

Improper Disposal of Used Oil & Filters: New Evidence & Possibilities

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Note

- ▶ This is the conference version of this presentation.
- ▶ It is available at <http://pri.sfsu.edu>.
- ▶ Some graphs and tables have interpretive notes that can be viewed in PowerPoint, Alt-View-Notes Page.
- ▶ This work was carried out under a contract with the CIWMB.

New Findings About...

- ▶ The big role of “shade-tree mechanics”
- ▶ Oil that remains in oil filters
- ▶ New immigrants & improper disposal
- ▶ The relative effects of oil collection curbside and by certified centers
- ▶ Outreach to DIYers
- ▶ Impact of media use on improper disposal
- ▶ Alternative models and methods of disposal

From...

- ▶ New in-depth analysis of 2001 statewide survey of DIY oil changers
 “Initial Results” published in 2002
 Available at www.ciwmb.ca.gov
- ▶ New focus groups in 2003
- ▶ Note: not all these topics are addressed in this presentation.
- ▶ Full report available about June 2004

Validity of Survey Estimates of Oil & Filter Disposal

- ▶ Estimates of TOTAL oil and filter use: GOOD.
- ▶ People try to hide improper disposal, therefore...
- ▶ Surveys UNDERESTIMATE improper disposal.

- ▶ Conclusion: do not use survey estimates alone to estimate total improper disposal.

- ▶ Two important uses:
 1. Use to estimate improper disposal in combination with other data—census, grantees' reports to CIWMB.
 2. Discover patterns of relationship.

For example: Predicting the Number of Oil Changes in Counties

- ▶ Statewide survey data on number of oil changes and number of vehicles per DIYer household.
- ▶ Estimate mean number of oil changes given number of vehicles in household.
- ▶ The Census gives us the number of households with 0, 1, 2, ... 5 or more vehicles available, in each county.
- ▶ Multiply mean oil changes times the number of households with N vehicles and add to estimate the number of DIYer oil changes per year in each county.

