Approaches to Communicating Flooding Information in Hampton Roads

Results from Surveys of Local Government Staff

March 2018

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APPROACHES TO COMMUNICATING FLOODING INFORMATION IN HAMPTON ROADS: RESULTS FROM SURVEYS OF LOCAL GOVERNMENT STAFF

Preparation of this report was included in the HRPDC Unified Planning Work Program for FY 2017-2018, approved by the Commission on May 18, 2017.

Prepared by the staff of the
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ABSTRACT

The objectives of this report are to identify current communication strategies regarding coastal flooding and present opportunities for improvement and collaboration within the Hampton Roads region. The Hampton Roads Planning District Commission partnered with Old Dominion University to design two surveys of local government staff, the first regarding flooding outreach and the second regarding flooding notification methods. This report summarizes the results of each survey and synthesizes challenges described by respondents. Opportunities and resources, including local initiatives and guides developed by federal agencies and emergency notification providers, are highlighted to assist local government staff in addressing challenges related to flooding outreach and notifications.

ACKNOWLEDGEMENTS

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Executive Summary

The ability of local governments to communicate flood risk, promote flood mitigation activities, and notify residents in the event of a weather-related emergency is critical to public safety and long-term community resilience. With the Hampton Roads region[1] of Virginia experiencing a heightened rate of relative sea level rise, local governments are evaluating and implementing approaches to prepare citizens for recurrent flooding and coastal storm events.

The Hampton Roads Planning District Commission (HRPDC) partnered with Old Dominion University to design two surveys to assess local government communication strategies regarding flooding and resiliency. The objectives of these surveys are to identify and compare local flooding outreach and notification methods, as well as highlight opportunities for improvement and collaboration. The first survey, distributed to floodplain managers and planners, collected information regarding local outreach programs related to flood risk, insurance, protection, and mitigation. The second survey, shared with emergency managers, included questions evaluating flooding notification systems.

Respondents of the flooding notification survey indicated a higher overall level of program satisfaction than respondents of the flood outreach survey. Although emergency managers were generally pleased with the capabilities of their alert systems, they also shared the common challenge of increasing enrollment for notifications. Six of the eleven localities who completed the survey indicated less than 10% of their city/county population is enrolled. Respondents of the flood outreach survey emphasized lack of staff time and funding as barriers to outreach programming. Measuring the effectiveness of outreach efforts is also challenging for local government staff due to limited resources and knowledge of methods to evaluate changes in resident behavior.

This report summarizes the methodologies and findings of the two surveys described above. It also identifies guidance documents developed by emergency notification providers and government agencies, which can be used as resources by local government staff. In addition, this report describes opportunities to improve outreach coordination and marketing campaigns, including some potential collaborative solutions.

[1] The Hampton Roads region includes seventeen localities in southeastern Virginia: Chesapeake, Franklin, Gloucester County, Hampton, Isle of Wight County, James City County, Newport News, Norfolk, Poquoson, Portsmouth, Southampton County, Suffolk, Surry County, Town of Smithfield, Virginia Beach, Williamsburg, and York County

Introduction

Following the severe hurricane season of 2017, the importance of preparing for flooding and having effective communication during severe weather has gathered national attention. The National Academies of Sciences, Engineering, and Medicine released a report in fall 2017 related to the integration of social and behavioral sciences in the weather enterprise, defined as "the network of government agencies, private sector companies, and academic institutions that provide weather services to the nation."(National Academies Press, 2017, pg. 1) At the local government level, this includes emergency managers and departments responsible for issuing flooding related information. In addition to distributing notifications during severe weather events, local governments play an integral role in communicating flood risk and encouraging residents to prepare for flooding incidents.

Local governments within the Hampton Roads region are actively engaged in disseminating flood risk and preparedness information to the public. Local governments who participate in the National Flood Insurance Program's (NFIP) Community Rating System can earn points for flooding-related outreach activities. These credits factor into an overall community score that corresponds with a flood insurance premium discount for residents of the locality (CRS) (FEMA, 2017). In the Hampton Roads region, 8 of the 17 localities participate in the CRS program (DCR, 2017).

The Hampton Roads Planning District Commission, in collaboration with Old Dominion University, designed two surveys to identify and evaluate flooding outreach and notification methods within the region. The idea to create these surveys originated at the Resilience and Adaptation Feasibility Tool (RAFT) workshop in Portsmouth, Virginia (RAFT, 2017). The RAFT collaborative developed a scorecard that provides an assessment of a locality's resilience to flooding, encompassing social, economic, and natural resource metrics (RAFT, 2017). During the workshop to review the scorecard for Portsmouth, local government staff expressed interest in comparing locality approaches to flood information outreach and alert methods.

