

CLASSIFICATION AND SCALE WITH “HARD TO COUNT” CENSUS DATA

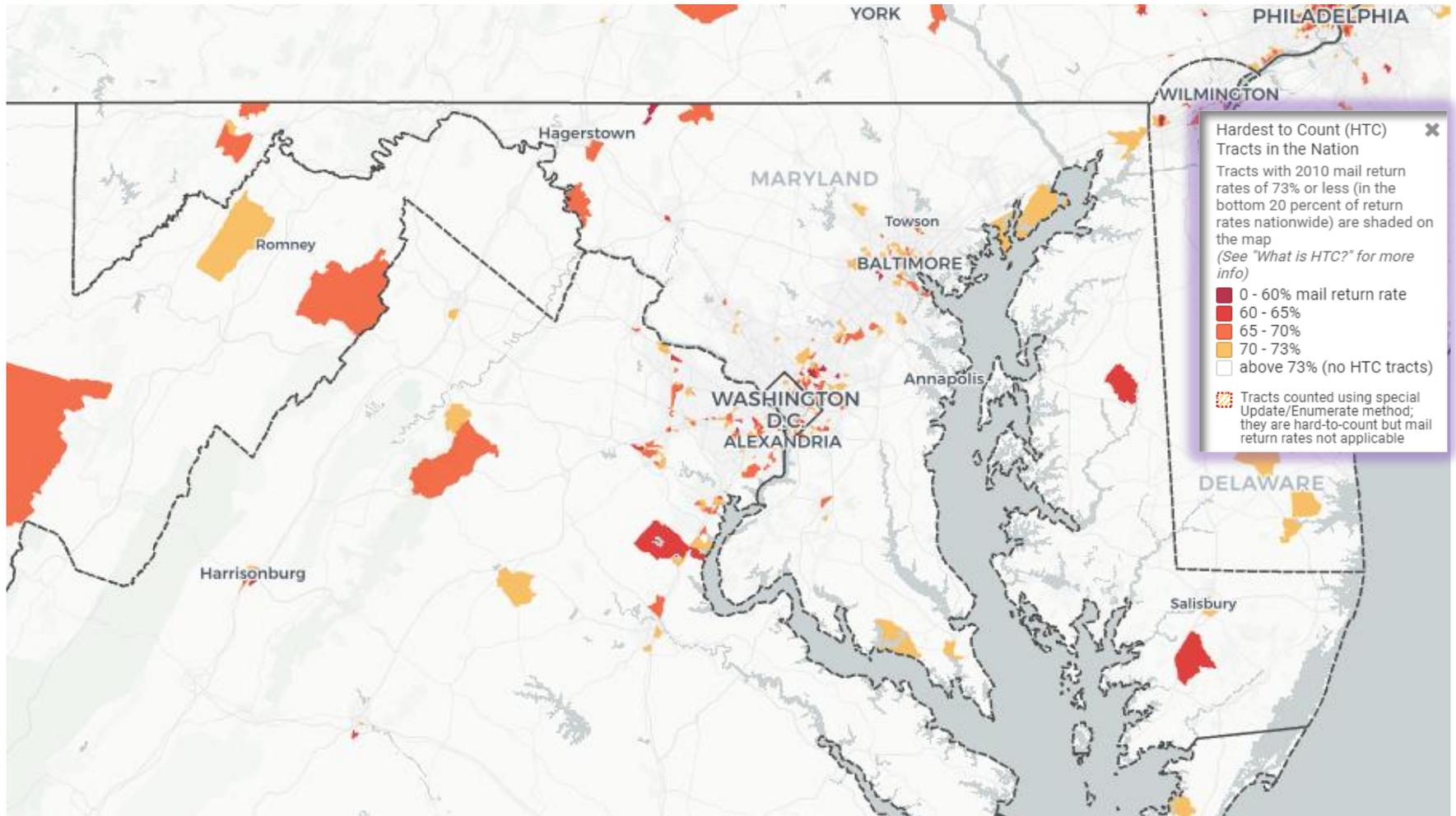
Scaling and reclassifying Census Mail Return Rates as a hard to count (HTC) indicator in Maryland and its subdivisions.

