Executive Summary

In 2011, the Southern California (SoCal) Metropolitan Statistical Area (MSA), comprised of Los Angeles County, Orange County, and the Cities of Long Beach, and Pasadena, initiated a health hazard risk assessment in response to a Centers for Disease Control and Prevention (CDC) risk-based pilot project to identify promising risk assessment practices with health agencies in the 10 highest-risk MSAs. The goals of this project were to establish a foundational framework from which more consistent, hazard-specific, departmental planning can effectively occur and to engage in “Whole Community Planning” that engages traditional and non-traditional community-based planning partners in identifying and discussing hazards, threats and resources relevant and specific to the community.

The SoCal MSA Planning Collaborative, which served as a planning and advisory body for this risk-based initiative, designed and implemented a coordinated community preparedness planning assessment, which engaged preparedness partners from public health, healthcare systems, emergency medical services, emergency management/homeland security, law enforcement, fire services, community-based agencies, and other key sectors. The assessment process was launched in October 2012 following a comprehensive planning and design process initiated in January 2012. The assessment tool, adapted from two existing instruments, considers public health risk in terms of hazard probability, health impact, system impacts and protective value/response capacity. It is referred to as the Health Hazard Assessment and Prioritization (hHAP) Tool.

The hHAP tool was implemented through a series of five assessment sessions targeting subject matter experts in the following fields: 1) Public Health, 2) Health Care, 3) Mental Health, 4) Responder Agencies and 5) Community Agencies. The results, observations and lessons learned from each of the five assessment sessions are detailed in this report. These results were synthesized into a final results matrix through an algorithm that identifies hazards in the SoCal MSA.

While this assessment provided a ranking of specific hazards, the real value of this overall effort is improved planning and true capability development for prioritized risks, which comes in part from the enhanced data gathering methods and in part from the relationship strengthening that this assessment fostered. The Planning Collaborative has developed a Mitigation Planning & Coordination Framework to outline key strategies and actions to coordinate future planning and mitigation activities. Building on the work of this project, as the SoCal MSA jurisdictions develop specific plans to mitigate the prioritize hazards, they will seek to maintain relationships with stakeholders and community groups to further strengthen their capacity to prepare and respond in an effective and coordinated manner.

The SoCal MSA’s hHAP represented a first for public health agencies in Southern California. This effort serves as a learning tool for its members, as well as agencies across the nation looking to replicate this process. This report, and its appendices, including the hHAP Manual, are being released with the expectation that they will serve as a reference for future planning and assessment efforts within the SoCal MSA and beyond that will guide decision-making and policy decisions in public health emergency planning for years to come.
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Introduction

Since the inception of the U.S. Centers for Disease Control and Prevention’s (CDC) Public Health Emergency Preparedness (PHEP) cooperative agreement in 2002, public health departments across the country have been tasked with developing plans for coordinated response to potential hazards in order to save lives, reduce suffering, and improve recovery. Some of these plans were based on CDC mandates (e.g., Smallpox, Anthrax, Strategic National Stockpile), while others came from other federal planning priorities (e.g., Pandemic Influenza, All Hazards). A key challenge for local jurisdictions is to identify how best to prioritize the development of specific hazard response plans. The CDC’s Risk-Based pilot project (2011) and recent guidance from the National Preparedness System presented an opportunity to apply a systematic, health-centered approach to hazard assessment and response plan development that incorporates existing community and response resources. This process has ensured that jurisdictional health priorities can be effectively assessed based on the unique threats and capabilities of each jurisdiction, thereby focusing planning resources on the top hazards—those that are highly probable and/or have high public health impacts—and deferring planning until later for those hazards with lower probabilities or minor public health impacts.

Since January 2012, the Southern California Metropolitan Statistical Area (SoCal MSA) has engaged in a comprehensive process to develop a meaningful risk assessment of potential hazards that builds on the knowledge and expertise of a broad array of stakeholders and identifies the hazards that will form the foundation of future planning priorities for public health agencies in the MSA.

Project Purpose

CDC Risk Based Grant Funding

In 2011, the Centers for Disease Control and Prevention (CDC) initiated a risk-based pilot project to identify promising risk assessment practices with health agencies in the 10 highest-risk metropolitan statistical areas (MSA), including the Southern California (SoCal) Metropolitan Statistical Area. The SoCal MSA includes Los Angeles County, Orange County, and the Cities of Long Beach, and Pasadena.

The overall goals of this project are twofold:

1. Establish a foundational framework from which more consistent, hazard-specific, departmental planning can effectively occur.
2. Provide a process for “Whole Community Planning” that engages traditional and non-traditional community-based planning partners in which hazards, threats and resources, relevant and specific to the community, can be identified and discussed.