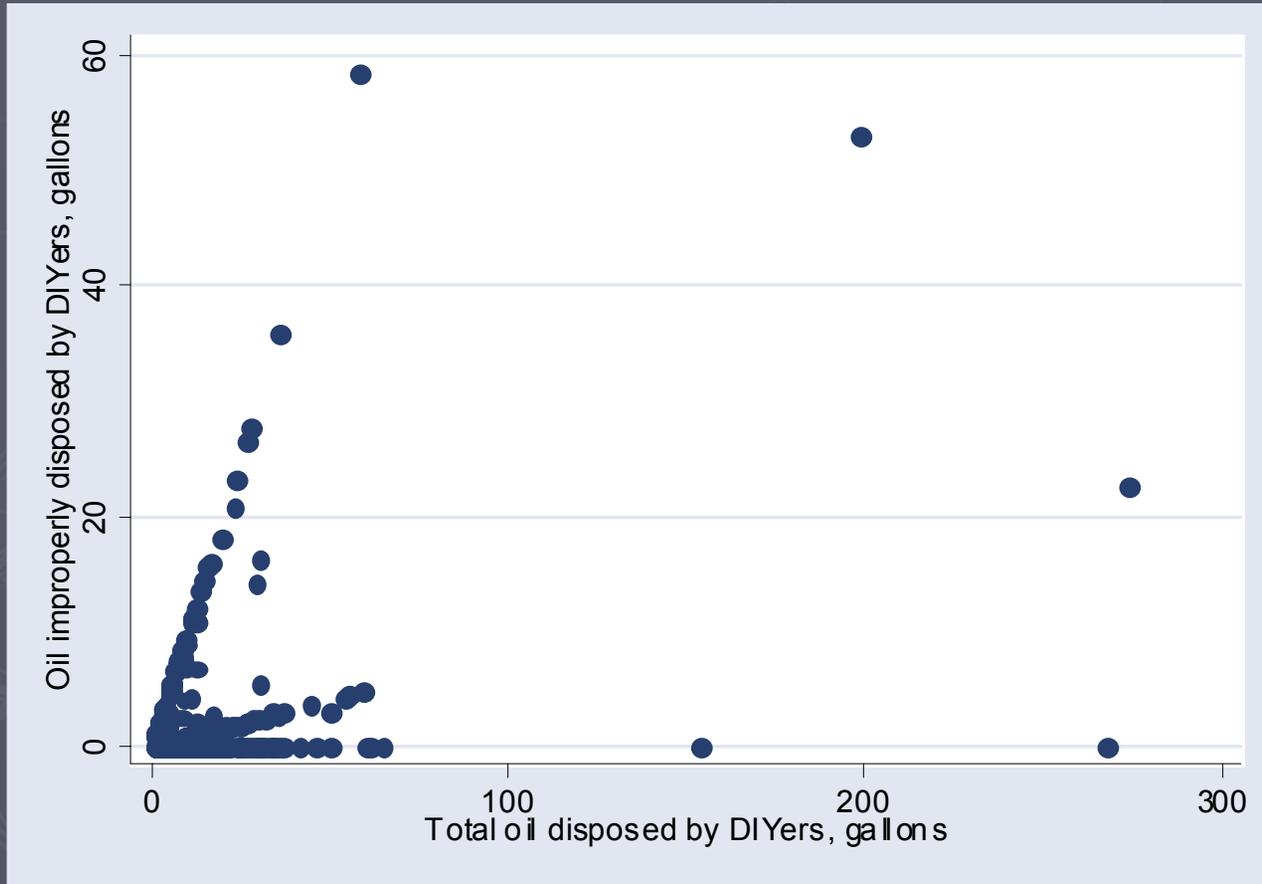
Disposal of Oil & Filters

The DIYer World in Six Parts

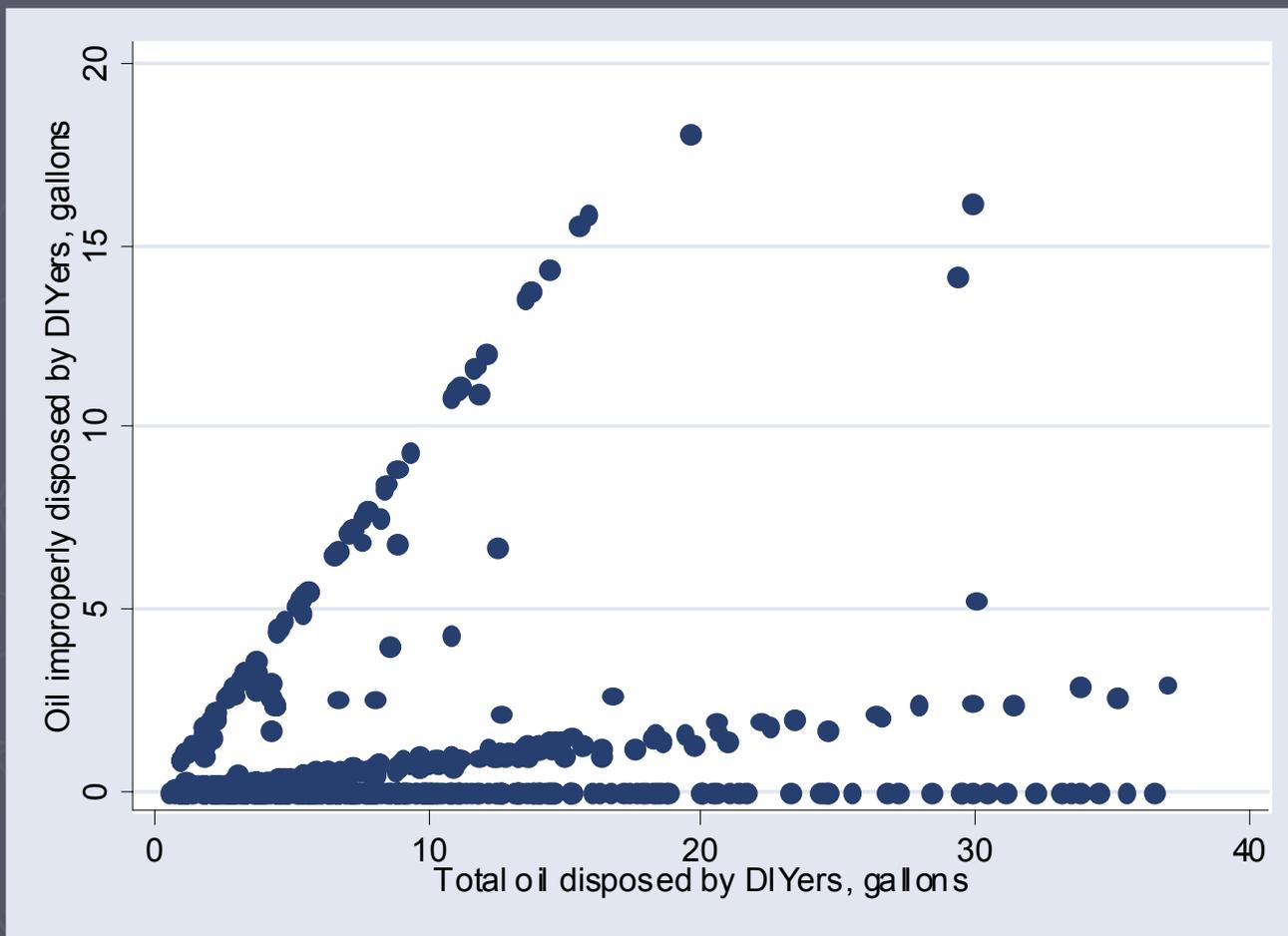
- ▶ Three patterns of disposal:
 - proper (or unknown) disposal
 - improper disposal of filters only
 - improper disposal of drained oil as well as filters

