The L’Aquila Earthquake on April 6th 2009
Social, Economic and Health Impacts

Social and economic impacts survey: Profile of respondents
Males 48%; females 52%
Mean age: 49 years (SD 16.8); 18% in age group 18-30; 35% in 31-50; 34% in 51-70; 13% in >70
Nationality: 98% Italians; 2% foreigners (Macedonian, Belarus, Romanian, American)
Education: Elementary school 9%; Junior high school 24%; Senior high school 45%; University 22%
Occupation: 65% professionals; 27% retired; 8% unemployed
Religion: 83% Catholics; 11% non believers; 1% Muslims; 1% Buddhist; 1% Eastern Orthodoxes
Respondents role in the family: 35% parents; 22% sons; 20% households; 12% wives or husbands
Households composition: 4-persons 30%, 3-persons 26%, 2-persons 19%, 5-persons 17%, 1-person 5%, 6-person 3%

Health impacts survey: Total data research features

<table>
<thead>
<tr>
<th>DATA SOURCE</th>
<th>SANITARY STRUCTURE</th>
<th>REFERENCE PERIOD</th>
<th>SANITARY SERVICE</th>
<th>TOTAL PATIENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>TERAMO REGIONAL HEADQUARTER OF THE NATIONAL EMERGENCY PHONE NUMBER (118)</td>
<td>ADVANCED MEDICAL POST II LEVEL</td>
<td>FROM APRIL 6 2009 TO 12 APRIL 2009</td>
<td>FIRST AID</td>
<td>689</td>
</tr>
<tr>
<td>ARES (REGIONAL ASSOCIATION SANITARY EMERGENCIES)</td>
<td>MARCHE REGION FIELD HOSPITAL</td>
<td>FROM APRIL 6 2009 TO 6 JUNE 2009</td>
<td>FIRST AID</td>
<td>5998</td>
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<tr>
<td>HEALTH DEPARTMENT S. SALVATORE HOSPITAL OF L’AQUILA</td>
<td>SAN. SALVATORE HOSPITAL</td>
<td>FROM APRIL 6 2008 TO 6 JUNE 2008</td>
<td>URGENT HOSPITALIZATION</td>
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<tr>
<td></td>
<td></td>
<td>FROM APRIL 6 2009 TO 6 JUNE 2009</td>
<td>URGENT HOSPITALIZATION</td>
<td>1689</td>
</tr>
<tr>
<td></td>
<td></td>
<td>FROM APRIL 6 2010 TO 6 JUNE 2010</td>
<td>URGENT HOSPITALIZATION</td>
<td>7945</td>
</tr>
</tbody>
</table>

Health data were processed to describe two different aspects:
(A) The health scenario in the earthquake aftermath; (B) The healthcare demand before, during and after the earthquake: FH data were compared with those of the S. Salvatore H in order to check how the earthquake has changed the population healthcare demand. This comparison was possible because the Marche Region's FH carried out both emergency treatment (comparable to ordinary first aid) and hospitalisations (comparable to hospitalisation for urgent admissions). With regard to the diagnosis code, each data source had its own terminology, related both to the different entities and timing of the treatments performed. To make pathology data comparable, the ARES common encoding protocol was used. This was developed by the ARES healthcare volunteers in all national and international emergency missions.
Summary Statistics

Italy

L’Aquila, Abruzzo

6 April 2009 Earthquake

Key Findings: Social Impacts

Geographical inertia
54% of the respondents were willing to transfer to a safer place, and 34% were not. Among those who had experience of deaths or permanent injuries among relatives (42% out of the total), 46% were willing to transfer to a safer place. Among those who had not had deaths or injuries (50% out of the total), only 31% were willing to move from L’Aquila.

The development of a new community
Respondents are divided into those who said that the new housing complexes (C.A.S.E. and M.A.P.) did not develop into a new cohesive community (38%), and those who said the opposite (28%); 34% were uncertain. The largest part of the respondents (71%) claimed that the integrity of the old community did not survive the displacement, while 10% claimed the opposite. The majority maintained that there were no community meeting places inside the new complexes (73%), 10% claimed the opposite, and 17% were uncertain. On the question about their new neighbourhood, 70% of the respondents considered it a good place to live. The age groups most integrated with the neighbourhood were 31-50 and 51-70. The youngest and the oldest age groups (18-30 and >70) were less integrated.

I think my neighbourhood is a good place for me to live

Willingness to move to a safer place

No deaths or injured friends/family

Deaths or injured friends/family

0%
10%
20%
30%
40%
50%
60%
70%
80%
Yes
No

I think my neighbourhood is a good place for me to live

Strongly disagree or disagree

Neither agree nor disagree

Strongly agree or agree

18-30

31-50

51-70

>70
Summary Statistics

Italy

L’Aquila, Abruzzo

6 April 2009 Earthquake

Key Findings: Economic Impacts

The interviewed sample claimed that before the disaster 71% were employed; 26% retired; 3% unemployed. After the disaster:

- 65% of the respondents remained employed; 27% were retired; and 8% were unemployed.