The CDC Grant deliverables for the SoCal MSA include:

1. Establish a coordinated and synchronized community preparedness planning effort within the MSA which includes the following preparedness partners: public health, health care systems, emergency medical services, emergency management/homeland security, law enforcement, fire services, critical infrastructure, and other key sectors
2. Conduct an MSA health risk assessment
3. With input from community planning partners, develop a matrix that describes and ranks/prioritizes the public health, medical, and mental/behavioral health threats (hazards) and risks within the MSA
4. Based on the MSA health risk assessment, identify the specific public health, medical, and mental/behavioral health threats and risks that will be addressed by the MSA with this funding and propose strategies and activities designed to reduce/mitigate the threats and risks
5. Develop an MSA risk mitigation plan to specifically address the public health, medical, and mental/behavioral health needs/risks of the community, including vulnerable populations
6. Develop an evaluation plan to assess and measure the impact of this process

To achieve these grant goals and requirements, the SoCal MSA developed an integrated comprehensive work plan (See Appendix 1).

**SoCal MSA Project Purpose and Structure**

The primary purpose of this project was to develop an effective, health-focused assessment tool to effectively explore, define, and prioritize hazards and associated health vulnerabilities across the SoCal MSA. The results of the assessment are intended to guide the SoCal MSA’s public health preparedness and planning efforts.

**Los Angeles-Santa Ana-Long Beach-Pasadena MSA**

The SoCal MSA is a very large and complex area that encompasses nearly 15 million residents living in 122 cities and includes more than 120 hospitals and hundreds of medical and health clinics.

To support implementation of the grant requirements, in July 2011, a SoCal MSA Planning Collaborative was formed, with LACDPH, the directly funded grantee, serving as the lead point of contact. The SoCal MSA Collaborative includes representation from each participating jurisdiction’s health agency to ensure coordinated implementation of the project goals and deliverables. This Committee has led implementation of the CDC grant requirements and continues to meet monthly.

**Hazards and Capabilities: Nexus of Threats and Capabilities**

The CDC’s five-year PHEP cooperative agreement executed in August 2011 defined a set of public health preparedness capabilities to assist state and local health departments with their preparedness planning. This focus brought public health into alignment with other federal and state stakeholders that also utilize capability-based emergency planning. The So Cal MSA Planning Collaborative developed an assessment that would not only engage those stakeholders in assessing these hazards from this renewed capability-focuses perspective, but inform them of the importance of these capabilities in mitigating and responding to such threats.

Following completion of the risk assessment, the Planning Collaborative developed a capability-focused matrix, designed to identify and highlight the key capabilities that will be focused on during future and ongoing hazard specific planning activities (See Appendix 2).

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1 For more information, see Center for Disease Control and Prevention “Public Health Preparedness Capabilities: National Standards for State and Local Planning” March 2011.
The SoCal MSA has developed a Coordinated Mitigation Planning and Coordination Framework that seeks to address and build upon these necessary capabilities to ensure a comprehensive and effective MSA response.

Health Hazard Assessment in Southern California

Conducting a health hazard risk assessment was the first step of a larger “Whole Community Planning” process to improve overall public health emergency planning and response outcomes for the MSA. The SoCal MSA was committed to developing a clear and effective process for engaging a range of key stakeholders in determining the priority hazards impacting the SoCal MSA. However, the SoCal MSA recognized that traditional risk assessments that rely primarily on the relationship between probability and severity of potential risks do not always capture the full impact of a hazard on the public health and health care systems. As such, they were committed to developing a new approach that would:

- Provide a greater health focus;
- Engage the community in the assessment process; and
- Explore the relationship of health risk.

Health Hazard Assessment and Prioritization Tool: Developing the hHAP Tool

To secure a new approach, the SoCal MSA developed the Health Hazard Assessment and Prioritization (hHAP) tool to assess and prioritize planning and mitigation efforts for those hazards that are most important and relevant in Southern California. Specifically, the hHAP tool was designed to:

- Identify the potential hazards, vulnerabilities, and risks in the community that relate to the jurisdiction’s public health, medical, and mental/behavioral health systems;
- Assess the relationship of those risks to human impact, interruption of public health, medical, and mental/behavioral health services, and
- Assess the impact of those risks on the jurisdiction’s public health, medical, and mental/behavioral health infrastructure.

This tool was used to conduct a comprehensive risk assessment. In July 2013, LACDPH completed a refinement of the hHAP tool and methods that incorporated suggestions and lessons learned from the stakeholder assessment process. The final version of the tool and manual has been made widely available at no cost for interested agencies (See Appendices 3 and 4).