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Planner - Projections and State Data Center

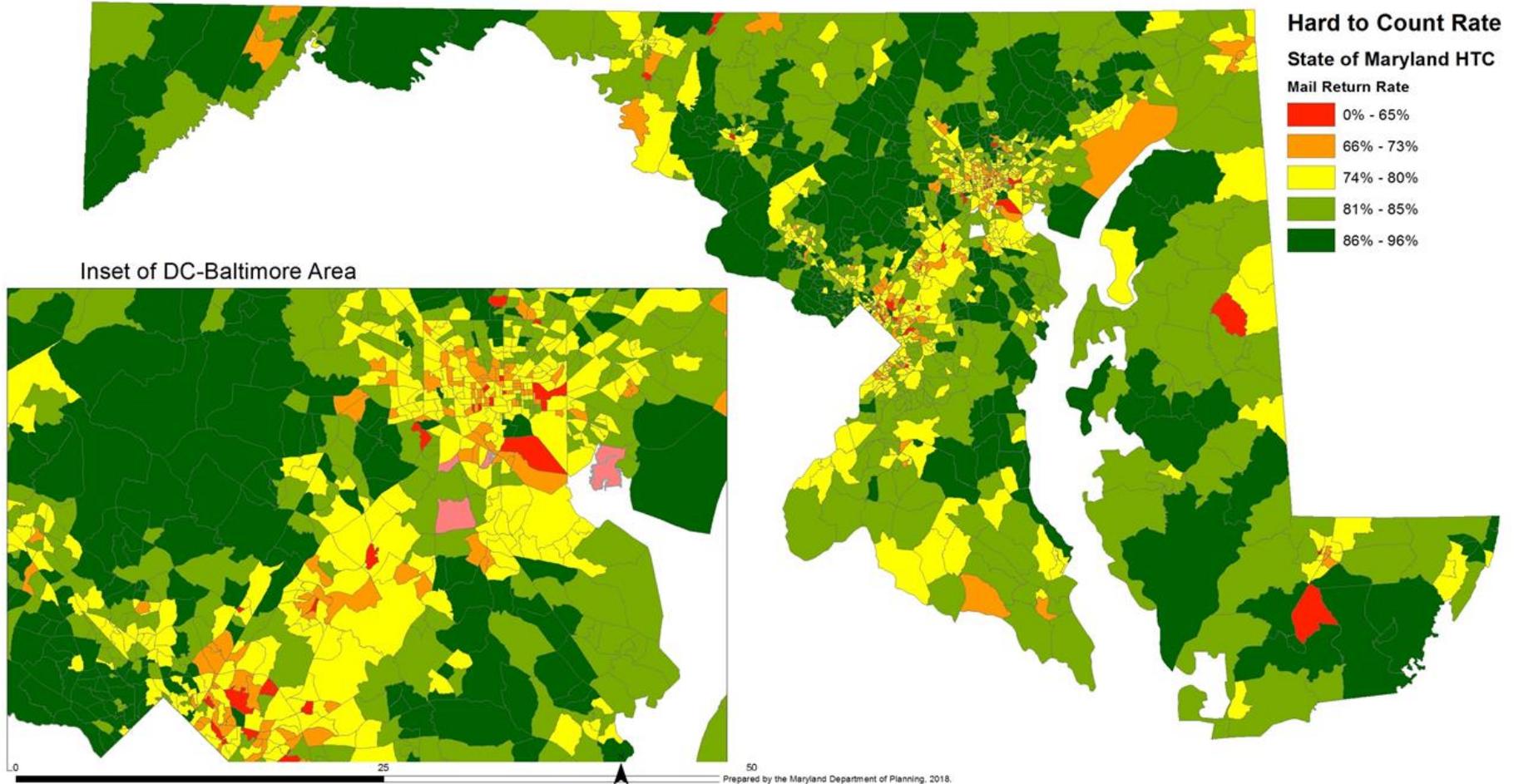
State Data Center - Annual Conference 2018