Both surveys were distributed via email to local staff from each of the 17 Hampton Roads localities. The flood outreach survey was sent to floodplain managers and/or environmental planners. It included questions related to outreach methods and frequency, as well as the respondents' opinions of current outreach methods. The flooding notification survey was distributed to emergency managers. The survey included questions about the capabilities of flooding notification systems, as well as respondents' level of satisfaction with current alert practices. This report summarizes the results of each survey and the

challenges associated with conducting outreach and issuing flooding alerts, as identified by local staff. The report concludes with opportunities for improving local public outreach and enhancing flooding notification enrollment.

Flood Outreach Survey Results

For the flood outreach survey, responses were received from 14 of 17 localities. When asked who the target audiences are for outreach materials related to flood risk, respondents most frequently indicated residents of the locality and, more specifically, property owners in the floodplain. Homeowners, real estate agents, building contractors, businesses, insurance agents, surveyors, and repetitive loss property owners were also referenced as focal contact groups (Figure 1). For example, the City of Franklin specifically meets with their Downtown Business Association regarding flood risk and preparedness information.

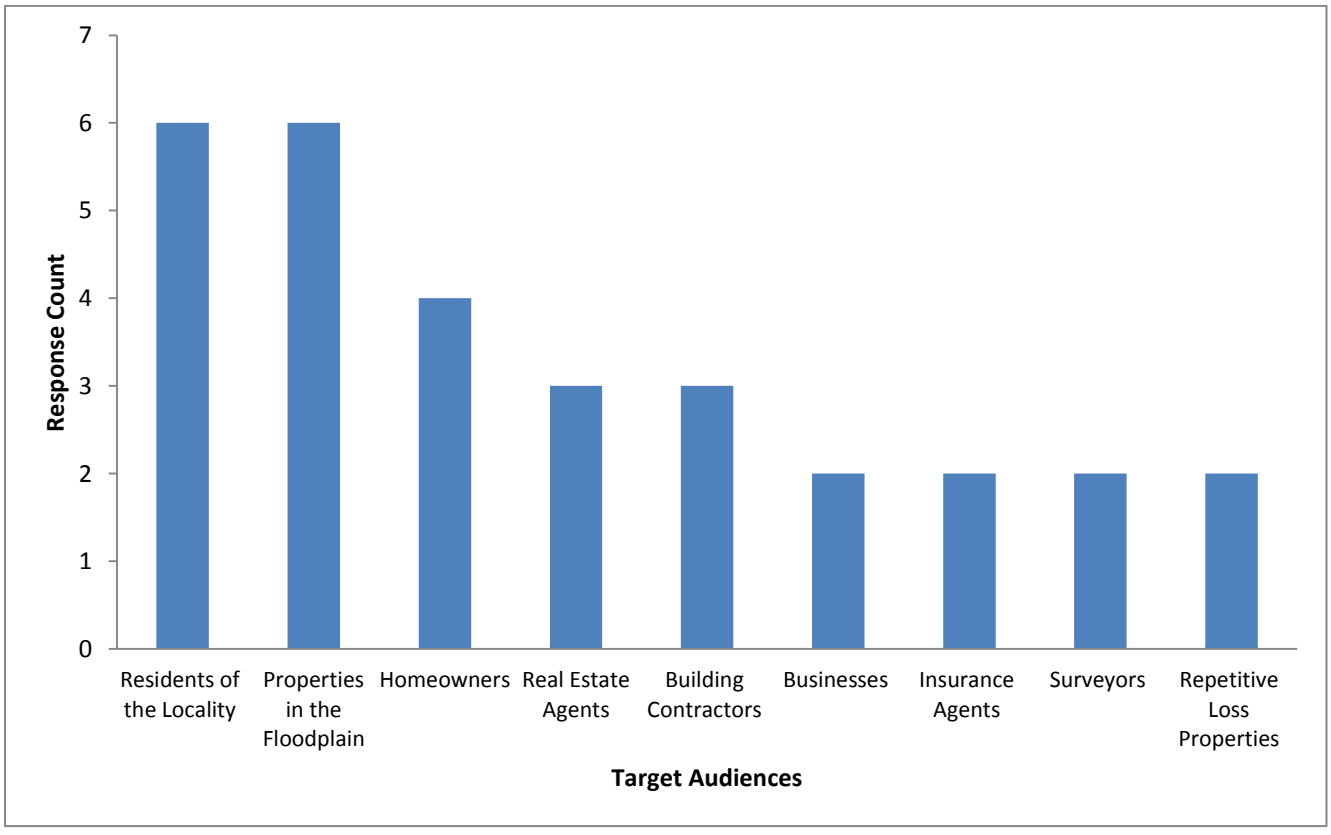

Figure 1: Responses to the question: "Who are your target audiences for outreach materials related to flood risk?" Audiences that were mentioned at least twice are included.

