Supplemental Material

Supplemental Table 1: Variables included in the calculation of CVI's socio-economic, environmental, and infrastructure-related domain

Domain	Subdomain	Indicator	Indicator Unit
Baseline: Social & Economic	Socioeconomic Stressors	Below Poverty	%tile ranking
Baseline: Social & Economic	Socioeconomic Stressors	Unemployed	%tile ranking
Baseline: Social & Economic	Socioeconomic Stressors	Low Income	%tile ranking
Baseline: Social & Economic	Socioeconomic Stressors	No High School Diploma	%tile ranking
Baseline: Social & Economic	Socioeconomic Stressors	Homicide Rate	Number of deaths due to homicide per 100,000 population, 2014-2020.
Baseline: Social & Economic	Socioeconomic Stressors	Gun Violence	Firearm Fatalities per 100,000 population, 2014-2020.
Baseline: Social & Economic	Socioeconomic Stressors	Religious Organizations	Number of religious organizations per 1,000 people, 2003-2017.
Baseline: Social & Economic	Socioeconomic Stressors	Civic and Social Organizations	Number of civic and social organizations per 1,000 people, 2003-2017.
Baseline: Social & Economic	Housing Composition & Disability	Aged 65 or Older	%tile ranking
Baseline: Social & Economic	Housing Composition & Disability	Aged 17 or Younger	%tile ranking
Baseline: Social & Economic	Housing Composition & Disability	Civilian with a Disability	%tile ranking
Baseline: Social & Economic	Housing Composition & Disability	Single-Parent Households	%tile ranking

Domain	Subdomain	Indicator	Indicator Unit
Baseline: Social & Economic	Housing Composition & Disability	Foster Children	Estimated percent of children under 18 who are foster children
Baseline: Social & Economic	Minority Status & Language	Minority	%tile ranking
Baseline: Social & Economic	Minority Status & Language	Speaks English Less than Well	%tile ranking
Baseline: Social & Economic	Minority Status & Language	Undocumented Population	% Undocumented Immigrant Population in the State, 2015-2018.
Baseline: Social & Economic	Minority Status & Language	Hate Crimes	Incidence of hate crimes per 100,000 people for 2019.
Baseline: Social & Economic	Minority Status & Language	Prison Population	Percent of population living in correctional facilities for adults, 2020.
Baseline: Social & Economic	Minority Status & Language	Redlining	Redlining maps of 200 urban areas with categories defining investment from A to D, with A="Best"; B="Still Desireable"; C="Definitely Declining"; and D="Hazardous."
Baseline: Social & Economic	Minority Status & Language	Homeless Population	Population-adjusted estimates of homeless population, 2020.
Baseline: Social & Economic	Minority Status & Language	Veterans Population	Percent of civilians age 18 and older who are veterans, 2016-2020.
Baseline: Social & Economic	Housing Type & Transportation	Multi-Unit Structures	%tile ranking
Baseline: Social & Economic	Housing Type & Transportation	Mobile Homes	%tile ranking
Baseline: Social & Economic	Housing Type & Transportation	Crowding	%tile ranking
Baseline: Social & Economic	Housing Type & Transportation	No Vehicle	%tile ranking

Domain	Subdomain	Indicator	Indicator Unit
Baseline: Social & Economic	Housing Type & Transportation	Group Quarters	%tile ranking
Baseline: Social & Economic	Housing Type & Transportation	Housing Foreclosure Risk	Estimated percent of mortgages in foreclosure or delinquent in past 2 years, 2008.
Baseline: Social & Economic	Housing Type & Transportation	Percent of Housing Units Built Between 1940-1969 as of 2015-2019	Percent of Housing Units Built Between 1940-1969, 2016-2020.
Baseline: Infrastructure	Transportation	Delay (congestion) per capita/census tract	Weighted yearly average commute deplay (congestion) per commuter, 2019.
Baseline: Infrastructure	Transportation	Flooding risk to roads	Flooding risk score average for the census tract, 2020.
Baseline: Infrastructure	Transportation	Lane miles per capita	Lane miles per capita, 2018.
Baseline: Infrastructure	Transportation	Road Quality and Maintenance	International Roughness Index, 2018.
Baseline: Infrastructure	Transportation	Public Transit Performance	Transit performance score from 0-10,2019
Baseline: Infrastructure	Transportation	Bridge Quality and Maintenance	Percent of poor bridge quality, 2019.
Baseline: Infrastructure	Transportation	Walkability	Score of walkability from 0-100, 2022
Baseline: Infrastructure	Transportation	Bikability	Score of bikability from 0-100, 2022
Baseline: Infrastructure	Energy	Residential Energy Cost Burden	Low-income energy affordability data (LEAD) estimating average energy burden by income, 2018.
Baseline: Infrastructure	Energy	Share of energy from fossil fuels	Share of total county level generation capacity that is fossil fuel derived, 2019.
Baseline: Infrastructure	Energy	EV Charging Stations	Proximity to EV charging station (5km centroid radius), April 14, 2022.

