Project #1: Mapping Health Equity Programs in Addison County

Community Partners: *Maddison Shropshire, Energy Planner, Addison County Regional Planning Commission and Bethany Yon, Middlebury & Rutland Local Health Offices of the Vermont Department of Health*

Background / Context

Last year, the Vermont Department of Health (VDH) funded Regional Planning Commissions (RPCs) to develop a Health Equity Toolkit to guide their work with municipalities in this space. Drafted in collaboration with local health partners, this toolkit seeks to both educate communities about the many facets of health equity and encourage the incorporation of health equity concepts into town planning documents and bylaws.

The toolkit defines health equity as being achieved when, "everyone has a fair and just opportunity to attain their highest level of health"; seeks to dissuade discrimination based on income, class, ethnicity, sexual identity, ability, and/or age; and recognizes that health equity must be considered in all aspects of town planning including transportation, recreation opportunities, medical care, emergency response, food access, safe and affordable housing, access to employment, energy use, and environmental quality[1][2].

The Addison County Regional Planning Commission (ACPRC) is a recent recipient of a Health Equity Grant, also funded by the VDH, to work with towns in the region on planning projects specifically related to health equity. This grant, as well as the continued availability of federal ARPA funds, have made this an opportune time for "thinking big" and generating visionary, cross-sector ideas and projects around the planning themes detailed above.

While various stakeholder groups have tight connections and networks amongst their organizations, the ACPRC is often an unknown partner for both support and funding (including funding from a range of new sources that can supplement traditional sources that organizations are aware of—e.g. Farm Bill funds for food access organizations). This limits not only connections between stakeholder groups and the groups that ACRPC works with, but also the development of innovative projects that can advance health equity.

To exemplify the link between ACRPC work and health equity goals, consider that the things that regional planning commissions can influence are all things that can be planned—e.g., food access, active transportation, housing, zoning, access to healthcare, access to greenspaces, etc. Then consider the possibilities of cross-sector thinking to plan / design for a vision where a food access coalition's food distribution site could also offer some co-located health services, serve as

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[1] https://www.healthvermont.gov/about/vision/health-equity#:~:text=The%20Department%20of%20Health%20is,application%20and%20technical%20assistance%20process.

[2] https://www.njhi.org/our-impact/resources/the-planners-playbook-a-community-centered-approach-to-improving-health-and-equity/

an emergency housing shelter in certain conditions, and it would be ensured that this space could be accessed via a sidewalk from all housing centers in a town.

In order to raise awareness of ACRPC resources and facilitate cross-sector collaboration and ambitious visioning, your partners have begun mapping the complex system of health programs in our region with the goal of identifying where local funding needs are, where are there gaps that aren't being met, and to develop a suite of ambitious visions that can be elevated for funding[3].

Project Need

This team of students can contribute to this systems-mapping and cross-sector visioning in several ways including:

Systems Mapping

- Your partners have begun a systems map for the food access sector. Given your limited engagement with this project over a 12-week semester, we and your partners recommend that you connect with other well-established networks where, through a series of key-informant interviews, you could relatively quickly develop a list of all the key players. In addition to food access, these networks include health care, housing, and child care.
- Your partners are also interested in your creative and technical skills to identify the best platform for sharing dynamic content. Since network players and their interactions will change over time, they want to be able to build on and update what you are able to start this semester. Their food access map was started using a Miro whiteboard and they are also interested in AcrGIS platforms, but you will likely have your own ideas too!

Cross-Sector Visioning

- In addition to the above-noted key-informant interviews, select a subset of representatives from the food, health care, housing, and child care sectors to survey and/or interview about their big picture visions and needs. Where are their opportunities for synergistic projects amongst the visions and needs you hear about?
    - One related possibility here would be to turn your interview/survey findings into case study profiles of various organizations featuring their key issues/challenges/ideas that could be shared once a month in ACRPC's newsletter. This could be a "hook"—in addition to the funding hook ACRPC is offering—to garner respondents to your interview and survey requests as needed.

Other Ideas

While the above two categories will likely consume a sizable chunk of your time, we wanted to highlight some additional needs expressed by your partners in case there are students on this team with a particular interest in these aspects of the work.

- Mapping access in addition to systems mapping: The other section of ENVS0401 this semester will also be working with Maddi on a project related to transportation equity to ensure that all members of a community are served that everyone's needs are reflected in

[3] https://www.lisc.org/our-initiatives/creative-placemaking/main/creative-placemaking-toolkit/asset-mapping/

infrastructure design. They will conduct some simple remote spatial analyses to assess gaps in bike/ped connectivity between a range of housing spaces and key community amenities (e.g., grocery stores, medical offices, libraries and other community gathering spaces, etc.). There is an opportunity here to work with students in Section A to develop a pilot methodology for this work—i.e., for an example town, could your team share the locations of key health equity "amenities" gleaned from your systems mapping for the Section A team to conduct a spatial analysis of access on.

