



# Utah Schools Pilot RVS Study

Utah Seismic Safety Commission  
Structural Engineers Association of Utah

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BHW Engineers, L.L.C.

# Topics

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- ② UT Schools RVS Legislation
- ③ FEMA Pilot Study proposal
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  - Funding
- ④ UT Schools RVS Committee
- ⑤ UT RVS Pilot Study
  - FEMA 154 basis
  - ROVER implementation
- ⑥ Utah Students at Risk Report
- ⑦ Lessons Learned (or not)



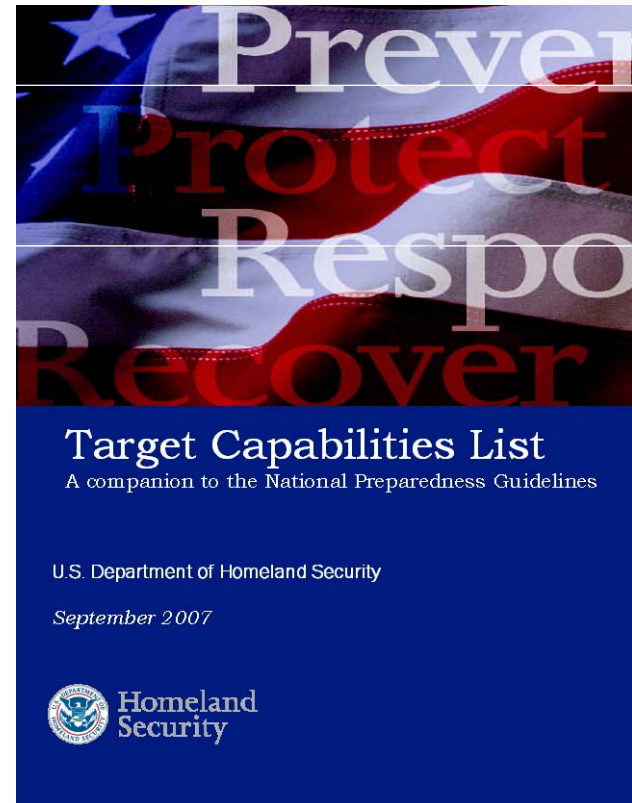
# ① Overview

## Why Do a School Building Survey?

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According to FEMA:

- “Policy makers need regular reports on the status capabilities for which they have responsibility to help them make better resource and investment decisions and to establish priorities”
- Emergency Managers and Planners require assessment information to:
  - Help them address deficiencies
  - Identify alternative sources of capabilities (e.g., mutual aid or contracts with private sector)
  - Identify which capabilities should be tested through exercise



# ② Utah Schools RVS Legislation

Past Legislative Efforts by Rep. Larry Wiley:

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- 2007 HB 431 – open bill file
- 2008 HB 162 – first request \$500k appropriations
- 2008 HB 162 – House Government Operations amended added immunity, pass 6-1-5, stopped on floor
- 2009 HB 330 – House Education 6-4-5,
- 2010 HB 072 – House Education substitute recommendation to return to rules and study during interim.
- 2010 HB 072 – placed on Master Study Resolution – never studied in interim committee



# ② Utah Schools RVS Legislation

2011 Legislative bills by Rep. Larry Wiley:

Two bills - HB 367 and HB 423

- HB 367 Utah Schools Seismic Hazards Inventory
  - Enacts the School Seismic Safety Act
    - Requires schools to perform RVS
    - Creates Public Schools Seismic Safety committee
      - 4 School District members
      - 3 Structural Engineers
    - Directs State Board to adopt certain rules
    - Provides immunity for suit relating to evaluation
    - repeals School Seismic Safety Act 2021
    - Makes technical changes
    - Appropriates \$500,000 for RVS and further study

LEGISLATIVE GENERAL COUNSEL  
Approved for Filing: A.O. Staffings, LLC  
05-11-11 4:05 PM

H.B. 367

1 UTAH SCHOOLS SEISMIC HAZARD INVENTORY  
2 2011 GENERAL SESSION  
3 STATE OF UTAH  
4 Chief Sponsor: Larry B. Wiley  
5 Senate Sponsor: \_\_\_\_\_  
6

7 LONG TITLE  
8 General Description:  
9 This bill establishes requirements relating to public school seismic safety.


10 Highlighted Provisions:  
11 This bill:  
12 • enacts the School Seismic Safety Act, which  
13 • requires a school district or charter school to conduct a seismic evaluation of  
14 each facility used by the school district or charter school using specified  
15 standards;  
16 • creates and specifies the duties of the Public School Seismic Safety Committee;  
17 • directs the State Board of Education to adopt rules; and  
18 • provides certain immunity from suit relating to a seismic safety evaluation;  
19 • repeals the School Seismic Safety Act on July 1, 2021; and  
20 • makes technical changes.

21 Money Appropriated in this Bill:  
22 This bill appropriates:  
23 • \$500,000 from the General Fund for fiscal year 2011-12 only, to the State Board of  
24 Education.

