Furniture Stability:

A Review of Data and Testing Results

A research report by:
Kids In Danger and Shane’s Foundation

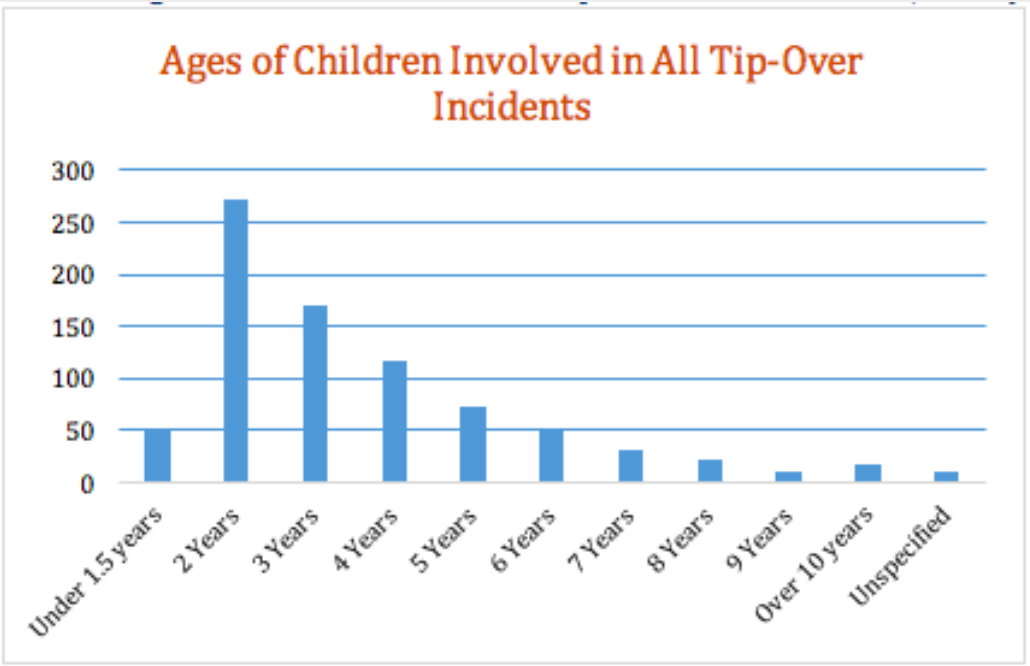
Introduction

Most families feel safest in their homes, but there are many potential hazards hidden where people least expect them. In fact, a child is killed by tipping furniture, appliances, or TVs every two weeks.

In our new report *Furniture Stability: A review of data and testing results*, released in conjunction with Shane's Foundation, KID presents an analysis of furniture tip-over data, reveals testing results for 19 furniture units, and offers recommendations to improve furniture safety.

