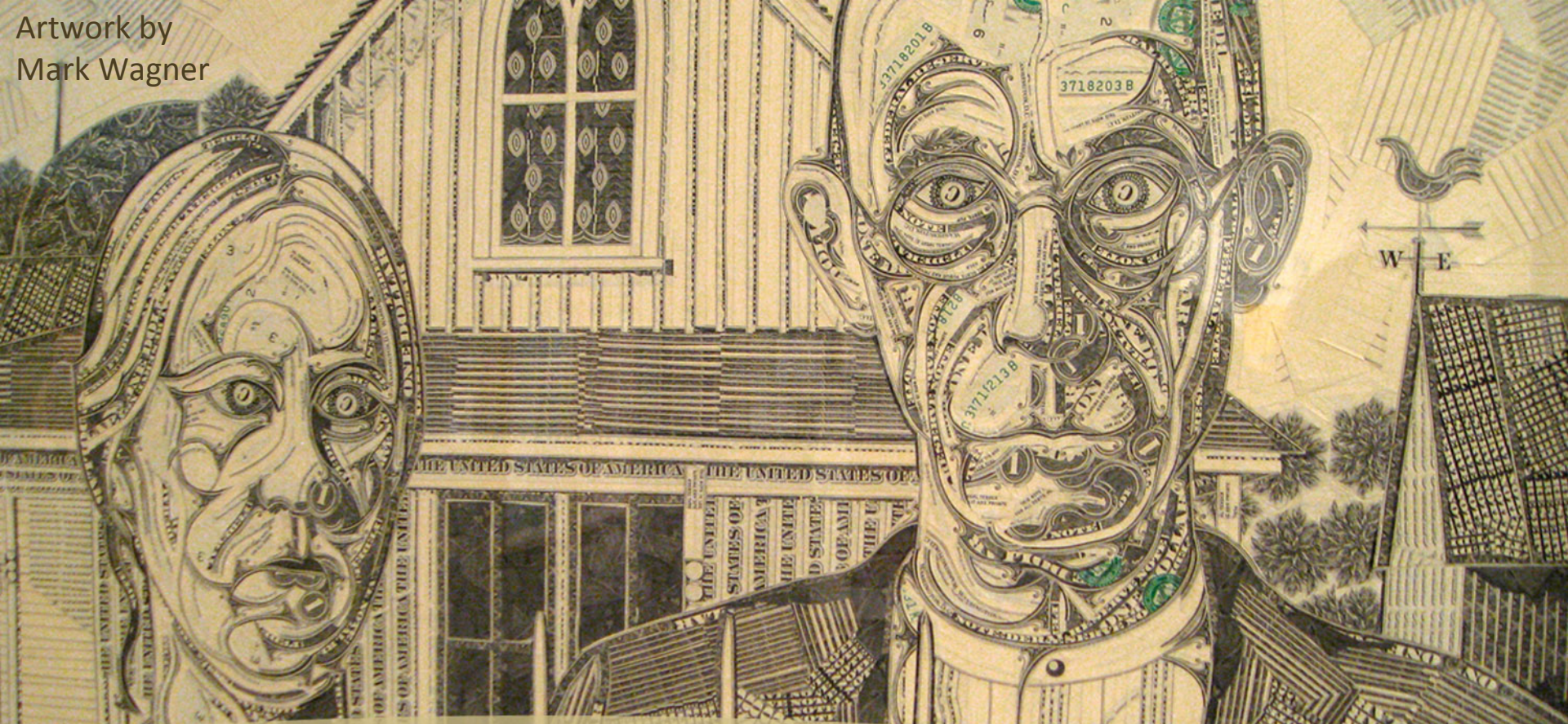


Artwork by
Mark Wagner



Kat Donnelly, MIT PhD in Engineering Systems, EPower Devices

Kristen Bremer: Duke University MS in Environmental Management

Advisor: Dan Ariely, PhD.

