COVID-Induced Migration and Potential Climate Destinations in New York State

American Society of Adaptation Professionals

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Abstract

This paper focuses on using lessons learned from the impacts of COVID on human migration over the course of the pandemic thus far, showcasing the towns with the lowest climate risk that have trended toward increasing population. Focusing on policies, projects, and other factors that may be influencing their people's decisions to migrate. The region focused on was limited to New York State due to the project being a partnership with NYSERDA (New York State Energy Research and Development Authority) and ASAP (American Society of Adaptation Professionals).

Intro

The nucleus of our research focused on where climate migrants in New York state will go, how will the receiving communities be selected, and how will the aforementioned communities have to change to accommodate the new climate migrants.

The COVID pandemic has shown how disasters of any kind can have drastic impacts on human migration patterns, with a wide swath of people moving to new locations in search of safety. The push for remote working has made these movements easier for many white-collared workers, allowing them never-before-seen freedom in where to live. These migration forerunners and their decisions on where to locate are defining the patterns around human migration moving into the post-COVID era. ("The rise of 'zoom towns' in the rural west" 2020) This is especially pertinent within coastal regions of the Atlantic Ocean and the Great Lakes, with highly dense urban areas there is huge climate risk with effects starting to be realized. (Gout 2021). These choices of new migrants will have impacts on the future planning and adaptation for climate migration. (Marshal 2021) These decisions to move are not solely based on COVID and do not usually consider the climate risks. Instead, a myriad of factors influences migrants' decisions.

This paper focuses on: using data from the years prior to and during COVID to analyze the shocks in migration patterns, mapping the significant migration flows to cities/towns, focusing on trends toward increasing population, looking at towns and urban regions that are at lower climate risk, analyzing their social and economic factors, then showcasing these receiver towns and regions for migration.

Background Review

At the start of this project we worked closely with the other parallel research teams and experts in the field to understand the current scope of research into climate migration within a US context. Thus far there has been plentiful research internationally looking at less developed nations and even within China at critical risk for climate migration, but within a US context, there has been much less of a detailed focus due to the advantages of being a developed nation with a greater capacity to adapt when it comes to coastal development. Despite this, there is increasing awareness that the effects of climate change are increasing, and the risks continue to rise and will lead to increased climate migration over the coming years. (Fan, Fisher-Vanden, and Klaiber 2018) New York State, and especially New York City, have a high potential for impacts because of the increasing severity of storm surges and sea-level rise. Flood risks are increasing and people continue to live and develop in floodplain regions, but new developments lack the mitigation necessary for long-term effectiveness. As such we need to move forward with precautionary approaches to development in at-risk regions. (McPhearson 2020) Unfortunately the pattern continues even through COVID that people locate in some of the immediate high climate risk regions, despite the oncoming challenges in locating in those regions. (Peters 2021) One of the greatest at-risk populations is those in affordable housing. Once displaced there exists little to no alternatives for them, and this risk is posed to accelerate in the coming years, especially in the New York State region. (Climate Central 2020) These aspects influenced us to look at what areas we could create the highest impact, following existing migration flows to inform and help in the implementation of new policy and development to help prepare for the onset of climate impacts within New York State.

Method

The goal of this project was to anticipate and analyze regions becoming receiving communities through data-driven analysis.

Kelly Leilani Main's and Anna Marandi's research paper on "*Vulnerable City, Recipient City, or Climate Destination? Towards a Typology of Domestic Climate Migration Impacts in US Cities"* (Marandi and Main 2021) classified cities into three different climate migration typologies: (1) vulnerable cities - cities that will suffer voluminous losses in both population and tax revenue; (2) recipient cities - cities that will unwillingly become host to "receiving communities" due to sudden-onset disasters; and (3) climate destinations - cities that will adopt an identity of being "climate havens" and welcome displaced communities through equity-focused planning and preparation. Our goal was to apply this work into practice, quantifying which cities in New York State hold the potential to belong in the latter two categories and what characteristics they have which may make them more successful.