Assessing Risk: Probability v. Impact

This project sought to effectively assess the potential impact of each hazard on the public’s health. In developing the hHAP tool, the Planning Collaborative sought to rectify a shortcoming that exists in many traditional risk assessments, which is that the frequency or probability of a hazard’s occurrence is often overvalued and the potential impact of the hazard on health is not fully considered. As such, the hHAP tool was designed to explore and capture the relationship between probability and health impact.
Creating a Risk Score: Risk Components

The hHAP tool creates a risk score by exploring the interaction of the following risk components:

1. **Probability** of hazard occurrence, assuming a 25 year planning cycle and based on the following criteria:
   - Known risk for hazard occurrence
   - Historical data for hazard occurrence
   - Research and/or modeling data specific to each hazard

2. **Health Severity** of the hazard, based on the potential for increase in:
   - Morbidity
   - Hospitalizations
   - Mortality

3. **Systems Impact** of hazard on public health, medical systems, and mental/behavioral health, including impacts on such factors as:
   - Employees and facilities
   - Services
   - Business operations
   - Critical supplies/resources

4. **Community Preparedness & Response Resources** available within:
   - Emergency response agencies
   - Community agencies

Each of these risk components has a corresponding metric input for each associated hazard. The Risk Score for each hazard is determined through the following formula:

\[
\text{RISK SCORE} = \text{PROBABILITY} \times \text{HEALTH SEVERITY} \times (\text{IMPACTS} - \text{RESOURCES})
\]

The Risk Scores generated for the hazards through the assessment process were then sorted to determine the top hazards SoCal MSA planning priorities.

**Risk Assessment**

The SoCal MSA hHAP assessment process was designed to capture the knowledge and perspective of a wide range of key stakeholders across the SoCal MSA. Throughout the process, hazards were assessed based on impact across the SoCal MSA, not individual city, county or operational area jurisdictions. By generating individual risk scores for a set of identified hazards through the hHAP tool, the SoCal MSA was provided a clear prioritization of the hazards that require priority focus by the SoCal MSA’s public health preparedness efforts and informs the development of mitigation strategies to achieve short-term and long-term outcomes.
Identification and Selection of Hazards

The first step of the hHAP assessment process was to determine which of a list of 60 possible hazards were most relevant and appropriate for further consideration and assessment within the SoCal MSA. These hazards were assigned into one of four pre-identified hazard types:

- Natural
- Biological
- Chemical-Radiological
- Technological

The SoCal MSA Planning Collaborative conducted an initial evaluation of the hazards, narrowing the list of hazards down to 36 by removing those hazards with low probability of occurrence or marginal impact on the public’s health.

Conducting the Risk Assessment: Sessions Summaries

Overview

The SoCal MSA conducted its hHAP Assessment Prioritization Process over a five-month period. Begun in October 2012 and completed by February 2013, a total of five assessment sessions were held with subject matter experts to assess the various risk components. The sessions were hosted by a variety of public and community-based agencies at locations around the SoCal MSA.

These sessions were designed to be consensus-based so discussion and debate amongst the participants was encouraged. To achieve consensus, significant variances in specific polling responses prompted follow up discussion and the group was provided an opportunity to re-poll. Each session was scheduled for up to four hours to allow sufficient time to provide an overview of the assessment purpose and process, conduct the assessment of 36 hazards with discussion and re-polling on select hazards. An
outside consulting firm, Focali Consulting, LLC, was retained to assist with coordinating the overall process and facilitating the assessment sessions.

To ensure a cross section of subject matter experts at all sessions, the SoCal MSA Planning Collaborative members identified and invited stakeholders from their jurisdictions to attend each session, with the goal of approximately 25 participants in attendance at each session. Participants were intended to be unique and independent from previous or later assessments. While no single agency or individual was expected to have full knowledge of the nexus between hazard and impact, familiarity with basic emergency preparedness and response functions was considered important. In addition, stakeholders were sought who had foundational knowledge about their organization, its primary mission, objectives and goals, as well as response capabilities that can be leveraged in an emergency response.

For all sessions, participants were asked to briefly review a set of scenarios developed for each of the hazards that blended historical data with available projections within a Southern California context. Participants were provided a scale and scoring criteria unique to their session from which they would base their votes. An automated audience participation system (TurningPoint) was used to collect participant votes on each hazard poll, tabulate the data, and project immediate results for the participants to view. (The hazard scenarios and scales can be found in Appendix 4.)

At the completion of the assessment sessions, a composite risk score was generated that represents the overall SoCal MSA risk associated with each of the 36 hazards. From these scores, the SoCal MSA is able to identify the priority hazards of focus for the SoCal MSA.

**Hazard Probability & Health Severity Assessment**

The assessment process launched on October 24, 2012 with public health sector subject matter experts assessing the probability and health severity of the 36 hazards. This session also included an assessment of the public health system impact (see section below).

**Participating Agencies**

This session included 25 public health subject matter experts from:
- LAC Department of Public Health (LAC DPH)
- LAC Department of Health Services, Emergency Management Services (EMS)
- Orange County Health Care Agency (OCHCA)
- City of Pasadena Public Health Department
- City of Long Beach Health and Human Services

**Ranking**

The results from the probability and health severity of the 36 hazards are as follows:

<table>
<thead>
<tr>
<th>Health Severity (Ranked High to Low)</th>
<th>Hazard Probability (Ranked High to Low)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nuclear Explosion- 10 Kiloton</td>
<td>Vectorborne Disease</td>
</tr>
<tr>
<td>Aerosolized Anthrax</td>
<td>Climate Change</td>
</tr>
<tr>
<td>Pneumonic Plague</td>
<td>Wildfire</td>
</tr>
<tr>
<td>Smallpox</td>
<td>Extreme Summer Weather</td>
</tr>
</tbody>
</table>
Public Health Assessment

Key Observations & Issues Discussed

- It took several attempts at assessing the risk components of the various hazards before the participants thoroughly understood the process and felt comfortable making assessments based on the information provided.