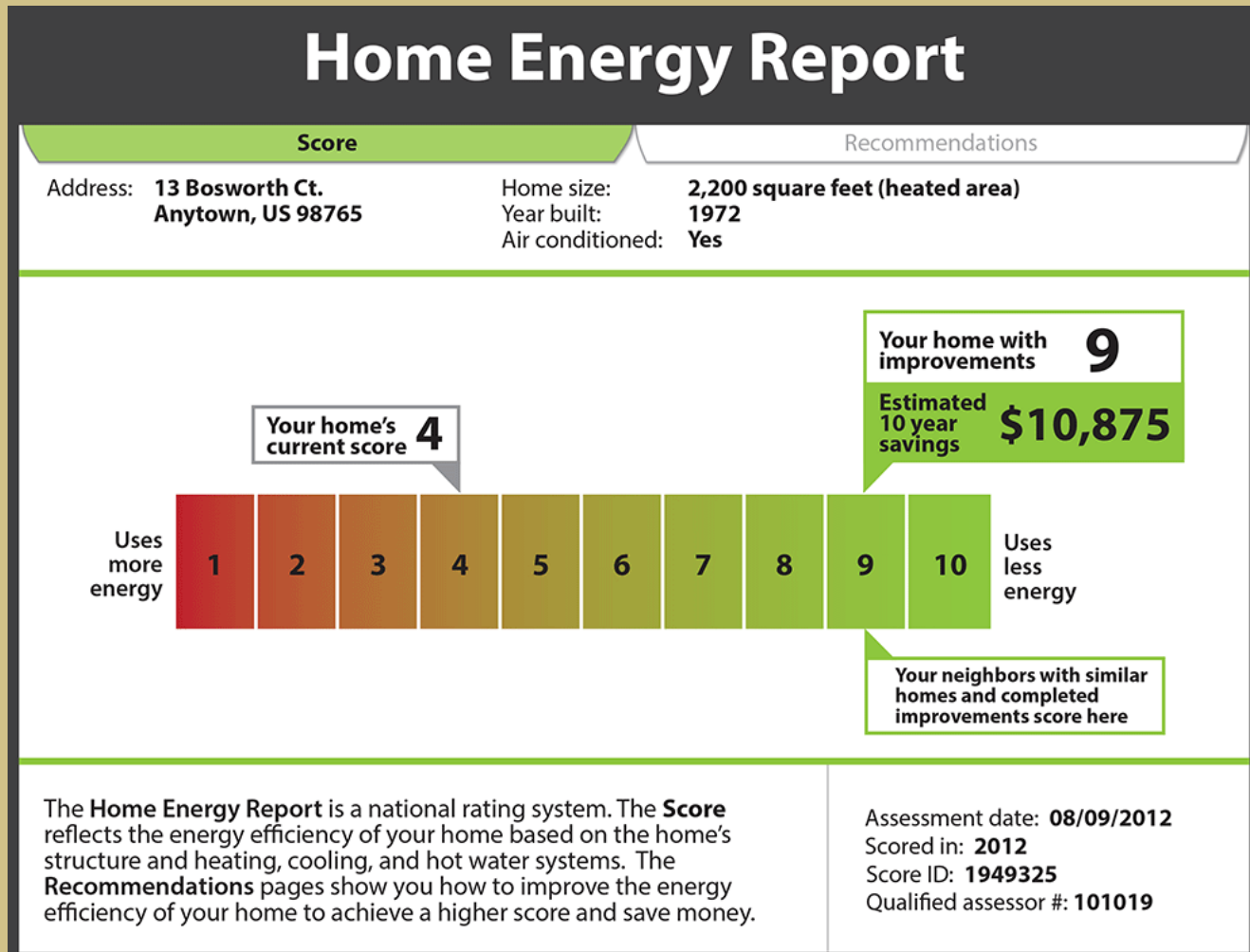
Using Home Energy Scoring to Motivate Energy Improvements

Analysis of factors influencing consumers' willingness to pay for energy-efficient home improvements

November 19, 2013, Behavior Energy and Climate Change Conference

Project Background

DOE Home Energy Score (researcher-modified version)



Experimental Design

Manipulated two factors

- Report type (decision environment)
- Housing condition (situational factor)

		Housing Situational Factor		
		Selling	Buying	Staying
Report Type				
Decision Environment	Control (No report)			
	Home Energy Score only			
	Basic Report (Score + High-level recommendations)			
	Detailed Report (Score + Detailed recommendations)			

Research Questions

How is WTP for home energy improvements impacted by a consumer's:

- ▣ Decision environment (score & report detail)
- ▣ Housing situation (buy, sell, stay)
- ▣ Do-it-yourself (DIY) home repair preference
- ▣ Political affiliation
- ▣ Preference for tax incentives
- ▣ Preference for public availability of the Home Energy Score

Survey Design

WTP for 5 energy-efficient improvements

Question	WTP Action	Avg. Cost	Savings /Year
1.	25 CFLs	\$100	\$220
2.	Two Smart Outlets & Two Power Strips	\$40	\$80
3.	Attic Insulation	\$1,100	\$450
4.	Duct Sealing	\$950	\$380
5.	Air Sealing	\$1,400	\$250



Survey Design

WTP questions in three formats:

- Yes/no



If you need to refresh your memory, click on the thumbnails to refer back to the report.