Towns and cities that showcased a sudden increase in population in 2020 demonstrated the potential

to be receiving communities or climate havens since large amounts of people moved to them with the advent of a major disaster (the COVID-19 pandemic). To quantify this, ZIP Code change request data from the USPS was used to discern which towns did receive an increase in population during this timeframe. (USPS, n.d.) The data came in a format sorted by every ZIP code throughout the U.S that held the amount of zip code change requests into and out of the particular ZIP code for a given month of the year. To clean the data, only ZIP codes in New York State were selected, which were, in turn, amalgamated into cities that they covered and summed for the entire year, which then were sorted into a change in a net ZIP code change request by taking the difference between incoming and outgoing numbers. The net ZIP code changes between 2020 and 2019 and 2021 and 2020 were then subtracted from each other so we could see which communities had seen an increase in net ZIP code change requests. Cities were ranked by largest to smallest increase in ZIP code change requests and the top in the former category were chosen for analysis. It should be noted that 2021 ZIP code change request data only covers request changes made until August 8th since that was when the data was downloaded, so the magnitude is smaller compared to the two prior years.

Once cities/towns were selected, they were categorized into Receiving Communities or Climate Havens based on their storm score on Climate Check. (ClimateCheck®, Inc., n.d.) Climate Check is a climate risk assessment website that allows users to understand how given municipalities and locations may be vulnerable to climate impacts. The site lists five climate risk factors generated from its algorithms, specifically storm, flood, drought, heat, and fire risk. By and large, the storm and flood are most variable across the entire state and heat and fire least controllable. As such regions with low storm and flood risk were primarily analyzed and at the fire and heat secondarily.

Cities/towns were analyzed for their ability to be a climate destination based on a series of climate destination factors, specifically freshwater access, high vacancy rates or abundance of affordable housing, amount of infrastructure to support more residents, expressed desire to grow and be welcoming, and a history of or interest in improving adaptive capacity through sustainability and/or resilience efforts. (Spiller 2016) Stable freshwater access was determined by searching for each town's freshwater source and verifying if it will be usable in the future. Vacancy rates were found by downloading 2019 U.S census data (U.S. Census Bureau)and dividing the number of vacant houses over total houses to arrive at a vacancy percentage, while the number of affordable homes for a community was found by searching its name on the website LowIncomeHousing.us. (Low Income Housing, n.d.) A community was considered to have a large surplus of housing if the vacancy rate was above 5% and if the percentage of housing stock in the city that was considered "affordable" was above 0.1%. The last three factors were determined using qualitative analysis of the city's/town's website and newspaper articles detailing activities the municipality has completed making itself more welcoming. In addition, municipalities were analyzed for digital services to support residents and visitors due to the increasing necessity of digital access after the onset of COVID.

Walkability and transit strength of selected municipalities were determined by inputting their name

into the website Walk Score looking at the scores for walkability and bikeability. (Walk Score, n.d.) Walk Score and Bike Score uses computational algorithms to quantify how friendly a given city, town, or location is to walking and biking use respectively. If a municipality's total walk or bike score was not stored in the database, then the central downtown location was used.

Municipalities were grouped into different regions for analysis so policymakers can have a "big-picture" view of what geographic locations might be more suitable for communities to move to.

Results

The following tables show the net change in Zip code requests, climate risk quantification, haven factors, and walking and bike scores made for each selected city in each region over the years studied. 2021 ZIP code change request data only covers request changes made until August 8th since that was when the data was downloaded, so the magnitude is smaller compared to the two prior years. **This can be updated after Dec 2021.**

Municipal name colored in yellow signifies a receiving community, green a climate haven, and an asterisk (for walk and bike scores) the downtown region only.