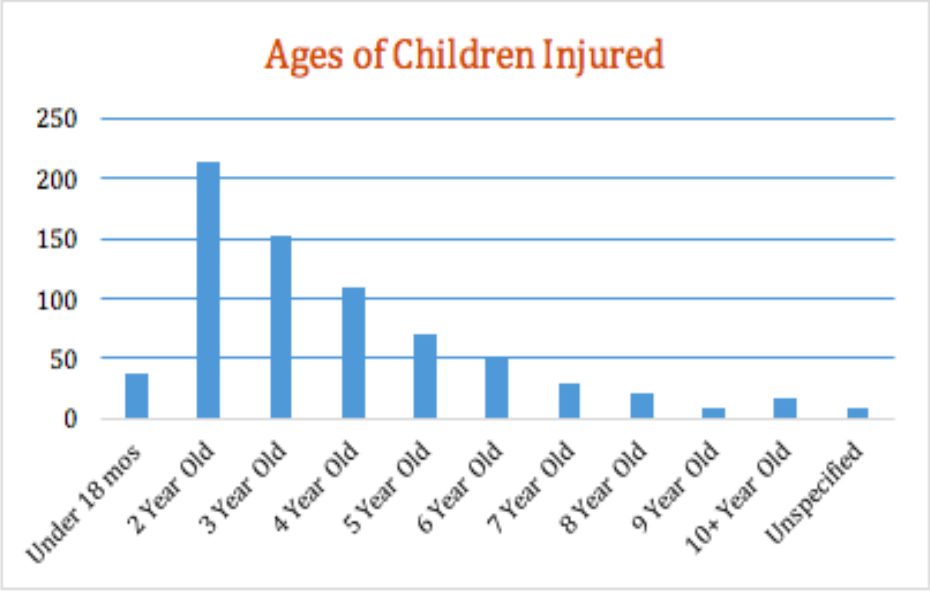
Part 1: Analysis of CPSC data

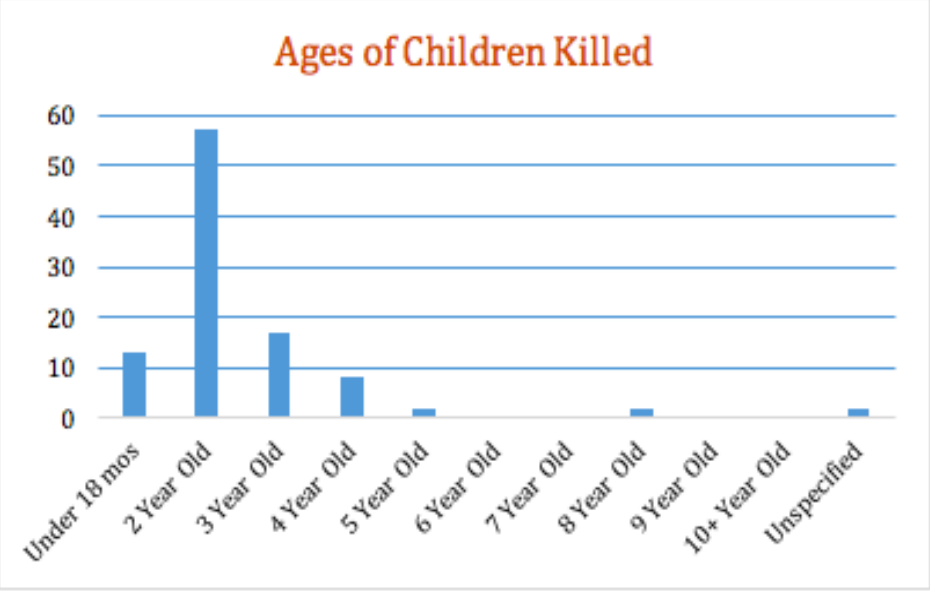
Age-related findings



- Two-year-olds are the age group most affected by tip-overs, and the age group most likely to be killed
- Children age two to five accounted for 77% of total incidents

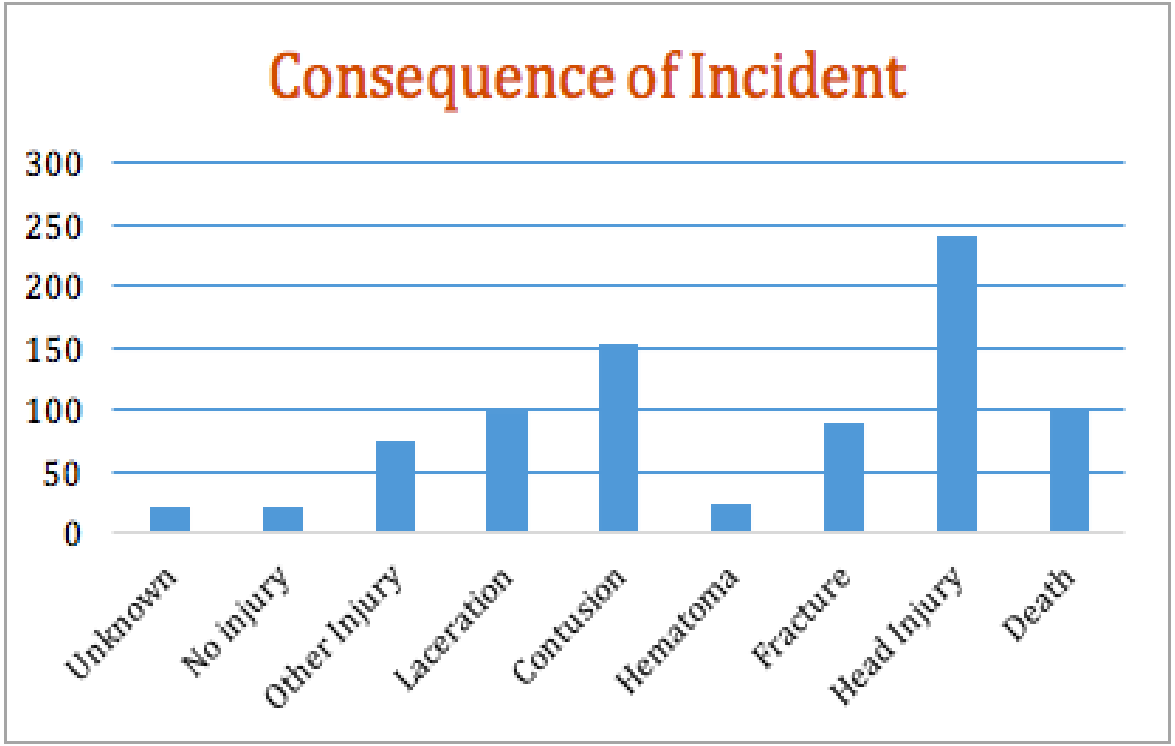
The age range of children *injured* is wider than the age range of children *killed* by tip-overs