CENSUS HTC MAP



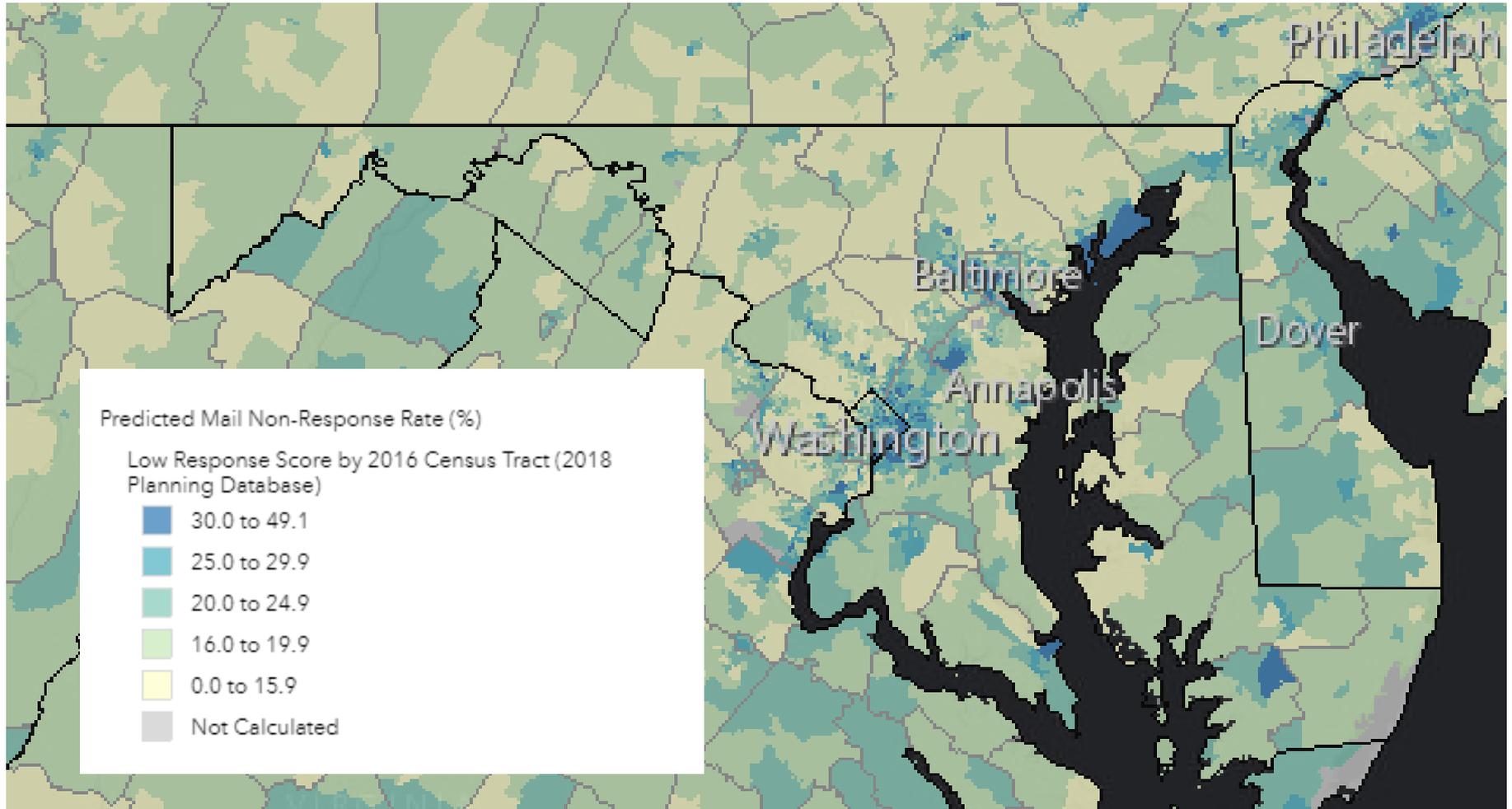
HARD TO COUNT - STATE OF MARYLAND



CENSUS MAIL RETURNS AND PROJECT HARD-TO-COUNT AREAS

- Mail returns represent the bulk of census responses.
 - Internet expected to become significant in 2020 (61% online response in RI test)
- Census Kaggle Challenge
- Mail Response Rates in tracts have been related to various demographic variables that were combined into a new metric the “Low Response Score.”
 - Caveats to the LRS dataset limit its application in aggregate calculations and localization.
 - (Census LRS FAQ)
 - Valuable intelligence about individual tracts but mail returns have proven more accurate at smaller levels of scale.

CENSUS ROAM APPLICATION (LRS)