by
- ▶ Two kinds of DIYers: shade-tree mechanics (STMs) and other DIYers

Improper Oil by Total Oil (2001 statewide sample, 773 DIYers)



Improper by Total Oil, closeup: three patterns of improper disposal



Disposal by DIYer Type

Note: UNDERestimates of improper disposal	DIYer Type		
	Disposal	STM	Other DIYer
Proper or not known	41%	48%	47%
Improper—filters only	41	39	39
Improper—drained oil	18	13	14
Total	100	100	100

Average Gallons of Oil Improperly Disposed

Disposal	DIYer Type		Ratio
	STM	Other DIYer	STM to Other DIYer
Proper or not known	0.0	0.0	0.0
Improper—filters only	2.0	0.5	4.0
Improper—drained oil	22.8	4.7	4.9

STMs

- ▶ STMs comprise 17% of all DIYers
- ▶ STMs dispose of 12 mill gals total: 46% of all DIYer oil
- ▶ Other DIYers dispose of 14 mill gals: 54%

STMs: Improperly Disposed Oil

- ▶ STMs dispose of 55%
- ▶ Other DIYers dispose of 45%
- ▶ The estimate for STMs has a very wide margin of sampling error.
- ▶ **STMs account for 40-70% of improperly disposed oil in Calif.**
- ▶ There are about 400,000 STMs in Calif.

Understanding STMs

- ▶ The “social STM”

- ▶ The “economic STM”

High-volume STMs tend to have low household income. They change oil frequently for multiple vehicles, probably for money.

STMs are...

- ▶ 17% of DIYers overall
- ▶ 75% of high-volume DIYers: ≥ 27 gals/yr
- ▶ 91% of very-high-volume DIYers: ≥ 50 gals/yr

STMs—A Special Problem

- ▶ STMs and the “midnight barrels”
- ▶ Small businesses outside state law and local ordinance
- ▶ Reaching STMs and their oil: special methods needed?

Understanding STM & high-volume work: age

- ▶ The STM rate drops sharply with age
 - 31% of DIYers 18-29
 - 7% of those 65 & over
- ▶ High-volume DIYers (≥ 27 gals/yr) also decline over age
 - 10% of DIYers 18-29
 - 5% age 30-39
 - 3% of DIYers of 40 & over, and 65 & over

WHERE'S THE OIL?

Younger DIYers including STMs dispose improperly of more oil

▶ % of improperly disposed oil by age

38%	18 to 29 years of age
26%	30 to 39
22%	40 to 49
8%	50 to 64
6%	65 plus

STM work by urban/rural

- ▶ STMs do much more business on average in cities than in rural areas:

Percent rural
of county

Mean gals of oil
disposed by STMs

0-4%	37.2 g
5-9%	22.9 g
10-29%	17.1 g
30-100%	16.3 g

WHERE'S THE OIL?

Urban DIYers including STMs dispose improperly of more oil

- ▶ % of improperly disposed oil by county percentage rural

65%

17%

13%

5%

0-4% rural (very urban)

5-9%

10-29%

30-100% (very rural)

Low income STMs dispose of much more oil on average

<u>Household income</u>	<u>Mean gals oil/yr</u>
Less than \$25,000	83.3 g
\$25-69,999	19.8 g
\$70,000 and over	21.3 g

WHERE'S THE OIL?