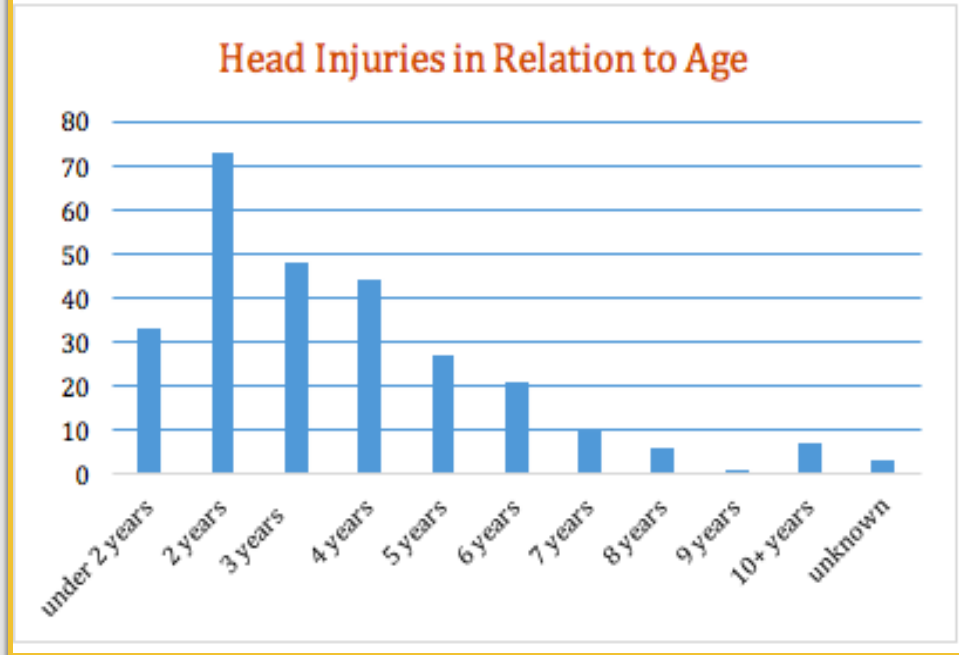
Injury types

- Head injuries (37%) were the most common category of injury
- Fatalities accounted for 12% of total incidents



Head injuries

- Most severe injury besides death
- Includes open head and closed head injuries, skull fractures, and hematomas
- Distribution across ages is more even compared to deaths or total non-fatal injuries
- Two-year-olds are the most vulnerable group (27% of total)