25 Other Special Clauses:  
26 This bill takes effect on July 1, 2011.

27 Utah Code Sections Affected:

H.B. 367



# ② Utah Schools RVS Legislation

2011 Legislative bills by Rep. Larry Wiley:

- HB 423 Public School Seismic Safety Committee
  - Creates Public Schools Seismic Safety committee
    - 4 School District members
    - 3 Structural Engineers
  - Makes recommendations to:
    - Legislature
    - Governor
    - State Superintendent
    - State Board of Education
  - Appropriations \$000,000.00

LEGISLATIVE GENERAL COUNSEL  
Approved for Filing: A.O. Stallings  
02-11-11 4:00 PM


H.B. 423

1 PUBLIC SCHOOL SEISMIC SAFETY COMMITTEE  
2 2011 GENERAL SESSION  
3 STATE OF UTAH  
4 Chief Sponsor: Larry B. Wiley  
5 Senate Sponsor: \_\_\_\_\_  
6

7 LONG TITLE  
8 General Description:  
9 This bill creates an advisory committee on seismic safety issues in public schools.  
10 Highlighted Provisions:  
11 This bill:  
12 • creates the Public School Seismic Safety Committee that shall advise and make  
13 recommendations to the Legislature, governor, state superintendent, and State Board  
14 of Education on seismic safety issues in public schools.  
15 Money Appropriated in this Bill:  
16 None  
17 Other Special Clauses:  
18 None  
19 Utah Code Sections Affected:  
20 ENACTS:  
21 53A-15-1201, Utah Code Annotated 1953  
22

23 Be it enacted by the Legislature of the state of Utah:  
24 Section 1. Section 53A-15-1201 is enacted to read:  
25 Part 12. Public School Seismic Safety Committee  
26 53A-15-1201, Public School Seismic Safety Committee.  
27 (1) There is created the Public School Seismic Safety Committee consisting of seven

H.B. 423



# ③ FEMA Pilot Study Proposal

- Work Plan Proposal
  - Description of Need:
    - Unsuccessful attempts to pass legislation in 2008, 2009
    - Separation of Schools and State
    - Informal survey results (2006) suggest 43% schools constructed before 1975
    - Most schools lie close to Wasatch fault (80%+ population)
    - Construction practices influenced by lack of damaging EQ
    - Communities perceive schools as shelters
  - Proposed Pilot Project
    - Sample inventory 10% (84 schools) by RVS methods
      - Mix: 121 Urban, 388 Suburban, 265 Rural
      - Distribute throughout the state according to density and age
      - Distribute according to kind (K-12; Junior (middle); High; Charters)



# ③ FEMA Pilot Study Proposal



- Work Plan Proposal
  - Scope of Work
    1. Establish steering committee
    2. Create written program defining needs, scope, product
    3. Select program consultants (RVS surveyors)
    4. Oversee and provide interim reports
    5. Compile final report
    6. Present report to state legislature and public
- Project team
  - Lead organization – Utah Seismic Safety Commission
  - Management team – Roger Evans, USSC; Glen Palmer, SEAU; Larry Newton, USOE; Representative Larry Wiley
  - “Watch Dogs” – Bob Carey, Utah DHS; Barry Welliver, SEAU

# ③ FEMA Pilot Study Proposal

## Earthquake State Assistance Program (Cooperative Agreements)



### 1. Pilot Project Funding Request

• Administrative	\$8,000
• Engineering Consultants (84 bldgs. x \$500/bldg.)	<u>\$42,000</u>
Total (Year 2009-10)	\$50,000

### 2. Supplemental Funding (Year 2010-11)

• Equipment	<u>\$19,000</u>
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Total Available Funds for Project **\$69,000**

# ④ Utah Schools RVS Committee

Management Committee represents four interests:

- Utah Seismic Safety Commission (lead organization)
- Structural Engineers Association of Utah (oversight)
- Utah State Office of Education
- Utah State Legislature

Critical Issues for success:

- Open dialogue about need to have pilot study (buy-in)
- Agree early on selection of buildings/schools for accurate sampling
- Discuss and decide how final results will unfold (anticipate issues)
- Committee should be conversant with methods used (ROVER)
- Attain consensus agreement on final report