Respondents identified using both active and passive methods to reach out to specific target audiences. Active forms of outreach are communication methods involving direct engagement with the public by local government staff, whereas passive forms of outreach provide information in a format for the recipient to review individually or seek out independently. Active forms referenced in the survey include running a booth at a public event and presenting at civic league meetings and community forums. Examples of passive methods include email, paper mailings, social media postings, and distributing information at libraries.

Community forums were identified as the most commonly used active method of sharing information related to flood insurance and flood risk, while community forums and civic league meetings were equally popular for communicating flood protection and mitigation information (Figure 2). Distributing paper mailings and providing resources at libraries were the two most popular passive forms of disseminating flooding related information (Figure 2). Of the 14 communities who completed the survey, 8 earn points in the Community Rating System for distributing flooding related information via mailers or libraries (Stiff, 2017).

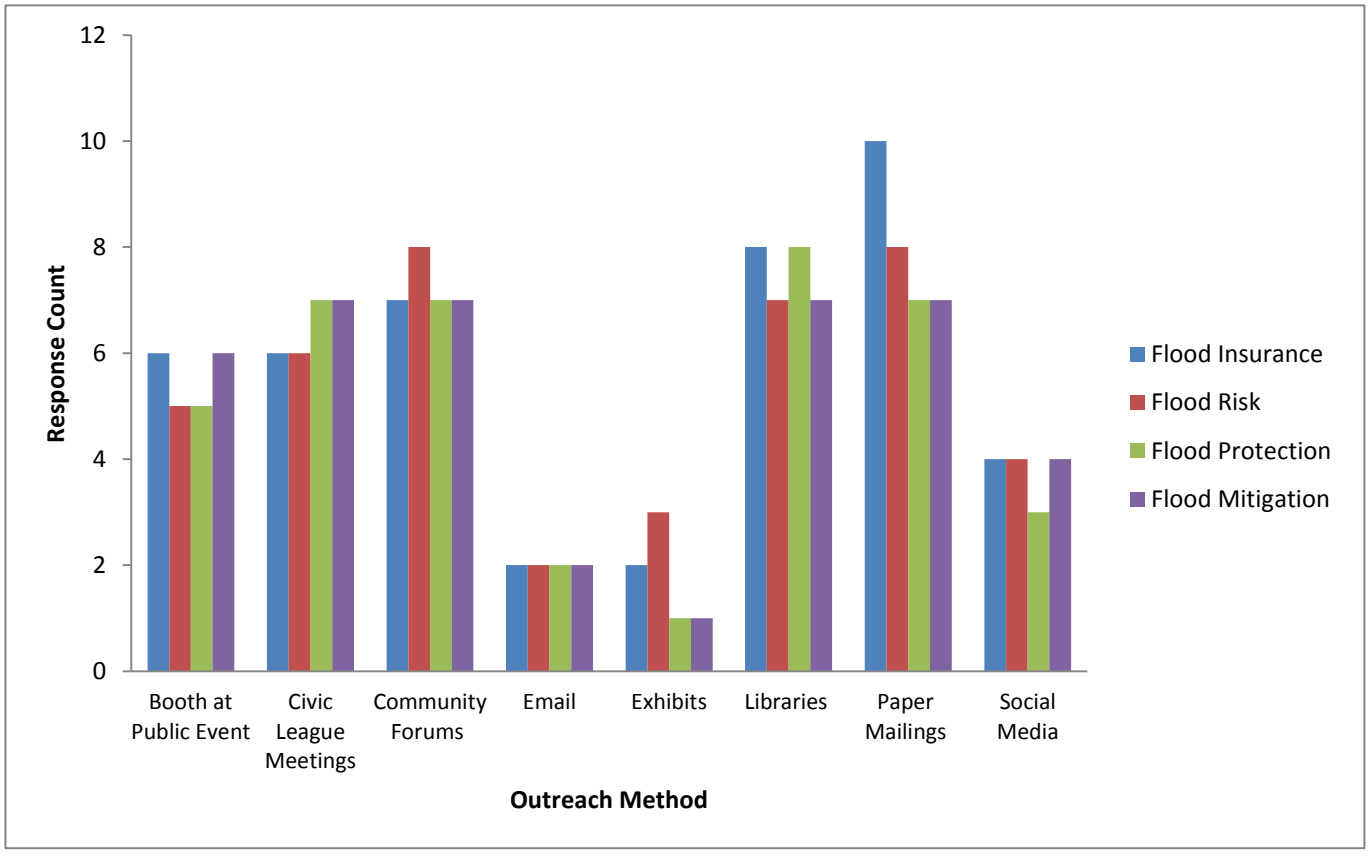

Figure 2: Response to question: "How are outreach materials distributed? Please check all that apply for each program area."