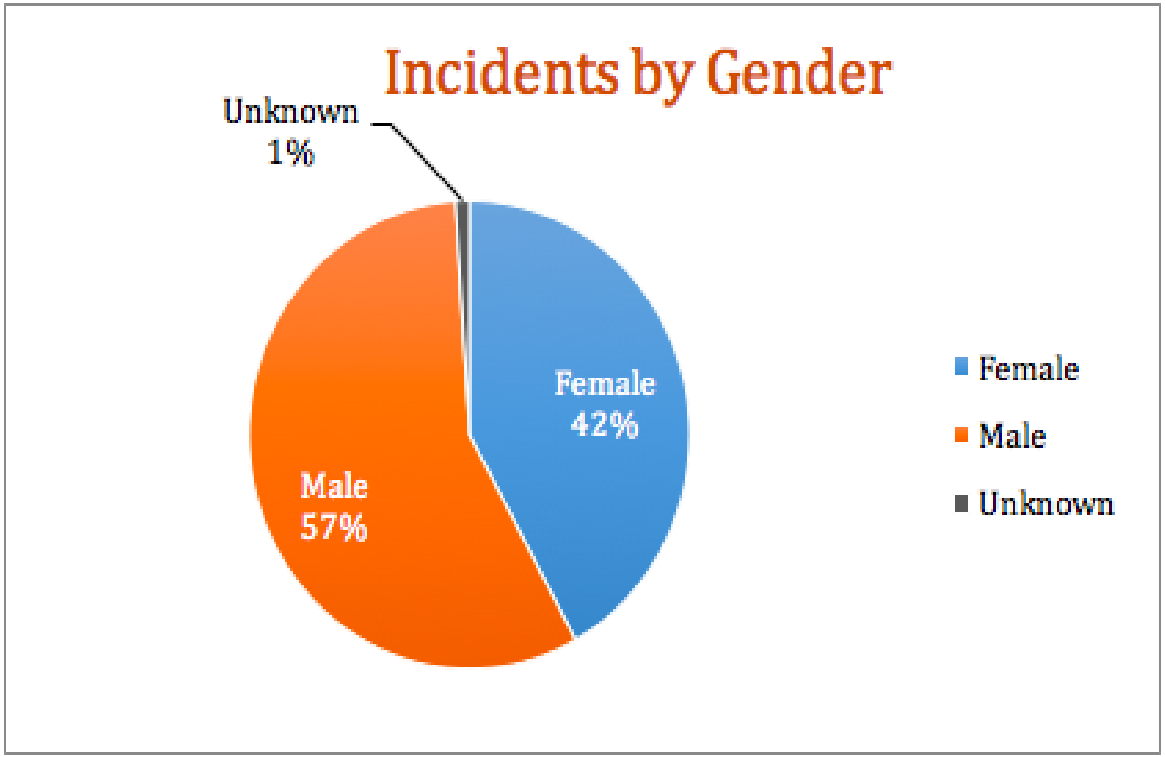
Role of televisions

- Almost all (98.7%) head injuries were related to a TV tipping over
- TVs that were 11-20 inches, 21-30 inches, and 31-40 inches contributed fairly equally to total number incidents, but larger size makes a difference when it comes to deaths

https://openclipart.org/detail/194748/tv

Gender

- 57% of incidents involved males and 42% involved females
- Similarly, in the 101 deaths recorded, 57 were male, 43 female, and one was unreported



Part 2: KID’s furniture test at UL

Furniture type

KID put a sample of 19 dressers and chests through stability performance tests. The samples were representative of furniture typically used in children's bedrooms.

Most of the units were "Ready-to-Assemble" types, made of Medium Density Fiberboard wood, had drawer stops, came with tip restraints like straps, and had inconspicuous warning labels regarding tip-overs.

Testing protocol

Technicians tested based on current standards and then by new protocols developed by KID to account for real-world factors like clothing inside drawers

KID protocol included:

Stability of unloaded units + stability with load (both part of ASTM F2057), stability with load of clothing, tipping-point test, progressive drawer opening test, TV test, and carpet test

Testing results

All 19 passed the Stability of Unloaded Units Test, but with 50-lb weight only 9 passed the Stability with Load Test

In the Tipping Point Test, unstable units required as little as 17 lbs to tip while more stable ones did not tip at 70 lbs

Only 2 units passed the Progressive Drawer Opening Test; one of these had interlocks, the other a design that increased the area of the dresser on the floor.