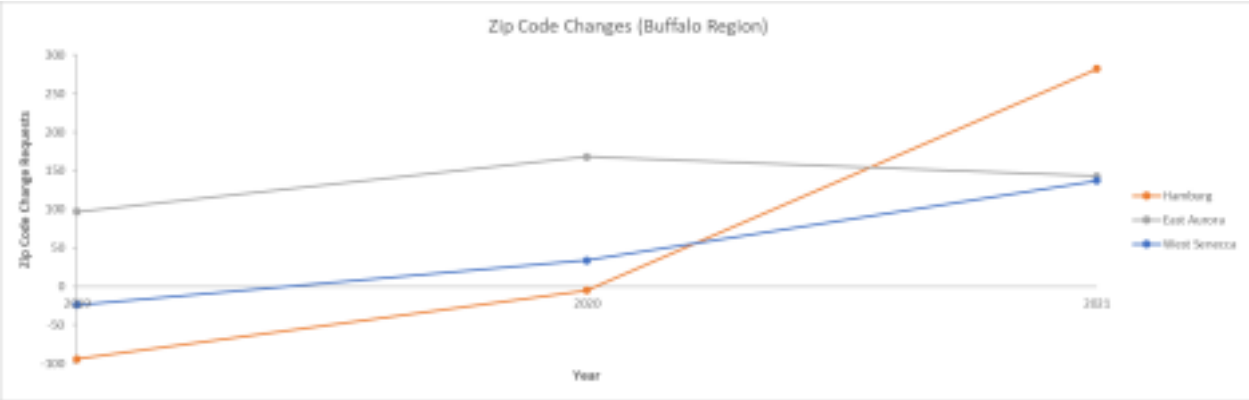
Zip Code Changes

Buffalo Region

Year	Buffalo
2019	-5745
2020	-4820
2021	-2795

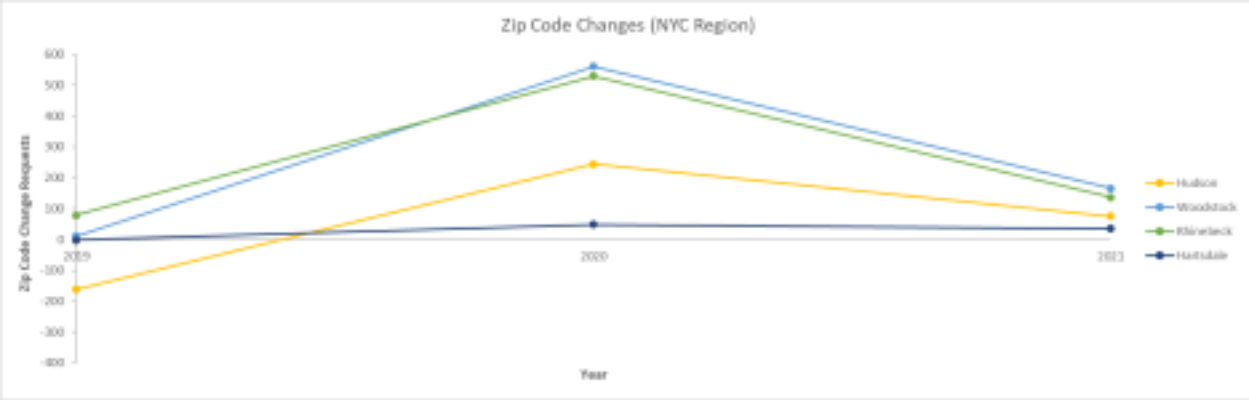
Hamburg East Aurora West Senecca

-94 97 -24 -5 168 34 282 143 137



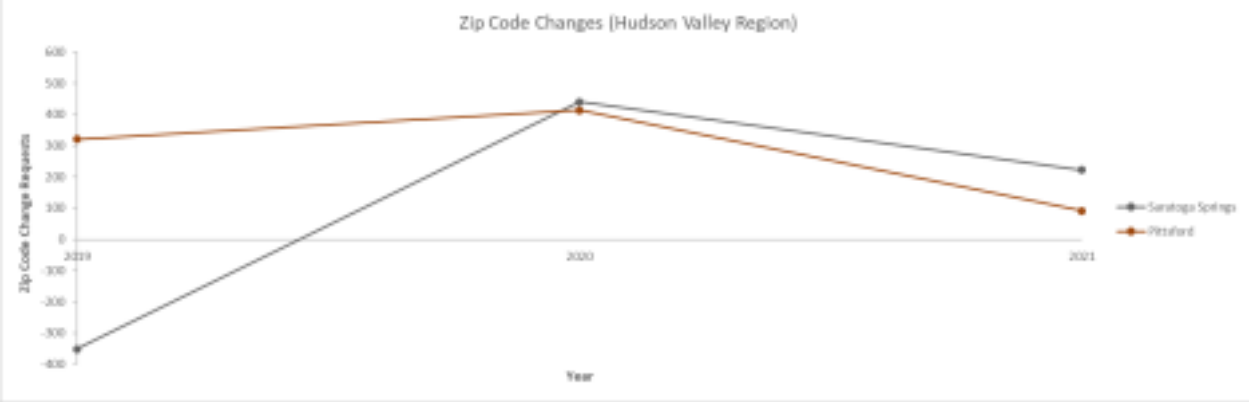
New York City and Hudson Valley Region

Year	Hudson	Woodstock Rhinebeck Hartsdale Scarsdale
2019	-162	10 79 -2 321
2020	244	561 529 48 414
2021	75	166 137 35 92