# ⑤ Utah RVS Pilot Study

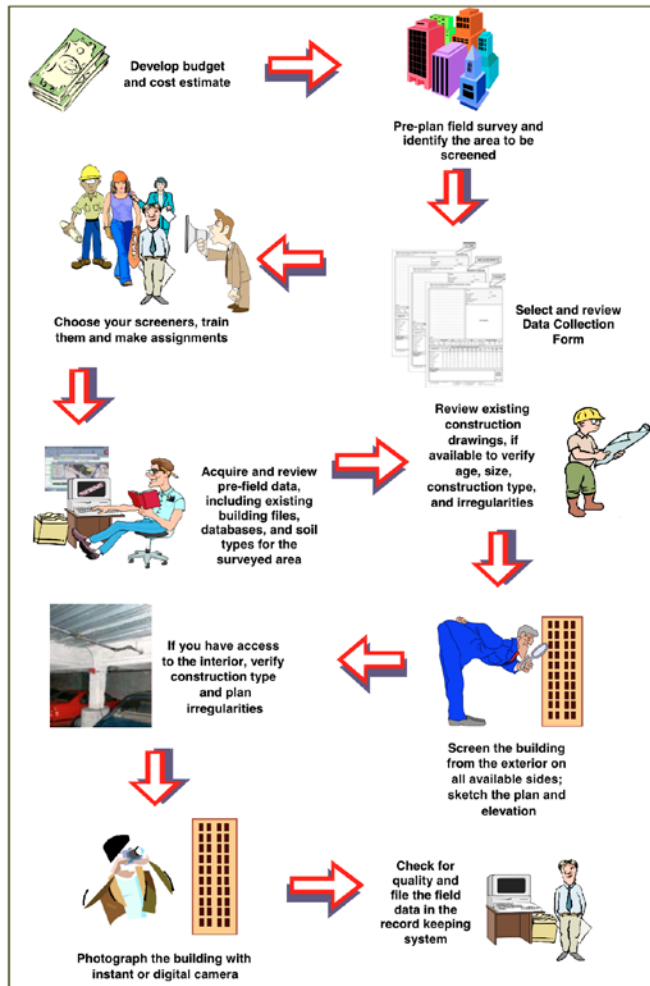


Figure 2-1 Rapid visual screening implementation sequence.

## FEMA 154 recommendations:

- Budget
- Pre-plan
- Select data forms (ROVER)
- Choose screeners
- Review existing pre-field data
- Review construction documents
- Screen buildings
- If available, observe interiors
- Photograph/sketch building(s)
- Check quality of field data

# ⑤ Utah RVS Pilot Study

## Utah Schools RVS method:

- Budget ✓
- Pre-plan ✓
- Select data forms (ROVER) ✓
- Choose screeners ✓
- Review pre-field data
- Review construction documents
- Screen buildings ✓
- If available, observe interiors ✓
- Photograph/sketch building(s) ✓
- Check quality of field data ✓

8 of 10 ..... 80% !!!

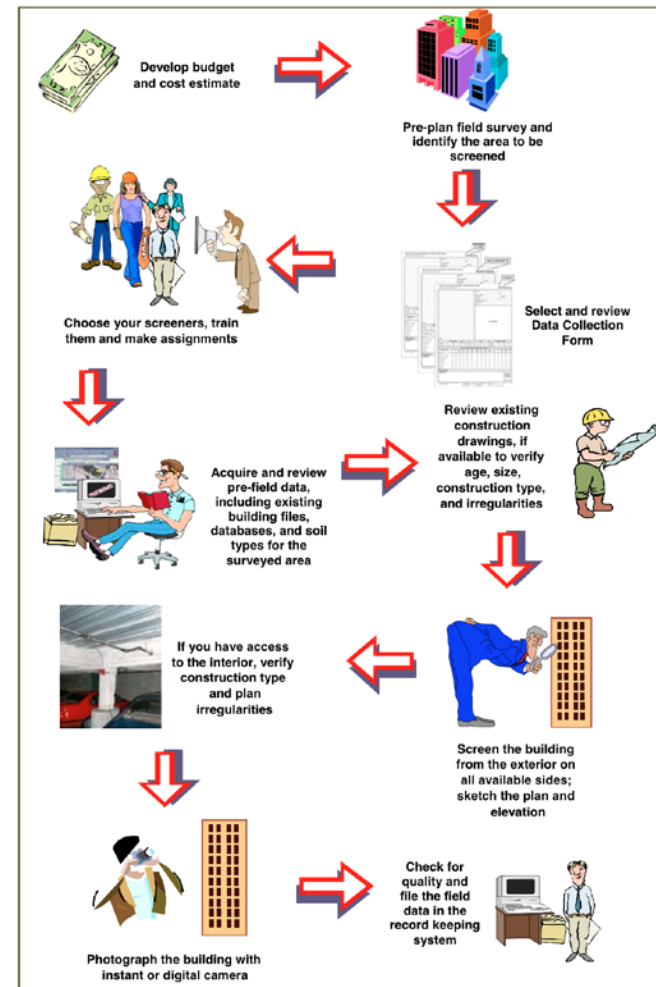
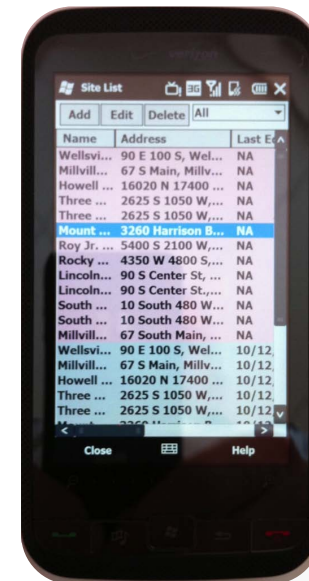


Figure 2-1 Rapid visual screening implementation sequence.

