

Urban-to-Rural Evacuation: Planning for Population Surge

Michael Meit, MA, MPH, Alene Kennedy, and Thomas Briggs

Rural preparedness planning efforts generally focus on the needs of area residents following local disaster or emergency situations. Few communities have considered the potential for mass population influx from nearby cities in the event of a disaster or public health emergency. The possibility of flight from urban areas during such an event necessitates a better understanding of rural capacities and the likely impact of evacuations on surrounding communities. Whenever evacuation occurs, the resources of receiving communities can be overwhelmed by the ensuing population increase. In smaller communities with limited resources, even small numbers of evacuees can represent sizeable increases in population, and can jeopardize the integrity of resources and infrastructure.

To identify the major issues surrounding potential evacuations of urban areas into rural communities, and to provide recommendations for how rural planners might prepare their communities for a population influx, we interviewed seventeen preparedness stakeholders, including six national preparedness experts and eleven local emergency preparedness planners (five urban;

KEY FINDINGS & POLICY RECOMMENDATIONS

- Limited rural infrastructure is a significant concern when considering urban-to-rural evacuation issues.
- Evacuees will travel *to* and *through* rural areas. Those traveling *through* will strain fuel, food, water, and sanitation resources, and those traveling *to*—even if small in numbers—represent a potentially overwhelming population increase.
- Estimates of the numbers of evacuees and information about evacuees are needed for rural preparedness planning.
- Counties outside of urban areas should predetermine sites for receiving and triaging evacuees to ensure efficiency of resource utilization.
- Communities in rural areas should develop coalitions to facilitate planning and interaction among multiple counties, and with nearby urban centers.
- Urban public health and preparedness officials should consider surrounding rural areas when developing disaster response plans.

six rural). Urban and rural planners were paired so that rural planners represented areas surrounding the urban planners' jurisdictions.

INTERVIEW SUBJECTS

To ensure that a variety of perspectives were collected, key informants were classified as urban, rural, or national experts. National

experts, representing academia, government, and the private sector, were identified through a review of the preparedness literature and recommendations from project advisors. To incorporate representation from varied geographic regions and city sizes, urban and rural counterparts were chosen from six major U.S. metropolitan areas and associated rural counties ranging from twenty minutes' to four hours' distance

from the urban center. Interviewees were public health directors or emergency preparedness coordinators for their jurisdictions.

Interviews were conducted to inform the development of a national survey¹ of urban residents to assess evacuation intentions, and to provide data to support components of a tool to model urban-to-rural evacuation and population surge.² Interview questions encompassed three categories: urban residents' evacuation behavior; rural issues related to an urban evacuation; and strengths and weaknesses of current preparedness planning. The first set of questions included such issues as the types of events that could precipitate an urban evacuation, differences between spontaneous and mandated evacuations, compliance with shelter-in-place directions, and evacuation direction, distance, travel time, and destination. The second category solicited opinions on the information needed by rural planners to prepare for a population influx, and the major challenges for rural areas receiving evacuees. The final set of questions assessed current preparedness planning and cooperation at the local, state, and national levels.

Interviews were conducted in a semi-structured fashion, allowing subjects to respond conversationally to open-ended questions. Interviews were typically 30 to 45 minutes in length and were conducted by phone between November 2006 and March 2007.

NATIONAL EXPERTS

The interviewed national experts generally concur that in the event of a disaster or public health emergency, the behavior of urban residents will largely depend on how the threat is presented by the media, the government, and/or word-of-mouth.

They note that in past disasters, person-to-person information transmittal significantly influenced evacuation, and they highlight effective media communication as a critical component of a successful evacuation. Interview findings also suggest that traffic would be a major issue. While a mandated evacuation allows for preemptive efforts like traffic lane reversals (i.e., “contraflow”), spontaneous evacuations can result in sudden, unexpected traffic jams and blockages, particularly in areas with limited access or road capacity.