A majority of respondents indicated their locality currently updates outreach materials annually. While an annual cycle is the most common time frame for paper mailings distribution, civic league presentations and community forums happen more frequently in response to requests. One respondent also indicated their locality increases posts to social media during hurricane season.

Although many localities indicated outreach efforts are conducted by various departments, the most frequently identified lead departments for flood outreach were emergency management, planning, and community development, followed by marketing and communications. Public works was the most frequently identified additional department for collaboration on flood risk and preparedness outreach.

Respondents expressed various levels of satisfaction with their current outreach programs. A higher level of satisfaction was associated with flood risk and insurance outreach programs than flood protection and mitigation outreach programs (Figure 3). Nearly 20% of respondents were dissatisfied with all provided categories of outreach programming (Figure 3).

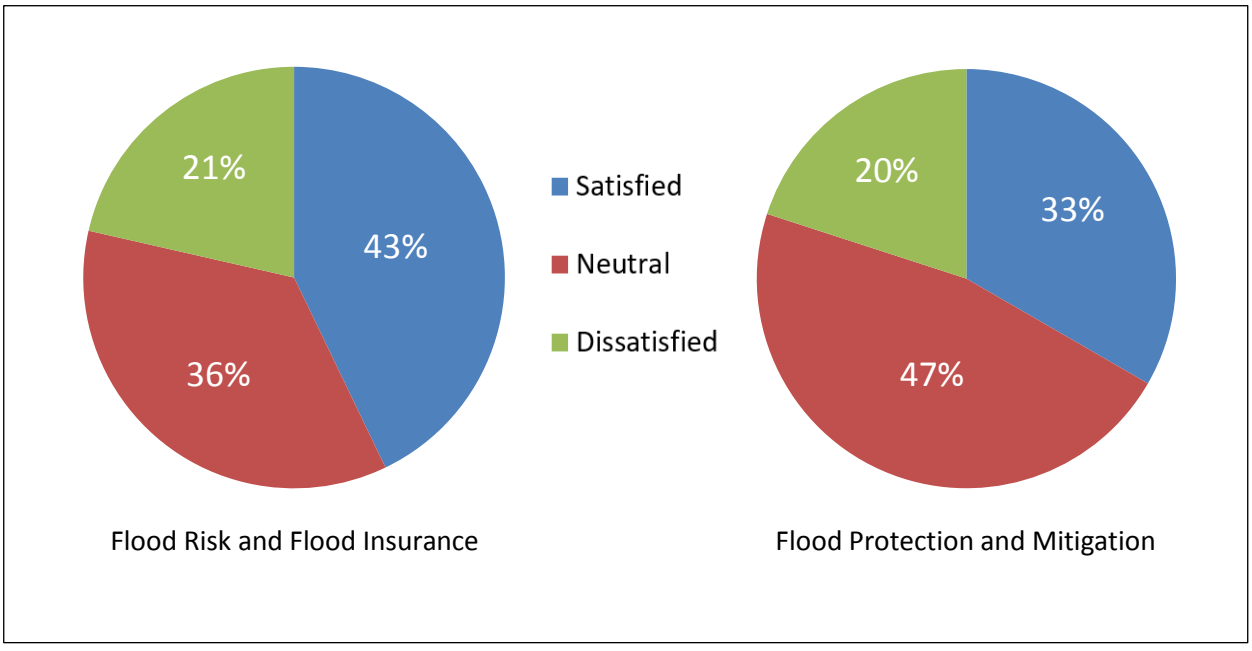

Figure 3: Response to question: "How satisfied are you with your city/county's outreach efforts in the following program areas?"

Flooding Notification Survey Results

For the flooding notification survey, responses were received from emergency managers of 11 localities. When asked to select their level of satisfaction with current city/county flooding notification methods,

78% of question respondents answered “Satisfied” and 22% of question respondents answered very satisfied. All localities represented by the survey results use an electronic notification provider with the capabilities to send notifications to specific neighborhoods. One respondent stated,

> “One big advantage of the Everbridge system is the ability to send geo-targeted alerts to anywhere in the city. These alerts can be sent down to the street-level in neighborhoods. We also have pre-established contact lists that we can send messaging to depending on the type of event (non-emergency or emergency).”

Respondents highlighted the additional benefit of allowing registrants to select their preferred contact method because these notification systems require users to opt-in online via a registration form.

The most common methods of advertising enrollment in emergency notification systems selected by respondents include social media, webpages, presentations, and brochures. Box 1 highlights examples of social media posts from local governments advertising enrollment and sharing flooding information.

