Weather Ready Reminders of the 1967 Outbreak

Applying Yesterday’s Lessons to Today’s Vulnerability

April 21, 1967

Feb 28, 2017

Matt Friedlein & Mike Bardou
National Weather Service – Chicago/Romeoville, IL
1967 Impacts: Vulnerable Groups

- 58 killed
- 1000+ injured
- High school dismissal (Belvidere)
- Seth Plaine School destroyed (Lake Zurich)
- Heavy school damage (Oak Lawn)
- Busses tossed (Belvidere & Oak Lawn)
- Tri-State Tollway crossed
- Suburbia struck (Oak Lawn)
- Drive-in theater hit (Chicago Ridge)
- 25-40 cars thrown at traffic jammed intersection (Oak Lawn)
- Dan Ryan crossed with semi flipped
Rural
Exurban
Suburban
Urban

2010

Lane Use

- Rural
- Exurban
- Suburban
- Urban

Courtesy of Walker Ashley, Ph.D. and Stephen Strader, Ph.D.
Expanding Bull’s-Eye Effect

Walker Ashley, Ph.D. & Stephen Strader, Ph.D.

- Their research stresses that “targets”—i.e., humans and their possessions—of hazards are enlarging as populations grow and spread

The 1967 Tornado Paths if Today

Housing Units Impacted by the 21 April 1967 Violent Tornadoes

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<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Belvedere</td>
<td>686</td>
<td>1,073</td>
<td>1,224</td>
<td>1,703</td>
<td>2,268</td>
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<tr>
<td>Lake Zurich</td>
<td>50</td>
<td>71</td>
<td>116</td>
<td>167</td>
<td>252</td>
</tr>
<tr>
<td>Oak Lawn</td>
<td>3,955</td>
<td>4,318</td>
<td>4,419</td>
<td>4,515</td>
<td>4,580</td>
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<table>
<thead>
<tr>
<th>1970-2010 Housing Units Change</th>
<th>1970-2010 % change</th>
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<tr>
<td>1,582</td>
<td>230%</td>
</tr>
<tr>
<td>202</td>
<td>404%</td>
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<tr>
<td>625</td>
<td>16%</td>
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4,691 + 2,409 = 7,100

151% increase

Oak Lawn Tornado Then and Now

Drive-in theatre now a shopping center
Busy intersection now one of many
Numerous dense residential areas

Link to GIF
Densely populated areas are every bit as susceptible to tornado strikes and recent years have shown this.

- Brooklyn, NY (2007)
- Atlanta, GA (2008)
- St. Louis, MO (2011)
- Raleigh, NC (2011)
- Tuscaloosa, AL (2011)
- Joplin, MO (2011)
- Springfield, MA (2011)
- Moore, OK (1999 & 2013)
- New Orleans, LA (2017)
- Moore, OK (2013)
- St. Louis, MO (2011)
- Tuscaloosa, AL (2011)
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National Weather Service Chicago: weather.gov/chicago/severeprepare
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Schools & Activities
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Transportation & Motorists
21 April 1967 Quotes

• “Most of those killed were people who were not in a position to hear the warnings because they were away from home.”

• “Actually, the tornado could hardly have hit at a worse time of the day or week to catch the greatest number of people out in the open.”
Tornadoes by Time of Day

56% 3-8 pm

National Weather Service - Chicago, IL
weather.gov/chicago
February 28, 2017 Northern & Central Illinois Tornado Timeline

- Naplate/Ottawa: EF-3 at 4:30 pm
- Washburn/Rutland: EF-3 at 5:00 pm

Multiple reports of same phenomenon (i.e. same tornado) occurred in circled areas.
Over the Past Half Century...

Tornado Prediction and Communications Evolution

Vulnerability

- Exposure to hazards (extreme weather)
- Misunderstanding of the message
- Not comprehending the threat
- “It cannot happen to me”
- Large groups requiring earlier decisions
- Proper & timely enacting of the safety plan
Plan, Practice, Monitor, Act!

Severe Weather Preparedness

PPMA

- Plan
  - Home, work, school, outdoor activities
  - Identify safe areas
  - Have a disaster kit
  - Know how to stay weather aware
- Practice! Practice! Practice!
- Monitor
  - Weather Watcher
  - Multiple ways to receive warnings
- Act
  - When severe weather threatens
  - Activate your plan!