Other Regions

Year	Saratoga Springs	Pittsford
2019	-351	321
2020	440	414
2021	222	92



Risk Factors

Buffalo Region

City/Town	Flood	Storm Heat Drought Fire	
Buffalo	88	71 19 1	1
Hamburg	1	90 50 27	20
East Aurora	1	92 45 27	22
West Seneca	25	82 51 27	1

New York City and Hudson Valley Region

City/Town	Flood	Storm Heat Drought Fire
Carmel	1	76 72 42 7
Scarsdale	39	77 30 49 1
Hartsdale	1	66 60 40 1
Woodstock	57	71 34 49 1
New City	1	72 28 17 1
Rhinebeck	43	87 43 16 1
Hudson	1	82 64 23 1

Other Regions

City/Town	Flood	Storm Heat Drought Fire
Albany	1	78 53 20 1
Saratoga Springs	1	87 54 11 7
Pittsford	1	77 45 29 20

Haven Factors

Buffalo Region

City/Town	Freshwater Access	Plentiful Vacancy	Solid Affordable Housing	Infrastructure for More Residents	Desire to Grow and be Welcoming	Adaptive Capacity Efforts
Hamburg	✓	✓	✗	✓	✓	✓
East Aurora	✓	✓	✗	✓	✓	✓
West Seneca	✓	✓	✗	✗	✗	✗

New York City and Hudson Valley Region

City/Town	Freshwater Access	Plentiful Housing	Solid Affordable Housing	Infrastructure for More Residents	Desire to Grow and be Welcoming	Adaptive Capacity Efforts
Carmel	✓	✓	✗	✓	✗	✓
Scarsdale	✓	✓	✗	✓	✗	✗
Hartsdale	✓	✓	✗	✓	✓	✓
Woodstock	✓	✓	✗	✗	✓	✗
New City	✓	✗	✗	✓	✓	✗
Rhinebeck	✓	✓	✗	✓	✓	✗
Hudson	✓	✓	✗	✗	✓	✗

Other Regions

City/Town	Freshwater Access	Plentiful Housing	Solid Affordable Housing	Infrastructure for More Residents	Desire to Grow and be Welcoming	Adaptive Capacity Efforts
Albany	✓	✓	✗	✓	✓	✗
Saratoga Springs	✓	✓	✗	✓	✓	✓
Pittsford	✓	✓	✗	✓	✓	✓

Walking/Transit Scores

Buffalo Region

City/Town	Walk Score	Bike Score
Hamburg*	66	63
East Aurora*	80	69
West Seneca	25	37

New York City and Hudson Valley Region

City/Town	Walk Score	Bike Score
Carmel*	51	35
Scarsdale	40	38
Hartsdale*	83	35
Woodstock*	47	39
New City*	76	47
Rhinebeck	41	48
Hudson*	86	45

Other Regions

City/Town	Walk Score	Bike Score
Albany	65	56
Saratoga Springs	40	38
Pittsford	40	38