- There was lack of clarity among some participants on the definition of “public health system”.

- The group was often swayed by an individual participant’s comments or provision of additional information relating to a particular hazard or system capacity issue. As the session progressed, the participant group appeared to have less tolerance for outliers.

- There were several scenarios that prompted questioning and debate among the group. This was primarily due to:
- Participant concern that the scenario information was overstated or key information was missing
- Participant with a specific hazard knowledge challenging the underlying assumption of a scenario
- Participant confusion as to how to weigh the multiple facts included in specific hazard scenarios that could each alter probability, severity or impact (e.g. Water Supply Disruption, Botulism)

- Given the knowledge and experience of the public health subject matter experts with the hazards and the SoCal MSA’s public health system capacities, a greater overall sense of confidence in the polling results was observed as compared to some of the other sessions.

**Ranking**

<table>
<thead>
<tr>
<th>Public Health System Impact Top 20 Hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nuclear Explosion-10 Kiloton</td>
</tr>
<tr>
<td>Smallpox</td>
</tr>
<tr>
<td>Aerosolized Anthrax</td>
</tr>
<tr>
<td>Pneumonic Plague</td>
</tr>
<tr>
<td>Pandemic Influenza</td>
</tr>
<tr>
<td>Major Earthquake</td>
</tr>
<tr>
<td>Emergent Disease</td>
</tr>
<tr>
<td>Blister Agent</td>
</tr>
<tr>
<td>Radiological Dispersal Device</td>
</tr>
<tr>
<td>Ricin</td>
</tr>
<tr>
<td>Nerve Agent</td>
</tr>
<tr>
<td>Industrial Plant Explosion</td>
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<tr>
<td>Nuclear Facility Failure</td>
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<tr>
<td>Electrical Failure</td>
</tr>
<tr>
<td>Water Supply Disruption</td>
</tr>
<tr>
<td>Agroterrorism</td>
</tr>
<tr>
<td>Moderate Earthquake</td>
</tr>
<tr>
<td>Accidental Food Supply Contamination</td>
</tr>
<tr>
<td>Civil Disorder</td>
</tr>
<tr>
<td>Fire - Large Scale Urban</td>
</tr>
</tbody>
</table>

**Lessons Learned**

- The session design assumed a common understanding of “public health system” by participants. Providing a definition or asking the participants to develop a common definition at the start of the meeting may have minimized some confusion on how best to assess the risk components. As a result, the following system impact sessions provided clear definitions.
Despite the session ground rule of not “fighting the scenarios”, several participants did challenge specific facts and assumptions underlying some of the scenarios. While this did divert the group’s attention somewhat from the assessment criteria, it ultimately strengthened select hazard scenario information by providing new and more relevant information.

This session required discussion and re-polling on a large number of hazards as compared to other sessions, which might be attributable to the familiarity and expertise these public health participants had with the material. These debates and discussions often provided valuable information sharing and insights.

The complexity of assessing three risk components in one session for all 36 hazards proved to be a very intensive and lengthy process that required the facilitators to limit discussion and debate on all of the hazards.

Health Care

The Health Care Assessment was held November 29, 2012. For purposes of this session, the health care system was defined as healthcare delivery systems and resource providers of health care, including: Hospitals, Emergency Medical Response Services, Long-Term Care Facilities, Clinics, and Provider Networks.

 Participating Agencies

This session included 16 health care sector representatives from the following agencies:

- Western Medical Center Santa Ana (Orange County)
- California Hospital Association
- Hy-Lond Home
- California Association of Health Facilities
- Hospital Association of Southern California
- Lestonnac Free Clinic (Orange County)
- Kaiser Permanente-Orange County
- Saddleback Memorial Medical Center (Orange County)
- Share Our Selves (Orange County)
- Pacific Care Nursing Center
- LAC DHS, EMS
- Long Beach Public Health
- Cedars Sinai Hospital
- Pacific Haven

Key Observations & Issues

- Many of the participants habitually crossed city/county jurisdictional lines in their work and appeared fairly confident in assessing the health care system impact at the SoCal MSA level.

- Participants possessed strong awareness of the potential impact of various hazards on their facilities as well as partner facilities. Some also appeared very knowledgeable about the emergency resources and capacity of various health care facilities.
Overall, the participants appeared to enjoy the process and sharing information with one another.