Cellular text messages were identified by respondents as the most effective weather notification method, followed closely by social media (Figure 4). While respondents were asked to select the top 3 most effective methods, one respondent commented, “Although listed are the top three, it takes a broad-brush approach to reach a multi-generational population.” Other notification methods used by local governments that were not ranked as most effective include landline phone calls, radio alerts, and webpages.

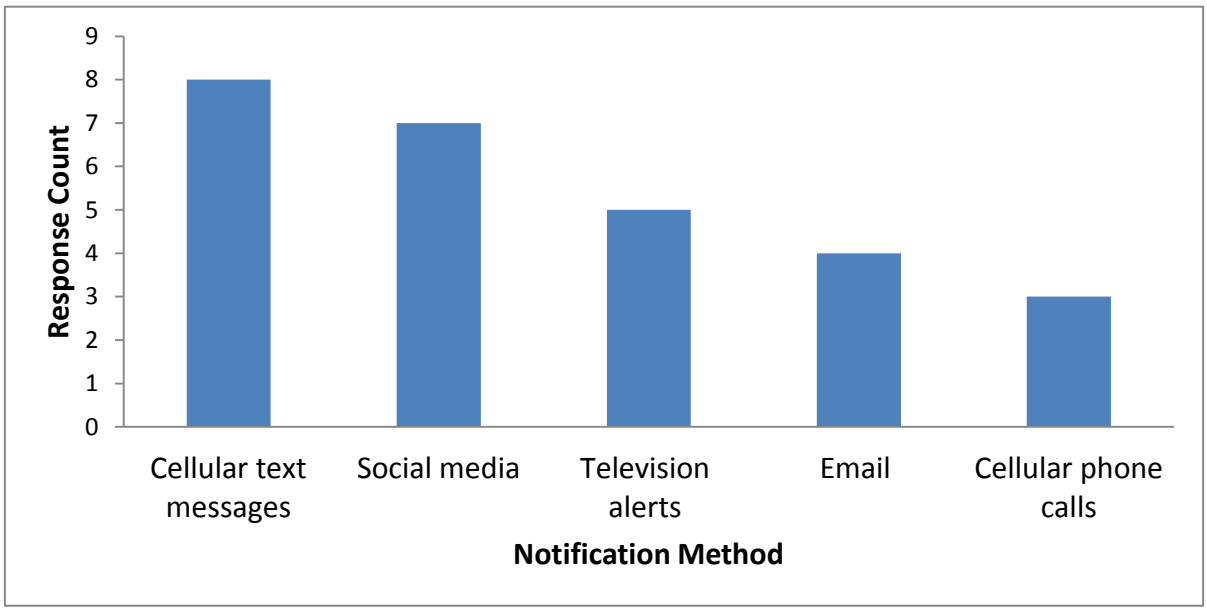

Figure 4: Response to question: “Of these notification methods, which do you think are most effective?”

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Box 1: Social media postings from local city governments.

Image 1: City of Norfolk Facebook post promoting the Norfolk Alert system (August 28, 2017)

Image 2: City of Virginia Beach Facebook post advertising the VB Alert System. (August 28, 2017)

Image 3: City of Hampton Tweet sharing flooding information with a link to the city website regarding road closures. (August 29, 2017)

All 11 of the respondents' respective localities currently use the National Weather Service Flood Advisories to determine when to issue a flood alert, and 5 of the localities also use a local water level/rainfall sensor network. Two localities stated the types of alerts they issue to large databases are restricted by certain classifications, such as a hurricane or thunderstorm event. When asked if it would be valuable to issue non-emergency flooding notifications (i.e. nuisance flooding separately from the National Weather Service flood advisory notifications), only 3 respondents who do not already have this function expressed interest (Figure 5). Those interested in issuing non-emergency flooding notifications unanimously identified social media as a preferred notification method. Other selected methods of communication included cellular calls/text messages, emails, road signage, a monitoring website, and mobile application notifications.

