Beans			
Kidney, Pinto	(Store doesn't sell more than 2 varieties)		
Fish			
Canned Tuna and Salmon not available, only Sardines.			
Fruits and Vegetables			
None available			
Whole Grains (See the WIC Program Booklet for brand information)			
Only 1 100% Whole Wheat option available (Nature's Owl brand).			

El Torito II (Grocery Store) 1409 Central Ave, Kansas City, KS 66102 (913) 233-1794

Food Type	*Brand/Variety*	*Packaging*	*Cost/Notes*
Milk (Store Brand or Least Expensive Brand Available)			
Whole	-	Gallon and 1/2 Gallon	$4.89 Gallon
Skim, Low-Fat	None	n/a	
Cheese (Store Brand or Least Expensive Brand Available)			
No WIC cheese, but wide variety of Mexican Cheeses	There are more than 2 varieties.	There are at least 8 - 8.oz and/or 4 - 16.oz packages available.	
Eggs (Store Brand or Least Expensive Brand Available)			
Large White A	At least 4 cartons	Carton (12)	$3.29 Carton
Juice (See WIC Program Booklet for brand information)			
Ready to Drink (Orange)	Not more than 2 non-concentrate fruit juices		
Concentrate (OJ, Grape, Grapefruit)	More than 2 concentrate fruit juices	12.oz containers	
Peanut Butter			
Smooth or Crunchy	At least 2 containers		
Canned Beans			
	At least 3 varieties	*aisles not labeled, beans randomly found*	
Fish			
La Sirena	Canned Tuna	5 oz. can	$1.59 Can
No Salmon	Sardines are available		
Fruits and Vegetables			
Broccoli, Carrots, Celery, Onions, Bell Peppers, Tomatoes, Lettuce, Squash			*Good Quality*
Apples, Bananas, Grapes, Grapefruit, Oranges, Pineapple, Strawberries			*Good Quality*
Whole Grains (See the WIC Program Booklet for brand information)			
At least 2 whole grain options available.			

Figure 5: Following the project, grant funding supported further development to leverage the students findings to generate conversations with the WIC Program representatives to identify stores that could become WIC eligible. Credit: Matt Kleinmann

and 3.) we are facilitating policy changes in the parks and stores in these neighborhoods.

DISSEMINATION ACTIVITIES

We have engaged in three primary dissemination activities: 1.) Students presented their findings, in poster format, to community members and stakeholders during a Community Exhibition held on May 5, 2016. A sample of one of these posters, which included a summary of key UNDO findings and design solutions developed by architecture students, is attached. 2.) We presented a poster outlining this project at the 2016 Annual Meeting of the Association of Schools and Programs of Public Health (ASPPH), 3.) We participated in an ASPPH webinar on June 14, 2016.

Acknowledgements: Co-Principal Investigator, Dr. Nikki Nollen, Dr. Megha Ramasway and doctoral student assistants, Matt Kleinmann and Christi Nance. Students in the class included Samir Alui, Olivia Arizmendi, Taylor Brumbelow, Nacova Copeland, Kendra Cruz, Connor Crist, Katie Fry, Kelien Gil, John Goehl, Sydney Grimm, Emma Grover, Jordyn Bunville, Adrienne Hearrell, Taylor Lilies, Stella Quinto Limo, Charlotte Liu, Lynton Macharia, Eryen Nelson, Jack Pearson, Joey Platt, Shannon Roberts, Meredith Shapland, Kevin Sloan, Neil Tally, Nandi Taylor, Riley Uecker, Shelby Webb, Louie Weishaar, Crisandra Wilkie, Allison Zaldivar, Zach Zielke; Community Members involved: Broderick Crawford, Monica Mendez, Carl Newton, Carole Newton, Chester Owens, Chuck Schittler, Melissa Sims, Erin Stryka, and Diosselyn Tot. Many thanks is paid to our many Community Partners/ Funders: Community Housing of Wyandotte County, Community Health Council of Wyandotte County, Wyandotte County Health Foundation, Health Foundation of Greater Kansas City, NBC Community Development Corporation, Healthy Communities Wyandotte, 20/20/20 Movement, Central Avenue Betterment Association, KU Public Health Department, KU Work Group, Latino Health for All Coalition, KU Center for Civic and Social Responsibility, KU School of Architecture Design, and Planning and especially to the Association of Schools & Programs of Public Health.