

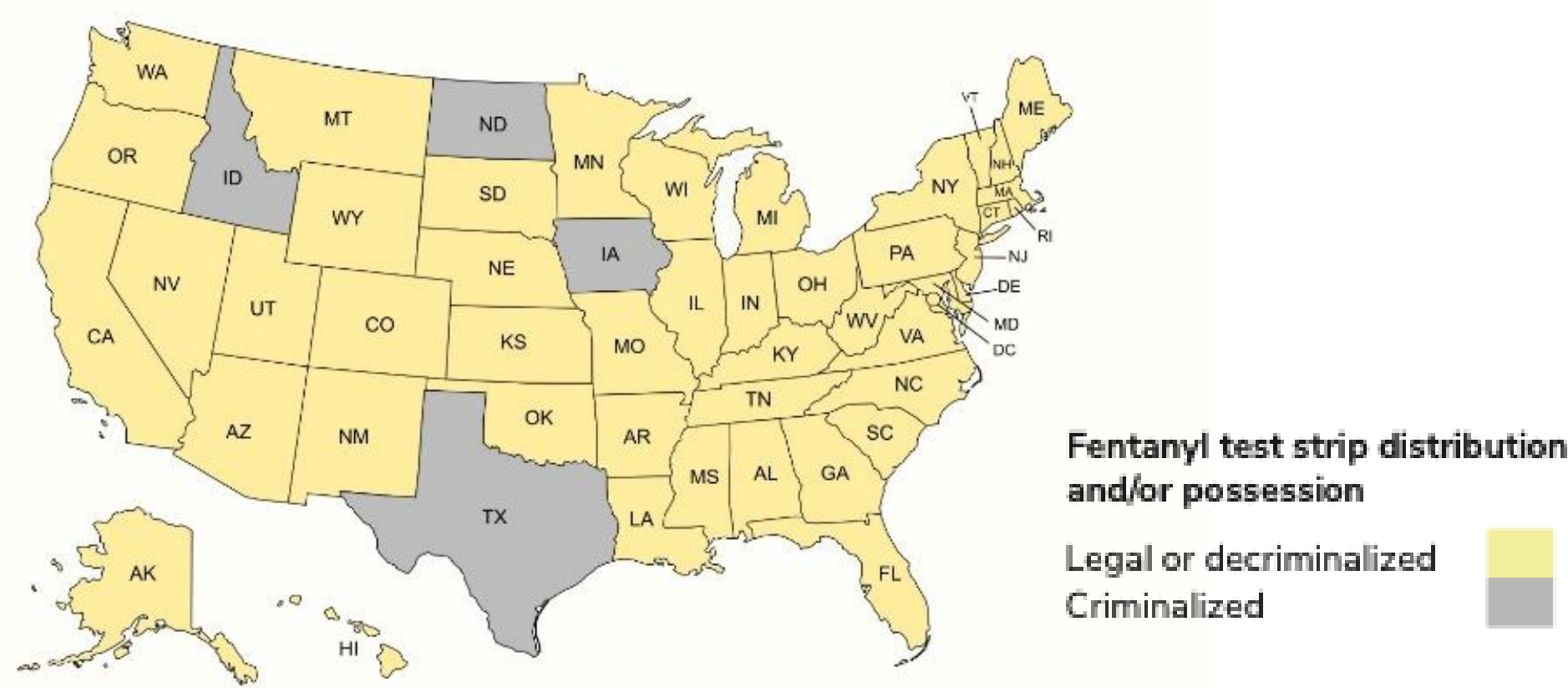
Usability Testing of 5 Brands of Fentanyl Test Strips in Real-World Settings

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BACKGROUND

Fentanyl test strips can prevent overdose from fentanyl in supply

- Disposable, single-use drug-checking tool
- Accurately detects fentanyl in multiple substances
- **Legal or decriminalized in 46 states in the United States**



Legal status of fentanyl test strips in the United States^{1,2}

Harm reduction organizations distribute many brands of fentanyl test strips

- But test strips are not designed for use in real-world settings
- **This creates unknown usability challenges for people testing their supply**



Staff of the Butler County (Ohio) mobile van syringe service program setting up (Photo: Janet Childerhose)

Our Ohio Stay Safe Study team examined 5 brands of fentanyl test strips

- Informal experiment to learn how to use them
- We discovered that fentanyl test strips are challenging to use
- **Decided to conduct formal usability study of those 5 brands**



Megan Dzurec (Ohio Stay Safe Study) reading envelope instructions for three fentanyl test strip brands. (Photo: Janet Childerhose)