**Ranking**

<table>
<thead>
<tr>
<th>Health Care System Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Top 20 Hazards</strong></td>
</tr>
<tr>
<td>Pandemic Influenza</td>
</tr>
<tr>
<td>Ricin</td>
</tr>
<tr>
<td>Pneumonic Plague</td>
</tr>
<tr>
<td>Drought</td>
</tr>
<tr>
<td>Windstorm</td>
</tr>
<tr>
<td>Accidental Food Supply Contamination</td>
</tr>
<tr>
<td>Water Supply Disruption</td>
</tr>
<tr>
<td>Nerve Agent</td>
</tr>
<tr>
<td>Nuclear Facility Failure</td>
</tr>
<tr>
<td>Nuclear Explosion-10 Kiloton</td>
</tr>
<tr>
<td>Major Earthquake</td>
</tr>
<tr>
<td>Communicable Disease Outbreak</td>
</tr>
<tr>
<td>Blister Agent</td>
</tr>
<tr>
<td>Extreme Summer Weather</td>
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<tr>
<td>Radiological Dispersal Device</td>
</tr>
<tr>
<td>Communications Failure</td>
</tr>
<tr>
<td>Aerosolized Anthrax</td>
</tr>
<tr>
<td>Industrial Plant Explosion</td>
</tr>
<tr>
<td>Mass Casualty Hazmat Incident</td>
</tr>
<tr>
<td>Supply Shortage</td>
</tr>
</tbody>
</table>

**Lessons Learned**

- The clear and structured definition of health care system made this assessment run very smoothly. The scenario impact’s focus on mortality and morbidity was likely a contributing factor. Future assessments may benefit from presenting the scenario impact in terms that resonate with the participating sector.

**Mental Health**

The Mental Health System session was held on January 22, 2013. Participants were asked to assess and reach consensus on the impact of 36 hazards on the mental health care delivery system. The SoCal MSA Planning Collaborative conferred with several mental health experts when developing this session. As a result, the facilitator spent more time at the outset of the meeting providing additional background information on the public health hazards and asked the group the anticipated response activities of the mental health system.
For purposes of this assessment, the following agency types were considered the major components of the mental health care delivery system:

- Public agencies
- In-Patient Facilities
- Outpatient Facilities
- Hospitals
- Community-Based Providers (Individuals and Agencies)

**Participating Agencies**

The session included 17 representatives from the following agencies:

- Los Angeles County Department of Mental Health
- Long Beach Department of Health
- Long Beach Human Resources Employee Assistance Program
- Hospital Association of Southern California
- Peace Over Violence
- Pasadena Public Health Department
- California Disaster Mental Health Coordinator’s Group
- Orange County Department of Education Crisis Response
- UCI, Center for Disaster Medicine - Psychological Services
- American Red Cross
- LA DHS, Emergency Medical Services Agency

**Key Observations & Issues**

- There was a lengthy discussion at the start of the session about the need for a greater focus on and integration of mental health issues in public health emergency planning. Key discussion points covered:
  - The importance of considering the mental health perspective when determining the initial hazard severity ratings
  - The additional impacts the hazards might have on the mental health system, including but not limited to: increased need for clinicians in the field and potential impacts to staff and business continuity issues
  - The need to develop viable metrics for mental health system impact and capacity in emergency planning

- There was greater deviation in the scores among participants in this session, resulting in robust discussions regarding various hazards and the system

- Hazards that were rated with the greatest impact on the mental health system were often rated so because the hazard was assumed to have a strong impact on creating new mental distress rather than exacerbating distress among existing mental health consumers

- One participant noted that the distinction between man-made and natural hazards may have an impact on the mental health trauma an individual experiences following an incident

- Although four or five participants dominated discussions, other participants seemed to make fairly autonomous decisions following discussion and repolling
### Lessons Learned

- The early discussion of the mental health system and rating process took more time and was more complex than anticipated. However, allowing time for this discussion to unfold ultimately helped to frame the hazard rating process for many of the participants, making the overall assessment easier.

- Several comments focused on the need for better integration of mental health perspectives and data in emergency planning, with which the SoCal MSA Planning Collaborative members present concurred. While the timing and scope of this current assessment project precluded further exploration of these issues, there was agreement that this remains an important planning consideration.

### Responder Agencies

The SoCal MSA Responder Agency Assessment was held on February 7\(^{th}\), 2013. Several confirmed participants were not able to attend, due in large part to a regional incident requiring extensive response during the session. In particular, the Orange County responder community was not represented at this meeting.

This component of the risk assessment was intended to:
Identify and assess status of existing responder agency resources and capabilities
Identify areas for improved planning (gap analysis), and
Provide a foundation for on-going discussion and improvement of response plans through “Whole Community Planning”.