- Dashboard design for tracking: Since RPCs routinely work with towns to update and re-write sections of town plans on a regular basis, it could be powerful and useful for future updates to be able to track "improvements" over time in the health equity space. While this is a huge and future-oriented project, what your team COULD lend here is some brainstorming and research around what metrics one would even seek to track. Sense of community? Sense of connectivity? Perceived level of access to various services? Other?

Project #2: Housing as a Social Determinant of Health: Better policy for improved access to housing in Vermont.

Community Partners: Ken Allen, Vermont Public Health Association

Background / context

Vermont has a serious housing shortage, particularly affordable housing. Affordable housing is typically defined as housing costs, such as rent, mortgage, interest and insurance, costing no more than 30% of a household's monthly income. Other expenses, such as childcare, transportation, healthcare, food, and clothing often add up to more than 70% of a household's income, restricting housing affordability even further.[1]

Based on data from the U.S. Census Bureau, Vermont housing vacancy rates, the current estimate of unhoused Vermonters, and Vermont's growing population, the Vermont Housing Finance Agency recently projected a need for 30,000-40,000 more homes in Vermont by 2030[2].
Based on the latest January 2023 count of each state's unhoused population, Vermont's count of 3,295 people experiencing homelessness represents an 18.5% increase over the prior year, according to a report released by the Chittenden County Homeless Alliance and the Vermont Coalition to End Homelessness. Households with children who are becoming homeless grew 36%. These increases are likely due to the end of several pandemic support programs and Vermont's extremely low rental vacancy rates.[3]

At the legislative, policy level, housing is a complex issue spanning across public and private sectors working in areas such as: land use, conservation, energy, transportation, and public health.[4]

The Vermont Public Health Association (VtPHA) is a statewide membership organization which advocates at the regional, state and national level for protecting and promoting the health of Vermonters. VtPHA recognizes the innate connection between physical and mental health outcomes with housing challenges of low-income Vermonters. Together with VtPHA, this project team will focus on housing security as a public health issue, and what, at the legislative level, can be done to improve availability of affordable housing in to low-income Vermonters.

Project Need

This project team will work with VtPHA to understand the affordable housing landscape in Vermont and assess the barriers and opportunities, at the policy level, for increasing

[1] https://www.housingdata.org/toolbox/municipal-impacts

[2] https://www.vhfa.org/news/blog/why-vermont-needs-30000-40000-more-homes

[3] https://vtdigger.org/2023/06/07/this-years-count-finds-homelessness-has-climbed-nearly-19-in-vermont/

[4] https://www.vtaffordablehousing.org/

opportunities for creating affordable housing. Ultimately, the project team will provide a set of evidence-based policy recommendations that will be used by members of the Vermont State Legislature when developing policies to support affordable housing. This work will presented in the form of an easy to digest, attractive and editable document. Work could include, but not limited to:

- Review/ analysis of Vermont's current housing policy across the state as it relates to improving access to affordable housing.
- A comparative analysis of successful affordable housing policies related to their public health impact.
- Review and analysis of Vermont's land use and building policies across the state impacting housing policy decisions.
- Key stakeholder analysis and story gathering – understanding the positive and negative experiences of Vermonters as it relates to this issue and who the problem is impacting.
- Community engagement in the form of interviews/focus groups to explore health impacts related to the lack of affordable housing.
- Design of clever/catchy presentation format – i.e. booklit, flipgrid, infographics etc. students should feel free to get creative, but intended audience would be a hopefully/newly formed public health caucus of legislators to have available when proposing and/or developing their legislation to introduce.

Project #3: Advancing Health Equity by Supporting Local Implementation of Recommendations for Unhoused Individuals and Extreme Weather Events

Community Partners: *Beate Ankjaer-Jensen, Public Health Specialist – Emergency Preparedness, Vermont Department of Health Middlebury Office and Eric Pulver, Public Health Specialist Vermont Department of Health Rutland Office*

Resource Contacts:
Jared Ulmer, Climate & Health Program Manager, Vermont Department of Health; Amy Redman, Health Equity Team Lead, Environmental Health, Vermont Department of Health; Kerri Duquette-Hoffman, Agency of Human Services Field Services Director Middlebury and Burlington Districts

Background / Context
Based on Vermont's most current (2018) Hazard Mitigation Plan's Extreme Heat Section, "the primary impact of extreme heat or prolonged periods of hot weather is to human life. Hot conditions, especially when combined with sun and high humidity, can limit the body's ability to thermoregulate properly. Prolonged exposure to hot conditions can lead to heat cramps, heat exhaustion, heat stroke, or exacerbate other pre-existing medical conditions. Some of these impacts require medical attention and can be fatal if left untreated."

