

MyCoast Pilot Communities

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URSP688L – Recent Developments in Urban Planning: Planning Technology
The University of Maryland – College Park
Fall 2020

This work was supported by a grant from the National Oceanic & Atmospheric Administration; administered through the State of Maryland, Department of National Resources; as part of an award totalling \$50,000 under agreement [14-21-2870 CZM 206]. This report has not been formally disseminated by the National Oceanic & Atmospheric Administration and does not represent any agency determination, view, or policy.



PALS – Partnership for Action Learning in Sustainability
An initiative of the National Center for Smart Growth

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Brief Overview

Overview and where to find information

Maryland's MyCoast Program is a strategic effort to anticipate and assess the impacts of flooding events across the state. MyCoast is a National program with the mission to document tides, storm damage, beach cleanups, nuisance flooding and more to allow decision makers, emergency managers, and others to use public reports to make better decisions. MyCoast: Maryland, "is a portal to collect and analyze pictures and data relating to flooding caused by precipitation or coastal events. In Maryland, this is a project supervised by the Chesapeake & Coastal Service and Maryland Department of Natural Resources (MDNR). The MyCoast: Maryland website can be found here: <https://mycoast.org/md>.

To enhance this project's reach in relevant locales, we set out to discern which communities in the state are most at risk for negative flooding effects. Our partner, Maryland Department of Natural Resources, asked that the project inform their roll-out of the MyCoast program in Maryland, and make sure that they reached the communities that are most at risk for flooding and might be the least able to reach those in power for assistance.

In order to narrow down the most socially and environmentally at-risk communities, our process involved an examination of both demographic and environmental vulnerability indicators at the census tract level. Using this methodology, we created a shortlist of those communities expected to be "most vulnerable" to the impacts of flooding events and thus prime candidates for the MyCoast program in Maryland. Our class, and introduction to GIS systems using ArcGis Pro, worked with MDNR to develop this criterion and identify said communities. The products of our research include an interactive Story Map as well as a static PDF map that together detail the total list of communities determined, how they were chosen and how they fit into the criteria and provides information on each community's individual resources.

All fully detailed aspects of the report and project can be accessed and downloaded through the following links:

[Web Application](#)

[Static Map, video recording of the presentation, and the zipped GIS feature geodatabase](#)

Goals

The primary goal of this project was to identify potential pilot communities that would be prime candidates for usage of the MyCoast program using publicly available data. As Maryland Department of Natural Resources requested, another goal was to collect both environmental and demographic data to determine which communities would be at risk both environmentally and socially and/or economically. This would enable MyCoast to be used to its fullest potential to assist those most in need in Maryland.

Data and Methodology

Using the publicly available data listed below, our team was able to determine pilot communities through examination of both demographic and environmental vulnerability indicators at the census tract level.

In order to determine which communities would be potential pilot communities for the launch of the MyCoast program, our team analyzed both demographic and environmental data, and then brought the two separate analyses together to form one completed list of nineteen communities across the state of Maryland.

Demographic Indicators

We created a composite score to determine the most demographically vulnerable census tracts. This composite score was based on two datasets: (1) Centers for Disease and Control: Social Vulnerability Index and (2) Maryland Department of Planning: Very High-Risk Census Tracts – these are found on Maryland’s GIS data catalogue mapped by Census Tract.

The CDC Social Vulnerability index uses four different measures of risk based on socioeconomics, household composition, minority status/language, and housing type. Tracts from this dataset were selected if they scored above 0.7/1.0 in overall vulnerability. The Maryland Planning Very High-Risk Census Tracts dataset was based on a variety of socioeconomic factors ranging from property ownership, language barriers, accessibility to resources, and family composition.

Environmental Indicators

In order to determine which communities are at a high flood risk, we examined residential and commercial parcels, available from Maryland Department of Planning, as well as the Maryland State Highway Administration (SHA) and Baltimore City maintained roads. The residential and commercial parcels gave an indication of where clusters of businesses and residential areas are located, thus Census Tracts with higher densities. The miles of roads per tract were used to determine the accessibility of emergency response and community movement during flood events. Each of these two sets of data were compared against three environmental flood risk factors:

1. FEMA Floodplains (100 and 500 year)
2. Hurricane storm surge area
3. Nuisance tidal inundation area (2050)

Census tracts with the highest percentage of both residential and commercial parcels and/or highest percentage of State/Baltimore City-maintained highways within the three flood risk criteria listed above ranked the highest for flood risk in the state.