The responder agencies were provided a scale and rating criteria that was based on the preparedness level of a responder agency in the following areas:
- Understanding of agencies’ potential role in hazard response
- Availability of resource assets
- Existing Response Plans
- MOUs with partner agencies
- Trainings, Drills & Exercises

Participating Agencies

The session included 12 representatives from the following agencies:
- Los Angeles County Alliance
- LAC DHS
- LA Department of Water & Power
- LA City Emergency Management Department
- Pasadena Fire Department
- Pasadena Police Department
- LA County Office of Emergency Management
- American Red Cross
- LA City Fire Department

Key Observations & Issues

- Several participants questioned the value of the data being gathered at this session positing that the overrepresentation of certain agencies at the meeting could skew the results
- The participants were curious as to how this assessment and corresponding data would interact with their agencies’ existing hazard planning tools
- There were varying interpretations of the scale presented for assessing mitigation capacity.
  - One participant did not rate its response capabilities on any hazard higher than a (3) Moderate since his agency did not have a COOP plan in place
  - Another participant felt the hazard-specific resources outlined in the scale were too restrictive
- Discussion occurred around how best to assess and determine responder agency preparedness, with one participant arguing that the scale defines preparedness as having plans and systems in place and does not focus on an agency’s capacity to respond during an event
Ranking

<table>
<thead>
<tr>
<th>Responder Agency Capacity</th>
<th>Top 20 Hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moderate Earthquake</td>
<td></td>
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<tr>
<td>Major Earthquake</td>
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<tr>
<td>Train Accident – Chlorine Release</td>
<td></td>
</tr>
<tr>
<td>Wildfire</td>
<td></td>
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<tr>
<td>Extreme Summer Weather</td>
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<tr>
<td>Fire-Large Scale Urban</td>
<td></td>
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<tr>
<td>Landslide</td>
<td></td>
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<tr>
<td>Mass Casualty Hazmat Incident</td>
<td></td>
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<tr>
<td>Windstorm</td>
<td></td>
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<tr>
<td>Civil Disorder</td>
<td></td>
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<tr>
<td>Climate Change</td>
<td></td>
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<tr>
<td>Flood</td>
<td></td>
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<tr>
<td>Communications Failure</td>
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<tr>
<td>Communicable Disease Outbreak</td>
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<tr>
<td>Industrial Plant Explosion</td>
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<tr>
<td>Tsunami</td>
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<tr>
<td>Sewer Failure</td>
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<tr>
<td>Electrical Failure</td>
<td></td>
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<tr>
<td>Vectorborne Disease</td>
<td></td>
</tr>
<tr>
<td>Supply Shortage</td>
<td></td>
</tr>
</tbody>
</table>

Lessons Learned

- Variance of scores was not a factor at this session since each participant was assessing the hazards based on his or her agency’s unique capacity to respond to an event in the SoCal MSA. However, displaying the variance scores did serve to prompt discussion among participants as they shared their agency’s response capacity for a particular hazard.

- Introducing a public health focused assessment process to first responder agency representatives prompted a significant number of questions about the underlying assumptions of the project and results. This served to underscore the value of the need for continued coordination and integration of public health preparedness planning concepts into overall emergency planning.

Community Response Agencies

On February 21, 2013, 24 representatives from community agencies in the SoCal MSA participated in the Community Response Agency session. This risk component was designed to:

- Expand community-based perspective on public health-focused emergency planning
- Identify and assess status of existing community-based resources
Identify areas for improved planning (gap analysis)
Provide a foundation for ongoing discussion and improvement of response plans through “Whole Community Planning”

The community agencies were provided a scale and rating criteria to rate their agencies’ capacity to mitigate and assist in the response to the 36 identified hazards considering the following potential issues:
- Understanding of role and function during an event
- Training, drills, exercises
- Ability for agency to stay open and function during emergency response
- Availability of response resources
- COOP plans and availability of back-up systems
- MOU/MOAs with partner agencies, vendors or governmental agencies.

Participating Agencies

This session included 26 representatives from the following agencies:
- Medical Reserve Corp – Los Angeles
- Medical Reserve Corp – Long Beach
- Compton Fire Department
- Alpert Jewish Community Center
- Lifehouse Health Services
- CHAP Care Clinics
- Henry Mayo Newhall Memorial
- Disaster Resource Alliance
- American Red Cross, LA
- PHEV Network
- Community Clinic Association of LA County
- LA City Community Emergency Response Team (CERT) Battalion 9
- Evening of Community Neighborhood Watch and Community Safety Network
- Community Perinatal Network
- Emergency Network Los Angeles

Key Observations & Issues

- One participant had difficulty assessing her organization’s capacity in terms of “availability of response resources”, noting that the “state of readiness” of an agency is not static and often depends on the length of the response required
- Several participants indicated that their agencies were not ready to respond to many of the hazards or shared that they refer to an external agency for response
- Discussion around the biological hazards revealed a lower level of perceived capacity given the lack of available or known non-medical response tactics.
### Lessons Learned

- The participants present were not balanced as a group, which may have had an impact on the final assessment scores from this session. Noted challenges included:
  - There was significant overrepresentation of participants from one community agency
  - Several participants represented both community groups and formal response entities and at times they were struggling with how best to respond to the assessment. It was not always clear which “hat” participants were wearing when assessing response capacity.
  - Several participants were volunteers or in training and had limited knowledge of their agency’s capacity and resources

### SoCal MSA Health Hazard Priorities

#### Risk Scoring and Weighting

The mean score from each of the assessment sessions provides a Risk Component value that is used to calculate the final hazard-Specific Risk Score. Each Risk Score is a representation of the total health and medical risk of the identified hazard, which can be sorted and ranked by each participating jurisdiction and agency to more effectively prioritize future planning and prioritization activities.
As noted, the process of defining and assessing Risk is subjective. When comparing the various aspects—or Components—of risk, different variables present different levels (values or weights) of perceived risk.

