

Assessing the Human Health and Safety Impact of Voluntary Consensus Standards



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Background: Whitepaper

Problem:

- No method to measure the impact of voluntary consensus standards

Solution:

- A measure for the impact of voluntary consensus standards



Impact relationship:

$$\text{IMPACT} = \text{EFFECTIVENESS} \times \text{CONFORMANCE}$$

Ability of the standard to produce a desired change in the impacted population

Ex. Principles:
■ Death Rate
■ Injury Rate

Fraction of the end product, service, process, or concept that meets the standard and is in possession on the product's user

Ex. Principles:
■ Time
■ Motivation



Project Goal:

Evaluate the health and safety impact of voluntary consensus standards on consumer products using the principles from ANSI's working group whitepaper

Objective 1:

**Identify consumer products
for possible analysis through
conversations with interested
parties**

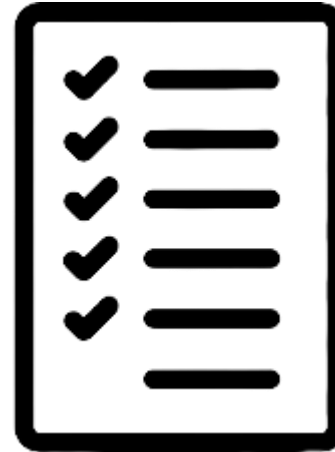


1: Data Collection and Outcomes

Collaboration with ANSI
working group



Long list of
products





1: Broad list Categories



- Home Products



- Safety Equipment



- Juvenile Products



- Miscellaneous



1: Home Products

- Blinds
- Coffee Makers
- Glass Front Fireplaces
- Microwaves
- Washing Machines
- Toasters
- Candles
- Lawnmowers
- Grills
- Backyard Trampolines
- Dryer Machines
- Heating Blankets
- Garage Door Openers
- Home Sprinklers
- Smoke Alarms
- Deep Dryers





1: Juvenile Products

- Cribs
- Baby Swings
- Baby Walkers
- Lead In Toys





1: Safety Equipment



- Hand Protection
- Construction/Sports Helmets
- Face Masks
- Ladders
- Body Harness
- Tethers
- Gear for Heat Stress





1: Miscellaneous



- Hover boards
- LED Lights
- Portable Generators
- Paper Shredders
- Button Cell Batteries
- ATV/ROVs
- Ceiling Fans