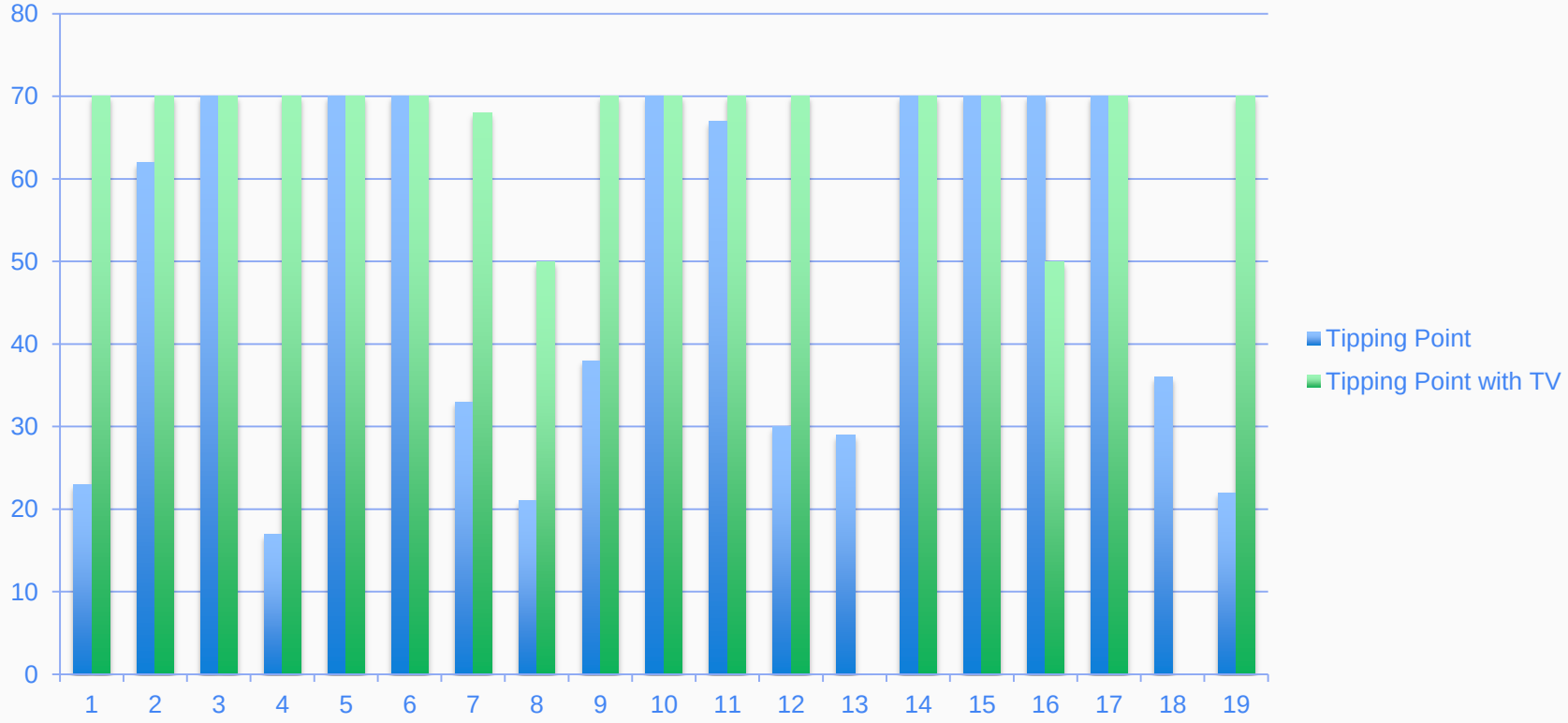
Testing results, cont

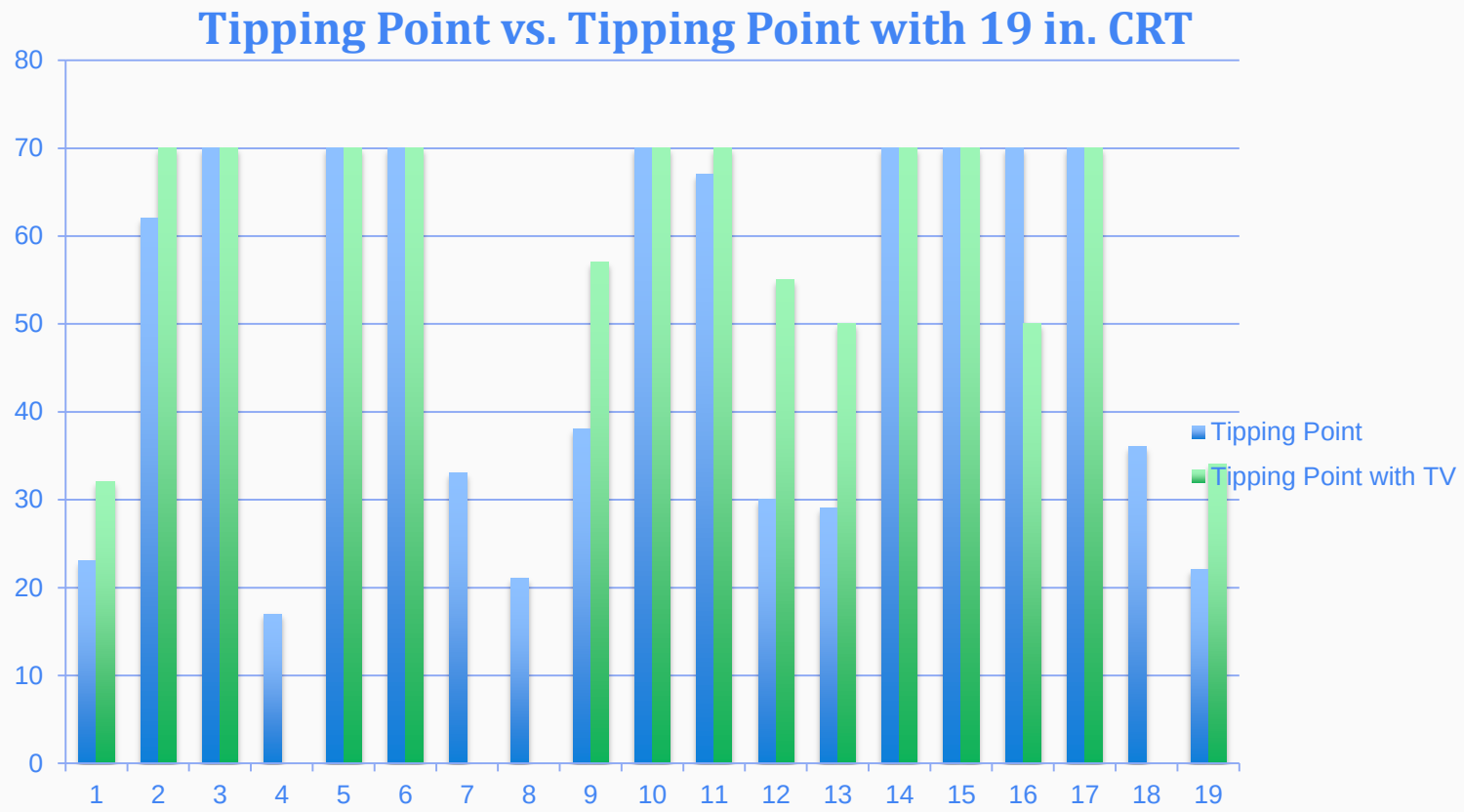
The TV Test showed that a placing a TV on top of furniture actually increases stability of the unit

Placing furniture on carpet makes them more unstable. Only 7 units passed the Carpet Test

After loading the drawers with T-shirts, units became more unstable due to changes in their center of gravity. Only 6 units didn't tip when drawers were opened when filled in the Clothing Load Test

Tipping Point vs. Tipping Point with 40 in. Flat Screen TV




Tipping Point vs. Tipping Point with 19 in. CRT
80
70
60
50
40
30
20
10
0
1
2
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5
6
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19
Tipping Point
Tipping Point with TV

Only 2 of the furniture units passed all tests, including additional testing protocol added by KID. Nine of furniture units passed tests based on the current tip-over safety standard, ASTM F2057.

Unit Code	Restraint	Warning Label	Compliant Design	Compliant Text	ASTM 7.1	ASTM 7.2	Progressive Drawer Opening	Tipping Point	TV Test	Carpet 7.1	Carpet 7.2