MIXED-METHODS DESIGN

Study Overview	
Design	Exploratory mixed-methods product evaluation
Purpose	Evaluate ease of use of 5 brands: <ul style="list-style-type: none">• BTNX RapidResponse• The Bunk Police• DanceSafe• Dosetest• Wisebatch
Sample	Convenience sample of 6 respondents (all researchers)
Setting	Homes of individual respondents
Instruments	<ol style="list-style-type: none">1. Brand inventory2. Longitudinal REDCap survey with 91 items, 7 response types<ul style="list-style-type: none">• Part 1: Rated ease-of-use of each brand for individual features• Part 2: Rated ease-of-use of each brand as an interactive system
Data collection	March 25-April 22, 2024
Data analysis	Descriptive statistical analysis and qualitative content analysis

We provided each respondent with these materials:



Each respondent was asked to provide these:



RESULTS

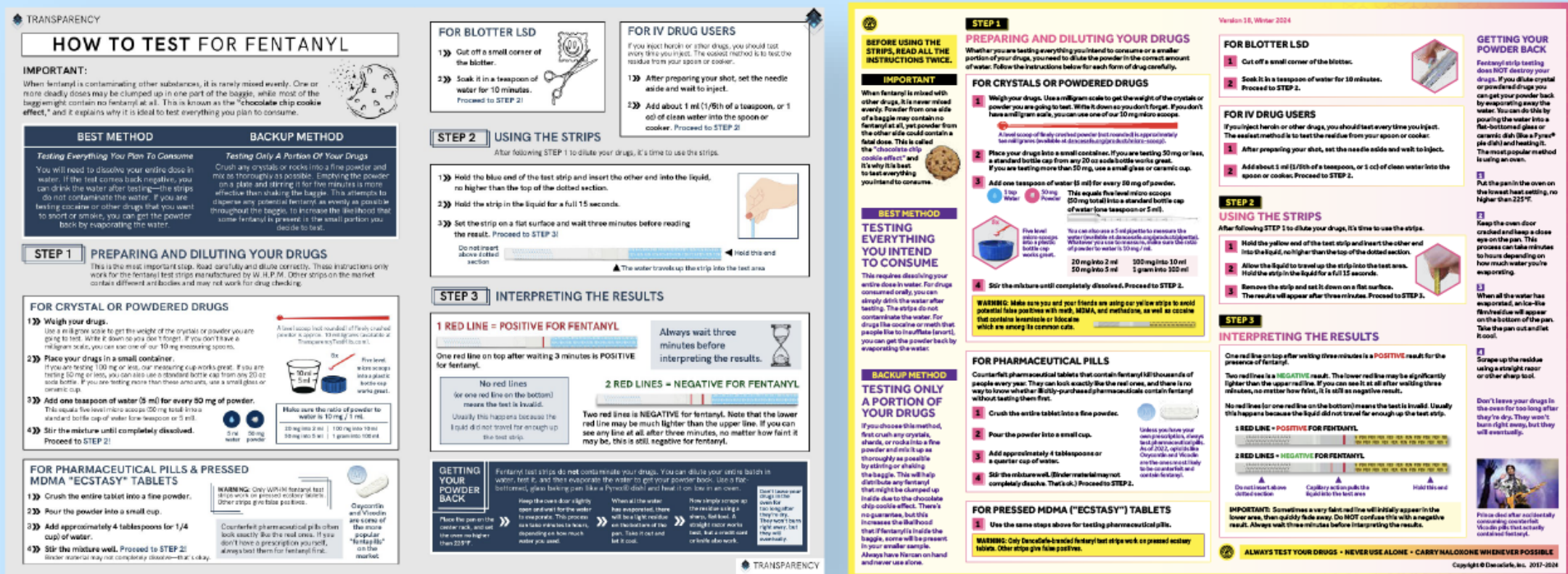
DanceSafe scored highest on ease-of-use ratings and highest on the System Usability Scale (above the usability threshold of ≤68)

Dosetest scored lowest on ease-of-use ratings and below the SUS usability threshold of ≤68