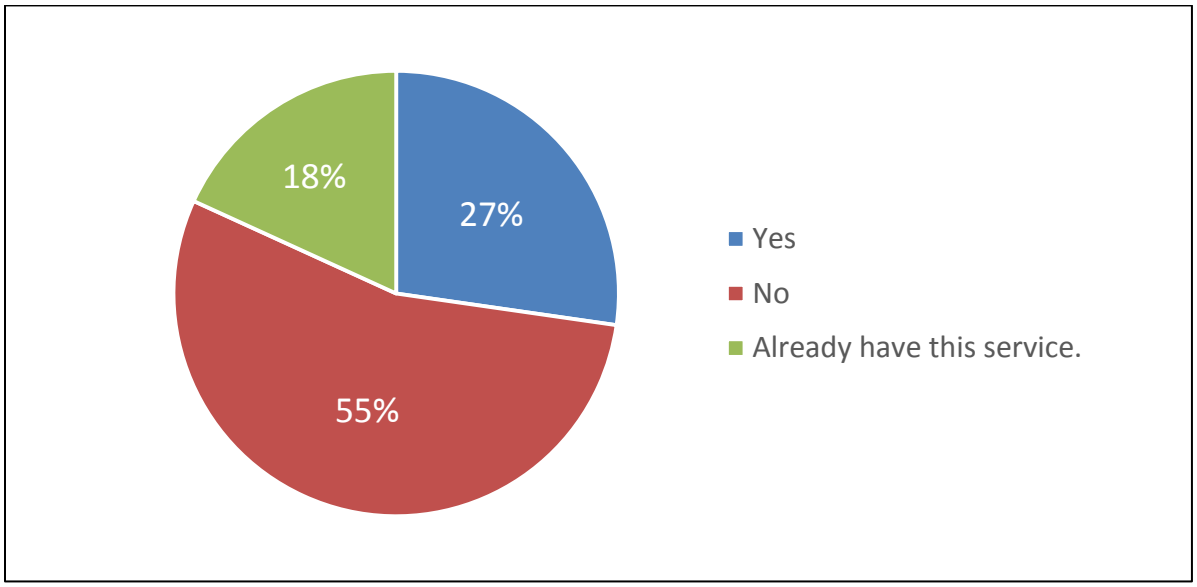

Figure 5: Response to the question: "Do you think it would be useful to issue non-emergency flooding notifications (i.e. nuisance flooding) that are separate from the National Weather Service advisory notifications?"

Respondent Identified Challenges

When asked to identify the greatest challenges for outreach programming in their communities, 57% of question respondents identified staff size and time. Respondents indicated they have limited time to devote to planning outreach activities. Furthermore, outreach is often a lower priority relative to other urgent tasks. Many localities also lack an official designated team charged with outreach programming, which can result in a lack of coordination.

In addition to staff size and time constraints, 21% of question respondents referenced limited financial resources as a challenge, as well as identifying and reaching appropriate audiences. Respondents also highlighted tradeoffs that exist between outreach directed for specific audiences and the general public. One respondent stated, “Specialized presentations at civic leagues and other groups give us the ability to provide direct information, but these events are typically attended by small numbers of people.”

Respondents also indicated concern over the effectiveness of outreach handouts and brochures. Two localities shared methods they are using to begin measuring the success of outreach efforts. These include tracking the number of pamphlets distributed and the number of information requests from the public, specifically regarding home inspections or flood mitigation efforts to reduce insurance costs. Limited funding or other resources and limited expertise were identified as the two major hindrances to measuring the success of outreach efforts.

While respondents of the flooding notification survey expressed a high level of satisfaction with the capabilities of their notification systems, a shortcoming associated with the current opt-in systems is low user enrollment. Increasing the number of residents registered for notifications, or low citizen enrollment, was identified as a challenge or weakness of current flooding notification approaches by 45% of respondents. Over half of the survey respondents estimated that less than 10% of their city/county population is enrolled for notifications (Figure 6).