A	Fail	Pass	Pass	*	Pass	Fail	N/A	23	Fail	Pass	Fail
B	Pass	Pass	Pass	Pass	Pass	Pass	Fail	62	Pass	Pass	Fail
C	Pass	Pass	Pass	Pass	Pass	Pass	Fail	70+	Pass	Pass	Pass
D	Pass	Pass	Pass	Fail	Pass	Fail	N/A	17	Pass	Pass	Fail
E	Pass	Pass	Pass	Pass	Pass	Pass	Fail	70+	Pass	Pass	Pass
F	Pass	Pass	Pass	Pass	Pass	Pass	Fail	70+	Pass	Pass	Pass
G	Pass	Pass	Pass	Fail	Pass	Fail	N/A	33	†	Pass	Fail
H	Pass	Pass	Pass	Fail	Pass	Fail	N/A	21	Fail	Fail	Fail
I	Pass	Pass	Pass	*	Pass	Fail	N/A	38	Pass	Fail	Fail
J	Fail	Pass	Pass	Fail	Pass	Pass	Pass	70+	Pass	Pass	Pass
K	Pass	Pass	Pass	Pass	Pass	Fail	N/A	50	Pass	Pass	Fail
L	Pass	Pass	Pass	Fail	Pass	Fail	N/A	30	Fail	Pass	Fail
M	Pass	Pass	Pass	Pass	Pass	Fail	N/A	29	†	Pass	Fail
N	Pass	Pass	Pass	Fail	Pass	Pass	Fail	70+	Pass	Pass	Pass
O	Pass	Pass	Pass	Pass	Pass	Pass	Fail	70+	Pass	Pass	Fail
P	Pass	Pass	Pass	Pass	Pass	Pass	Pass	70+	Pass	Pass	Pass
Q	Pass	Pass	Pass	Pass	Pass	Pass	Fail	70+	Pass	Pass	Pass
R	Pass	Pass	Pass	Pass	Pass	Fail	N/A	36	†	Pass	Fail
S	Pass	Pass	Pass	Pass	Pass	Fail	N/A	22	Fail	Pass	Fail

