

PROJECTING EMPLOYMENT EFFECTS OF STORM SURGE AND SEA LEVEL RISE IN YORK COUNTY MAINE

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Predicting the effects of climate change and sea level rise on specific coastal locations is an essential pre-condition to encouraging effective action to both mitigate and adapt to these changes. In many cases, computer generated visual simulations of potential inundations are employed to illustrate what may happen under different assumptions about the rate and extent of sea level rise. But these only partly convey the economic effects of increasing exposure to storms and the sea.

To examine possible economic effects, this paper examines the potential impacts of storm surge on the economies of eight communities in York County, Maine. These communities are in the section of the Maine coast dominated by low lying wetlands and beaches and thus most exposed to the effects of storm surge.

Data from the Quarterly Census of Employment and Wages was used to estimate the exposure in terms of the number of establishments, employment, and wages in areas of the towns subject to potential flooding during storms. QCEW records are geo-coded by longitude and latitude and so can be accurately mapped with respect to their location. The SLOSH model was used to estimate the potential inundation areas. Vulnerability was determined by the intersection of employment establishments and SLOSH model estimated effects.

Results indicate that over 265 establishments with 1,800 jobs are at risk from storm surge within the SLOSH model inundation zones, comprising 6% of employment in the subject towns. Annual wages at risk were more than \$41 million. The towns range from 1.6% of employment (Kittery) to 28.9% of employment (Old Orchard Beach) at risk. These numbers rise to nearly 2,900 jobs in the summer, as high as 47% of summer employment in Old Orchard Beach.

The SLOSH model probably understates the effects of sea level rise, and some towns will see even greater exposure. In these cases, the number of establishments at risks increases to 687, with 4,700 employees at risk. The employment at risk within the SLOSH model zones is primarily tourist related, but this expands to include almost all economic sectors if the damage extends beyond SLOSH predictions.

The exposure of economic activities to damages from storm surge and rising sea levels raises issues about municipalities should be planning, and these questions may become more pressing if repeated and increasing damages result in the price and availability of property and liability

insurance. Rising insurance costs could have significant economic effects long before the full effects of sea level rise are apparent.

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