Domain	Subdomain	Indicator	Indicator Unit
Baseline: Infrastructure	Food, Water, and Waste Management	Modified Retail Food Environment Index	Modified Retail Food Environment Index (MRFEI) Score, 2011.
Baseline: Infrastructure	Food, Water, and Waste Management	Food Insecurity	Percentage of population who lack adequate access to food, 2019.
Baseline: Infrastructure	Food, Water, and Waste Management	Access to Healthy Foods	Percentage of population who are low-income and do not live close to a grocery store, 2019.
Baseline: Infrastructure	Food, Water, and Waste Management	Indoor Plumbing	Percent of households with indoor plumbing, 2019.
Baseline: Infrastructure	Communications	Percent of Household with no internet access	Percent of Household with no internet access, 2013-2017.
Baseline: Infrastructure	Communications	Percent of household with smartphone but no other device.	Percent of household with smartphone but no other device, 2013-2017.
Baseline: Infrastructure	Financial Services	Percent of Unbanked Households	Percent of family households that are unbanked, 2015-2019.
Baseline: Infrastructure	Financial Services	Payday lending rank	Payday Loan Shops Per 10,000 Households, 2010.
Baseline: Infrastructure	Financial Services	Housing Affordability (renters)	Housing is rental occupied and household income is less than or equal to 30% of HUD Area Median Family Income (HAMFI), 2014-2018.
Baseline: Infrastructure	Financial Services	Housing Affordability (owners)	Housing is owner occupied and household income is less than or equal to 30% of HUD Area Median Family Income (HAMFI), 2014-2018.
Baseline: Infrastructure	Governance	Tax Base: Median Real Estate Taxes Paid	Estimated median annual real estate taxes paid, between 2015-2019.
Baseline: Infrastructure	Governance	Voter Turnout 2020	Population-adjusted voter turnout rate among voting eligible population in the 2020 presidential election.
Baseline: Infrastructure	Governance	Public Library Locations	Proximity to public library (5km centroid radius), 2017.
Baseline: Infrastructure	Governance	HUD Public Housing	Number of HUD public housing units, 2009-2020.

Domain	Subdomain	Indicator	Indicator Unit
Baseline: Infrastructure	Governance	Aggregate funding amount for HUD grants	Aggregate funding amount for grants, 2018.
Baseline: Environment	Transportation Sources	Total vehicle miles traveled per capita	Total VMT per capita, 2018.
Baseline: Environment	Transportation Sources	Passenger vehicle miles traveled per capita	Passenger vehicle (LDV) VMT per capita, 2018.
Baseline: Environment	Transportation Sources	Truck vehicle miles traveled per capita	Single unit truck (MDV) VMT per capita, 2018.
Baseline: Environment	Transportation Sources	Heavy Duty Vehicle vehicle miles traveled per capita	Combination Truck (HDV) VMT per capita, 2018.
Baseline: Environment	Transportation Sources	Proximity to Ports	Proximity to Major Ports (5km centroid radius), 2019.
Baseline: Environment	Transportation Sources	Rail Crossings	Proximity to an at-grade railroad crossing (5km centroid radius), 2021.
Baseline: Environment	Transportation Sources	Traffic Proximity and Volume	Count of vehicles (AADT, avg. annual daily traffic) at major roads within 500 meters, divided by distance in meters (not km), 2019.
Baseline: Environment	Transportation Sources	National Transportation Noise Map	Modeled estimates of average noise from aviation, road and rail, 2018.
Baseline: Environment	Exposures & Risks	Risk-Screening Environmental Indicators (RSEI)	Aggregated toxicity-weighted concentration, 2019.
Baseline: Environment	Exposures & Risks	Air Tox Respiratory	Hazard index for respiratory health effects from air toxics and diesel PM, 2017.
Baseline: Environment	Exposures & Risks	Air Tox Neurological	Hazard index for neurological health effects from air toxics and diesel PM, 2017.
Baseline: Environment	Exposures & Risks	Air Tox Liver	Hazard index for liver health effects from air toxics and diesel PM, 2017.
Baseline: Environment	Exposures & Risks	Air Tox Developmental	Hazard index for developmental health effects from air toxics and diesel PM, 2017.