# ⑤ Utah RVS Pilot Study

## Use of ROVER in Pilot Study:

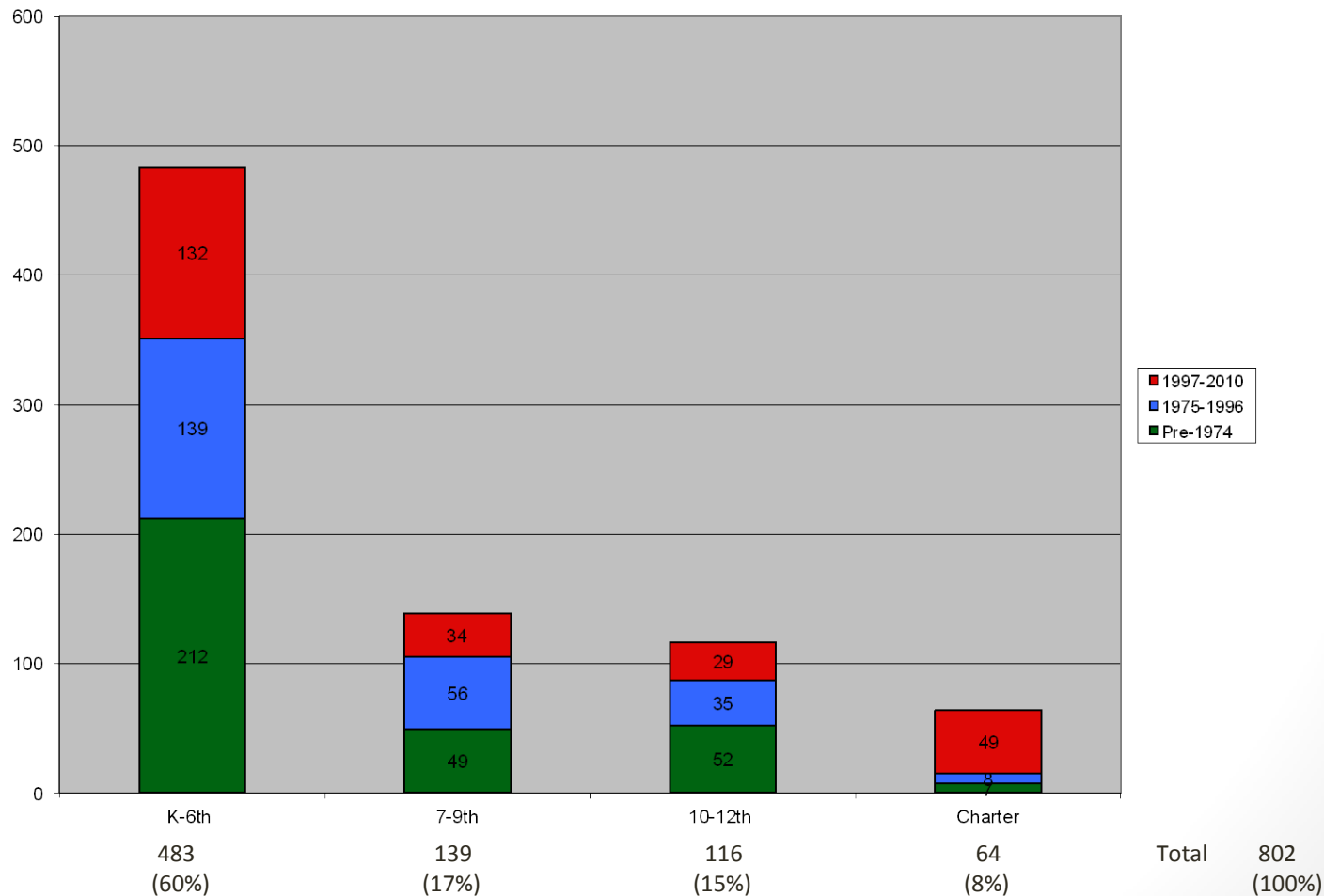
- Demonstration project for FEMA 154 Seismic Mobile Technology
- Utah purchase 20 Verizon phones + 10 FEMA phones
- ATC/FEMA provides instruction on use of ROVER
- Field data manually loaded in phones
  - Data provided to surveyors included:
    - Name and address of school
    - Latitude and longitude
    - Letter of introduction to school officials
    - “School” can include multiple buildings and additions



