

### Overview of NC Traffic Stop Data

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**North Carolina Traffic Stops**  
NC Association of District Court Judges 2016  
Fall Conference  
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### SBI-122 Form

- Mandated for Highway Patrol since 2000
- Other agencies since 2002
- So far, about 18,000,000 records
- No Attorney General reports
- State web site: <http://trafficstops.ncdoj.gov/>
- Baumgartner web site:  
<http://www.unc.edu/~fbaum/traffic>

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### The Focus of My Analysis Today

- Given a traffic stop, what are the odds of search, arrest, citation?
- For drivers of different age, gender, and race categories, what are the odds of each outcome?
- What are trends over time?
- Do the bivariate results remain when we control statistically for other factors?
- Which types of stops lead to racial disparities?
- How much contraband is typically found?
- (Note: My focus here is on Black-White comparisons but the same can be done for Hispanics.)

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Overview of NC Traffic Outcomes

	Number	Percent
Total Traffic Stops, 2002-13 Excludes passengers Excludes checkpoints	15,992,317	100.0
Citations	10,616,581	66.3
Searches	511,813	3.2
Arrests	349,136	2.1
Contraband "hits"	128,918	0.8

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Percent Black Stopped, by Purpose

	Number	Percent Black
Total Stops	15,992,305	30.64
Driving Impaired	158,264	22.32
Seat Belt	1,492,624	26.56
Speed Limit	6,665,939	26.65
Safe Movement	886,090	29.82
Stop Light/Sign	758,136	31.18
Investigation	1,130,736	31.43
Other Vehicle	851,550	33.53
Vehicle Equipment	1,422,461	38.12
Vehicle Regulatory	2,626,505	38.41

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Percent Searched, Cited, Arrested

	White	Black	Ratio
Searched	2.61	4.57	75
Cited	66.88	63.43	-5
Arrested	1.90	2.71	43

Ratio = (Black Percent – White Percent)\*100 / White Percent  
 A Simple Measure of Racial Disparity in Outcomes  
 Percent Difference in the Likelihood of the Outcome

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### Percent of Men Searched

	Number	White	Black	Ratio
Total Searches	427,677	3.23	6.38	97
Incident to Arrest	148,326	1.23	1.90	55
Warrant	1,127	0.01	0.01	61
Protective Frisk	14,316	0.11	0.21	94
Consent	194,236	1.47	2.94	100
Probable Cause	69,672	0.42	1.33	216

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### Percent of Men Searched with Contraband

	White	Black	Diff.
Total Searches	25.64	26.07	2
Incident to Arrest	18.68	20.39	9
Warrant	38.19	42.28	11
Protective Frisk	15.79	17.76	12
Consent	23.30	19.13	-18
Probable Cause	56.39	50.68	-10

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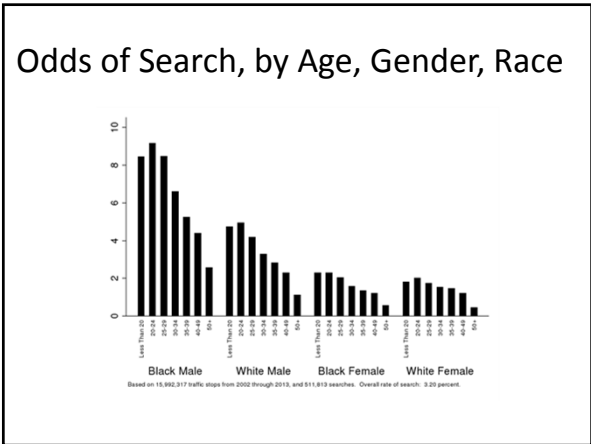
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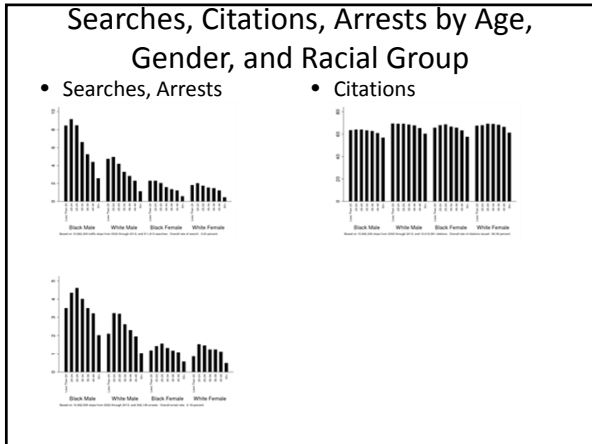
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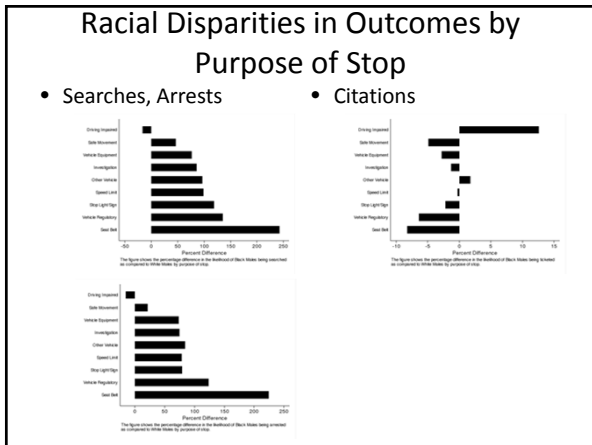
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Racial disparities come from “investigatory” stops.  
Black and White Search Rates Predicted (Charlotte)