Domain	Subdomain	Indicator	Indicator Unit
Baseline: Environment	Exposures & Risks	Air Tox Reproductive	Hazard index for reproductive health effects from air toxics and diesel PM, 2017.
Baseline: Environment	Exposures & Risks	Air Tox Kidney	Hazard index for kidney health effects from air toxics and diesel PM, 2017.
Baseline: Environment	Exposures & Risks	Air Tox Immunological	Hazard index for immunological health effects from air toxics and diesel PM, 2017.
Baseline: Environment	Exposures & Risks	Air Tox Thyroid	Hazard index for thyroid health effects from air toxics and diesel PM, 2017.
Baseline: Environment	Exposures & Risks	Air Tox Total Cancer Risk	Hazard index for cancer health effects from air toxics and diesel PM, 2017.
Baseline: Environment	Exposures & Risks	Black Carbon	Percent of black carbon as a percentage of PM2.5 as µg/m3, nationally in 0.01° x 0.01° resolution, 2021.
Baseline: Environment	Exposures & Risks	Agricultural pesticides	Annual agricultural pesticide use per cropland area, by county (lbs/acre), 2013-17.
Baseline: Environment	Exposures & Risks	Lead Paint: % housing units built before 1960	Percent of housing units built before 1960 per census tract, 2020.
Baseline: Environment	Exposures & Risks	Lead in drinking water violations	Number of drinking water systems with an Action Level Exceedance for lead, 2018-2020.
Baseline: Environment	Pollution Sources	Superfund Sites	Proximity to superfund/NPL sites (5km centroid radius), 2020.
Baseline: Environment	Pollution Sources	Brownfields	Proximity to brownfield sites (5km centroid radius), 2020.
Baseline: Environment	Pollution Sources	Stream Toxicity Risk-Screening Environmental Indicators (RSEI)	Stream Toxicity Risk-Screening Environmental Indicators (RSEI). RSEI modeled Toxic Concentrations at stream segments within 500 meters, divided by distance in kilometers (km), 2020.
Baseline: Environment	Pollution Sources	Proximity to facilities participating in air markets	Proximity to facilities participating in air markets (5km centroid radius), 2020.
Baseline: Environment	Pollution Sources	NPL sites	Count of proposed and listed NPL sites within 5 km (or nearest one beyond 5 km), each divided by distance in km, 2020.

Domain	Subdomain	Indicator	Indicator Unit
Baseline: Environment	Pollution Sources	Hazardous Waste Management Facilities (TSDFs)	Count of hazardous waste management facilities (TSDFs and LQGs) within 5 km (or nearest one beyond 5 km), each divided by distance in km, 2020.
Baseline: Environment	Pollution Sources	Hazardous Waste Generator/Incinerators	Proximity to a Hazardous Waste Generator/Incinerators site (5km centroid radius), 2022.
Baseline: Environment	Pollution Sources	Facilities with Enforcement or Violation	Proximity to Facilities with Enforcement/Violation (5km centroid radius), 2022.
Baseline: Environment	Pollution Sources	Landfills	Proximity to Landfills (5km centroid radius), 2021.
Baseline: Environment	Pollution Sources	TSCA Facilities	Proximity to TSCA Facilities, unweighted (5km centroid radius), 2015-2019.
Baseline: Environment	Pollution Sources	Risk Management Plan Facilities	Proximity to RMP facilities. Count of RMP (potential chemical accident management plan) facilities within 5 km (or nearest one beyond 5 km), each divided by distance in km, 2020.
Baseline: Environment	Pollution Sources	Chemical Manufacturers	Proximity to Chemical Manufacturing Facilities (5km centroid radius), September 24, 2015.
Baseline: Environment	Pollution Sources	Metal Recyclers	Proximity to Metal Recyling Facilities (5km centroid radius), September 24, 2015.
Baseline: Environment	Pollution Sources	Active Oil and Gas Wells	Active Oil and Gas Wells (5km centroid radius), 2022.
Baseline: Environment	Criteria Air Pollutants	Annual average PM2.5 concentrations	PM 2.5 annual average concentration - 3 year average, 2017-2019.
Baseline: Environment	Criteria Air Pollutants	NO2 concentration	NO2 annual average concentration, 2019.
Baseline: Environment	Criteria Air Pollutants	Ozone concentration	Ozone concentration, 2018.
Baseline: Environment	Land Use	Parks and Greenspace	Number and area of parks in each census tract, 2018.