Analysis/Interpretation

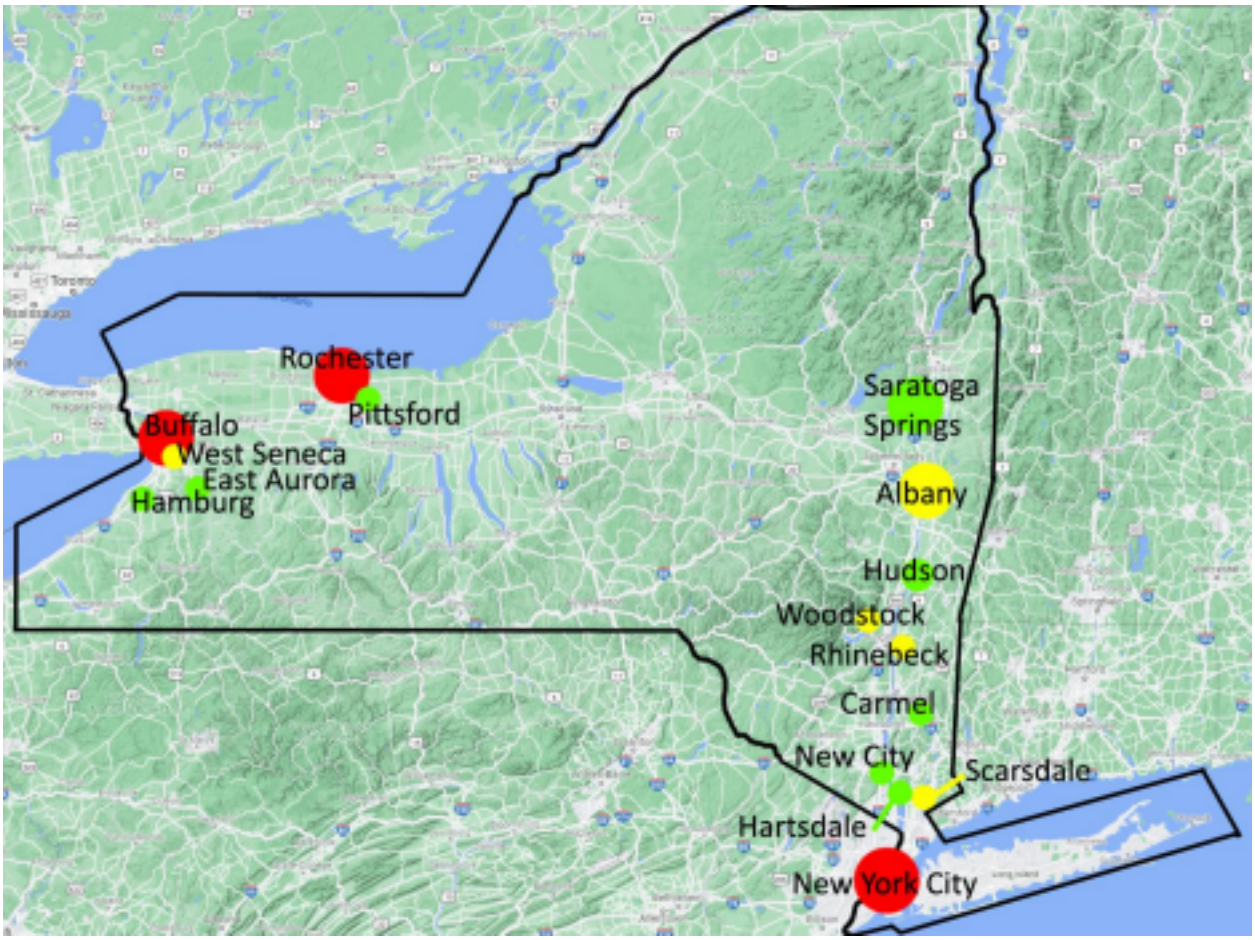


Image Credit: Google Maps captured by Isaac Gendler, Edited by Ross Plattel

Buffalo Region

We started our research focusing on the Buffalo Region anticipating a discussion with the city of Buffalo in October 2021. Although the discussion opportunity with the city was canceled, the region acted as a good start to define and test our process in determining the towns to look more closely at. This was due to the smaller number of municipalities and the distance from the other regions in the state, especially compared to New York and Hudson Valley moving north.

In recent years Buffalo has attempted to showcase itself as a climate haven in its marketing and appearing in various pieces of research (Kendra 2019) including Kelly Leilani Main's and Anna Marandi's paper (Marandi and Main 2021). However, looking through Climate Check and other climate reports, we found that the climate risk being right on the great lake is especially high for storms and floods which could be extremely detrimental to Buffalo. This is only compounded by its post-industrial landscape and lack of effective drainage.

With the towns in the Buffalo region outside of the main city that did gain population, we

found that they all have a special focus on digital services through town apps and/or websites. This includes easy access to all town-specific services through central town websites including permits, town security, block watch, department-specific contacts, and more. (WEST SENECA, n.d.; Town of Hamburg, n.d.; Village of East Aurora, NY, n.d.). Hamburg has provided COVID assistance resources for rent and mortgages, and prominently advertises its food bank. Both downtown Hamburg and East Aurora have some of the highest walkability and bikeability scores of towns surveyed and have sidewalks with greenspace along major roadways. West Seneca is also gaining a fair amount of population with its close proximity to Buffalo giving easier transit access, but it lacks elements of walkability. It also is more "boxed in" with little room to expand outward but does have the potential for densification, although there has been little discussion toward such adaptive efforts that we found.