Inventory. Brand envelopes vary in design and information content

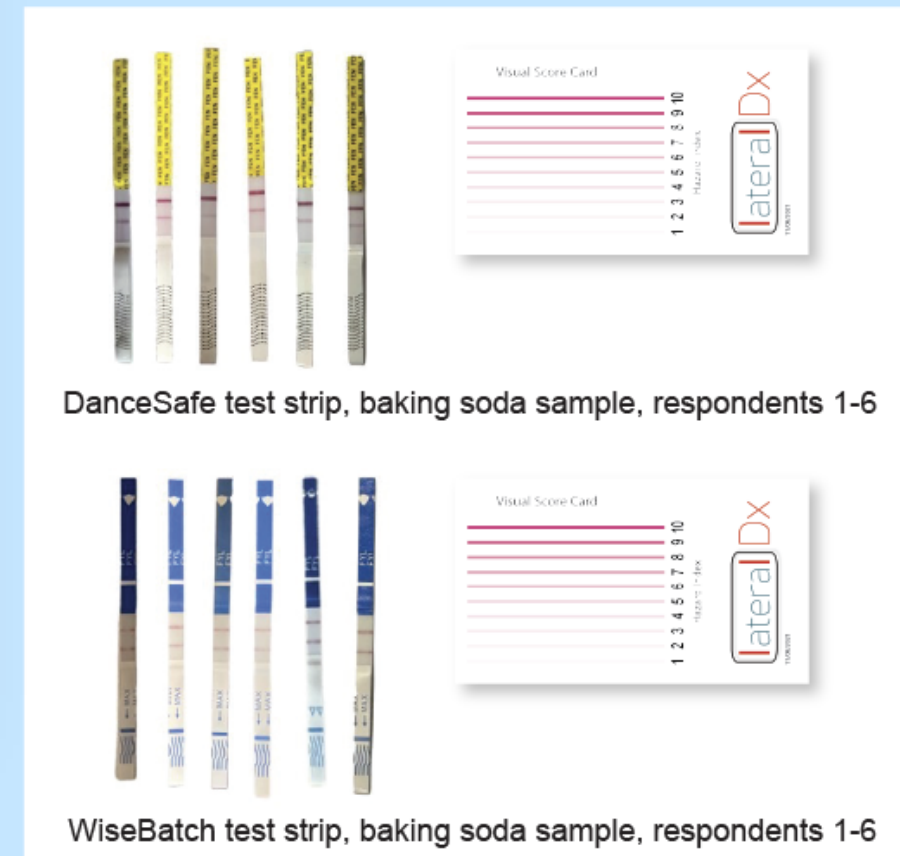
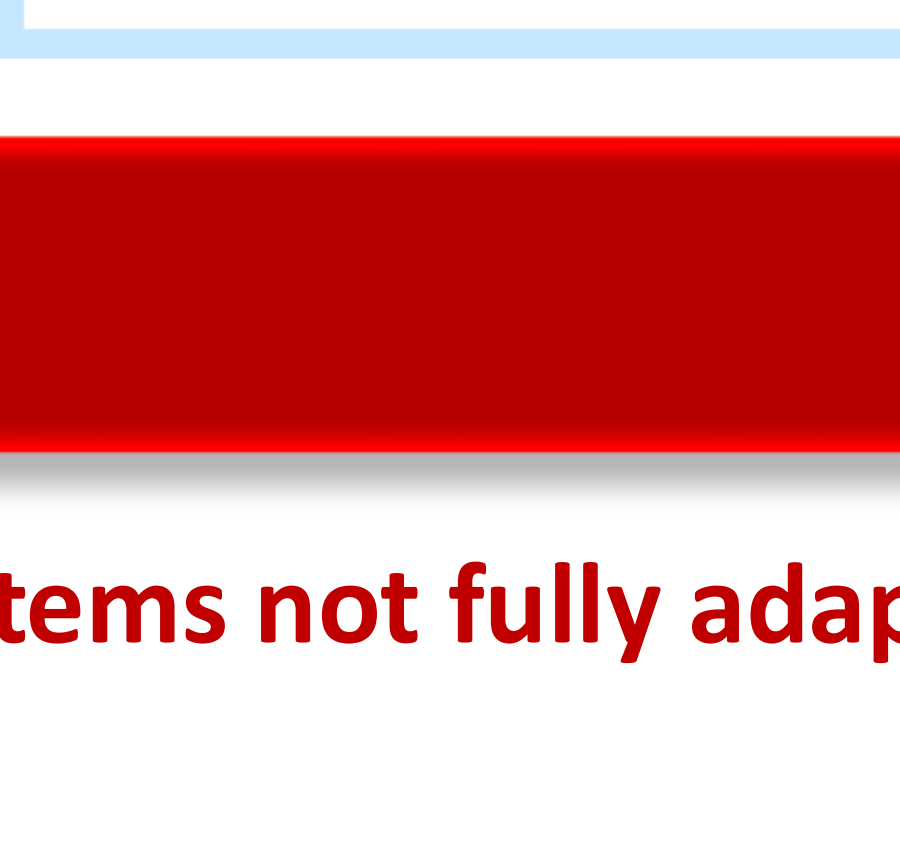


Survey Part 1. Respondents characterized web-based instructions as adding to their decision-making burden