4. It will cost you about \$950 to hire a professional contractor to seal and insulate the ducts in your home. If you have your ducts sealed and insulated, you will save about \$380 each year on your utility bill.

Would you hire a contractor to seal and insulate your ducts for \$950?

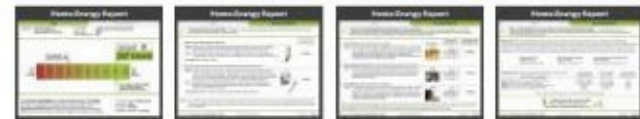
Yes

No

Survey Design

WTP questions in three formats:

- Matrix



If you need to refresh your memory, click on the thumbnails to refer back to the report.

4. It will cost you about \$950 to hire a professional contractor to seal and insulate the ducts in your home. If you have your ducts sealed and insulated, you will save about \$380 each year on your utility bill.

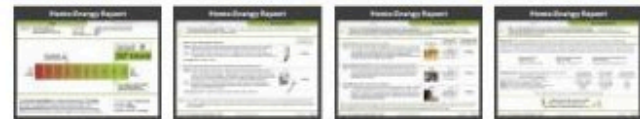
Would you hire a contractor to seal and insulate your ducts if the price was \$ _____?

	\$500	\$650	\$750	\$850	\$950	\$1,050	\$1,150	\$1,250	\$1,350	\$1,450	\$1,550	\$1,650
Yes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
No	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Survey Design

WTP questions in three formats:

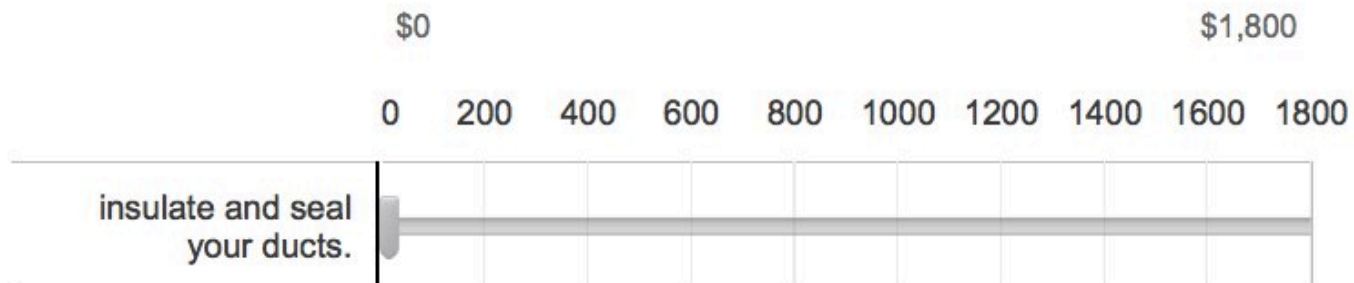
- Slider



If you need to refresh your memory, click on the thumbnails to refer back to the report.

4. It will cost you about \$950 to hire a professional contractor to seal and insulate the ducts in your home. If you have your ducts sealed, you will save about \$380 each year on your utility bill.

Please move the slider to the **MAXIMUM** you would be willing to spend to have a professional come into your home and seal your ducts.



Survey Distributions

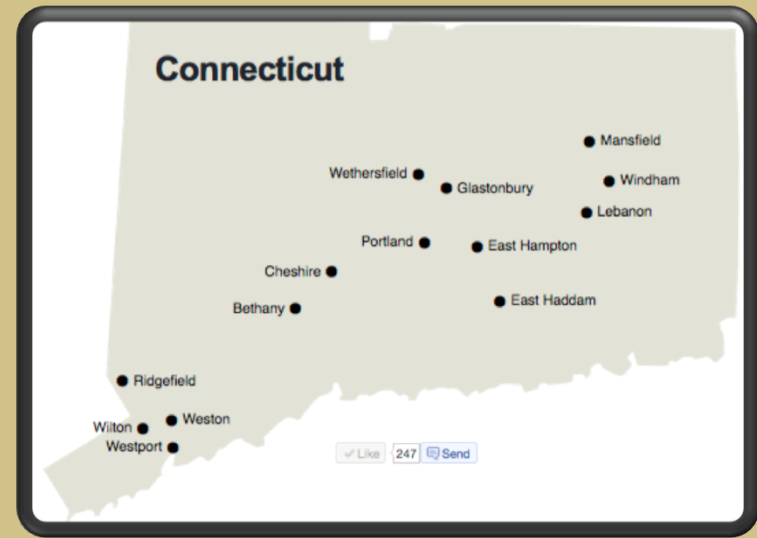
U.S. Panel (Qualtrics)