Domain	Subdomain	Indicator	Indicator Unit
Baseline: Environment	Land Use	Impermeable Surfaces	Percent of developed imperviousness, 2021.
Baseline: Environment	Land Use	Forest Land Cover	Percent of land covered by forest, 2021.
Baseline: Environment	Land Use	Native American Lands	Share of land in the tract that is Native American Lands, 2021.

Supplemental Table 2: Association between Adjusted Prevalence of Type 2 Diabetes, Coronary Artery Disease, and Stroke and scaled MMLs using Linear Regression with Robust Standard Errors

Outcome	β	95% Confidence Interval	*p*-value
Type II diabetes	0.0021	0.0004704647 - 0.003784390	0.01
Coronary Artery Disease	0.0028	0.001662464 – 0.003882784	<0.001
Stroke	0.0011	0.0005571380 – 0.001626006	<0.001

Supplemental Table 3: Comparison of Adjusted Cardiometabolic Disease Prevalence between Coastal Counties with Very High MMLs and their Adjacent Non-Coastal Counties

Adjusted Mean Prevalence	Very High MMLs (Coastal Counties)	Adjacent Non-Coastal Counties	p-value (Welch Two Sample t-test)
Type II diabetes	13.03	11.18	<0.001
Coronary Artery Disease	8.94	6.36	<0.001
Stroke	4.17	3.14	<0.001
The age, sex, race, ethnicity, and social vulnerability index-adjusted prevalence of cardiometabolic diseases between coastal counties with very high MMLs and their adjacent non-coastal counties. MMLs: Marine Microplastics Levels			

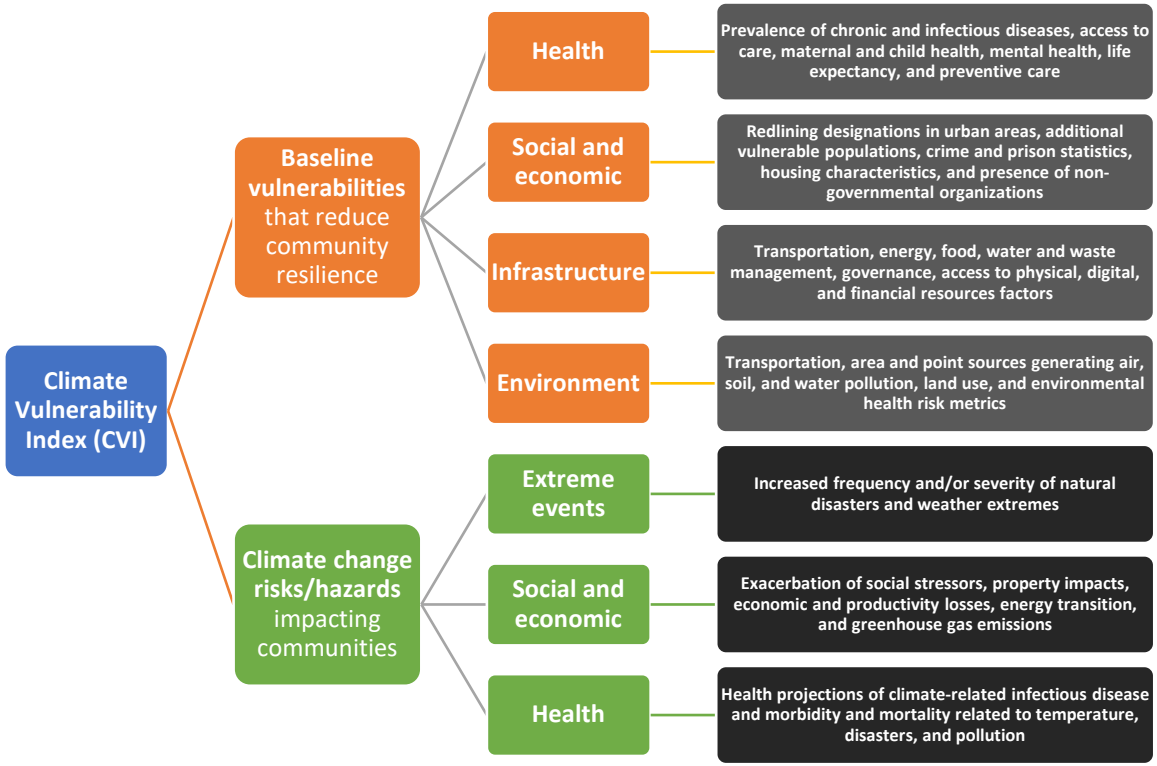
Supplemental Table 4: Adjusted Prevalence of Type 2 Diabetes, Coronary Artery Disease, and Stroke in Very High MML Counties and Adjacent Non-Coastal Counties

