

# Risk Communication on Social Media to Spanish-Speaking Populations

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## Background and Goals

- Climate change will increase the severity and frequency of life threatening weather related events in coming years.
- High levels of diversity and growing minority populations complicate efforts to communicate high risk situations successfully.
- Effective risk communication to minority groups is crucial in the development of safe and resilient communities.
- National Weather Service (NWS) Twitter feeds have accessible and representative data on current communication methods.
- The purpose of this study was to determine if NWS Weather Forecasting Offices (WFOs) in areas with high Hispanic populations are meeting the risk communication needs the Spanish-speaking populations that they serve.

## Research Methods

- Gathered Twitter data from 10 local NWS offices. A total of 3200 historic tweets can be obtained from any public feed upon request.
- Selected only WFOs which met a minimum criteria of 25 percent Hispanic population and had accessible data reaching back to June, July, and August of 2016.
- Filtered the tweets to show only those containing the English and Spanish words "heat" ("calor") and "warning" ("aviso").
- Analyzed 1,200 individual tweets and recorded the presence of variables including which language was used, which specific warnings types were issued by the WFO, and any heat illnesses that were mentioned.
- A second person analyzed 10 percent of the tweets to insure reliability.
- Many NWS tweets suggest that readers take specific actions, such as "drink lots of water" or "never leave a child unattended in the car".

## Findings

- Some offices automate certain warning types. Flash flood warnings and severe thunderstorm warnings were the main type frequently automated.
- Automated messages were successfully communicated in both Spanish and English.
- 5 of 10 WFOs communicated hazardous flood warnings effectively in Spanish.
- 4 of 10 WFOs effectively communicated extreme storm warnings (wind/thunderstorm/tornado warnings) in Spanish.
- 0 of 10 WFOs communicated extreme heat warnings, marine safety warnings, and fire warnings in Spanish.
- Automation of tweets largely determined the quantity of Spanish language Tweets.

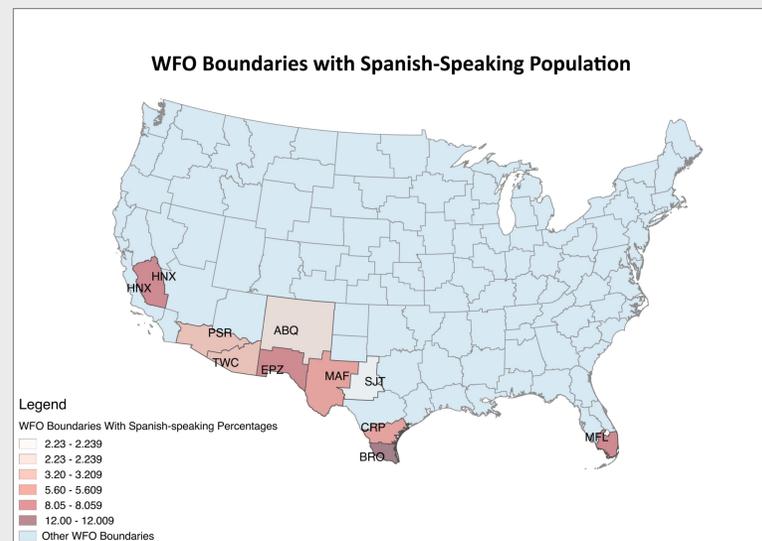


Figure A: Map of WFO boundaries with the sampled boundaries shaded by the Spanish-speaking percentage.



Figure B: Very few tweets about heat were written in Spanish.



Figure C: Flood warnings were tweeted frequently in Spanish and English.



Figure D: Shows an automated flood warning tweet in Spanish.



Figure E: This format is typical for tweets related to heat.



Figure F: This tweet about heat illnesses is one of few that is consistently tweeted in both Spanish and English.

WFO	Followers	Population	Hispanic %	Spanish only %	Spanish Tweets %
Albuquerque (ABQ)	11,003	1,610,880	41.20%	3.20%	32.12%
Brownsville (BRO)	7,599	1,349,147	81.69%	18.24%	12.82%
Corpus Cristi (CRP)	12,435	969,693	62.45%	8.05%	13.94%
El Paso (EPZ)	8,232	1,183,872	68.14%	12.00%	26.11%
Hanford (HNX)	12,947	2,889,416	47.70%	9.81%	1.04%
Miami (MFL)	25,222	6,329,627	39.12%	10.47%	8.82%
Midland (MAF)	5,992	626,144	44.88%	6.32%	0.00%
Phoenix (PSR)	19,742	6,488,411	34.08%	5.60%	0.88%
San Angelo (SJT)	15,348	415,587	26.17%	2.23%	0.00%
Tucson (TWC)	9,913	1,416,573	33.08%	3.62%	7.94%

Figure G: Table listing each WFO, followers on Twitter, Hispanic demographic within the boundaries, and the percentage of tweets that were communicated in Spanish.

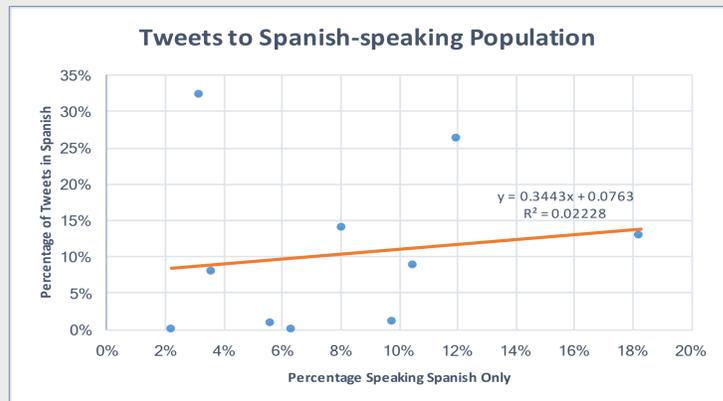


Figure H: Shows that there is very little correlation between Spanish-speaking populations and the number of tweets communicated in Spanish.

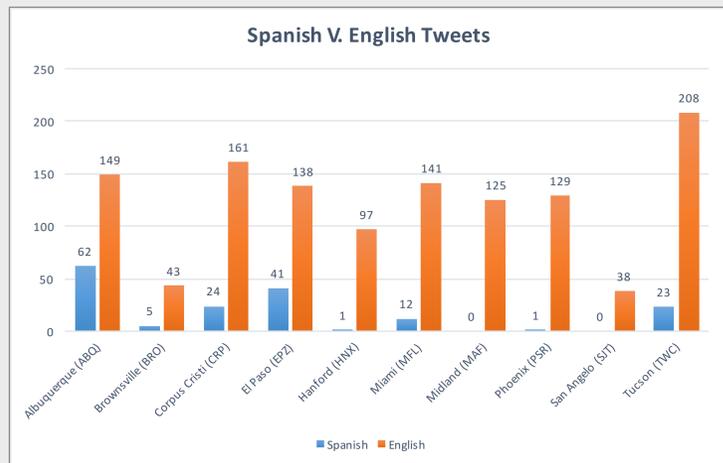


Figure I: ABQ and EPZ had the most tweets in Spanish. BRO and SJT had relatively inactive twitter feeds compared to the overall sample.



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