Getting engaged: Facebook and the fire service

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- **Social Media Director**
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Social media during crises

- Collaboration and coordination tools
  - Listening to & managing stakeholder needs & expectations
  - Increasing situational awareness
  - Organizing & empowering citizens as force multipliers
Social media during crises

- 2010 Haiti earthquake. (Keim and Noji, 2011)
- 2011 Japan earthquake & tsunami. (Hjorth and Kim, 2011)
- 2011 Joplin, MO tornado outbreak
- 2011 Virginia earthquake. (Houston et al., 2014)
- 2011 Queensland floods. (McLean and Power, 2013)
- 2012 Hurricane Sandy. (Hughes et al., 2014)
Why Facebook?

- **Largest social media application in world.**
  - 2+ billion monthly users.
  - 1.32+ billion daily users. (Constine, 2017)

- **More than 66% users visit daily.**
  (Constine, 2017)
  - Nearly 40% visit multiple times a day.
    (Bonson, Royo, and Ratkai, 2014)

- **67% American adults use Facebook.**
  (Gottfried and Shearer, 2016)
Challenges for Fire Service

• Facebook itself.
  – Content showing algorithms - secretive and changing. (van Dijck and Powell, 2013)
  – Not all posts will be seen by all followers. (Bucher, 2012; Taylor, 2011)
  – Content needs to generate user interactivity to be seen. (De Vries, Gensler, and Leeftan, 2012; Parsons, 2013)
    • Likes.
    • Comments.
    • Shares.
Challenges for Fire Service

• Overcoming command and control tradition. (Dufty, 2013; Boivard, 2007)

• Facebook a “communication channel.” (Murphy, 2013)

• Engaging stakeholders on a day-to-day basis. (Bortree and Seltzer, 2009; Waters et al., 2009; Waters et al., 2011; Bonson, Royo, and Ratkai, 2015)

• “Social media fatigue.” (Brightt, 2015)
Challenges for Fire Service

- Differences in local staffing/resources & populations. (Wardell and Su, 2011; Hughes et al., 2014)

- Changing scope – fires down but responses up. (Evarts, 2011)

- Guidance remains limited for day to day use.
  (Sheil, Violanti, and Slusarski, 2011)
  - Watching peers.
  - Trial by error. (Mergel, 2013; Latonero and Shklovski, 2010)
Sampling

- 50 fire departments from around USA.
  - 35 states represented.
  - Pops. Served 8 million+ to fewer than 500.

- Each post logged & coded for 1 month.
  - December 2014.
  - 1142 total posts.
Coding

• *Likes, comments, & shares* for each post logged.

• **Posts sorted by content type:**
  • *Disclosure*
    • History, fire department life, activity recaps
  • *Information*
    • General information, public service announcements, situational awareness
  • *Involvement*
    • Physical involvement, virtual involvement, general engagement
Coding

• Additional independent variables:
  • *Shares from other Facebook pages.*
  • *Links to other web pages.*
  • *Day and Time of original post.*
  • Includes *videos or images.*
Coding

- 20% of posts randomly selected for inter-coder reliability.
  - 3 additional reviewers trained.
  - 93.54% average pairwise agreement.
  - Krippendorff Alpha (nominal) score .899.
Analytical Methods

• Analysis of variance (ANOVA)
  • Three or more independent variable groups.
  • Levene’s Test.
  • Welch & Brown-Forsythe robust tests of equality of means.
    • Tests equal population means when we don’t have equal population variances.

• T-Test
  • Two independent variable groups.
  • Levene’s Test.
• **RQ1:** Is there a difference among Facebook users’ online interaction with fire departments’ disclosure, information, and involvement posts?
Research Questions

• **RQ2.1**: Is there a difference among Facebook users’ online interaction with fire departments’ disclosure post subcategories (*history, fire department life, activity recaps*)?

• **RQ2.2**: Is there a difference among Facebook users’ online interaction with fire departments’ information post subcategories (*general information, public service announcements, situational awareness*)?