Very High MML Coastal County and State	T2D Adjusted Prevalence (%)	CAD Adjusted Prevalence (%)	Stroke Adjusted Prevalence	Adjacent Non-Coastal Counties	T2D Adjusted Prevalence (%)	CAD Adjusted Prevalence (%)	Stroke Adjusted Prevalence (%)
Charlotte County, Florida	14.56	11.96	5.34	Alachua County, Florida	9.91	6.05	3.03
Dixie County, Florida	13.79	10.22	4.84	Alachua County, Florida	9.91	6.05	3.03
Flagler County, Florida	12.50	9.18	4.10	Alachua County, Florida	9.91	6.05	3.03

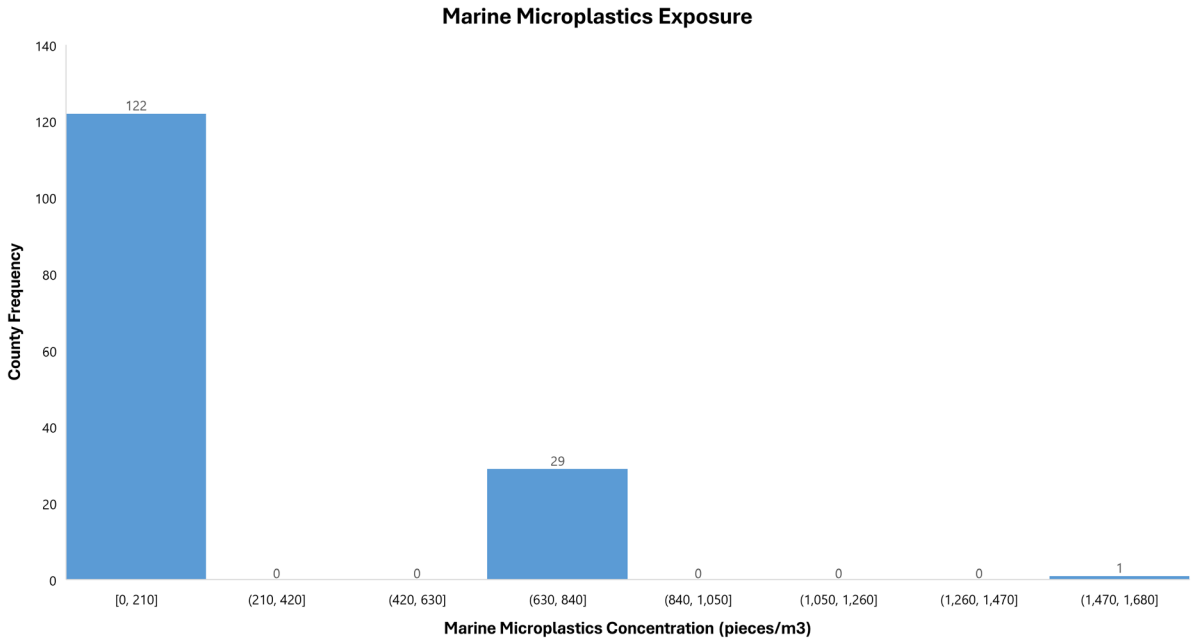
Jefferson County, Florida	14.21	9.52	4.90	Alachua County, Florida	9.91	6.05	3.03
Manatee County, Florida	13.29	9.41	4.29	Alachua County, Florida	9.91	6.05	3.03
Sarasota County, Florida	13.28	10.57	4.63	Alachua County, Florida	9.91	6.05	3.03
Taylor County, Florida	13.76	9.20	4.62	Alachua County, Florida	9.91	6.05	3.03
Camden County, Georgia	11.08	6.11	3.09	Alachua County, Florida	9.91	6.05	3.03
Duval County, Florida	12.37	6.87	3.61	Baker County, Florida	11.28	7.36	3.62
Nassau County, Florida	11.39	8.13	3.61	Baker County, Florida	11.28	7.36	3.62
St. Johns County, Florida	10.60	7.24	3.15	Clay County, Florida	10.63	7.05	3.26
Franklin County, Florida	14.51	10.54	5.13	Leon County, Florida	8.99	5.12	2.72
Wakulla County, Florida	11.09	7.13	3.41	Leon County, Florida	8.99	5.12	2.72
Martin County, Florida	13.16	9.90	4.41	Okeechobee County, Florida	13.63	9.35	4.43
St. Lucie County, Florida	13.51	8.69	4.21	Okeechobee County, Florida	13.63	9.35	4.43
Citrus County, Florida	13.77	11.23	4.95	Orange County, Florida	11.24	6.05	3.04
Hernando County, Florida	13.12	9.59	4.29	Orange County, Florida	11.24	6.05	3.04
Hillsborough County, Florida	12.27	6.70	3.27	Orange County, Florida	11.24	6.05	3.04
Levy County, Florida	13.31	9.62	4.43	Orange County, Florida	11.24	6.05	3.04
Pasco County, Florida	12.79	8.83	4.00	Orange County, Florida	11.24	6.05	3.04