Predictor variables	White	Black
Search rate for the other racial category (Black / White)	+ .675***	+ .918***
Percent Speeding	-.0004, n.s.	+ .002, n.s.
Percent Stop sign / stop light	-.032*	+ .008, n.s.
Percent DWI	+ .532***	-.331***
Percent Safe movement (e.g. lane changes)	+ .011, n.s.	+ .028, n.s.
Percent Equipment (e.g., broken tail light)	+ .007, n.s.	+ .069***
Percent Regulatory (e.g., expired tags)	-.002, n.s.	+ .011**
Percent Seat belt	-.010, n.s.	+ .098***
Percent Investigation	+ .007, n.s.	+ .073***
Percent Other	-.025*	+ .071***
N = 889	R-sq = .79	R-sq = .83

IAAAR  
 INSTITUTE FOR APPLIED ANALYTICAL RESEARCH  
 UNIVERSITY OF NORTH CAROLINA AT CHARLOTTE

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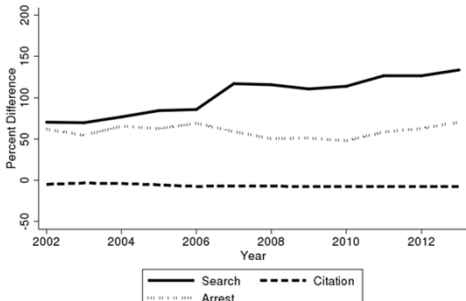
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### Search Disparities are increasing over time.



The figure shows the percentage difference in the likelihood of different outcomes for Black Males as compared to White Males.

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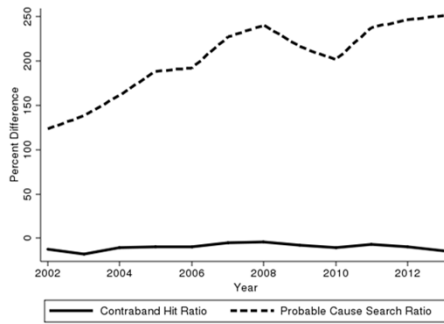
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### Probable Cause Searches Increasingly Targeted, but Continued Low Hit Rate



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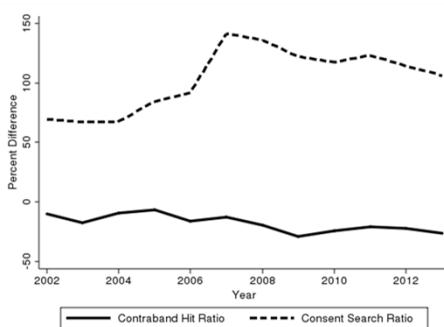
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### Similar Pattern for Consent Searches



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## Multivariate Analyses

- Control for other factors, logistic regression
  - Race
  - Hispanic
  - Age
  - Purpose of the stop (speeding, equipment, etc., 9 categories defined)
  - High disparity officer
  - Hour of the day
  - Day of the week

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Variable	Search	Citation	Arrest
Race	1.75*	1.08*	1.51*
Hispanic	1.16*	1.83*	1.72*
Age	0.97*	0.99*	0.99*
Stop Purpose			
Speed Limit	-	-	-
Stop Light	1.45*	0.52*	1.25*
Impaired	23.65*	0.08*	59.21*
Movement	2.96*	0.21*	2.04*
Equipment	2.38*	0.17*	1.27*
Regulatory	1.90*	0.55*	1.57*
Seat Belt	2.10*	0.89*	1.26*
Investigation	5.38*	0.27*	3.98*
Other	2.61*	0.47*	2.38*
Officer Type			
Black Disparity $\uparrow$	1.20*	0.98*	1.12*
White Disparity $\uparrow$	0.84*	0.97*	1.32*
Contraband			
Contraband Found	-	0.88*	23.49*
Time			
Hour of Day	Included	Included	Included
Day of Week	Included	Included	Included
Constant	0.09*	2.63*	0.03*
N	4,752,908	4,752,908	4,752,908
Pseudo R <sup>2</sup>	0.10	0.10	0.23