# ⑤ Utah RVS Pilot Study

## Development of “statistical” survey

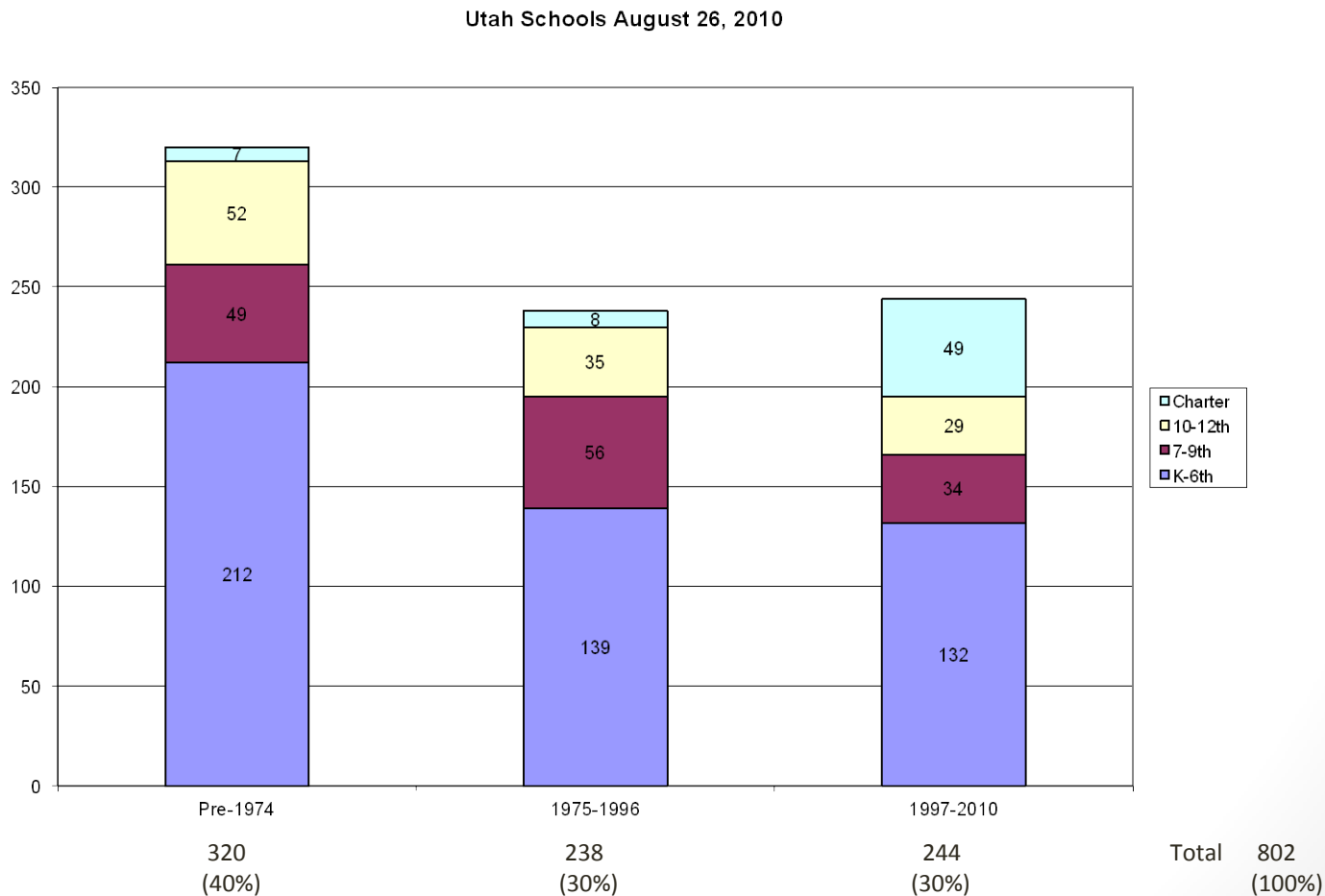
Schools by Type:



# ⑤ Utah RVS Pilot Study

## Development of “statistical” survey

Schools by Age:



# 5 Utah RVS Pilot Study

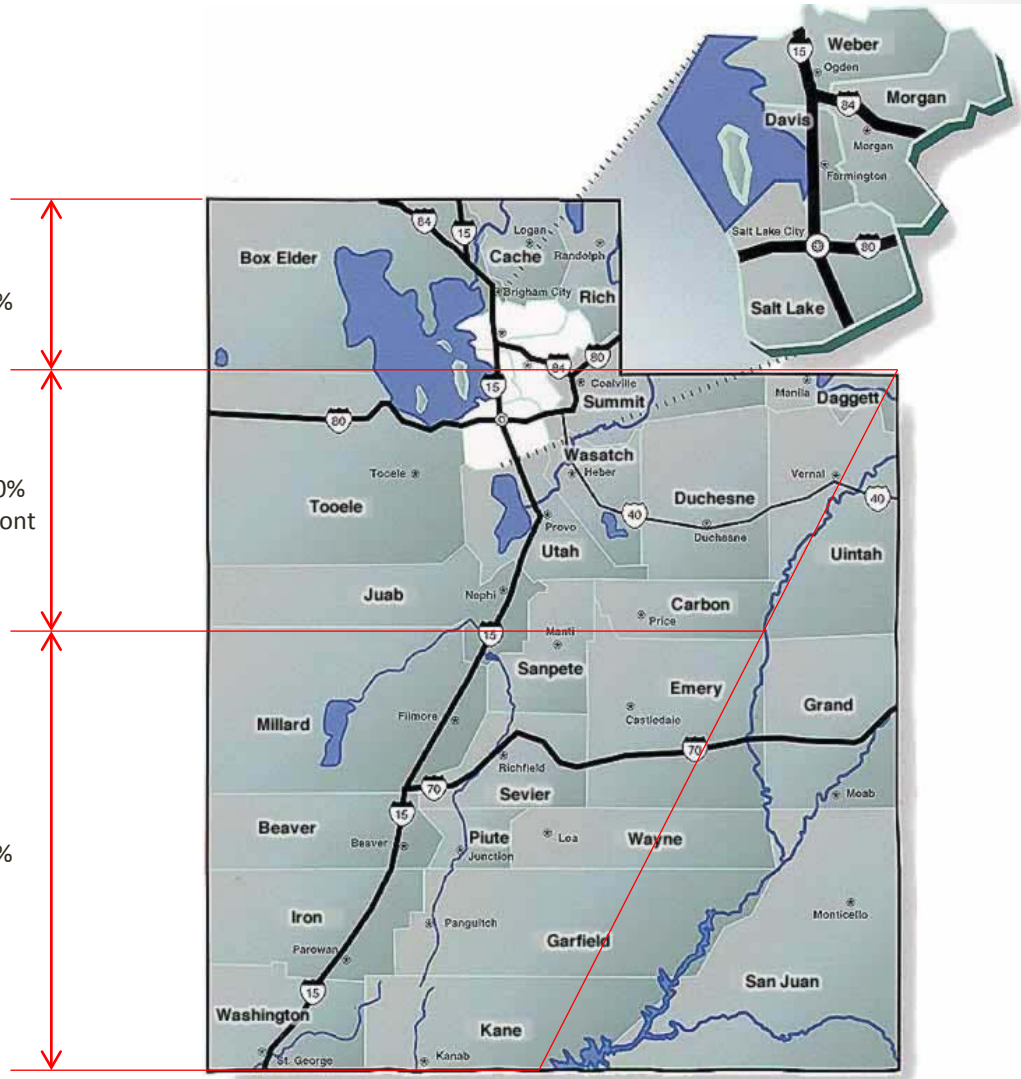
## Statewide distribution:

Beaver county (6,576)	0.23%
Box elder county (49,421)	1.76%
Cache county (114,276)	4.08%
Carbon county (19,768)	0.71%
Daggett county (988)	0.04%
Davis county (307,656)	10.99%
Duchesne county (17,368)	0.62%
Emery county (10,848)	0.39%
Garfield county (5,149)	0.18%
Grand county (9,493)	0.34%
Iron county (46,825)	1.67%
Juab county (10,191)	0.36%
Kane county (6,740)	0.24%
Millard county (13,702)	0.49%
Morgan county (9,947)	0.36%
Piute county (1,479)	0.05%
Rich county (2,329)	0.08%
Salt lake county (1,042,125)	37.22%
San juan county (15,643)	0.56%
Sanpete county (27,646)	0.99%
Sevier county (20,773)	0.74%
Summit county (40,451)	1.44%
Tooele county (59,117)	2.11%
Uintah county (31,291)	1.12%
Utah county (531,442)	18.98%
Wasatch county (23,428)	0.84%
Washington county (145,466)	5.2%
Wayne county (2,692)	0.1%
Weber county (227,259)	8.12%