Pinellas County, Florida	13.32	9.60	4.41	Orange County, Florida	11.24	6.05	3.04
Broward County, Florida	13.10	7.12	3.66	Osceola County, Florida	12.73	6.21	3.04
Collier County, Florida	13.60	9.53	4.29	Osceola County, Florida	12.73	6.21	3.04
Indian River County, Florida	13.43	10.14	4.55	Osceola County, Florida	12.73	6.21	3.04
Lee County, Florida	13.48	9.40	4.29	Osceola County, Florida	12.73	6.21	3.04
Miami-Dade County, Florida	13.35	6.25	3.04	Osceola County, Florida	12.73	6.21	3.04
Monroe County, Florida	13.52	9.33	4.29	Osceola County, Florida	12.73	6.21	3.04
Palm Beach County, Florida	13.42	8.52	4.10	Osceola County, Florida	12.73	6.21	3.04
Brevard County, Florida	12.38	8.76	3.97	Seminole County, Florida	10.62	5.92	2.79
Volusia County, Florida	12.96	8.98	4.14	Seminole County, Florida	10.62	5.92	2.79
MMLs: Marine Microplastics Levels, T2D: Type 2 Diabetes; CAD: Coronary Artery Disease							

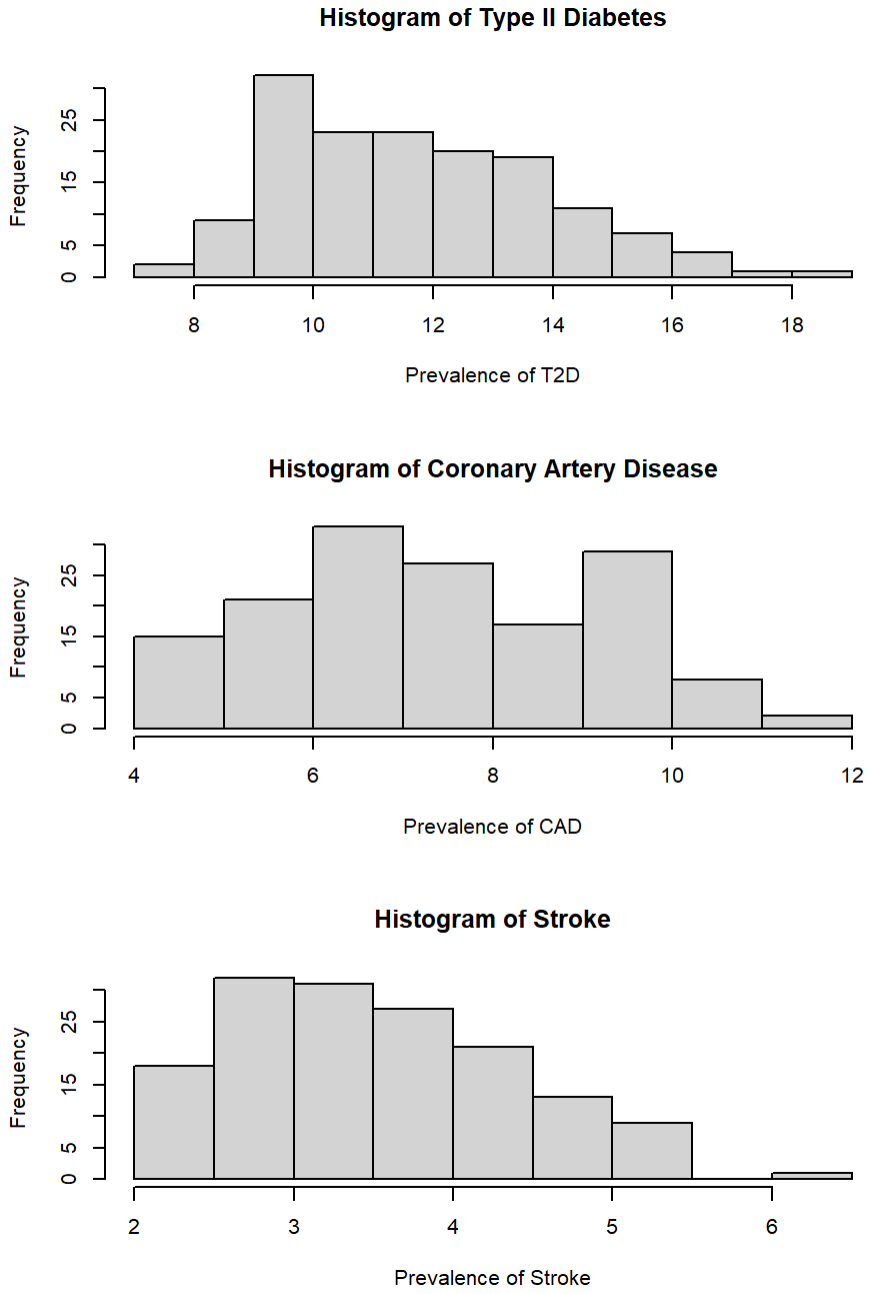
Supplemental Figure 1: Vulnerability risk categories and components used to create the U.S. Climate Vulnerability Index (CVI)