The hHAP process utilizes a weighting scheme of weights (Impacts) and modifiers (Probability, Health Severity and Agency Resources) to ensure an analytic process that is representative and sensitive to the nuances of assessing and prioritizing the public health and medical impact of the various hazards. These weights and modifiers were applied to the MSA and jurisdictional specific weighting results reported herein.

A more detailed description of the risk scoring and weighting methodology can be found in the Health Hazard Assessment and Prioritization Manual, available at:

http://publichealth.lacounty.gov/eprp/hazardassessment.htm

Hazard Prioritization: Top 20 Results for MSA and Individual Jurisdictions

<table>
<thead>
<tr>
<th>SoCal MSA Prioritized Hazard Results</th>
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<tbody>
<tr>
<td>1  Major Earthquake</td>
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<td>2  Pneumonic Plague</td>
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<td>3  Nuclear Explosion – 10 Kiloton</td>
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<td>4  Pandemic Flu</td>
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<td>5  Aerosolized Anthrax</td>
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<td>6  Smallpox</td>
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<td>7  Emergent Disease</td>
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<td>8  Industrial Plant Explosion</td>
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<td>9  Ricin</td>
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<td>10 Blister Agent</td>
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<td>11 Communicable Disease Outbreak</td>
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<td>12 Radiological Dispersal Device</td>
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<td>13 Nerve Agent</td>
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<td>14 Accidental Food Supply Contamination</td>
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<td>15 Moderate Earthquake</td>
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<td>16 Climate Change</td>
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<td>17 Drought</td>
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<td>18 Water Supply Disruption</td>
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<td>19 Civil Disorder</td>
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<td>20 Fire - Largescale Urban</td>
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<tr>
<td>Los Angeles County Prioritized Hazard Results</td>
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<td>12  Communicable Disease</td>
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<td>13  Foodborne Outbreak</td>
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<td>14  Moderate Earthquake</td>
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<td>15  Climate Change</td>
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<td>16  Fire—Largescale Urban</td>
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<td>17  Train Accident—Chlorine Release</td>
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<td>18  Water Supply Disruption</td>
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<td>19  Drought</td>
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<td>20  Vectorborne Disease</td>
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<th>Pasadena Prioritized Hazard Results</th>
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Next Steps

SoCal MSA Planning Collaborative

The SoCal MSA Planning Collaborative continues to meet monthly and remains committed to maintaining and growing relationships across the jurisdictions. This assessment process is an important “first step” in an ongoing process of risk assessment and mitigation. The expectation is that the stakeholders participating in the assessment process will continue to be engaged and serve as a valuable resource for the public health agencies’ ongoing emergency planning efforts.

The Planning Collaborative has also developed a *Mitigation Planning & Coordination Framework* (See Appendix 6) that outlines key strategies and actions to coordinate planning and mitigation activities in response to unusual events or a declared emergency. This Framework will be integrated into each jurisdiction’s planning efforts.

Jurisdictional Planning Efforts

The jurisdictions plan to evaluate the prioritized results against the federal preparedness capabilities to match each hazard-specific risk with particular tasks, planning elements, and initiatives to achieve measurable preparedness and response metrics. The assessment data will also be sorted and ranked by each participating jurisdiction to inform future planning and preparedness efforts. Several jurisdictions are also planning on convening stakeholders within their jurisdiction to conduct jurisdiction-specific assessments that build on the SoCal MSA Risk Assessment data.

Whole Community Planning: Hazard Specific Planning v. All-Hazards Planning

Evaluation

The results of this assessment are ultimately worthwhile in so far as they inform and direct jurisdictional and regional based planning initiatives and efforts to develop plans to address, prepare for and mitigate the various health hazards that face our community. In Los Angeles County, DPH has developed a “Whole Community Planning,” a comprehensive planning framework—based on the established FEMA Planning Process—to systematically develop emergency readiness, response and recovery plans for the prioritized hazards.

This planning system uses the established PHEP and HPP Capabilities to identify and develop plans that incorporate both the foundational, “all-hazard” response features, as well as hazard specific interventions and courses of action necessary to mitigate the intended health threat. Based, in part off the valuable lessons learned of community engagement through the hazard assessment, this planning process also encompasses a significant community engagement and planning component. Taken in whole, this planning framework encompasses hazard specific, capability based and community oriented emergency plan development into a single process and approach.