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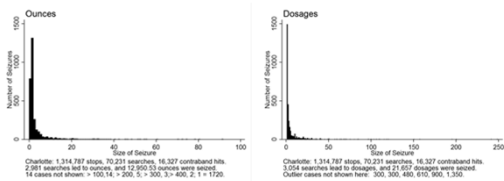
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## Contraband hits: Usually very small amounts




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### Contraband: Rare, and small amounts

Quantity	Number	50 % have less than:	90 % have less than:	99 % have less than:
Ounces	2,981	1	6	52
Pounds	104	1	5	25
Pints	180	1	2	27
Gallons	2,763	1	3	16
Dosages	3,054	2	13	96
Money	962	\$226	\$1,705	\$14,470
Weapons	2,198	1	2	3
Other (value)	2,229	\$5	\$100	\$3,000

Data for Charlotte. N = 1,314,787. Total Contraband hits: 16,327 (1.24 percent of stops).

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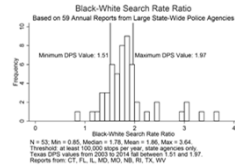
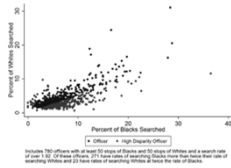
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### Findings not peculiar to NC

- Texas Highway Patrol troopers, 2011-15
- 53 statewide agency yearly reports




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### “Bad apples” and systems, both

- We can identify officers with racial disparities in the patterns of their stops, searches, and arrests.
- Controlling for that leaves unexplained racial disparities.
- Chiefs can monitor and train officers.
- Disparities stem from both effects.
- Disparities greater when searches are more discretionary and more investigative rather than focused on traffic safety.
- Clearly a national issue, not particular to any particular agency.

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## Frank R. Baumgartner

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<http://www.unc.edu/~fbaum/traffic.htm>

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## Reserve Slides

- Contraband finds in Charlotte
- Traffic stops as a means of searching for large amounts of drugs or other contraband is extremely inefficient
- Searches are rare (~ 3 percent state-wide)
- Contraband is rare (~ 20-30 percent of searches)
- Almost always, the contraband is “user” amounts

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## Simple percent differences in odds of search, for males

City	Stops	White Pct Searched	Black Pct Searched	Percent Increase for Blacks
Charlotte	822 K	4.65	10.48	125
Durham	146 K	5.03	11.07	120
Chapel Hill	38 K	4.43	8.64	95
Carrboro	17 K	7.37	16.18	120
Raleigh	456 K	3.28	5.69	74
SHP	5.4 M	0.77	1.19	55
North Carolina	10.3 M	3.23	6.38	98

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## Results: Focus on Young Black Men

City	Increased Odds of Being Searched, for Black Males compared to White Males, controlling for relevant factors
Charlotte	136 %
Durham	164 %
Chapel Hill	111 %
Carrboro	273 %
Raleigh	130 %
SHP	66 %
State-wide	75 %
Arrest, controlling for same factors as well as whether contraband was found (state-wide)	51 %

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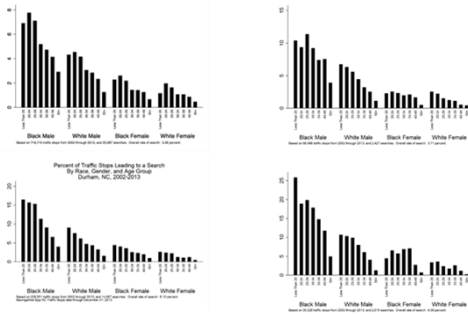
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## It's the same in every city

- Raleigh, Durham
- Chapel Hill, Carrboro




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## Officer – by – Officer Analyses

- Each officer has a unique ID number
- Linking to the identity of that officer requires legal work, but can be done
- Agencies can use data to review patterns
- Many typos in the officer ID numbers
- I analyze only if:
  - Greater than the department average search rate
  - At least 50 Black and 50 White Stops