- Dispersed across U.S.
- 897 Valid Responses

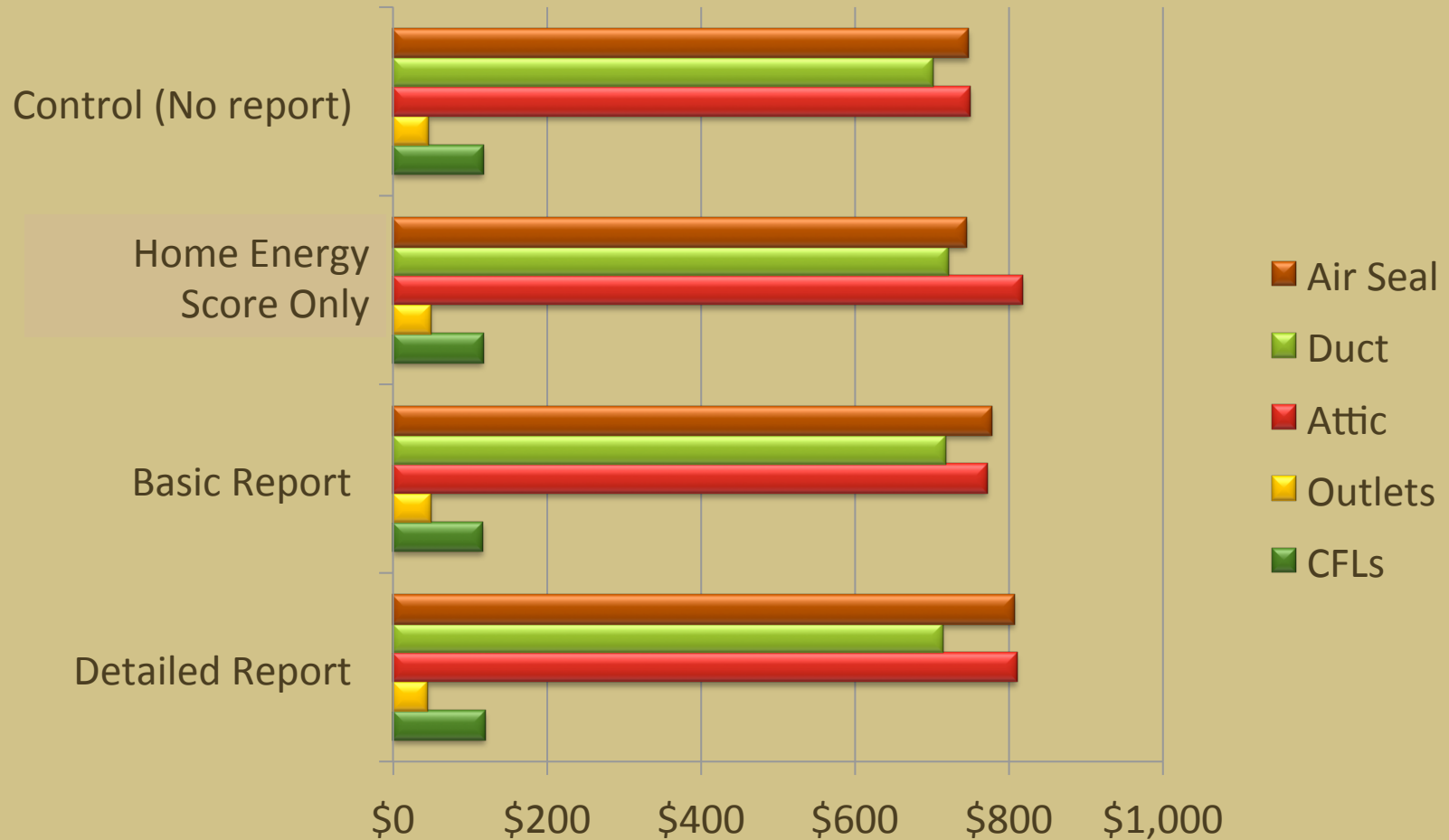


CT Population (Self-selected)