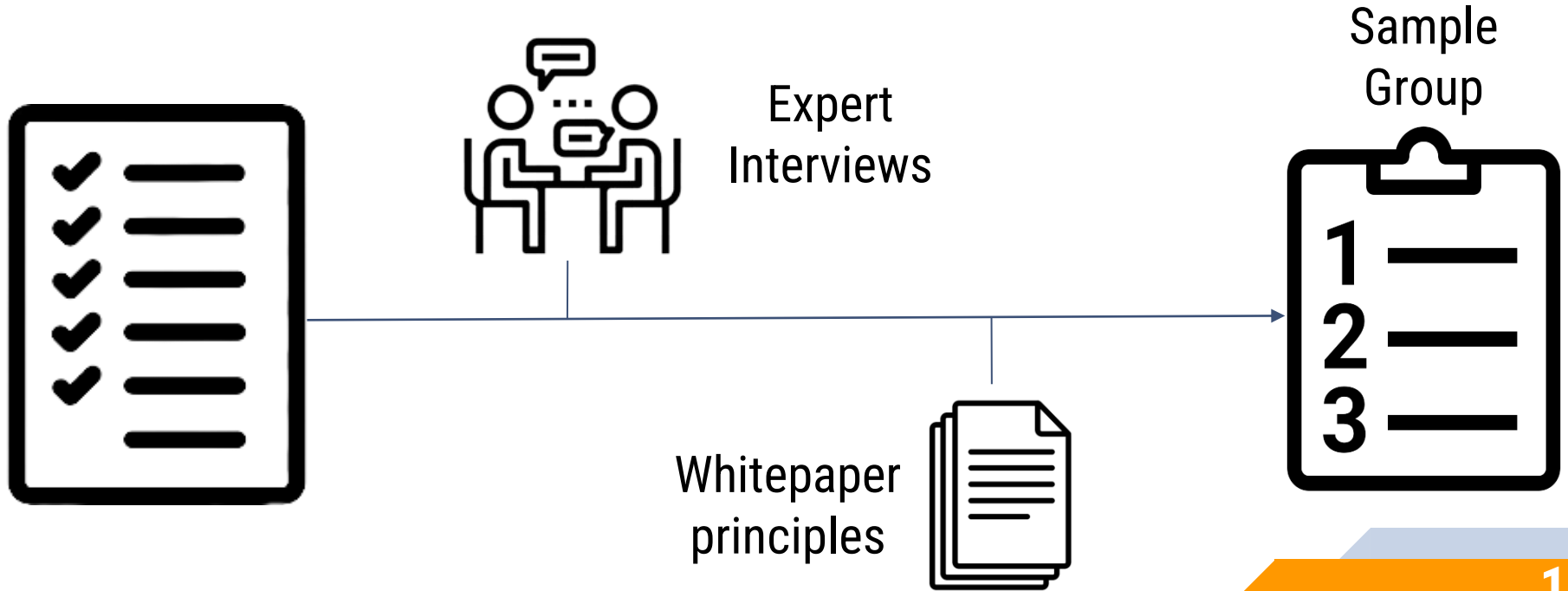


Objective 2:

Select a sample group of products with input from subject matter expert interviews and data analysis



2: Data Collection and Outcomes





2: Sample Group

Narratives:

- Hairdryers
- Hoverboards
- Baby Cribs
- Lead in Toys



Future Project Frameworks:

- Candles
- Helmets
- Portable Generators
- Home Sprinklers
- Drying Machines





2: Principles

Principles:

■ Rates



■ Time



■ Motivation



■ Knowledge



Products:

■ Hoverboard

■ Hairdryers

■ Baby Cribs

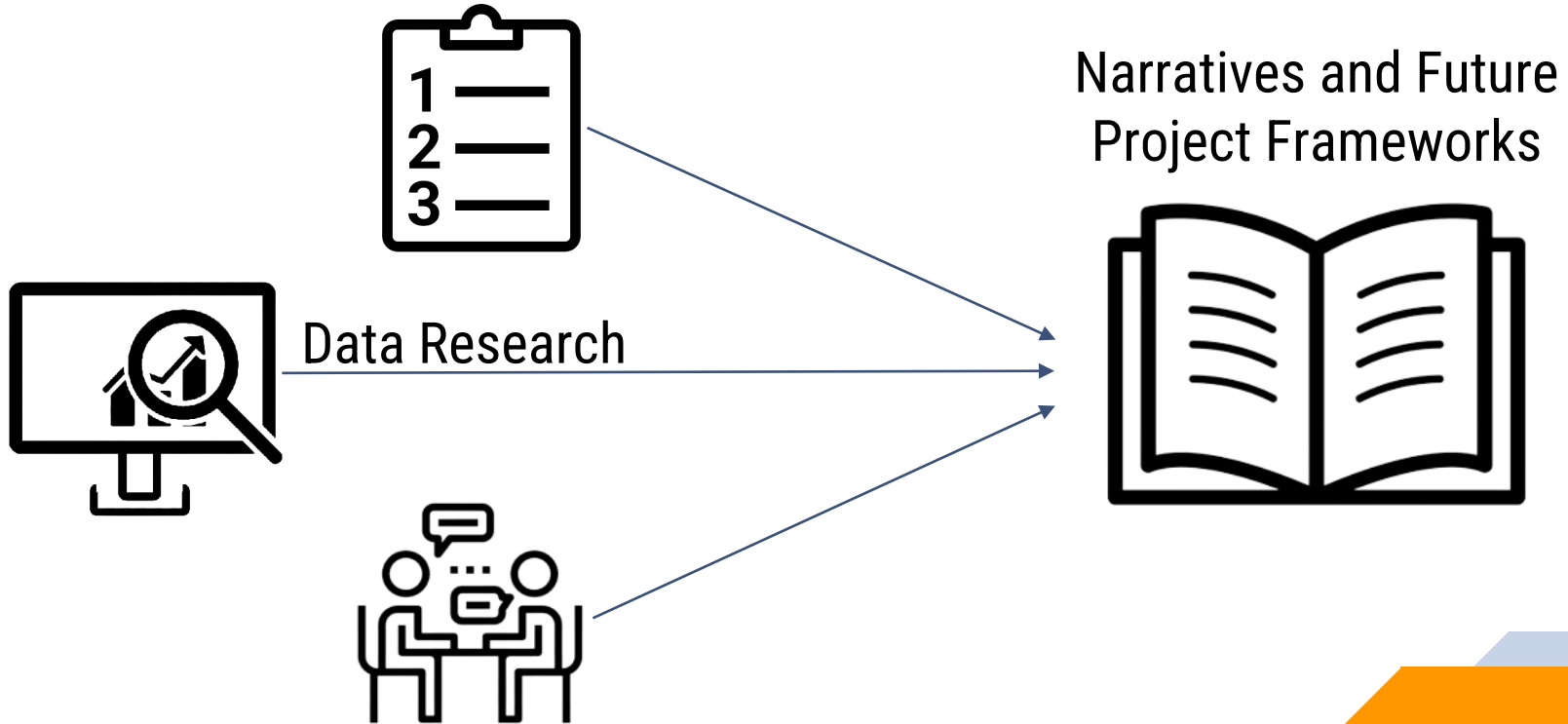
■ Lead In Toys

Objective 3:

Critically evaluate and formulate narratives around the impact of voluntary consensus standards on the sample group of products using the principles



3: Data Collection and Outcomes





3: Data Research

Databases

- ▷ NEISS
- ▷ NHANES
- ▷ Clearinghouse



Python

- ▷ xlwt
- ▷ pandas
- ▷ xport
- ▷ matplotlib



Final Narrative

- ▷ Story
- ▷ Impact
- ▷ Principles
- ▷ Additional Comments



3: Narratives - Hoverboard



Usage of Rates

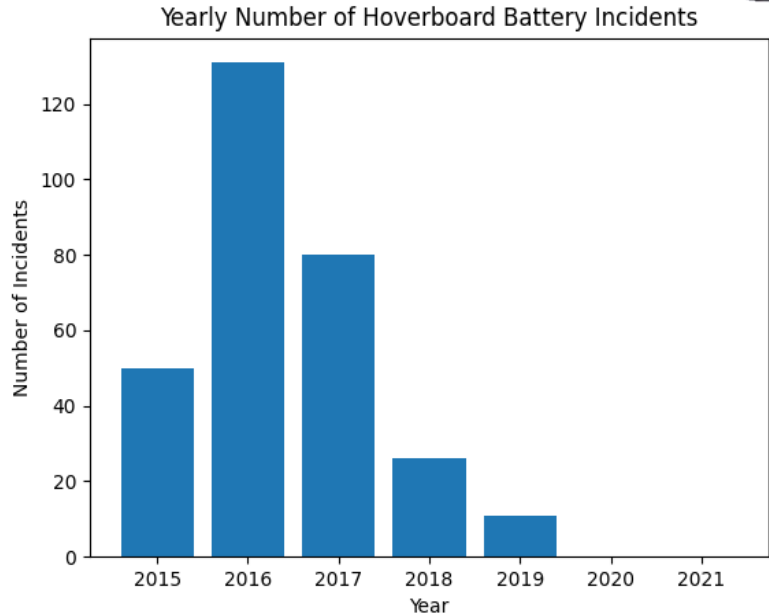
- Raw Numbers

- Undersell Impact

UL 2271

- 2016

- Standard for Batteries for Use in Light Electric Vehicle (LEV) Applications



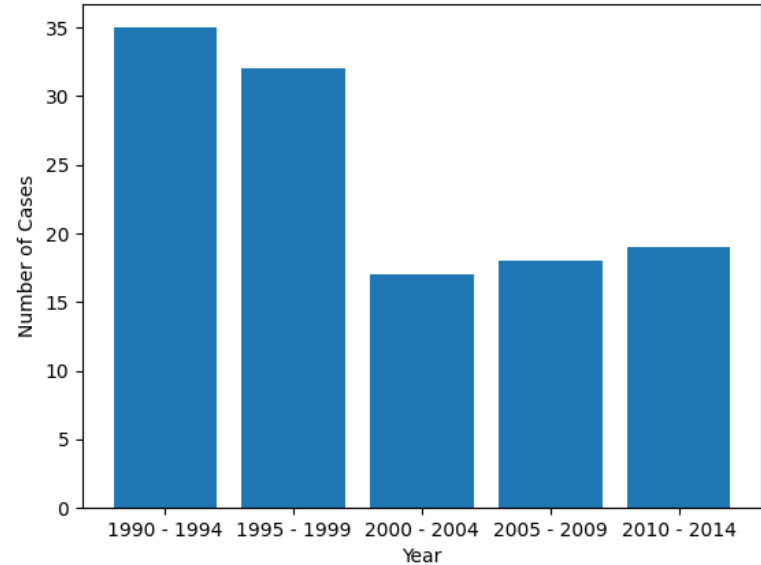


3: Narratives – Hair Dryers



- Time Factor
 - ▷ Short lifespan vs. Long lifespan
- UL 859 Household Electric Personal Grooming Appliances
 - ▷ 1987