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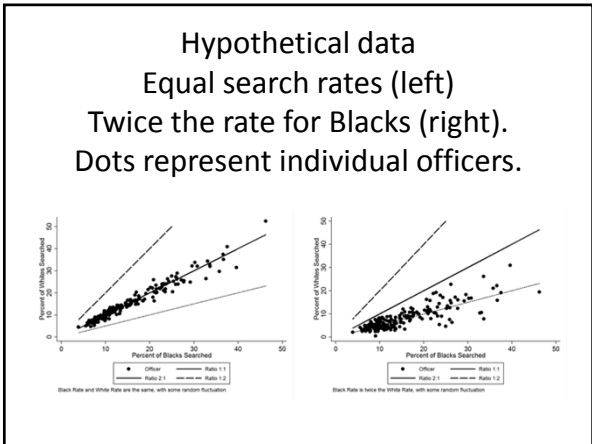
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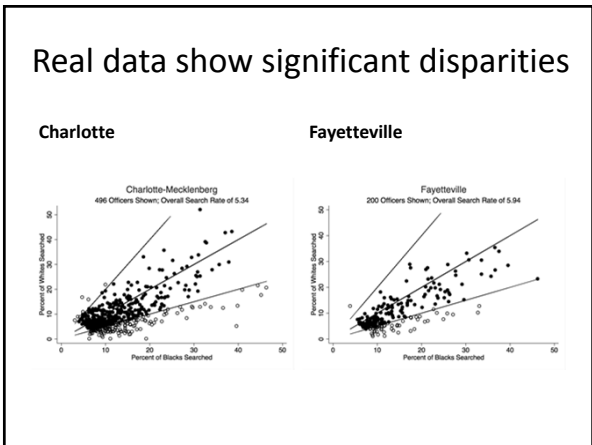
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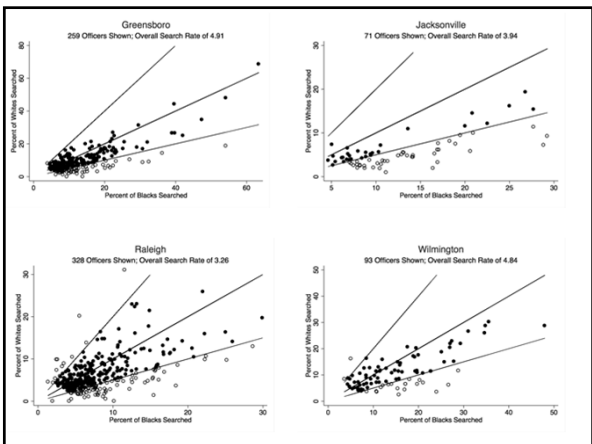
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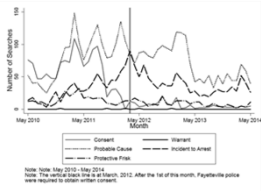
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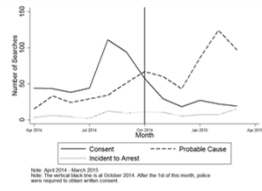
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### Written Consent Searches: Depends on the Implementation

Fayetteville



Durham




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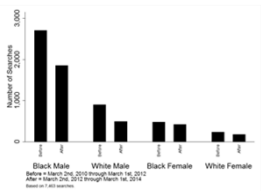
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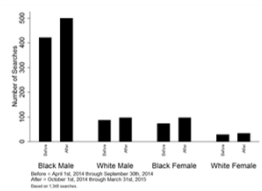
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### Number of Searches Before and After Written Consent Reforms

Fayetteville



Durham




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### Contraband hits: Very few “king pins”

- Hits can be:
  - Dollars
  - Gallons (alcohol)
  - Pints (alcohol)
  - Pounds (drugs, but of any sort)
  - Ounces (drugs, but of any sort)
  - Dosages (prescription drugs)
  - Weapons (pocket knife through assault weapon)
- Slides that follow show what was found in Charlotte

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### Charlotte Contraband hits

Type of Search	Number of searches	Percent with Contraband
Consent	34,461	17
Warrant	119	31
Probable Cause	10,462	56
Incident to Arrest	23,969	18
Protective Frisk	1,220	21
Total traffic stops	1,314,787	1.2
Total searches	70,231	23
Total contraband hits	16,327	100