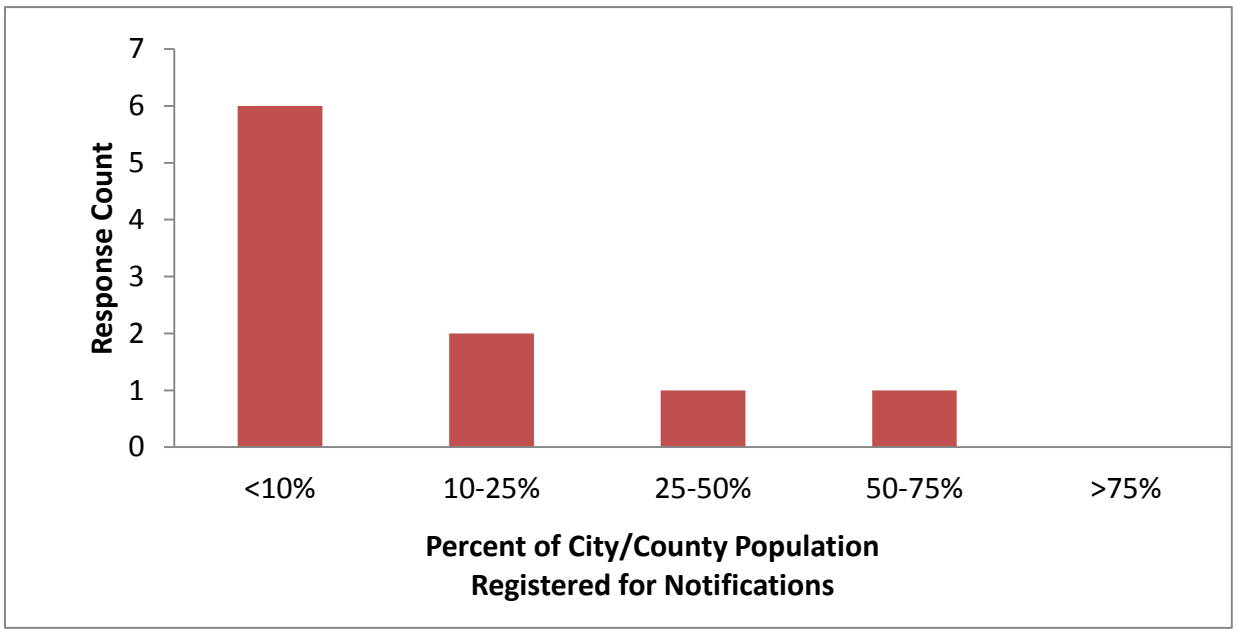

Figure 6: Responses to the question: “What is your estimate of the percent of your city/county population registered to receive cellular notifications?”

Opportunities and Resources

The challenges identified by local floodplain managers, planners, and emergency managers through the two surveys also highlight areas of opportunity to strengthen outreach programming and enrollment in emergency notification systems. The following sections highlight local examples and guidance documents to support improved organization of outreach programs and marketing of emergency notification systems.

Local Approaches to Organizing Outreach Initiatives

Gloucester County's Program for Public Information (PPI) illustrates an interdisciplinary approach to defining and organizing outreach projects. The PPI is a credit multiplier for outreach project points the County earns through the NFIP's Community Rating System. Within the PPI is a table that identifies the target audience, primary message, expected outcomes, and project type and frequency associated with each outreach theme (County of Gloucester Floodplain Management Committee, 2015). The PPI was developed by a working group of the County's Floodplain Management Committee. The Floodplain Management Committee was formed in 2009 and is tasked with annually reviewing progress towards Floodplain Management Plan goals, as well as providing input during the 5-year plan update (Gloucester County, 2014). The working group to the Committee consists of local government staff, mortgage brokers, insurance agents, real estate professionals, and community residents (County of Gloucester Floodplain Management Committee, 2015).

Another local example of collaborative outreach efforts is the City of Poquoson's Office of Community Recreation quarterly publication, the *Island Tide*. An article related to flooding information is included in nearly every edition, such as the article "Flood Insurance Costs Rising? What Can I Do?" in the Fall 2017 publication (City of Poquoson, 2017). Integrating flooding information into regular publications from other departments is a cost-effective approach for increasing outreach frequency. Additional local government communication examples from Hampton Roads can be accessed through the links to flood preparedness websites included in the Appendix.

Guides to Support Outreach Planning

Although measuring the success of outreach efforts is challenging, guides to developing effective outreach materials can assist in designing quality products. A report from the National Oceanic and Atmospheric Administration (NOAA) Social Science Committee (2016), which includes best practices and

research findings for risk communication behavior, recommends testing communication materials with members of the target audience. Although time and financial resources may not permit a formal survey evaluation process, gathering feedback on outreach materials from a few members of the target audience, such as realtors or property owners, provides an opportunity to test the clarity of a message.

The NOAA Office for Coastal Management's Risk Communication Basics (2016) report also identifies a list of approaches to avoid or embrace. For example, NOAA advises against invoking fear and anxiety through outreach materials, and suggests providing an action residents can take if using post-storm imagery or daunting sea level rise projections. NOAA also recommends using personal stories in outreach materials that provide relatable examples without overdramatizing (NOAA OCM, 2016). Video recording is one method to share personal stories related to flooding that has not yet been implemented by local governments in the Hampton Roads region. A local non-governmental organization, Wetlands Watch, provides videos on their website discussing the benefits of flood insurance (Wetlands Watch, 2017). To explore this communication method at the neighborhood scale, interviews with homeowners who experienced benefits from installing flood vents or purchasing flood insurance could be recorded and shared.

Resources to Promote Enrollment for Notifications

Effective communication in preparation for and during a severe weather event is imperative to public safety. While current locality opt-in notification systems provide this service, the flooding notification survey revealed low enrollment estimates for emergency alert systems, with 6 of 11 responding localities' estimating less than 10% of their population is registered. While several factors influence a residents' decision to sign-up for notifications, one of the most common reasons for lack of enrollment is ineffective promotion of the opt-in notification system (Regroup, 2017*).* Everbridge, the major emergency notification provider for the Hampton Roads region, has developed a guide on Emergency Notification Best Practices for Citizen Registration (2014). Everbridge recommends collaborating with local grad schools, colleges, religious centers, and other local clubs and organizations to advertise enrollment. For example, the guide highlights a Girl Scout troop that earned service project credits by assisting citizens with emergency alert registration in a high school computer lab.