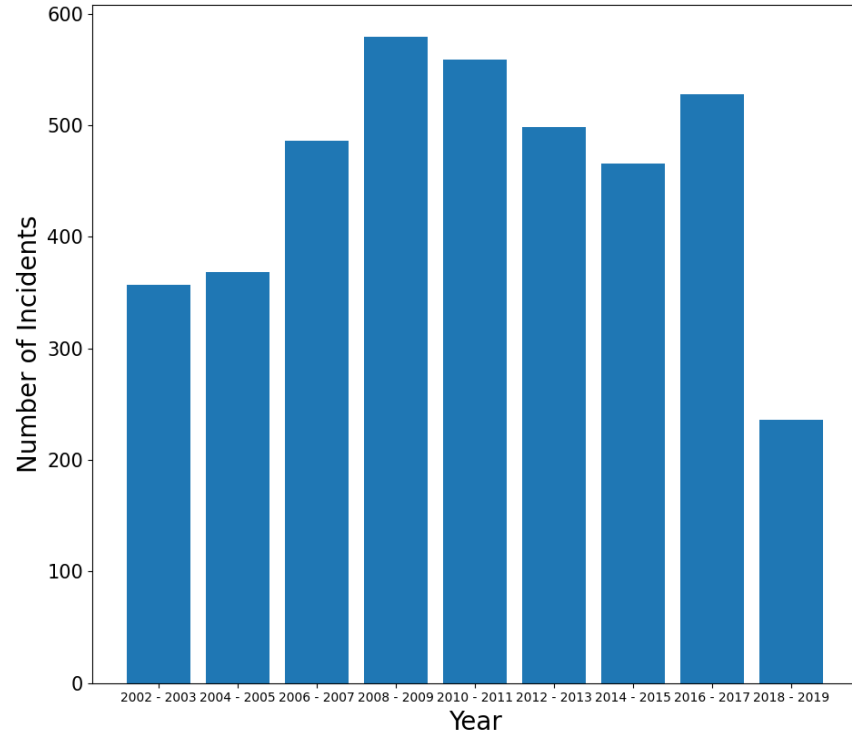
Hair Dryer Electrical Incidents





3: Narratives – Baby Cribs

Number of Crib Incidents



Motivation

ASTM F1169

1999

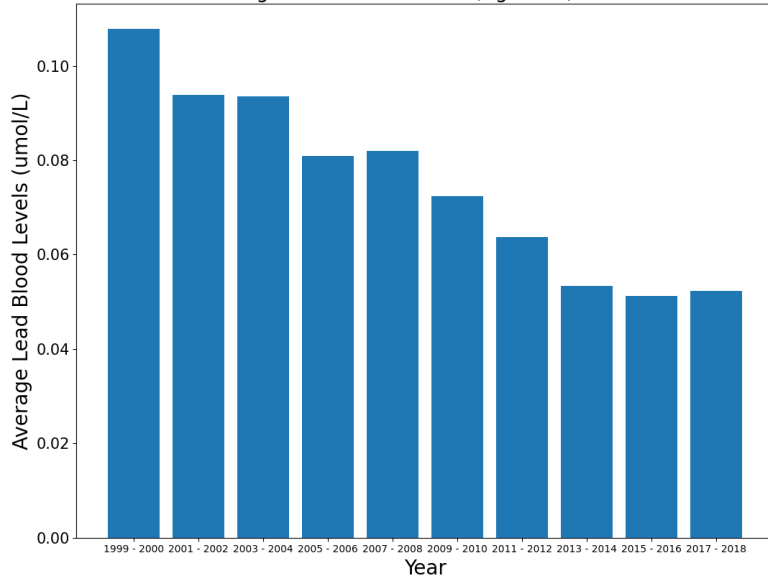
Standard Consumer Safety Specification for Full Size Baby Cribs





3: Narratives – Lead In Toys

Average Lead Blood Levels (Ages 6+) vs Year



Knowledge

ASTM F963

1996

Standard Consumer
Safety Specification for
Toy Safety





3: Future Project Frameworks



■ Candles

- ▶ Missing sales data
- ▶ Collaborate with candle companies



3: Future Project Frameworks

- Home Sprinklers
 - ▶ Lack of a unified database
 - ▶ Outside the scope
 - ▶ Building codes





3: Future Project Frameworks



■ Construction Helmets

- ▶ Too recent
- ▶ Different method to determine impact
- ▶ One company has adopted current standard



3: Future Project Frameworks

- Portable Generators
 - ▶ Competing standards
 - ▶ Unimpactful





3: Future Project Frameworks



■ Drying Machines

- ▶ Difficulty differentiating cases
- ▶ Incomplete fire data
 - ▶ Property damage



3: Recommendations

- Definition of Effectiveness
 - ▶ Rate of incidents measures impact
- Consideration of Non-Product Standards
 - ▶ Inclusion of other voluntary standards
- Creation of a Version of the Whitepaper with Open Language
 - ▶ Version for end users



CREDITS

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- Professor Carol L. Stimmel

***Thank you for
watching!***

Any questions?

*A special thank you to SlideCarnival for allowing us to utilize their slide
template*

Image sources

Hairdryer Image:

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