Middle income DIYers including STMs dispose improperly of more oil

▶ % of improperly disposed oil by income level

33% <\$25,000 annual income

47% \$25,000 – to \$69,999

20% >\$70,000 and over

FILTERS

- ▶ How much oil remains in filters?

Commonly cited:

2-8 oz.

3.5-8 oz.

- ▶ New research estimates **70%** of filter oil capacity remains in DIY filters:
average **10.6 oz.**

Residual oil in filters 2000-2001

- ▶ 24.4 million DIY oil changes
- ▶ 25.7 mill gals of used DIY oil
- ▶ 2.13 mill gals in used DIY filters
- ▶ 2.03 mill gals in improperly disposed DIY filters

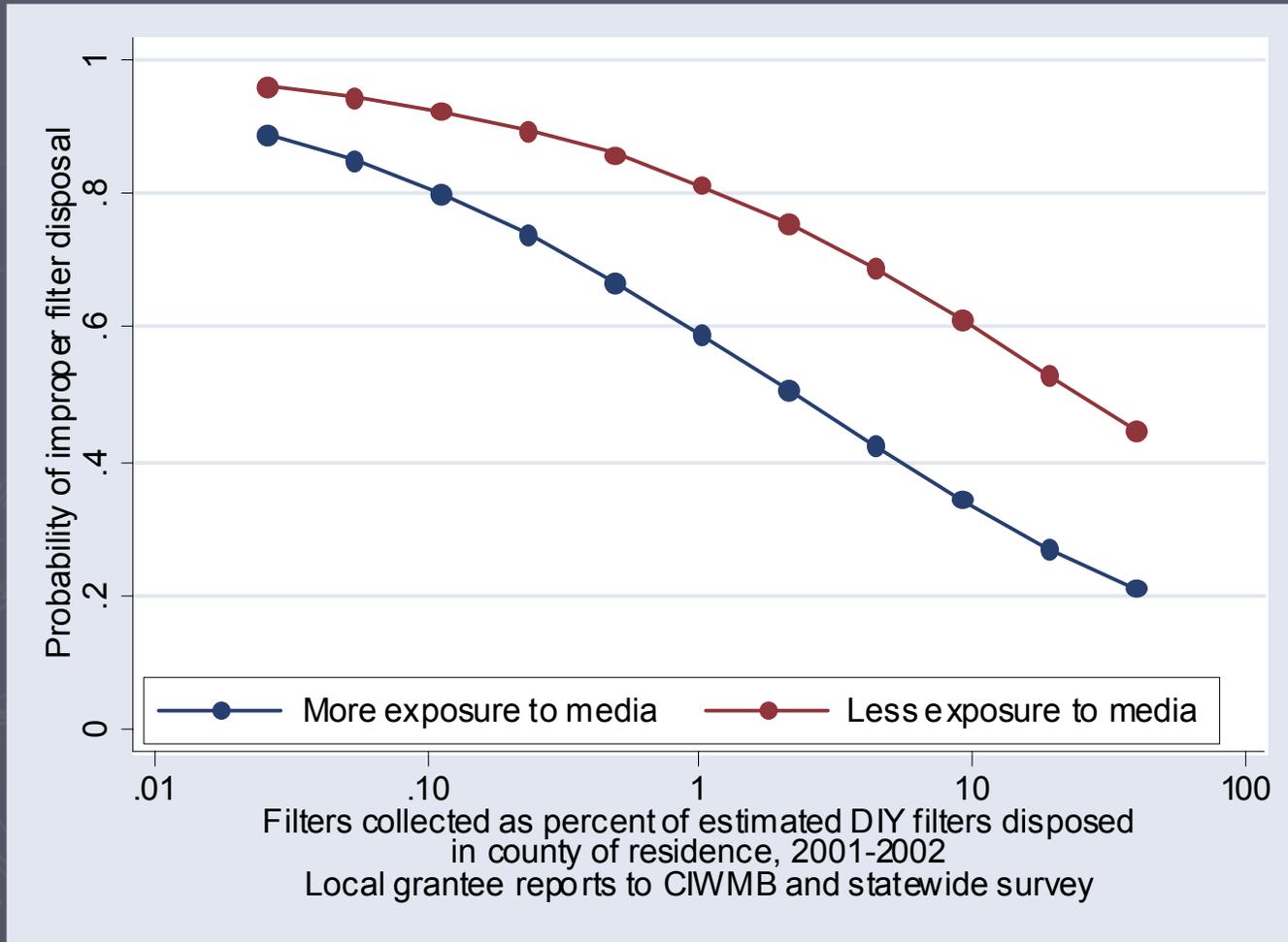
Implications for Programs

- ▶ Much more oil remains in filters than previously thought.
- ▶ Recycling filters is an important way to recycle oil as well as other materials.