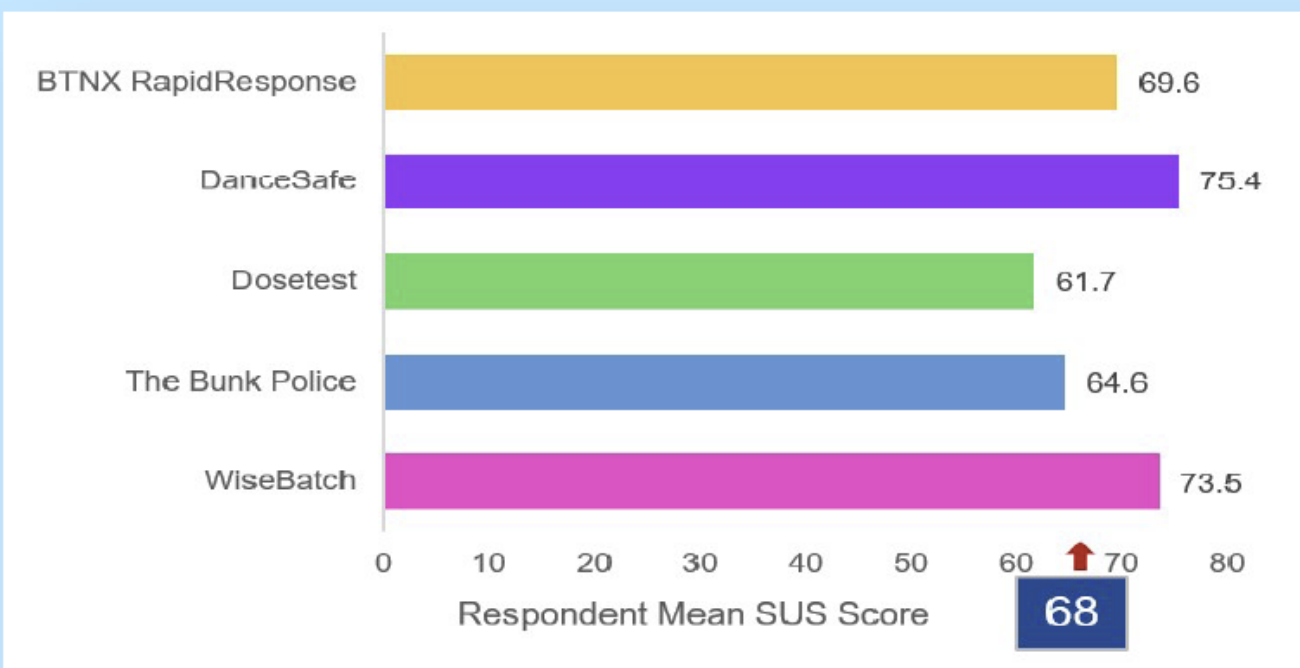


Web-based instructions for The Bunk Police (left)³ and Dance Safe (right)⁴

Survey Part 1. Saturation of control and test lines after testing, DanceSafe and WiseBatch.



Survey Part 2. BTNX RapidResponse, DanceSafe, and WiseBatch had passing system usability scores; The Bunk Police and Dosetest had failing scores (System Usability Scale)



Respondents identified these challenges and concerns:

- Single-strip envelopes are difficult to tear open
- Web-based instructions are complex
- Instructions are inconsistent across different formats
- Saturation of control and test lines is difficult to detect
- There is no privacy statement with mobile app

CONCLUSIONS

Fentanyl test strips are complex interactive systems not fully adapted for testing supply in real-world settings.

User design of envelopes, instructions, and assays creates usability challenges in real-world settings:

1. Assumptions are built into the user design about user access to required resources.
2. Users may not have access to some of these resources (e.g., water, adequate lighting, measuring tools, Internet)
3. Complexity of instructions may lead to testing error or limit the adoption of fentanyl test strips

There is an urgent need to re-design test strips with people who use drugs for use in real-world settings.

REFERENCES

¹ Source: <https://legislativeanalysis.org/knowledge-lab-state-maps/fentanyl-tests-strips/> Accessed April 9, 2025

² MapChart. Source: <https://www.mapchart.net/usa.html> Accessed April 9, 2025

³ Web-based instructions for The Bunk Police fentanyl test strips. Source: https://bunkpolice.com/how-to-test-for-fentanyl-fent-kits/?srsltid=AfmBOoplAmO6_iG9LzvMBpwld0vZGkIAZ9pyLdERs5gcVv4HnEQ9yMzRh Accessed April 9, 2025

⁴ Web-based instructions for DanceSafe fentanyl test strips. Source: https://dancesafe.org/wp-content/uploads/2024/04/DS_Fentanyl-Strip-Instructions_V18_Winter24.pdf Accessed April 9, 2025