Hudson Valley Region

Hudson received large attention over late 2020 and into 2021 as it was ranked first in migration in its region in terms of the volume of migrants. This has resulted in the displacement of the local population with many now moving to nearby towns throughout the region to find more affordable housing. (Vaughn, Schneider 2021) This does present an opportunity for Hudson to expand its focus on affordable housing and diversification of the local housing stock. In terms of what is attracting migrants to Hudson it falls into a similar sphere of other towns in the region that we looked at, with an early settlement era design that promotes walkability and accessibility, especially in the downtown core. Hudson markets itself as a high-end destination through a luxury European feel, with the downtown marketed as a center for amenities for the upstate region. Their economy is focused on local tourism and services within the surrounding area, making the region's interest overall increase. (LEV-TOV 2020) A mix of ethnic and socio-cultural backgrounds makes it accessible to a wider variety of prospective home buyers. This all combined with accessible transit access allows taking the train down to New York City for access to services unavailable yet within the region, and easy access for migration.

Other towns between Hudson and New York City share many common themes. People preferred living near rail access, giving them access to services centered in New York City. Existing resources and services are a priority with high-end shopping and amenities being a major draw. Numerous towns have arts and culture interests as a major focus. Municipalities close to other major centers with increased migration overflow are seeing similar challenges with affordability in housing. There is variety in the design and makeup of receiving towns with varying degrees of these elements, each with its own niche catering to specific demographics, industries, and lifestyles. Most towns with historically preserved look and feel.

Woodstock is well-regarded for its arts scene due to the famous music festival that took place there, and continuous heavy investment in the field. The town has seen modest population gains from the pandemic and in 2021. Woodstock has continued to focus on attracting people related to the arts scene to bolster its capacity with its keen focus on tourism, even during COVID. Its various amenities like its music theater, playhouse sculpture park, Buddhist monastery, hotels, and tourist attractions show that

it has variety for residents. (Alvord 2021) The town has strong potential to connect its local arts scene to New York to help bridge communities and migration flows. (Woodstock Byrdcliffe Guild, n.d.) However, multiple aspects of the town can be improved before ramping up migration. Some of the issues include the town website being drastically out of date for modern web standards and the lack of digital services for tourists and residents. Its central location in NY State and its surrounding space give it even more potential for growth and densification. A focus on densification and affordable housing is needed here because the cost of housing has increased during the pandemic, and was already previously quite high.

Rhinebeck is similar to Woodsock with a small-town atmosphere increasingly focused on the arts with galleries and museums, and arts and crafts stores (Kurutz 2021) in addition to the emphasis on historic preservation and character within the town culture. (Enjoy Rhinebeck, n.d.) Given its location, it is closer than Woodstock to central roads and rail access, granting it greater potential to connect to other cities in the region for more services and ease of migration. Connecting to art communities in New York City to facilitate migration has great potential due to all the local economies and supports. It also has a wide variety of amenities with two public libraries and a movie theater with other local shops. Their website provides answers to basic questions for tourists and residents but there is little access to other in-depth services like some of the more comprehensive assets that other researched towns have. (Village of Rhinebeck, n.d.) Lastly, it does have fairly good walkability with sidewalks that have road verges making pedestrians feel safer.

Carmel has seen an influx of people during the pandemic. The town comprises predominantly of single-family homes featuring green space and parks. It acts as a center for the local region, including the town of Kent, with the central post office. The core of the town is fairly walkable contributing to a modest walk score. The center of town has some essential shops and resources for residents, as well as a golf course nearby. Likely the largest factor influencing the migration to the town in recent years is the direct access with a local train station into New York City. The town does have a basic website with a directory but lacks more supportive and comprehensive digital services. (Carmel Town Hall, n.d.) It is promising with a very low flood risk as well as low risks in most other categories with the exception of high heat which most of its surrounding region shares.

New City was seeing modest population gains prior to 2020 with very large population gains in 2020 and modest gains in 2021 when the data was pulled. It sits inside of the Town of Clarkstown which is a combination of smaller towns in the region. (Town of Clarkstown, n.d.) As such services are centralized around New City but the Town of Clarkstown as a whole is lacking in terms of digital services and accessibility. The core of the town is densely packed with shopping and amenities that not only support New City but the surrounding towns as well. Row housing exists closer to the center of the town but the housing stock is still prominently single-family housing along the outside. Due to the precedent of some denser housing, there is potential here to create more affordable high-density housing that could accommodate migrants. With a high walk score and very low climate risk, the region

overall has great future potential to accommodate migration.