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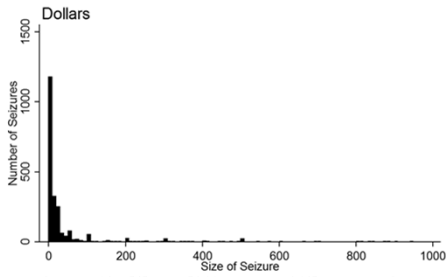
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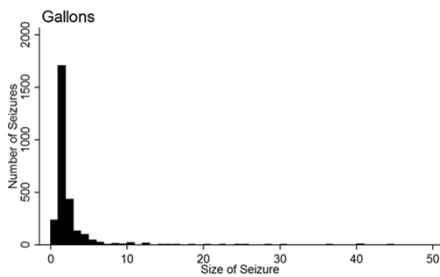
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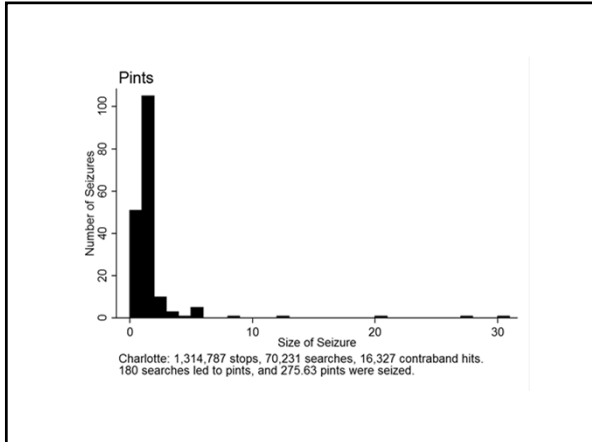
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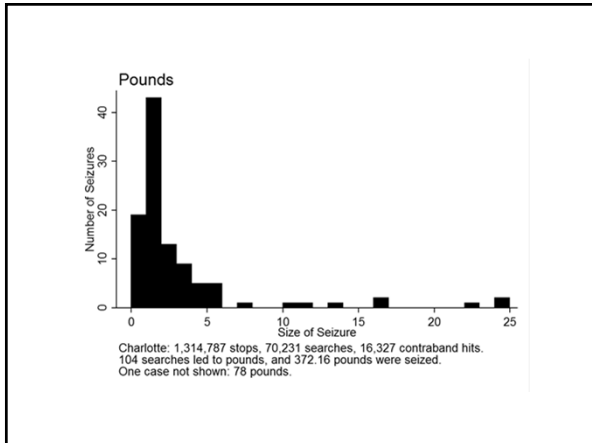
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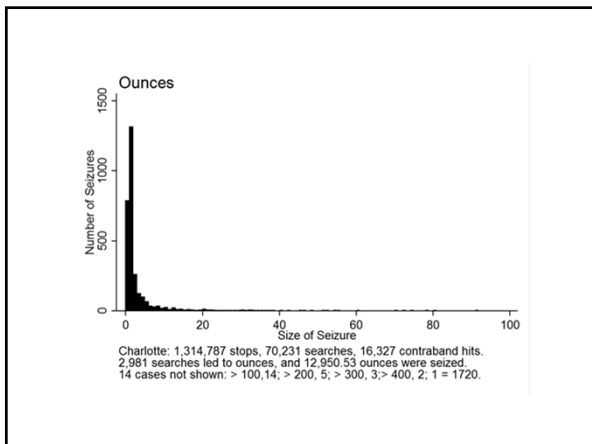
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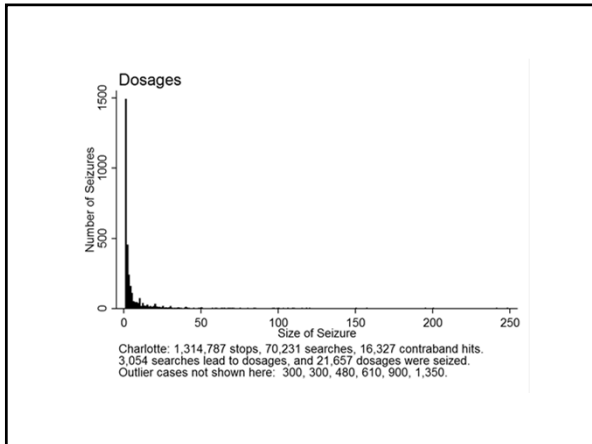
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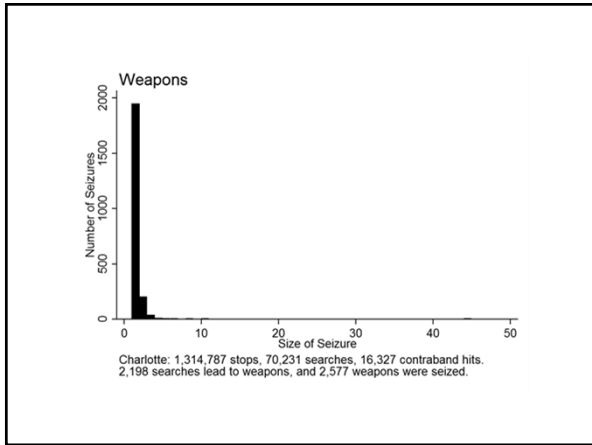
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