Demographic Analysis and Critical Facilities

David Racca and Eric Best
Center for Applied Demography & Survey Research
University of Delaware
Demographic Analysis Tools

- Combined building, population, tax parcel, land use, and demographic data to examine areas flooded in models
- Significant exposure in Wilmington and eastern Sussex County
- Major travel and evacuation routes inundated
Modeled Flood Risks

- Over 8,000 inundated mobile homes
- More than a dozen flooded fire stations
- Loss of travel to Nanticoke Memorial Hospital
- Loss of travel to multiple nursing homes
- 7-15% of major route road miles flooded
Data Issues to Address

• Information Availability – Many empty data layers in FEMA compatible modeling tools
• Risk Valuation – Property tax assessments do not translate to real value for Delaware properties, must go beyond simple adjustment for inflation
• Seasonal Housing – Census records likely do not reflect peak summertime populations in Sussex County
• Evacuations – Any major evacuation would include MD and VA
Outcomes

• Pre-plan for evacuation or loss of access to Nanticoke and area nursing homes
• Consider how to estimate beach population during hurricane season
• Awareness of both pace of development and demographic changes, especially in Sussex County
Data Presentation

• These data layers change constantly
• Flood models can also change and we should explore multiple scenarios
• Looking to move beyond static maps, CADSR developed an interactive Web Mapping Interface
Web Flood Mapping Interface

David Racca
Center for Applied Demography and Survey Research
University of Delaware
dracca@udel.edu
CADSR supported this project by creating a web mapping interface to display and query related data. Features include:

- A wide array of detailed land use to identify and query critical facilities and land use.
- Several tools to add additional data, further identify data on the map, mark up, and print maps
- Password protected
- Built on same technology in use at DelDOT and other State agencies
Data currently included:

- DelDOT assets (roads, bridges, signals, drainage structures, maintenance yards and areas, pavements, and multi-modal facilities data)
- Bridge vulnerability
- Critical response facilities
- Hurricane scenario data
- Coastal inundation depth estimates
- Predicted maximum wind gusts for scenarios
- Flood plains and wetlands
- Shelter facilities
- Vulnerable community facilities and populations
- 20,000 destinations, categorized and mapped at the building site level
- Thematic Census maps, population, households, poverty, age
- Housing units, mobile homes, multi unit housing
Destinations
Moving Forward

• Refinement, update, and documentation
• Building level layer
• Loss estimation
• Additional automated tools for data query and summary
• Evacuation modeling using high resolution data
• Shelter Capacity
• Incorporation of monitoring data
• Peninsula wide data and evacuation
https://cadsrgis2.org/hurricane

David Racca
Center for Applied Demography and Survey Research
University of Delaware
Phone 302 831-1698
Email: dracca@udel.edu