Scarsdale and Heartsdale are sister towns each across the major commuter train line from one another and are the two closest to New York City of the cities analyzed. Both have similarly seen large gains in population in 2020 and into 2021. Scarsdale has a relatively low walk score being mostly high-end single-family housing and because the train is relatively segregated being more integrated instead to Hartsdale. Scarsdale also has a higher flood risk than Heartsdale making the Hartsdale region the safer side to focus on development. The region is plentiful with golf courses on both sides appealing to commuters from New York City and wealthy locals. The Scarsdale Golf Course and the country club actually reside in the heart of Hartsdale. Within Hartsdale, there is a lot of high-density housing around the train station and the golf course, setting a precedent for potential future affordable and high-density housing. Heartsdale is also highly walkable and accessible at its core, likely due to the train station that creates an atmosphere promoting walkability and accessibility. We were not able to find much in the way of digital services and amenities for either town. Scarsdale does have a government website but only for connecting to departments, which shows a lack of services to help individuals with immediate needs. ("Scarsdale, NY", n.d.) In terms of ability to grow outward neither have much capacity due to being "boxed in" by other towns, so the only option here is increasing the density. If density is being added in Scarsdale some flood mitigation will need to be assessed and implemented.

Albany Region

Although Albany itself is in a great location for relative flood risk and has relatively low scores in all other categories given its location, it has been consistently losing population. Looking at their services we found they do have an app for the city amenities, but only targeted toward tourists. The website for the government does have access to some resources, but less that are effective supports for local citizens. (Albany County Convention & Visitors Bureau, n.d.; Government of Albany, n.d.) Being the capital is predominantly government-oriented for industry without much diversification. The downtown of the city is quite dense and accessible, and the city overall has a good walk score and bike score, but as you move out from the core of the city walkability decreases drastically. There is a bike-share program that allows for easy bike rentals and accessibility across the city with places to pay for rentals and locations to park and return the bikes. (Albany.com, n.d.) All other towns around Albany have also been similarly losing population, the exception of which is Saratoga Springs.

Saratoga Springs has had a reversal in population trends. After losing population in the years prior to COVID it has turned around with population now gaining in 2020 and 2021. Echoing other cities in the region, it works to maintain its more heritage-esque feel mixed with activities like horse racing, art galleries, and access to the local national park. (The World and Then Some 2021) Their focus on renewable energy and resilience strategies appear to be influencing the decisions for people to locate there. (Government of Saratoga Springs, n.d.) Showing the positive impacts from "Solar for All", and other related initiatives by NYSERDA and the city. (Sustainable Saratoga, n.d.) This combined with the focus on digital services, the existing walkable core, urban forestry, and efforts toward zero-waste, are making compounded impacts in attracting migrants. Efforts from a variety of fronts such as adaptive

capacity and future planning with a focus on ecologically conscious lifestyles, Saratoga Springs appears to be the most prominent example of successful efforts in recent years. There is potential to apply these efforts elsewhere, and Albany being the closest large neighbor would be a great place to expand and replicate these efforts to help attract migrants and possibly change its course of losing population.

Rochester Region

Rochester is another major climate risk city within the state. Being right on Lake Ontario it has an extremely high flood risk score. It has also been steadily losing population year over year. Similarly, nearly all towns in the surrounding region have been losing population, and many have higher climate risks, although not as severe as Rochester itself. The only town that has gained population over recent years in the region has been Pittsford.