Implications for Your Filters Data

- ▶ Rules of thumb for converting the weight of a drum of filters into a number of filters and an amount of residual oil should be re-examined.
- ▶ Sizes and market shares of filters are changing and need continuing study.

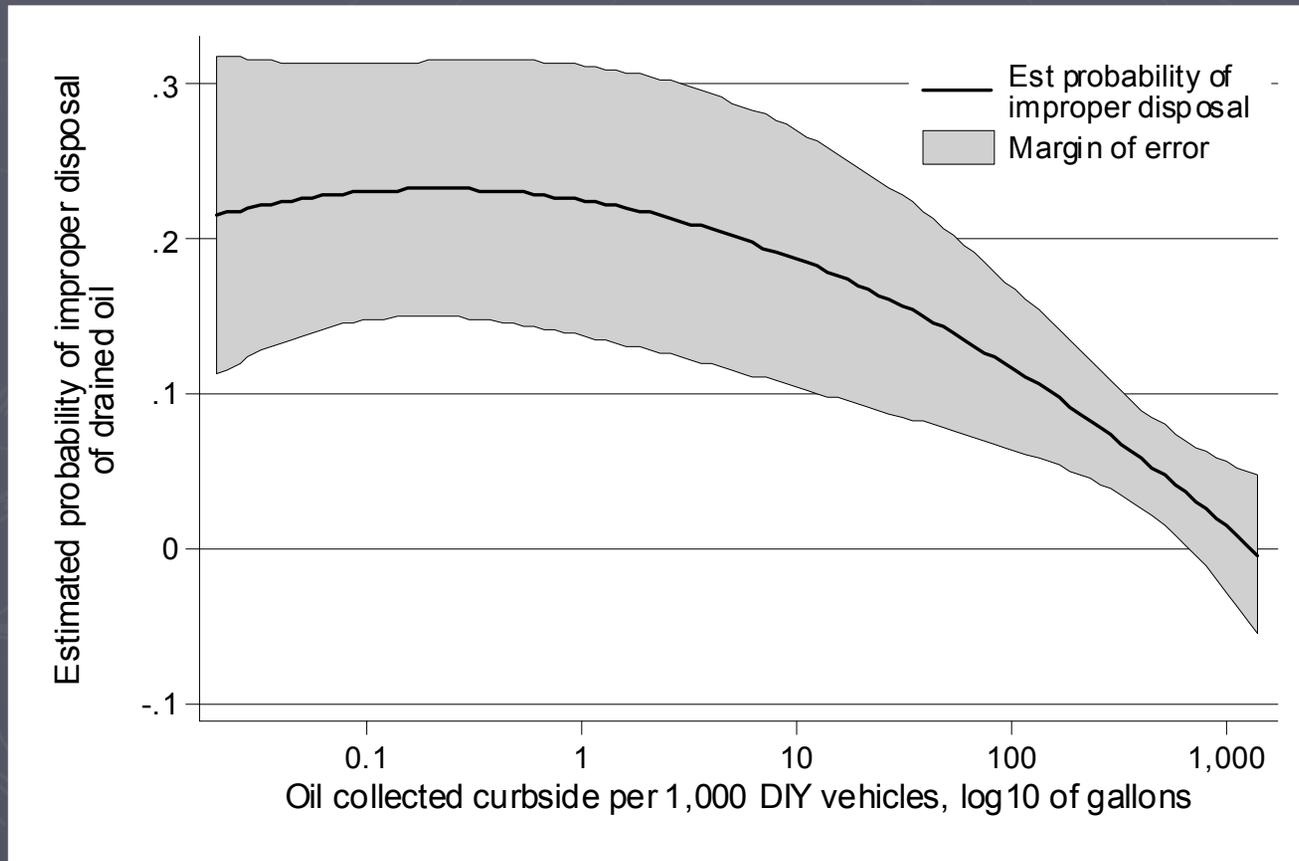
Filters: Improper Disposal by Rate of Collection in County and Media Exposure