Overall, 9% of the respondents had a different occupation after the earthquake. 45% of those who changed their occupation became unemployed. In general, there is a balance between the respondents who reported a decrease in their income (46%), and those whose income has remained unchanged (45%). The age groups most affected by the income decrease were 51-70, and >70.

The unemployed people were more severely affected by the income decrease more than employed and retired people. Only two people out of 250 interviewed had a disaster-related insurance policy before the earthquake.
Respondents evaluation about the C.A.S.E. and M.A.P. project

Respondents were asked to evaluate their new C.A.S.E. and M.A.P. housing, and the criteria by which the units were assigned. A Likert scale with five options (1. Strongly disagree, 2. Disagree, 3. Neither agree nor disagree, 4. Agree, 5. Strongly agree) was used to gauge perception. Overall, the respondents claimed that the new houses have a familiar feeling (mean 3.44); the comfort level (e.g., thermo-acoustic insulation) inside the houses is good (mean 3.67); the houses of C.A.S.E. and M.A.P. Projects are more resistant (mean 3.95) compared to the old ones. However, a majority (68%) of the respondents wish to leave these C.A.S.E. and M.A.P. units as soon as possible. Respondents were uncertain about the state of care of the green areas surrounding the building complexes (mean 2.96).

The housing assignment criteria were perceived as unfair (mean 2.5), and not taking into account the individual and family needs (mean 2.44). However, respondents considered quite timely the assignment procedures (mean 3.07), and the paperwork on earthquake aid was judged somewhat accessible (mean 3.07) and comprehensible (mean 3.15).
Key Findings: Health Impacts

(A) THE HEALTH SCENARIO AFTER THE EARTHQUAKE

The first week after the earthquake

Data Profile

<table>
<thead>
<tr>
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<th>FIRST AID</th>
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<tbody>
<tr>
<td>SANITARY STRUCTURE</td>
<td>REGION MARCHE FH</td>
</tr>
<tr>
<td>REFERENCE PERIOD</td>
<td>TERAMO REGIONAL HEADQUARTER OF THE NATIONAL EMERGENCY PHONE NUMBER AMP II LEVEL</td>
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</tbody>
</table>

The plot shows that during the first week 14% of patients (191) reported traumas and 15.7% (214) needed medications. The data indicate that 12.9% (176) of the patients reported cardiovascular problems. This pathology could be unrelated to the earthquake, but it is nevertheless one of the first pathologies consequent upon stress.

The two months after the earthquake

Data Profile

<table>
<thead>
<tr>
<th>SANITARY SERVICE</th>
<th>FIRST AID AND URGENT HOSPITALIZATION</th>
<th>DIAGNOSIS RELATED GROUP – DRG</th>
</tr>
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<tbody>
<tr>
<td>SANITARY STRUCTURE</td>
<td>REGION MARCHE FH</td>
<td>S. SALVATORE H</td>
</tr>
<tr>
<td>REFERENCE PERIOD</td>
<td>FROM APRIL 6 2009 TO MAY 31 2009 DIVIDED IN 8 WEEKS</td>
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</table>

The total 2009 FH health scenario reported significant pathologies: trauma, cardiovascular ailments, wounds needing medication and gastroenteritis. The number of trauma increased in two different phases: in the first week (probably due to the earthquake) and in the fifth week (probably due to the difficult living conditions; many survivors were moved to tent camps).

About the FH urgent hospitalizations, trauma increased in the first week due to the earthquake, then decreased between the second and the fourth week because many patients were transferred in other hospitals in Abruzzo Region. Cardiovascular pathologies increased in the first weeks, confirming the relationship with post-disaster stress.
Key Findings: Health Impacts

Intra-regional passive mobility data of L’Aquila residents during the 2009 year: Diagnosis Related Group (DRG)

DRG Data are uncompleted because of the lack of classification of pathologies. However, data confirm a significant migration of patients. This migration is also a consequence of the earthquake because of the Civil Protection Department’s and Abruzzo Region’s decision to transfer as many patients as possible to Abruzzo Region hospitals (evacuation during the first hours after the earthquake and urgent hospitalizations).

(B) HEALTHCARE DEMAND ANALYSIS BEFORE, DURING AND AFTER THE EARTHQUAKE.

Data Profile

Plots show that years 2008 and 2010 (S. Salvatore activity) are similar, while the year 2009 (Region Marche FH activity) has different values, confirming that the earthquake has changed the healthcare demand of the population.

First aid analysis: cardiovascular, surgical pathologies, and medications increased in 2009, probably due to the earthquake. Gastrological pathologies decreased in 2009 because in the emergency scenario they had a lower priority for treatment.

Urgent hospitalization analysis: cardiovascular pathologies decreased in the 2009 cause the FH treated mostly acute pathologies. In 2009 surgical pathologies increased, probably due to the earthquake. Trauma pathologies are similar to other years, because many patients were transferred, as the 2009 DRG plot shows.