• **RQ2.3**: Is there a difference among Facebook users’ online interaction with fire departments’ involvement post subcategories (*physical involvement, virtual involvement, general engagement*)?
Research Questions

• **RQ3.1:** Is there a difference among Facebook users’ online interaction with fire departments’ posts based on whether they include *shares from other Facebook pages*?

• **RQ3.2:** Is there a difference among Facebook users’ online interaction with fire departments’ posts based on whether they include *links to other web pages*?
Research Questions

• **RQ4.1:** Is there a difference among Facebook users’ online interaction with fire departments’ posts based on the *day* they are made?

• **RQ4.2:** Is there a difference among Facebook users’ online interaction with fire departments’ posts based on the *time* they are made?
Research Questions

• **RQ5.1:** Is there a difference among Facebook users’ online interaction with fire departments’ posts that include videos?

• **RQ5.2:** Is there a difference among Facebook users’ online interaction with fire departments’ posts that contain images?
Results

- 1142 total posts examined.
- 97.37% received at least one like, comment, or share.
  - 97.19% with at least one like.
  - 48.51% with at least one share.
  - 46.32% with at least one comment.
## Results

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<th>VARIABLE</th>
<th>LIKES</th>
<th>COMMENTS</th>
<th>SHARES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main Content Categories</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Disclosure</td>
<td>252.67</td>
<td>6.7</td>
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<tr>
<td>• Information</td>
<td>21.84</td>
<td>.69</td>
<td>-</td>
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<tr>
<td>• Involvement</td>
<td>99.13</td>
<td>5.21</td>
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<tr>
<td><strong>Information subcategories</strong></td>
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</tr>
<tr>
<td>• General information</td>
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<tr>
<td>• Public Service Announcements</td>
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<td>• Situational Awareness</td>
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</table>
Results

- RQ1: Is there a difference among Facebook users’ online interaction with fire departments’ disclosure, information, and involvement posts?

![Bar graph showing likes for different categories.](image)

**Figure 4-1: Mean likes by main content categories.**
Results

• RQ1: Is there a difference among Facebook users’ online interaction with fire departments’ disclosure, information, and involvement posts?

Figure 4-2: Mean comments by main content categories.
Results

• RQ2.2: Is there a difference among Facebook users’ online interaction with fire departments’ information post sub-categories (general information, public service announcements, situational awareness)?

Figure 4-3: Mean likes by information sub-categories.
Results

• RQ3.1: Is there a difference among Facebook users’ online interaction with fire departments’ posts based on whether they include shares from other Facebook pages?

Figure 4-4: Mean likes for content containing shares from other Facebook pages.
Results

• RQ3.1: Is there a difference among Facebook users’ online interaction with fire departments’ posts based on whether they include *shares from other Facebook pages*?
Results

- RQ4.2: Is there a difference among Facebook users’ online interaction with fire departments’ posts based on the time they are made?

![Bar chart showing mean shares by time of post.]

**Figure 4-6: Mean shares by time of post.**
Results

• RQ5.2: Is there a difference among Facebook users’ online interaction with fire departments’ posts that contain images?

Figure 4-7: Mean likes by contains image.
Results

• RQ5.2: Is there a difference among Facebook users’ online interaction with fire departments’ posts that contain images?

Figure 4-8: Mean comments by contains image.
Discussion & Conclusion

• Disclosure content most engaged.

• Information least engaged.

• Posts shared from other Facebook pages or having links to other web pages engaged less than posts not having these.

• Posts made late at night, 10pm-2am, significant shares.

• Images led to more likes and comments.
Discussion & Conclusion

• FB used for quick, frequent interactions.

• Fire service a local resource – content needs to connect locally.

• Engagement requires interesting & entertaining content - lazy content gets lazy results.

• Images lead to engagement.
Discussion & Conclusion

- Limitations / Future Studies
  - Sample size.
  - Period of time studied.
  - Differences in sizes of cities studied.
  - Facebook constantly changing internal mechanisms.
  - Look at growing use of video.
Discussion & Conclusion

• Applications
  • Better understanding how FDs use Facebook and what content engages followers.
  • Applying these concepts to other social media tools.
  • Applying these concepts to other public outreach efforts.
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