After initial separate analysis, demographic and environmental variables were brought together, and indicated that there were nineteen communities across the state at the highest risk for the negative effects of flooding events, thus these nineteen communities would benefit most from usage of the MyCoast program.

See the [downloadable static map](#) and our [web application](#) for more detailed information.

Results

There were nineteen communities identified as the most at risk, and the most likely to be pilot communities for the launch of the MyCoast program in Maryland. The communities are listed below. Please see the [PDF download map linked here](#) to see more detailed information, including a broader list of communities at risk due to solely environmental or demographic factors. Communities were included in the finalized combined list if they met one or more of the characteristics from each analysis, therefore some communities could be on the list due to more environmental risk or more demographic risk.

Baltimore & I-95 North Corridor

Anne Arundel County

- Pumphrey

Cecil County

- Elkton

Baltimore City

- Carroll Park – Morrell Park – Westport
- Cedonia
- Charles North – Greenmount
- Pleasant View Gardens – Washington Hill

Southeast Baltimore County & Harford County

- Chase
- Dundalk-Essex
- Perryman – Aberdeen

Lower Eastern Shore

Somerset County

- Crisfield

Wicomico County

- City of Salisbury

Worcester County

- Pocomoke City
- Berlin area

Dorchester County

- City of Cambridge

Prince George's County

- Greater Riverdale
- Spring Hill Lake
- Bladensburg – North Kenilworth
- Chillum – Queenstown

Western Maryland

Allegany County

- Cumberland

Future Research

The next steps would include following up with these nineteen communities to see how MyCoast can assist them best. Additional data that may not be publicly available at the appropriate Census Tract level or smaller, such as flooding due to changes in rainfall patterns, topographical flooding maps, stream locations, and additional demographic information such as household ownership, would be useful to add into our provided methodology.

Another helpful future step would be to analyze the original and potential new data at a smaller scale than Census Tract to really narrow down which communities are most at risk and would benefit the most from MyCoast.

Lastly, research on how this information could be repackaged to assist not only those who are MDNR or the State, but those who live within these communities.

There are future PALS projects partnering with Maryland Department of Resources to analyze the MyCoast program from a technical point of view this Spring 2021.

Appendix

Full Deliverable

[Web Application](#)

[Static Map, video recording of the presentation, and the zipped GIS feature geodatabase](#)

Maryland's FEMA Floodplains: Effective

<https://data-maryland.opendata.arcgis.com/datasets/maryland-floodplain-effective-fema-floodplain>

Maryland's FEMA Floodplains: Preliminary

<https://data-maryland.opendata.arcgis.com/datasets/maryland-floodplain-preliminary-fema-floodplain>

WEAT_HurricaneStormSurge_USACE

<https://uofmd.maps.arcgis.com/home/item.html?id=e426a3514ca944f499d1458118693d7a>

<https://data.imap.maryland.gov/datasets/maryland-storm-surge-hurricane-storm-surge>

2050 Nuisance Tidal Inundation

<https://data.imap.maryland.gov/datasets/aeac333a08b04f7197a47848cd08ba97>

MDOT SHA Maintained Roads

<https://maryland.maps.arcgis.com/apps/webappviewer/index.html?id=86b5933d2d3e45ee8b9d8a5f03a7030c>

Baltimore City Maintained Roads

https://data.imap.maryland.gov/datasets/c06d2e7193e24403a5ed590d52003491_0?geometry=-77.995%2C39.004%2C-75.382%2C39.377

Parcel Data – Statewide October 2020 Parcel Points and Parcel Polygons Geodatabase

<https://planning.maryland.gov/Pages/OurProducts/DownloadFiles.aspx>

Census Tract Data

<https://data.imap.maryland.gov/datasets/maryland-census-boundaries-census-tracts-2010>

CDC Social Vulnerability Index: 2018 Dataset ranked within Maryland at the census tract level

https://www.atsdr.cdc.gov/placeandhealth/svi/data_documentation_download.html

American Community Survey

https://data.imap.maryland.gov/datasets/fdcb9d65512a44db8735919d9689b43c_0

Maryland Census Data- Census Tracts

[Maryland Census Data - Census Tracts | Maryland's GIS Data Catalog](#)

Communities of Opportunity (DHCD)

<https://hub.arcgis.com/datasets/maryland::maryland-housing-designated-areas-communities-of-opportunity?geometry=-94.050%2C37.310%2C-60.487%2C40.305>