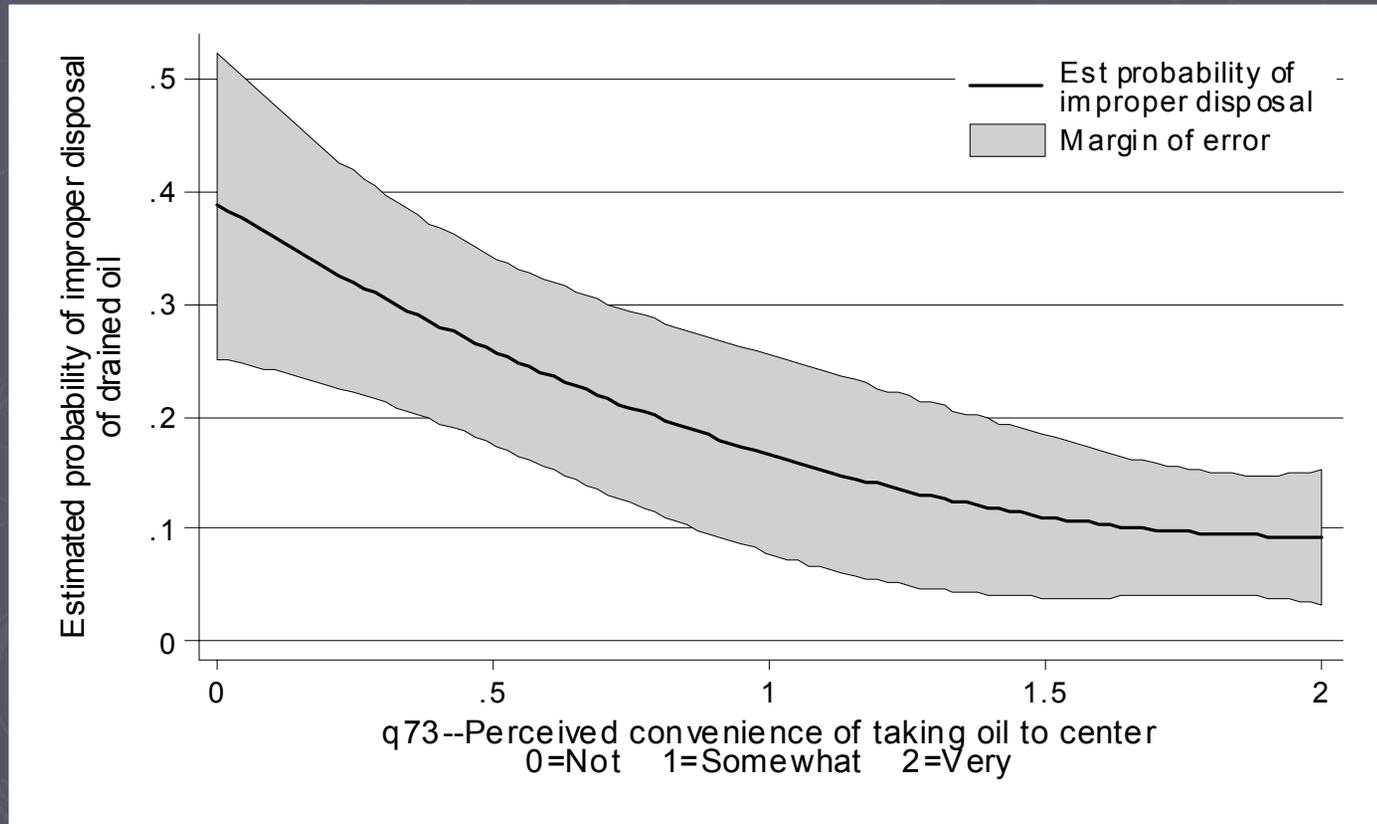
DRAINED OIL

- ▶ Comparison of
 - Curbside collection
 - Collection at certified centers
- ▶ Note:
 - Curbside collection typically NOT available at multi-family dwellings
 - People 40 and over more likely to be homeowners in single-family dwellings

Drained oil: among men 40 and over, predicted IMPROPER DISPOSAL drops with more curbside collection



Drained oil, **men less than 40**: predicted IMPROPER DISPOSAL drops with increased perceived convenience of taking oil to a collection center



Which method of collection?

- ▶ An equity issue?
- ▶ A cost issue?
- ▶ A sustainability issue?
- ▶ A uniformity issue?

Your reactions & insights needed!

- ▶ Do you have any reaction to these findings?
PLEASE LET ME KNOW.
- ▶ Please contact me at the Conference or at
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