Evaluation

The SoCal MSA Planning Collaborative is currently identifying a process and timeline for evaluating the impact of the hHAP assessment process on the SoCal MSA planning efforts.
Overall Lessons Learned

Public health agencies in Southern California have never before implemented an assessment of this scope, scale or complexity. The uniqueness of this project resulted in an adaptive, thought-provoking process that will reframe how public health emergency planning is achieved moving forward. The public health agencies within the SoCal MSA committed to making the process, tool and information as user-friendly as possible, and have approached this effort as a continuous learning and improvement process. As one Planning Collaborative member stated, it is “more insightful when things weren’t working well. Then we were able to adjust and modify.” As such, changes and modifications were made as the process unfolded, informed by the various sessions, analysis of results and participant feedback. The lessons learned as outlined below serve only to strengthen future health assessment and emergency preparedness planning efforts across the SoCal MSA and within the participating jurisdictions.

The Planning Process

- The SoCalMSA recognized the inherent challenges of developing and implementing a process that is driven in tandem by objective and subjective data. This was a well-designed process that allowed for continuous learning and process improvements. However, grant requirements, funding and timeline drove the process. As a result, there was less time to focus on the design of more challenging areas within the process, such as mental health and responder assessments.

- There was clear recognition by the SoCal MSA Planning Collaborative that there is a public health bias throughout each step of the process regardless of the sector that was assessing the hazards. This posed the most challenges at the Mental Health session, underscoring the need for greater collaboration across sectors in the planning of similar assessments and in response planning moving forward.

Hazards and Rating Scales

- The hazard scenarios provided at the assessment sessions were useful in educating and focusing participants on critical hazard information and potential impact. These scenarios worked particularly well for the Public Health and Health Care System sessions since the impacts focused primarily on hospitalizations and deaths. This very strength, however, proved a greater challenge for Mental Health System participants since their agencies’ definition of impact often included other critical factors. Future assessment efforts will need to include greater sector-specific impacts, in addition to the public health and health system impacts, to ensure the scenarios resonate with different audiences.

- The criteria and rating scales used at each session were carefully crafted for each assessment group. Nevertheless, there were some sessions where participants challenged the underlying assumptions of the scale construction and content. This was particularly true for the Mental Health and Responder (#1) sessions. Developing the scales in greater collaboration with representatives from the specific sectors would most likely result in a stronger assessment.
Despite the description of this process as “part art, part science”, there were some participants in the assessment sessions who challenged the underlying assumptions of the process and the validity of the tool.

In most instances, additional information or opinions shared by a participant during a discussion on a hazard served to positively inform other participants who did not have similar knowledge. In some sessions there were several highly knowledgeable experts whose voices naturally dominated. In some instances, the consensus that was achieved may have reflected a bias towards the strongest voices or opinions in the room. While this dynamic can never be completely avoided, greater balancing of the knowledge and experience of participants in a session might mitigate this challenge somewhat.

The number of hazards (36) to assess in each session may have resulted in limitations on dialogue as well as some voting fatigue. This may have impacted some of the responses.

Sessions & Stakeholder Representation

It often proved challenging to secure the right mix of participants at some of the sessions. This was often due to scheduling conflicts and the aggressive timeline of the project. As a result, several key subject matter experts were unable to attend or sent a representative resulting in a large variance of experience and subject matter knowledge within some of the sessions. Some participants shared that they did not feel they possessed sufficient expertise or knowledge to fully participate in the assessment.

The inclusion of a robust community engagement feature added significant value to the process and outcomes of this project; however, it also requires additional time and resources to engage and capture the varied community input and voices throughout the large and diverse SoCal MSA. The accelerated timeline of this project prevented a fully representative engagement process of numerous potential community groups. Future such assessments may benefit from open invitations for agencies to attend.

The assessment sessions provided a unique opportunity to convene diverse sets of cross-jurisdictional subject matter experts around a table to discuss hazard prioritization and response, as well as foster new connections among participants across jurisdictions and subject area to support future planning and response.

The jurisdictions within the SoCal MSA vary widely in size and structure, which made it a challenge for the smaller jurisdictions to have equal representation throughout the assessment process.

At a few of the sessions, some stakeholder groups were overrepresented, while other sectors were underrepresented (for example, only one health care clinic was represented at the Health Care System session). This was most evident at the Responder Agency Session, which did not include any Orange County representation. Confirming session dates and securing invitees for the various sessions well in advance would help to ensure sufficient representation. Holding additional sessions, as was done with the Responder Agency assessment, is another way to accommodate key invitees.
Planning Collaborative

- The Planning Collaborative successfully allowed for a diversity of opinions, approaches and perspectives to shape the assessment process. An important outgrowth of this Committee has been the forging of strong, informal collaborations and linkages among the participating jurisdictional agencies.

Acknowledgements

The Health Hazard Assessment and Prioritization Project was designed and implemented by the SoCal MSA Planning Collaborative. The following Collaborative members are acknowledged for their commitment and leadership:

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Erik Lowman, OCHCA
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Appendices

1. SoCal MSA Workplan
2. Capability Matrix
3. SoCal MSA Health Hazard Assessment & Prioritization Tool Manual, which includes:
   a. Scales
   b. Hazards Scenarios
4. hHAP Tool
5. SoCal MSA Planning and Mitigation Framework