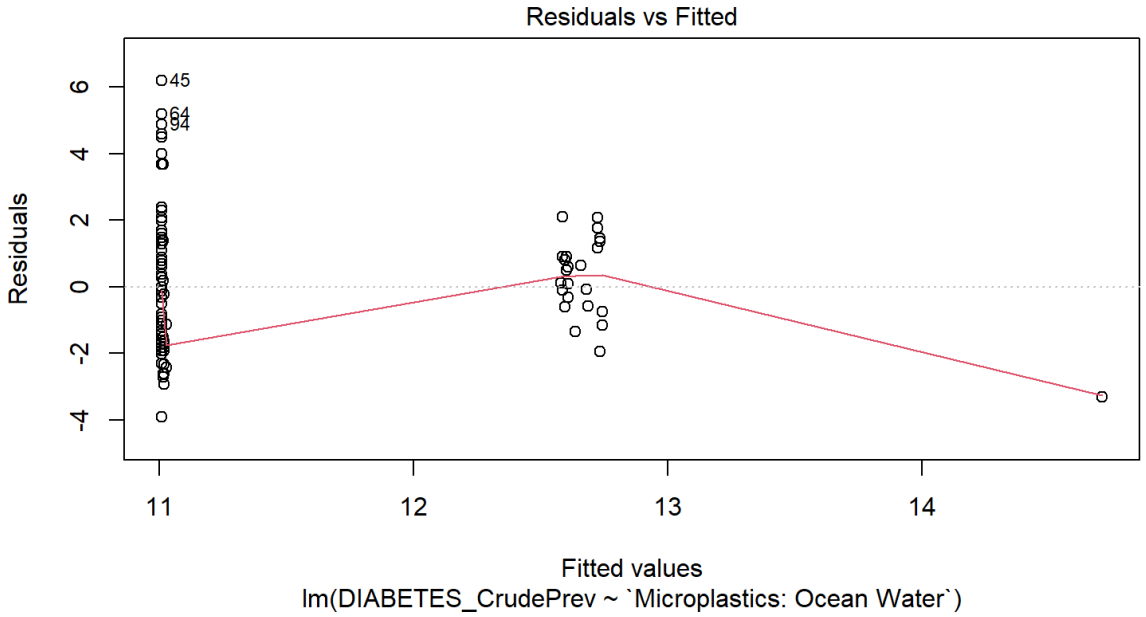
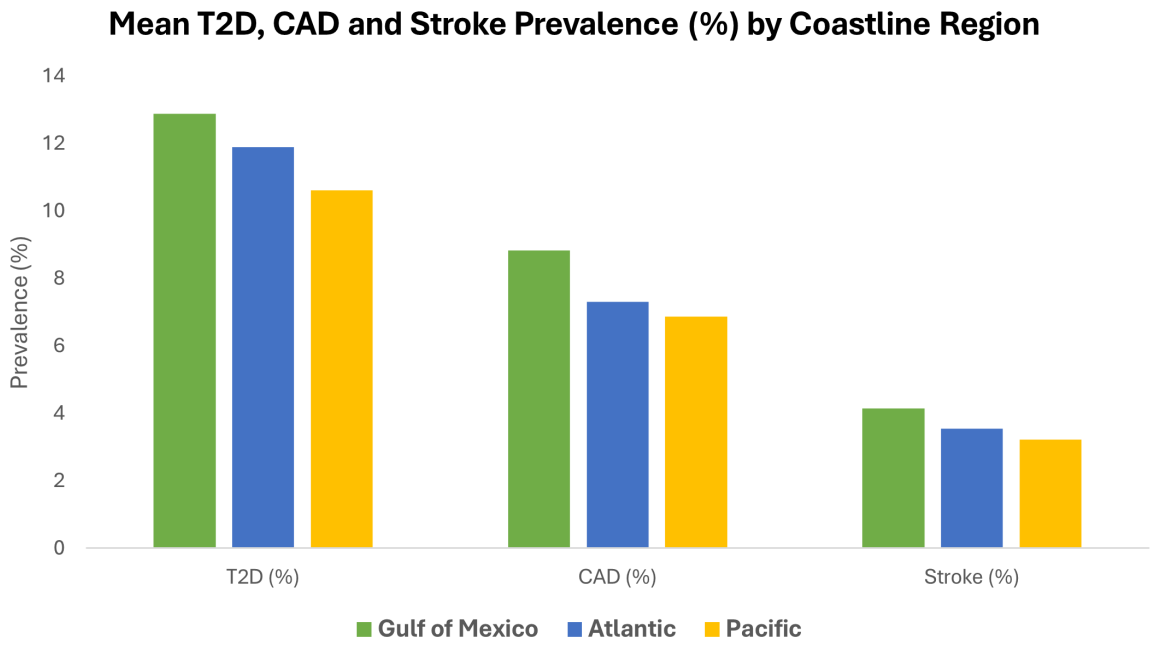
Supplemental Figure 2.1: Distribution of MMLs across the coastal counties



Supplemental Figure 2.2: Prevalence of T2D, CAD, and Stroke across the coastal counties



Supplemental Figure 3: Residuals vs. Fitted plot for the linear model assessing the relation between MME and Diabetes Prevalence. The assumption of constant variance of residuals is not satisfied at the lower and higher extremes of fitted values, as seen in the graph, necessitating the categorization of marine microplastics concentration (exposure variable)



Supplemental Figure 4: Mean Prevalence of T2D, CAD, and Stroke Stratified by coastline region