Testing conclusions

- There was widespread non-compliance with the ASTM standard (10 units failed)
- The ASTM standard doesn't replicate real-world conditions
- The scope of the standard should be amended to include all heights
- Should use drawer interlocks
- Though tip-overs cause injuries, TVs do not decrease stability of furniture
- The standard should include carpet testing
- The was no strong correlation between price and stability -- design is more important

Part 3: Recommendations and next steps

A two-pronged approach

1) Increasing consumer awareness of the danger of tip-overs and knowledge of the actions needed to keep children safe

2) Improving furniture stability by strengthening standards, making standards mandatory and enforceable, and promoting changed in furniture design

Strong standards

A strong standard should include:

- Testing on a carpet sample
- Increasing the weight to protect children up to and including age 5
- Requiring that furniture remain stable when drawers are loaded
- Adding the progressive drawer-opening test and including interlock systems for those that cannot pass
- Eliminating height restrictions in the standard so it can apply to all units

Call to action

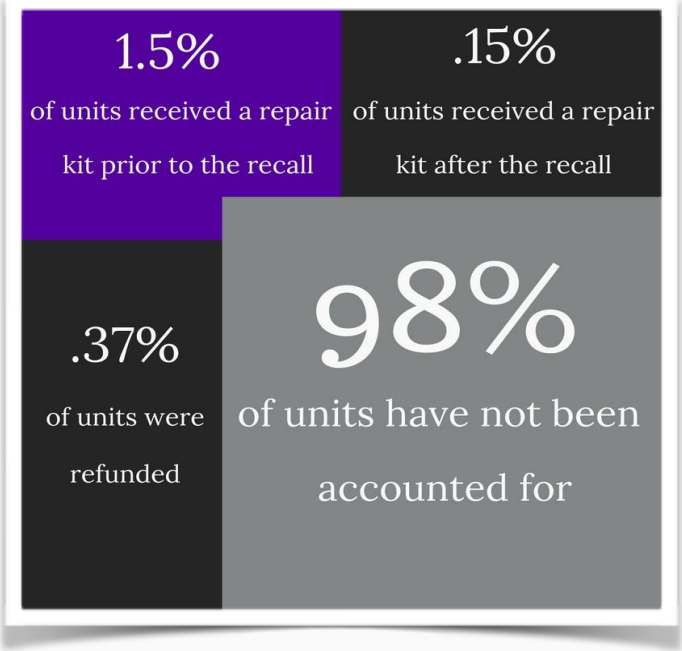
The ASTM subcommittee on furniture should add the tests listed in the previous slide to their standard

But, given the continued rate of injury, the demonstrated noncompliance of many manufacturers, and the resistance to making real changes to the standard, the CPSC should start their own rulemaking process

IKEA Dresser Recall
What you need to know

This year IKEA recalled 29 million dressers due to six children's deaths in tip-over accidents. Another death was later reported.

- Only 44,812 repair kits issued
- Only 107,811 refunds issued



Stop using any recalled IKEA dressers and get your refund NOW. To do so visit: bit.ly/IKEArefund. Contact KID with any problems faced.

We hope that information from this report will create an impetus to **design, test**, and **sell safer furniture.**

Thanks!

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