North – 40%

Middle – 50%  
Wasatch Front

South – 40%

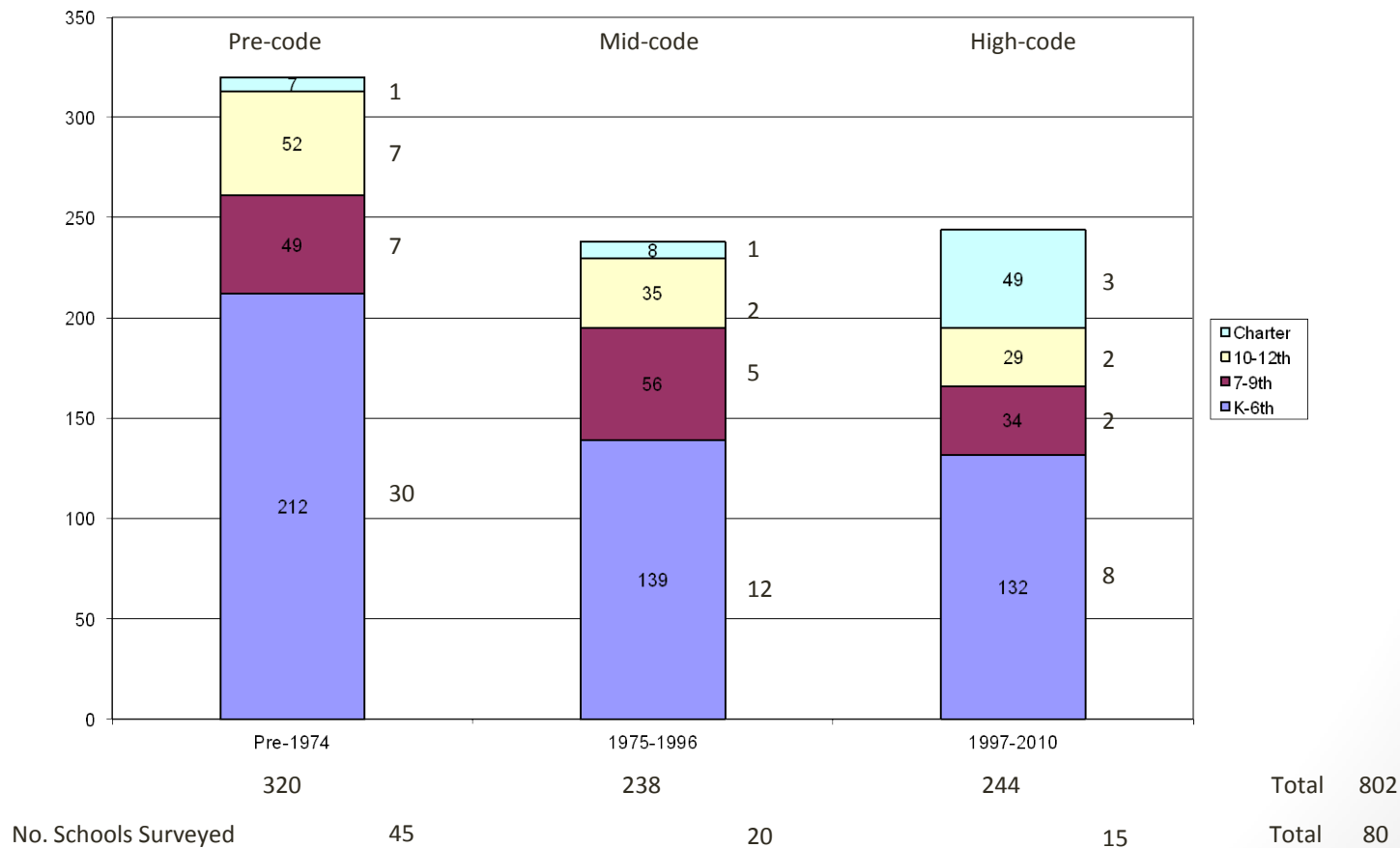


# ⑤ Utah RVS Pilot Study

## Development of “statistical” survey

Schools Surveyed:

Utah Schools August 26, 2010



# ⑤ Utah RVS Pilot Study

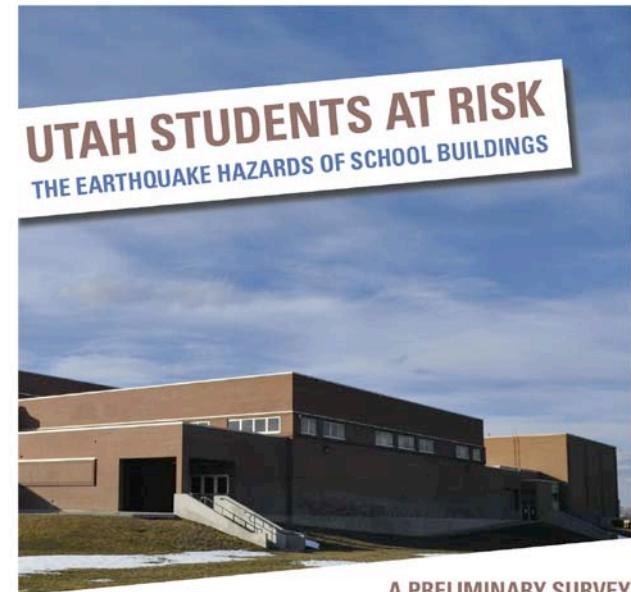
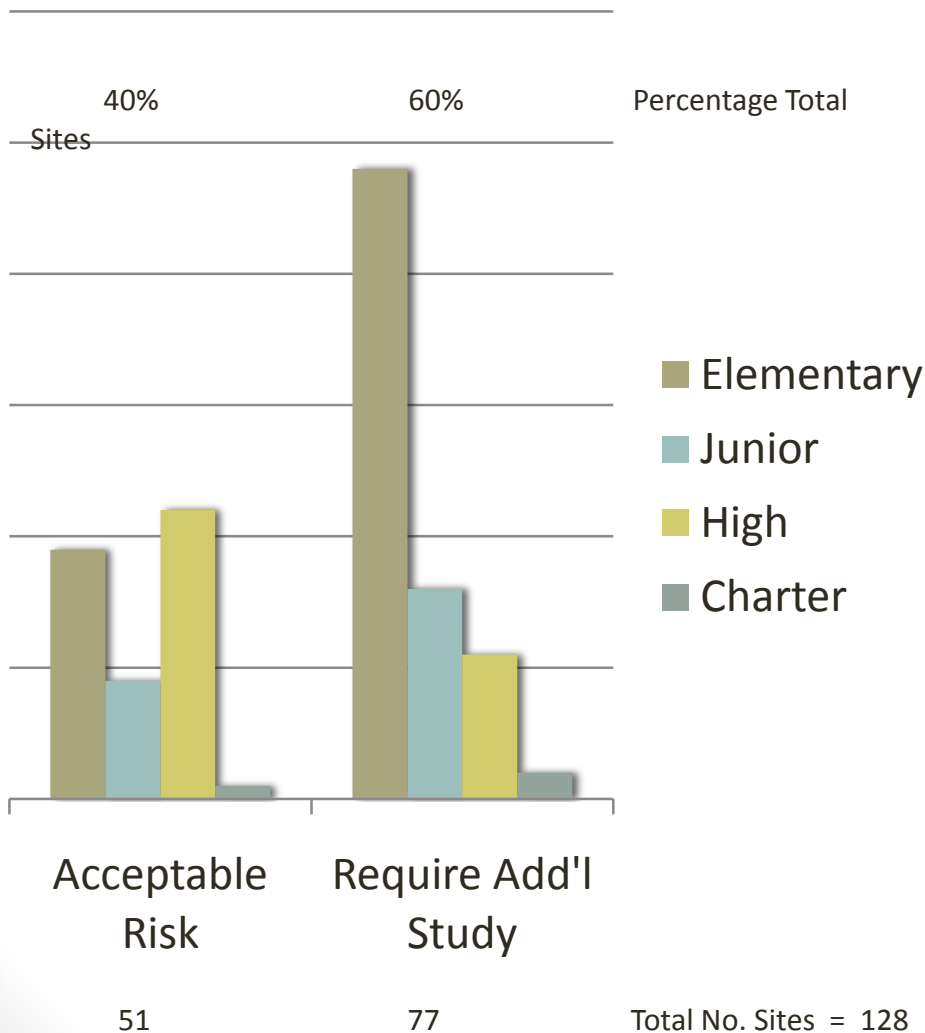
## Development of “statistical” survey

### Statewide Distribution:

Region	Pre-1974	1975-1996	1997-2010	Totals
North	18	8	5	31
Wasatch	23	10	7	40
South	4	2	3	9
	45	20	15	80
Pilot	56%	25%	19%	100%

- Pilot Study not exactly distributed uniformly.....but
  - Other factors:
    - Multiple buildings at each site with varying construction dates
    - Sample quantity increased during survey from 80 to 128 buildings (+60%)
    - Large number of elementary schools built before 1975

# ⑥ Utah Students at Risk



**A PRELIMINARY SURVEY  
BY THE UTAH SEISMIC SAFETY COMMISSION AND  
STRUCTURAL ENGINEERS ASSOCIATION OF UTAH**

**Committee on Rapid Visual Screening of Utah Schools:**

- Roger Evans, Chair, Utah Seismic Safety Commission
- Larry Newton, Utah State Office of Education
- Glen Palmer, Structural Engineers Association of Utah
- Larry Wiley, Utah House of Representatives
- Bob Carey, Utah Division of Homeland Security
- Barry Welliver, Structural Engineers Association of Utah

Written by Lee J. Siegel

Funded by the  
Federal Emergency  
Management Agency

February 2011

# ⑥ Utah Students at Risk

- Presentation to Utah Seismic Safety Commission
  - Report timed to be available for legislative session
    - Preliminary draft review by USSC and SEAU
    - Authorized to finalize report for use in session
  - Availability of RVS forms (backup data)
    - Instant GRAMA request (Government Access Records Management Act)
  - USSC legislators input
- Plan for Roll out:
  - Media interest
  - Presentation to legislators

# ⑦ Lessons Learned

- Seismic advocacy takes patience when you don't have an earthquake handy
- Legislators/administrators will ask the same questions year after year
- Seismic ownership (responsibility) is hard to pin point
- Be fully educated about the process (RVS)
- Engage the media (newspaper/tv/social media) all along the way and prepare for the attention
- Create a “partnership” attitude
- Expect results - even if they are small (all publicity is good)
- Strong, committed management committee
- Follow through after the spotlight fades

# ⑦ What's Next

- Legislators point toward school district responsibility:
  - Work with Utah State Office of Education
  - Continue to advocate states responsibility
- Develop stronger grass roots appeal:
  - Engage PTA's early and often
  - Engage local community support (shelter asset)
  - Encourage continued media coverage
- Continue ROVER use to survey schools:
  - Seek additional funds to expand scope
  - Provide training to USOE and school districts on value of inventory for pre and post earthquake inventory uses
  - Offer RVS to districts without surveys



That's All Folks!