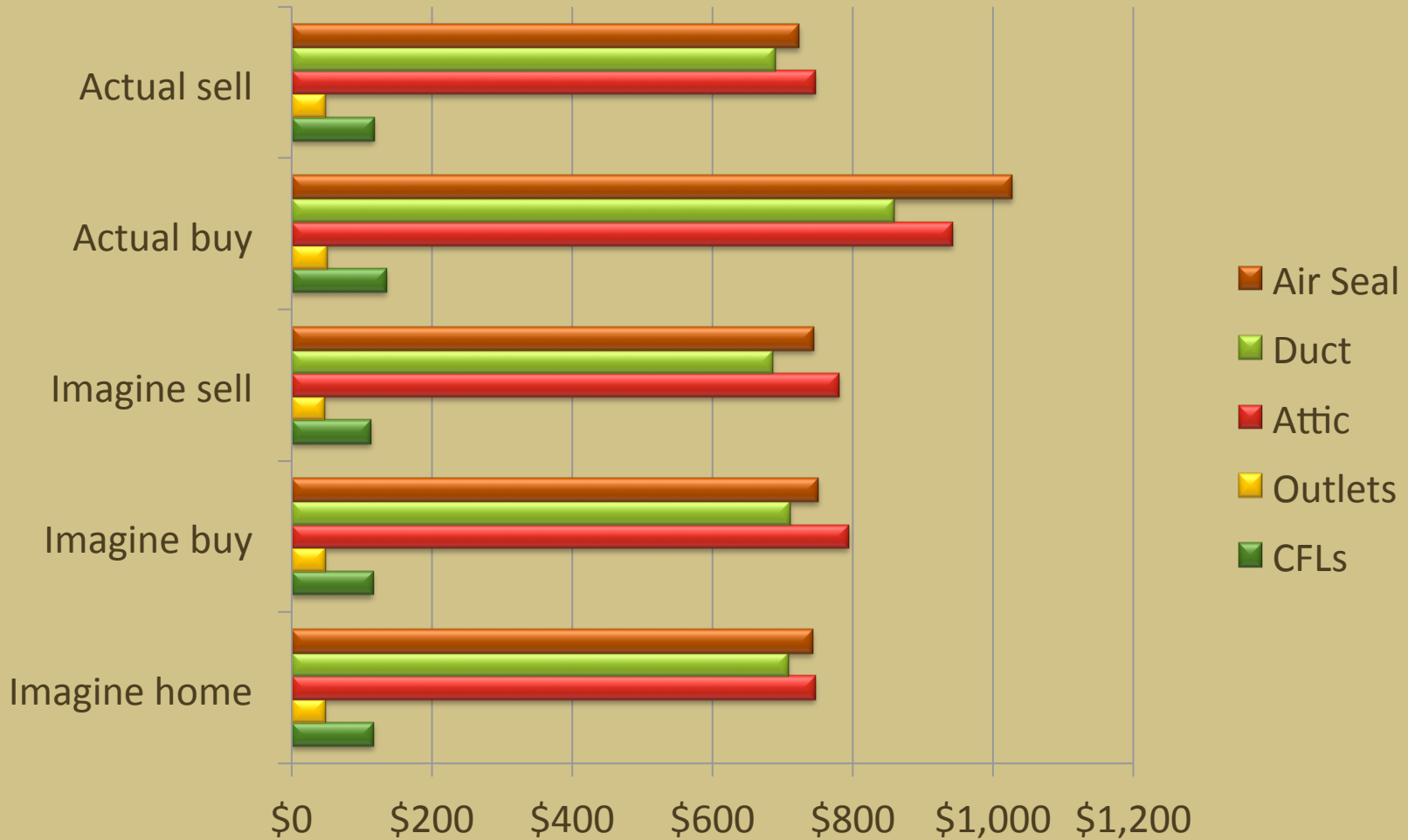
- Early Adopters from DOE CT Neighbor to Neighbor grant
- 586 Valid Responses
- Same overarching results, but slightly higher WTP than U.S.