Addressing these and many other climate-related health impacts is the primary focus of the Vermont Department of Health's Climate and Health Program – work that is unfortunately increasingly necessary given Vermont's trend toward warmer and wetter weather. The northeast region of the country is the fastest-warming area in the United States and is warming at a rate 50% greater than the global average. Climate change models for Vermont predict that by the end of the century, the number of days where temperatures reach 87°F or warmer are expected to increase from about six per year currently to more than 20 per year.[1]

While the health effects of climate change affect all Vermonters, the Health Department has identified populations that are disproportionately affected. Populations at highest risk of experiencing a heat-related illness include:[2]

- People with more exposure to hot conditions, including people without access to air conditioning, outdoor workers and hobbyists, people experiencing homelessness, and urban residents.
- People that are particularly sensitive to heat exposure, including anyone not acclimated to hot weather, older adults and young children, pregnant women, people that are overweight or have a chronic medical condition, people using drugs, alcohol or some prescription medications, and people who experienced a prior heat illness.
- People with limited adaptation resources, including people who live alone, have limited transportation options, are unable to purchase or use an air conditioner, or are unable to access community cooling resources.

[1] https://www.healthvermont.gov/sites/default/files/documents/pdf/ENV_CH_HeatReport.pdf
[2] https://www.healthvermont.gov/health-environment/climate-health/vulnerable-populations

Lastly, based on the latest January 2023 count of each state's unhoused population, Vermont's count of 3,295 people experiencing homelessness represents an 18.5% increase over the prior year, according to a report released by the Chittenden County Homeless Alliance and the Vermont Coalition to End Homelessness. Households with children who are becoming homeless grew 36%. These increases are likely due to the end of several pandemic support programs and Vermont's extremely low rental vacancy rates.[3]

Project Need

This project team will build upon the work of the past two semesters of ENVS 401 work on this issue, where students conducted research, survey, and interview work around the impacts of extreme heat events on unhoused Vermonters. Here are the final report links for Fall 2022 and Spring 2023 for your reference. Our community partners have suggested that the logical next project would be to research the needed funding, policy, logistical considerations, geographic considerations, etc. necessary to implement some of the combined suite of recommendations that student teams have identified thus far.

Beate Ankjaer-Jensen and Eric Pulver are Vermont Department of Health (VDH) Public Health Specialists focusing on emergency preparedness in the local VDH Middlebury and Rutland Offices, respectively. They also co-coordinate a Medical Reserve Corps (MRC) that allows them to deploy services through a cohort of volunteers including recently deployed kits to combat ticks and the spread of Lyme disease for unhoused Vermonters that regularly camp out in the summer months.

As suggested by these community partners, this project team would build on previous efforts to better meet the needs of unhoused Vermonters. This project explores streamlining user-friendly systems for providing and distributing essential resources to unhoused Vermonters, considering the perspectives of those distributing the resource and those receiving the resources. The community partners have identified the following areas of focus as priorities for this work:

- Understand the challenges and opportunities that Vermont towns face when providing resources to unhoused Vermonters. VHD, for example, would like to encourage municipalities to provide and manage misting tents as "third spaces" where unhoused Vermonters could spend time and cool down in extreme heat.
    - Research case studies of towns around the state and/or beyond which have secured funding for cooling center planning, development, and maintenance/staffing.
    - What else are towns doing in light of the resource needs of unhoused residents in extreme weather events? How is would this work be funded?
    - Provide case studies/precedents of Vermont towns/others that incorporate emergency management policies into their town plans to address the needs of unhoused Vermonters as it relates to extreme weather and climate vulnerability.

- Redesign, update and/or develop "Gotta Go" cards, which provide information about where people experiencing homelessness can access resource such as public bathrooms,

[3] https://vtdigger.org/2023/06/07/this-years-count-finds-homelessness-has-climbed-nearly-19-in-vermont/

showers, laundry facilities, etc. The partners for this project would like to update existing information, add new information (e.g., tick kit distribution sites and cooling centers mapped by Middlebury intern, Isaac Danuloff), translate cards into Spanish, and improve graphics/visual design for Addison County and create an analogous card for Rutland County.

- As time permits, your partners are also interested in learning about other types of resource needs and access challenges that the unhoused population in Vermont faces. This might include compiling qualitative, user experience information to inform an inventory of what resources exist and are known and/or used by unhoused Vermonters. Further, your partners are interested in learning more about what resources are needed, what distribution methods have worked well, and what else should to be considered when providing these resources. Are there ways to make distribution of resources to unhoused Vermonters more efficient for both the receivers and providers of these resources? Again, Isaac Dunaloff's summer internship and previous ENVS 401 projects can serve as starting points for this work.

Project #4: Responding to the impacts of soil and sediment deposition from flooding on recovery efforts and environmental health in rural New England towns.