MAKE SURE YOU KNOW
Severe Weather Safety

- How to Get in Touch
- Where to Shelter
- How to Reach Each Other (communication)
- Meet-up spot if You Get Separated
- Knowing Important Sources of Weather Information
- NWS Chicago Weather Watcher Page
- Watches and Warnings
- Have Multiple Ways to Get Weather Information
- Ensure Wireless Emergency Alerts are Enabled on Smartphone
- “Get In, Get Down, Cover Up”

SEVERE WEATHER SAFETY PLAN

1. Pick A Spot
2. How To Get in Touch
3. Choose a “Meet Up Spot”

HAVE MULTIPLE WAYS TO GET WEATHER INFO

- Battery powered radio
- Internet
- Internet
- Phone
- Television
- NOAA Weather Radio
- Get into a sturdy building and put as many walls between you and the outside as possible.

WHEN A TORNADO WARNING is Issued

“Get In, Get Down, Cover Up”

- Get as low in the building as possible – the basement or the lowest floor.
- Flying and falling debris are a storm’s number one killer. Use pillows, blankets, helmets, etc. to cover up and protect yourself.

weather.gov/chicago/severeprepare
Building a Weather-Ready Nation

- Weather awareness is key!
- Ask yourself these questions:
  - Do you have a preparedness plan for your home, workplace or school?
  - Do you have means to monitor the weather?
  - Do you have multiple ways to receive warnings?
  - What actions would you take if hazardous weather impacts you?
PPMA – a step further

• **Goal is to not put yourself in a vulnerable situation**
  – What will you be doing during the time of greatest risk?
  – How will you monitor weather information?
  – How will you receive warnings?
  – Can you adjust your plans or your route?

• [weather.gov/chicago/severe_prepare](http://weather.gov/chicago/severe_prepare)
February 28, 2017

- “Out of season” severe weather event
- After school activities?
- Afternoon commute?
- What were you doing that afternoon?

Northeast of Washburn, IL: February 28, 2017
Photo courtesy of Cameron Nixon
Weather Watcher

- **Designate one!**
  - Familiar with weather information/sources
  - Authority to enact severe weather plan
  - Access to internet
  - NOAA Weather Radio
  - Mobile apps
  - Lightning detection?
  - [weather.gov/chicago/wxWatcher](http://weather.gov/chicago/wxWatcher)
Schools

• **Unique Challenges**
  – Multiple facilities
  – Outdoor facilities
  – Before and after school activities
  – Transportation
Schools

• Have sheltering/evacuation plans
  – for all facilities
  – after school activities
• Transportation plans
• Weather Watcher
• Drills
• School Preparedness Guide
  • weather.gov/chicago/severeprepare
Schools – Activities

- Calculate time needed to evacuate/shelter
- Lightning risk with all storms
- Designate a Weather Watcher
Transportation Planning

- Identify shelters along routes
- Weather Watcher mode
- Identify timing of greatest threat
- Communication with school or dispatch
- Consider altering your schedule
Transportation Action!

• Activate your plan!
• Consider not releasing students
  – lightning
  – warnings
• Seek shelter
Transportation Action! – Last Resort

• Remain calm and assess the situation!

• Determine the tornado's direction of movement. Can you drive away from it?

• Too much traffic? Seek shelter in a nearby building.

• Lie flat in a nearby ditch or depression. Get as low as possible -- that is where the wind speed is the lowest!
HIGHLAND OVERPASSES ARE **NOT** SAFE SHELTER!

Why you should **never** take shelter under a highway overpass:

- You’re exposed to higher wind speeds with no protection
- Wind and flying debris become channeled underneath
- Your parked car could block traffic and put others at risk

National Weather Service – Chicago, IL
weather.gov/Chicago

Created by:
NWS Kansas City, MO
Other Issues

- Blocks traffic
- Prevents Emergency Personnel from reaching affected areas
- Potential major traffic disaster in situations of low visibility
Where We’re At

- Vulnerability
- Awareness
- Science
- Communication
- Preparedness
- #BeAForce
Weather Ready Reminders of the 1967 Outbreak

Thank you!

Matt Friedlein & Mike Bardou
National Weather Service – Chicago/Romeoville, IL

Hazard Exposure Information

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