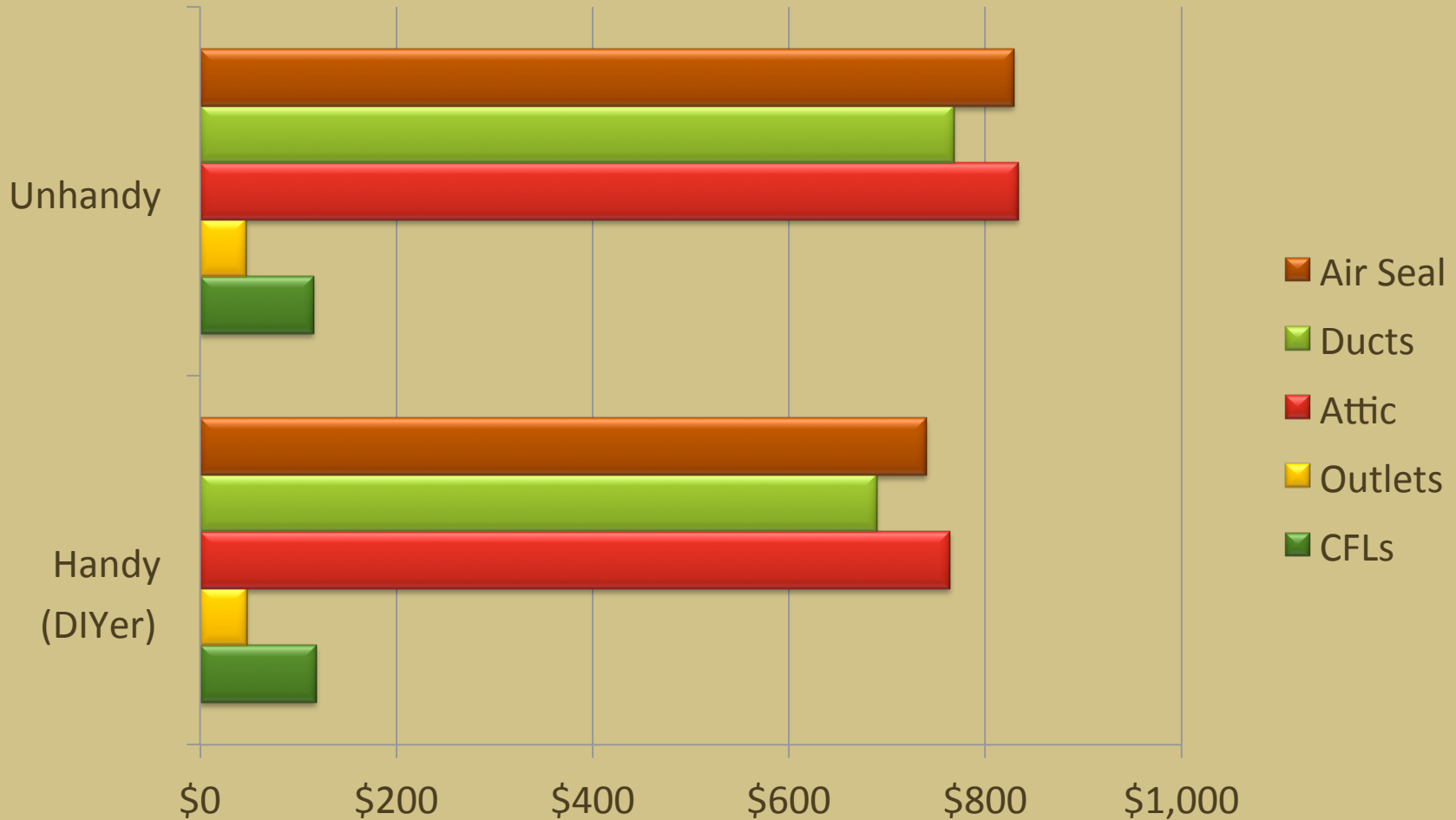
Decision Environment



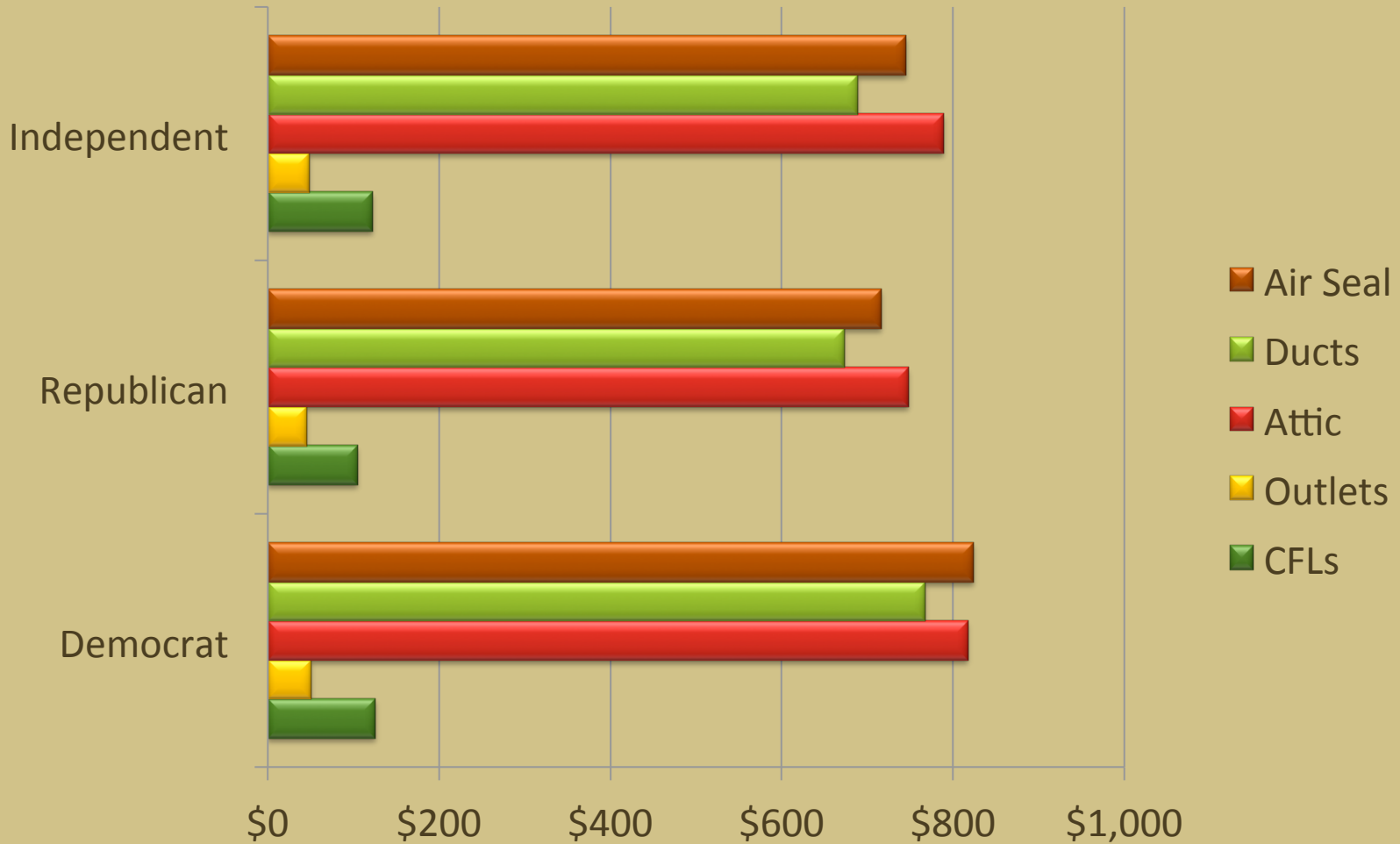
Housing Situation



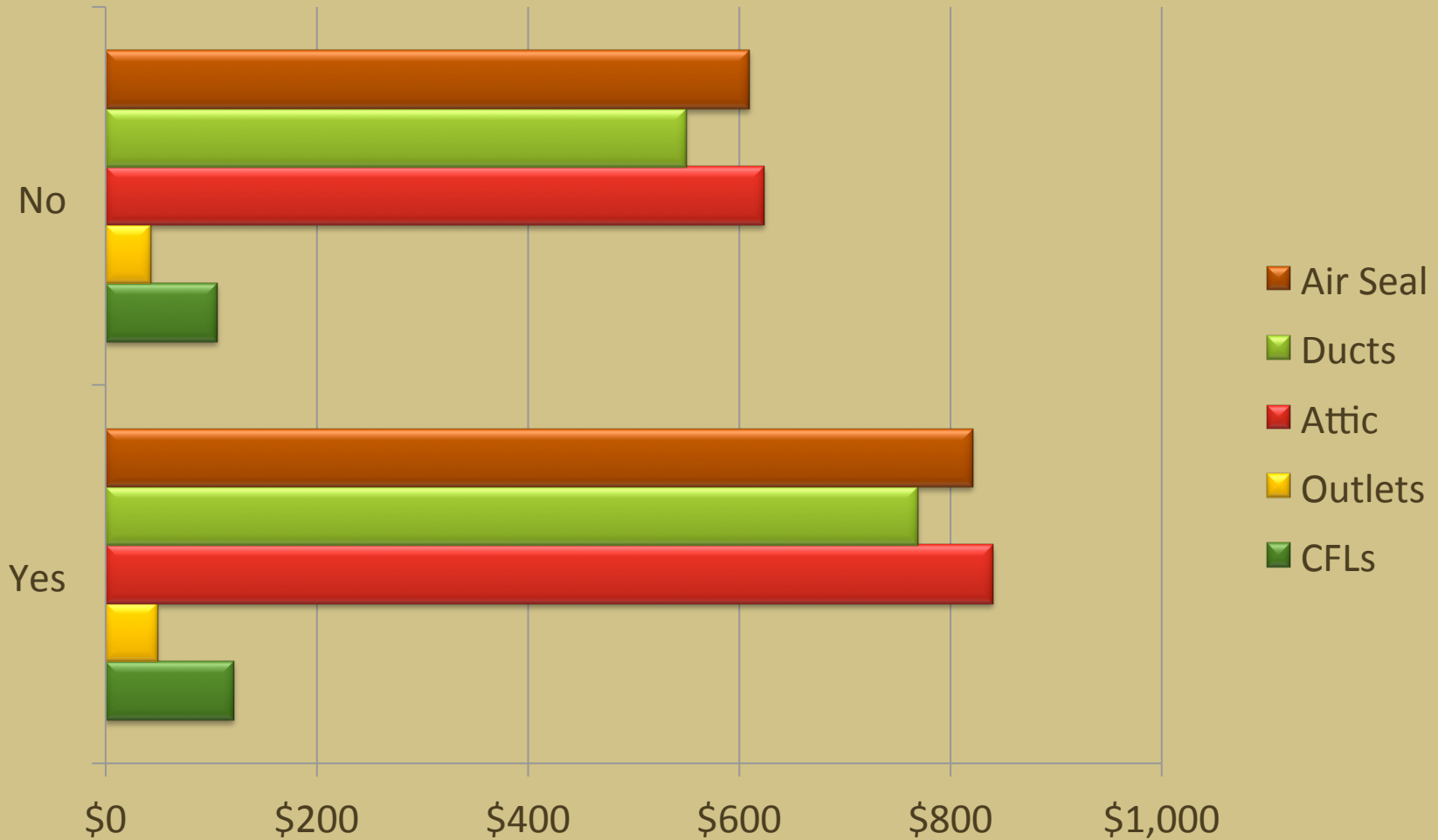
Repair Preferences



Political Affiliation



Public Availability



Findings Discussion

No single factor affects consumers' WTP

The decision process is influenced by many factors, such as:

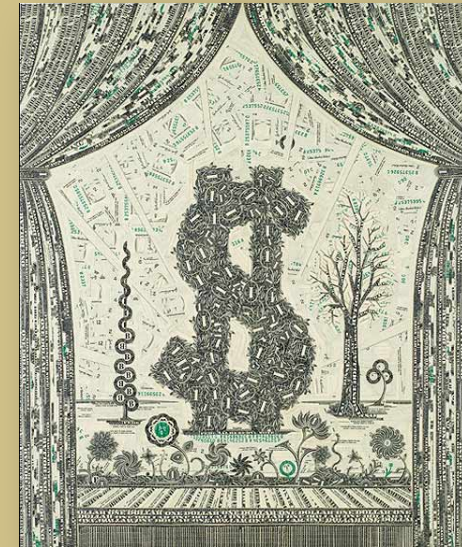
- Heuristics/Associative Memory
- Anchoring Effects/Framing
- Evaluability
- Social Norms/Peer pressure
- Housing, Personal, and Market Characteristics



Artwork: Mark Wagner

Program Recommendations

- Test different framing options (words matter!)
- Increase understanding among all homeowners
- Consider the do-it-yourselfer
- Target home buyers and provide incentives
- Target Democrats and Independents as early adopters to gain traction
- Bundle incentives and rebates at the outset
- Make it public and develop social norms



Artwork: Mark Wagner

Concluding Thoughts

- Choice decisions are fraught with emotion
- Labeling programs are helpful, but need a basis for understanding
- Audience considerations are critical
- Nudging factors - like tax incentives and public availability of the Home Energy Score - should be part of the policy discussion



Artwork: Mark Wagner

Any Questions?



Artwork: Mark Wagner

BIG Thanks to:

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Alon Evron, RTI International
(formerly Duke University)

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