FEMA's 2012 National Household Survey also reported that exposure to disaster preparedness through workplace, school, or response volunteer organizations has a positive correlation with preparedness behaviors (FEMA, 2014). Approximately 56% of respondents with schoolchildren who brought home

preparedness materials reported being familiar with alert and warning systems; however, only 37% of respondents in households with children who did not bring home materials and 44% of households without children reported familiarity with alert and warning systems (FEMA, 2014). Collaborating with existing social networks can help enhance the reach of communication while leveraging existing resources in the community.

Another recommended practice for increasing participation in opt-in notification systems is to ensure the enrollment process is clear and advertisements link directly to the page (Everbridge, 2014). The City of Chesapeake, for example, advertised their alert system on their main homepage following severe winter weather associated with Snowstorm Grayson (Box 2). Links to enroll in each local emergency notification system in Hampton Roads are also available via the Ready Hampton Roads website.[2] To further evaluate current marketing strategies, localities could consider adding an additional question in their online registration form asking how the respondent learned about the opt-in emergency notification system.

Communication through Cellular Devices

While cellular text messages are one of the most popular methods to distribute emergency notifications in Hampton Roads, cell phones can also help streamline the notification enrollment process. Everbridge offers a feature through the Nixle Community Engagement solution that permits residents to sign-up for notifications via text message (Everbridge, 2015). By encouraging residents to text the code "PAPALVISIT" to a designated number in preparation for Pope Francis' visit, the City of Philadelphia's Office of Emergency Management was able to register 11,449 users in the ReadyPhiladelphia alert system within just 7 days (Everbridge, 2015). Linking a code to specific community events through this feature can encourage a high volume of users to opt-in for notifications over a short period of time.

Mobile applications may offer another efficient method of severe weather and flooding information communication. Harris County, Texas, which received significant media attention in response to Hurricane Harvey, has designed the mobile application ReadyHarris to assist citizens in accessing severe weather notifications (Harris County, 2017). The app also includes an evacuation map and option to create a plan in preparation for weather emergencies (Box 2). However as noted with opt-in emergency notification systems, mobile applications also have the associated challenge of encouraging citizens to install the application on their cellular device.

[2] Visit Ready Hampton Roads online at http://readyhamptonroads.org/prepare/be_informed/local_alerts/

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Box 2: Examples of local and national severe weather notification methods.
Image 1: Advertisement from the City of Chesapeake, Virginia, to enroll in their emergency notification system.
Image 2: Harris County, Texas, emergency notification and preperation mobile app, ReadyHarris.

Conclusions

Local governments within the Hampton Roads region communicate flooding information to the public through diverse methods, including staff presentations, publications, and opt-in emergency notification systems. While opt-in notification systems present the challenge of encouraging citizens to enroll, outreach efforts are often restricted by staff time and resources. Locality staff also have limited resources to measure the effectiveness of flooding-related outreach activities. To address these challenges, we have identified the following opportunities:

- Increase use of existing City/County publications to improve the frequency and coordination of outreach efforts and develop interdisciplinary outreach teams.
- Conduct a separate survey of Hampton Roads residents before and after an outreach campaign to begin measuring changes in behavior.
- Improve coordination with community groups and link marketing campaigns with local events to promote registration for emergency notifications.
- Encourage collaboration between localities to develop a regional campaign promoting flood preparedness behavior.

The reference documents reviewed in this report are intended to support localities in refining their flooding communication strategies and strengthening coordination to enhance the resilience of the Hampton Roads region.

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Wetlands Watch. 2017. Flood Insurance and Biggert-Waters Guide for Policyholders. http://wetlandswatch.org/flood-insurance/

Appendix

	Locality	Flooding Information Webpage
Peninsula	Gloucester County	Flood Management Information
	Hampton	Flooding and Flood Safety
	James City County	Flood Plains
	Newport News	Flood Information
	Poquoson	Flood Information
	Williamsburg	Emergency Preparedness
	York County	Floodplain and Flood Insurance Information
Southside	Chesapeake	Floods
	Norfolk	Flood Awareness and Mitigation
	Portsmouth	Flood Program
	Suffolk	Flood Information
	Virginia Beach	Floodplain Management
Western Tidewater	Franklin/ Southampton County	Floodplain Management
	Smithfield/Isle of Wight County	Floodplain Management
	Surry County	Emergency Services