National experts are split in their predictions of whether pandemic influenza will precipitate spontaneous evacuations; some feel the public will perceive safety in rural areas with lower population density, while others believe most urban residents will adhere to governmental directions for social distancing and sheltering in place. Most agree that citizens would be more likely to follow such directions if the government provided assurances regarding job security and continued availability of necessities such as food and water.

“Rural areas have a hard time providing healthcare for their residents as it is, let alone for evacuees.”
- National Expert

In the event of an urban evacuation, there are several issues national experts identify as particularly problematic for rural regions. While residents might evacuate *to* rural areas, an additional concern is the large number who may evacuate *through* these areas, consuming fuel, food, water, and sanitation resources

as they travel to their destinations. Several experts highlight water and sanitation as critical but often overlooked aspects of evacuation planning. They note that many rural areas have preexisting water supply and sanitation capacity issues, and any additional population will likely overwhelm these systems.

The most consistently cited critical weakness of rural communities is their limited health care and public health infrastructures. Evacuees exposed to radiation, chemical, or biological threats will likely overwhelm the health systems of small communities, and may also precipitate health consequences among the local population. An additional concern is rural health systems' lack of capacity to provide care for evacuees with special medical needs. The national experts suggest that reception sites be set up along evacuation routes where evacuees can be triaged and directed appropriately rather than allowed to travel to their various destinations before seeking medical care. In this way, officials can provide care to those most in need and utilize resources accordingly.

¹ Results of this survey will appear in a future brief.

² The Department of Health Policy and Evaluation at NORC at the University of Chicago is currently developing a prototype evacuation modeling tool for the Western New York Public Health Alliance with funding from a National Association of County and City Health Officials (NACCHO) Advanced Practice Center (APC) grant.

URBAN EXPERTS

Urban experts also feel that city residents' reactions to disasters and public health emergencies will depend on the content and delivery of official messages and recommendations. In addition, urban experts note that information must be tailored to distinct demographic groups within the city if messages are to be successful. They believe that citizens will cooperate with shelter-in-place directions if the message is delivered appropriately and the entity delivering the message is trusted. In a pandemic flu scenario, urban experts agree that financial incentives, promises to compensate for lost workdays, and guarantees that sufficient food, water and energy supplies will be provided are requisites to persuading citizens to shelter in place.

Several urban experts maintain that urban residents are unlikely to evacuate to rural destinations. Rather than prepare for an influx of evacuees, they suggest that rural preparedness efforts focus on providing adequate food and fuel for the large numbers likely to travel through rural regions to reach family, friends, second homes, hotels, and familiar sites in other metropolitan areas. Urban informants frequently raise issues relating to culture and acclimation. They observe that urban populations are ethnically, culturally, and socio-economically diverse, whereas rural regions tend to be more homogeneous. The interviewees also indicate that rural

"We typically think of evacuating our citizens to other large urban centers... we don't give rural areas the attention that we should."
- Urban Official

communities might not welcome or accept urban evacuees into their communities, echoing opinions expressed by several national experts. Urban interviewees also suggest that city residents may not feel comfortable in rural areas, which lack familiar conveniences

and infrastructure.

While interviewees acknowledge that some evacuees would settle in rural areas, they feel that preparedness efforts should consider

that evacuees will travel to nearby cities, which have greater capacity for absorbing them. Several urban experts note coordination and planning efforts with other urban areas that might serve as potential evacuation destinations; few report similar coordination with surrounding rural communities.

RURAL EXPERTS

Rural experts, not surprisingly, are greatly concerned with the issue of urban-to-rural evacuation, although this does not appear to have translated into specific planning to address a potential population surge. The majority of ongoing preparedness activities in the represented counties involve the use of all-hazards approaches to plan for locally occurring disasters, as well as pandemic flu planning. When asked about the lack of planning to address urban evacuation, rural planners note the lack of population surge estimates as a barrier to effective planning.