Pittsford has a unique mix of a more accessible urban core with suburbs that appeal to longer time living in the home. Due to its close proximity to Rochester for more amenities within driving distance, it is popular with those wanting to be away from the city but still with an element of accessibility to services. But it has been historically predominantly car-oriented in its urban designs. In recent years a new focus on walkability, bikeability, along with nature parks and paths connected to amenities and the communities has been developed. This is great for residents wanting walks to connect with nature and escape the confines of their houses, but longer walks to amenities from outlying areas exist. This is because previous car-oriented designs make walks more for leisure rather than a means to do regular errands. There has been a focus on making the downtown core more walkable and bikeable with pathway improvement projects, and a focus on local retail meaning people do not need to drive into Rochester as frequently, allowing people to park and walk through the core of the city over driving short distances to destinations. (Historic Pittsford 2020) There is great potential for densification due to these traffic calming and walkability improvements combined with seating in the town core and along paths. Looking at the suburbs home builders tend to focus on in-home amenities and larger homes with custom designs for long periods of living at home, including multiple home offices. Because of the pandemic, this has been greatly appealing to remote working employees. (Battaglia and Betty Battaglia Homes, n.d.) Looking at digital services Pitsfrod also has a comprehensive website helping both residents and visitors easily find services and support that they may need. (Town of Pittsford, n.d.)

Conclusion

The efforts toward understanding the impacts and factors for climate migration are an ever changing and evolving field. Our approach was to use a mix of current events with COVID impacts and analytical quantitative methods to determine what towns were in safe climate zones, then leading into a more quantitative analysis to help understand the reasons why people are currently located in climate-safe cities and regions to help inform what is working as well as to develop future methods for analysis and recommendations. NYSERDA provided some questions below for us to answer.

Questions from NYSERDA

1. **How has your thinking changed about how to identify cities that have a high likelihood of climate migrants moving there?**

   The biggest change is that we are moved to looking at non-climate disasters already ongoing as a way to understand migration patterns. Considering the long-term
   potentials from climate modeling and impacts we found was limiting because of the vast number of possible factors that could influence decisions to migrate. This prompted us to look at what the migration flows were already happening, instead of looking at cities solely on a climate basis. We were influenced by the migration changes and wanted to find people's reasons for moving to climate-safe regions that were already receiving population.

2. **How could NYSERDA apply those methodologies in the future?**

   NYSERDA can analyze what towns are currently experiencing population increase and model how it might play out. NYSERDA can also look at open datasets that can be mapped together to create dashboards and models using similar methods to our project. This would allow for faster decision-making but also deeper insights as migration patterns as they develop and change.

We hope that the research has provided benefits and insights to those that have taken the opportunity to read through it, and are open to any feedback and recommendations for further development, refinement. Feel free to reach out to us. Below are the next steps and potential areas for future work that we have discussed thus far.

Next Steps

Future Work

With further development on this project we hope to focus on how these cities/towns can grow to accommodate a larger, more diverse population. Construction and development stats over the past few years will need to be analyzed so policymakers can know if housing construction in the area already has momentum or if it will need to be initiated to make room for more people.

These cities/towns will also have to be assessed for their acceptance of Black, Indigenous, and People of Color (BIPOC) communities to ensure that these areas can be true climate destinations. This can be accomplished through uncovering demographic data of the towns and

cities, interviews with BIPOC individuals currently living in the selected municipalities, and other techniques which may be discovered through literature review.

Transit infrastructure will need to be understood for integrating climate migrants into their new cities. This is especially important in the Hudson Valley Region with its strong rail connections with New York City. This will be amalgamated with detailed discussions with leaders in the cities/towns on the impacts of public policy, zoning, and focused redevelopments in the municipalities. The scope of understanding of climate impacts, both directly experienced and due to migration, will have to be broadened and deepened so policymakers can make more accurate decisions.

Future Datasets

Census bureau stats lag behind by two years, and by 2022 we will have census bureau information for 2020, allowing us to update our housing availability estimates and verify our population change projections, along with incorporating birth and death data. Getting access to census racial breakdowns will give a better picture of how diverse each city/town is. Obtaining migration data from the IRS will give us a more nuanced understanding of population change patterns. Data on business and modes of work, focusing on long-term trends and impacts of remote working on communities and resulting migration impacts will help with previewing how disaster affects population mobility. Furthermore, detailed adaptive capacity indicators and Environmental/Socio-Cultural/Technological overviews of towns using detailed data from the specific towns and cities where available will allow for more accurate quantification of climate risk and resilience.

Other Areas to Consider

Integration of demographic modeling methods would be very useful for this project, as it would allow for long-term projections of how municipalities will evolve with the onset of climate change. Creating community partnerships between leaders and residents of climate-risky areas with towns can create channels for migration that can smoothen transitions. This route can be bolstered by interviews on why people move to specific regions and match the demographics to help anticipate and facilitate the movement of migrants along with an assessment of the effectiveness of zoning and development.

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