Community Partners: *Kate Buckman and Kathy Urffer, New Hampshire and Vermont River Stewards (respectively), Connecticut River Conservancy (CRC)*

Resource Contacts:

- Barb Schwendtner; Compliance Chief - Solid Waste and Salvage Yards, Vermont Agency of Natural Resources (barb.schwendtner@vermont.gov)
- Contact solid waste management district for Town examined: https://dec.vermont.gov/waste-management/solid/local-districts
- Kelly Stettner; Black River Action Team (blackrivercleanup@gmail.com)

Background / Context

Vermont and New Hampshire witnessed historic, catastrophic flooding this summer. Numerous towns, including Middlebury, endured complete destruction of roads, bridges, farm crops, homes, downtown businesses, riparian systems, and other wildlife habitats.[1] While the quantity of water and its velocity in river systems are the most immediate threats when witnessing flooding events, floods pose many other threats to human-ecological systems. Water and sediment contamination, deposition of sediments in locations that negatively impact human landuse, and mold growth in flooded buildings are examples of significant and lasting issues, which compound detrimental environmental health impacts of catastrophic flooding.[2] In each case, individuals and municipalities with fewer resources are disproportionately burdened by the tasks associated with post-flood recovery.

Flooding leads to both redistribution of existing sediment in waterways and the addition of new soil material via erosion within a watershed – sometimes leading to sediment deposition in places that conflict with human activity, such as on transportation infrastructure, inside buildings, and on agricultural fields. Flood water can contain biological and chemical contaminants from road runoff, garbage, raw sewage, heating oil, agricultural and industrial waste depending on size and intensity of storms[3,4]. These contaminants can then settle in the sediment deposited from a flood. If you look at pictures of summer floods from July 2023, particularly in downtown areas, such as Montpelier, it is easy to see that this sediment coated absolutely everything that the flood water touched. As a result, flood recovery of the built environment necessarily involves removing deposited sediment and, in many cases, the material it touched (e.g., building materials). This process is labor-intensive, expensive, produces a tremendous amount of waste, and creates the

[1] https://www.vermontpublic.org/2023-07-13/maps-which-areas-in-vermont-were-hit-hardest-in-this-weeks-flooding

[2] https://vem.vermont.gov/sites/demhs/files/documents/2018SHMP-HazardAssessmentInundationFloodingFluvialErosion.pdf

[3] https://www.healthvermont.gov/media/news-room/news-release-guidance-vermont-flood-recovery-health-and-safety

potential for immediate and ongoing challenges for protecting environmental quality and human health.

In the wake of this summer's historic rainfall and associated flooding in Vermont and New Hampshire, how was this sediment and sediment-coated debris handled? Where did it get taken? Has it been tested for contaminants? Who was responsible for these decisions? Additionally, who is most impacted by this issue and how have they been impacted?

Your community partners, Kate Buckman and Kathy Urffer, New Hampshire and Vermont River Stewards (respectively) at the Connecticut River Conservancy (CRC), have been asking these questions. CRC is a non-profit advocacy and education organization working for the health of the Connecticut River watershed, which includes land in Vermont, New Hampshire, Massachusetts, and Connecticut. Staff at CRC have recognized the gap in guidance, testing, data, educational information, and other resources available in response to flooding, notably about handling flood-related sediment, soil, and debris.

Project Need

CRC would like to understand who is considering how flood-related sediment and soil are being managed following recent catastrophic flooding events, what information is being gathered and/or should be gathered about this material. They also would like to learn what creative solutions to dealing with this material could be considered to best protect health and safety of those responding to a flood, what resources and guidance exist for sediment/soil quality testing, how sediments/soils from floods impact the environment and public health where it is disposed of during post-flood recovery efforts, and potential remediation options for the sediment/soil, if contaminated. Possible avenues to explore include:

- Outreach to state and local agencies/municipalities to identify what was done with flood sediment/soil in Vermont and New Hampshire towns following this past summer's floods. What/if any guidance was given and by who?

- Outreach to residents and business owners to learn about their firsthand experiences with handling flood sediment and flood debris. Was there any guidance and/or best practices available as a resource to turn to if they had questions about health and safety of flood cleanup and recovery efforts?

- Outreach to the farming community to understand how they were directed to deal with sediment on cropland and whether and how the sediment/soil quality was tested.

- Understand what data/information exists about the quality, quantity, and handling of flood-related sediment/soil. Relatedly, are there resources available for testing flood-related sediment/soils for contaminants and, if so, what information-gathering systems exist to aggregate this information. How would you measure if these systems were working effectively?

- Compile case studies/precedents on soil remediation methods and/or creative business opportunities to help alleviate the challenges associated with responding to flood-related sediment and soil on the people and communities who are most impacted by the problems posed by these dimensions of post-flood recovery.