"No rural community builds their infrastructure to handle a large influx."
- Rural Official

Rural planners share urban and national experts' concerns about their health system capacities for evacuee absorption. Community hospitals generally run above 90 percent capacity and are much smaller than urban hospitals. In the event of an evacuation, rural hospitals will need to discharge patients to accommodate evacuees. Rural estimates of available absorption capacity of evacuees with health care needs ranges from five (in a county of approximately 82,000) to several thousand (in a county of approximately 30,000). Clearly, interviewees perceive the concept of accommodating evacuees with health needs differently, and this variation suggests a need for standardization and preplanning for evacuees with a variety of medical needs.

Rural planners highlight that while larger numbers of evacuees will likely go to other urban areas in many scenarios, it will take fewer evacuees to overwhelm smaller, rural community systems. In addition to considering raw numbers of evacuees, these planners recommended analyzing the ratio of evacuees to the existing population. In light of the already limited resources in smaller communities, the potential for small numbers of evacuees to quickly deplete available resources is great.

Rural counties also vary in their degree of regional coordination. Although three of the represented counties have

communicated or coordinated in some way with nearby urban centers, the other three have not.

All counties, however, have activities, planning efforts, or standing meetings with other nearby counties. Despite the variation in the extent of planning around preparedness issues, the rural counties express concerns about the lack of information surrounding urban evacuation and find it difficult to plan for potential population influxes when they have so little information with which to plan.

Interviews reveal that the following types of information would be particularly helpful for rural planners: estimates of numbers of evacuees that might arrive in their areas following particular disaster events; characteristics of those evacuees, such as approximate percentages of the evacuating population who are children, elderly, or disabled; and those arriving with special medical needs or pets.

CONCLUSIONS

Rural preparedness officials face significant informational, organizational, and infrastructural constraints in their abilities to prepare for a potential population surge. In particular, the rural health care delivery infrastructure is ill-equipped to absorb evacuees with medical needs and those with special medical needs. Hospitals generally operate close to capacity and would need to discharge patients to accommodate evacuees. Additionally, few rural counties have triage centers or other plans for receiving evacuees with health problems or with potential health risks. Most informants agree that addressing these and other health-

related concerns should take priority in rural communities' preparedness plans.

In the event of a disaster, the manner in which the threat is presented by the media, government, or word-of-mouth will influence urban citizens' reactions and behavior. Adherence to shelter-in-place directions will depend upon trust in the source of those instructions. Urban citizens who do evacuate will likely go to family and friends, second properties, or hotels. Although a significant portion of evacuees may not stay in rural areas, they will travel through these regions, straining fuel, food, water, and sanitation resources. Those who do stay in rural areas have the potential to overwhelm already strained infrastructures.

The experiences and insights provided during these interviews can be utilized to formulate several policy recommendations. Communities in rural areas should develop coalitions to facilitate planning and communication among multiple counties, and should seek to plan in conjunction with nearby urban centers. In addition, regions surrounding cities should consider establishing predetermined reception sites for evaluating evacuees' needs and distributing limited resources efficiently. Urban public health and preparedness officials should consider the surrounding rural areas when developing disaster response plans. Although many city residents may evacuate to other metropolitan areas, many will travel through rural areas, and some will clearly settle in those areas. As urban residents travel through and to rural areas, the potential for exhaustion of supplies

and resources is a significant concern. While the number of evacuees who settle in rural communities may reflect only a small percentage of the evacuating urban community, they will likely represent a significant population increase in rural areas already struggling with limited resources. Future research and preparedness planning should seek to develop strategies to address these issues.

This project was funded by the Office of Rural Health Policy (ORHP) under cooperative agreement U1CRH03715. The conclusions and opinions expressed in this paper are the authors' alone; no endorsement by NORC, ORHP, HRSA or other sources of information is intended or should be inferred. The Walsh Center for Rural Health Analysis is part of the Department of Health Policy and Evaluation at NORC at the University of Chicago. For more information about this project, please contact Michael Meit at (301) 951-5076 or meit-michael@norc.org.