LRS DATA VARIABLES

Table 1. Low-Response Model Summaries at the Block Group and Tract Levels

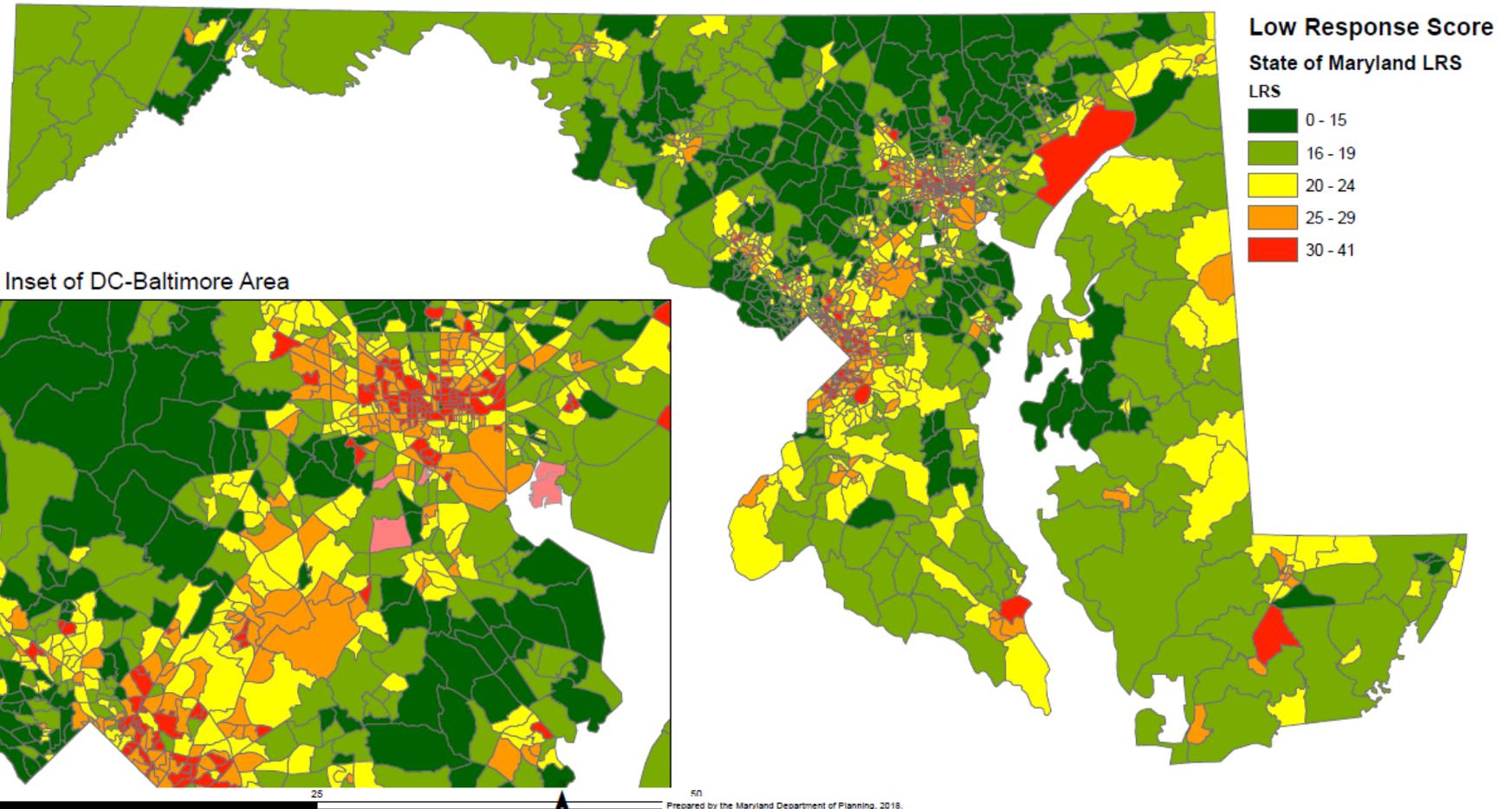
Variable	Block group <i>n</i> = 217,417			Tract <i>n</i> = 72,763		
	Coef.	Z-value	Sig.	Coef.	Z-value	Sig.
Intercept	10.29	12.49	***	16.61	10.56	***
Renter-occupied units	1.08	50.57	***	0.95	23.51	***
Ages 18–24	0.64	21.53	***	0.47	9.57	***
Female head, no husband	0.58	17.26	***	0.33	5.37	***
Non-Hispanic White	-0.77	-38.76	***	-0.87	-26.17	***
Ages 65+	-1.21	-39.61	***	-1.29	-24.31	***
Related child < 6	0.46	15.82	***	0.08	1.38	
Males	0.09	20.43	***	0.04	4.91	***
Married family households	-0.12	-37.43	***	-0.14	-25.46	***
Ages 25–44	-0.06	-1.74		0.11	2.08	*
Vacant units	1.08	52.74	***	0.91	25.11	***
College graduates	-0.32	-17.33	***	-0.53	-12.62	***
Median household income	0.24	4.62	***	0.34	2.88	**
Ages 45–64	-0.08	-2.54	*	-0.16	-2.69	**
Persons per household	3.44	13.19	***	3.30	6.78	***
Moved in 2005–2009	0.09	7.19	***	0.13	4.38	***
Hispanic	0.41	24.45	***	0.52	18.23	***
Single-unit structures	-0.52	-53.11	***	-0.56	-27.32	***
Population density	-0.40	-41.93	***	-0.46	-29.25	***
Below poverty	0.11	9.95	***	0.26	9.56	***
Different housing unit 1 year ago	-0.12	-11.09	***	-0.35	-12.55	***
Ages 5–17	0.17	4.30	***	0.24	3.24	**
Black	-0.04	-2.69	**	0.01	0.24	
Single-person households	-0.24	-5.19	***	-0.35	-4.26	***
Not high school graduate	-0.06	-4.84	***	-0.19	-6.75	***
Median house value	0.71	25.56	***	0.78	14.69	***

NOTE.—All variables are percentages unless otherwise indicated. Most variables are square-root, log or logit transformed (see the [appendix](#) for details). Block group *R*-squared: 56.10; Tract *R*-squared: 55.25.

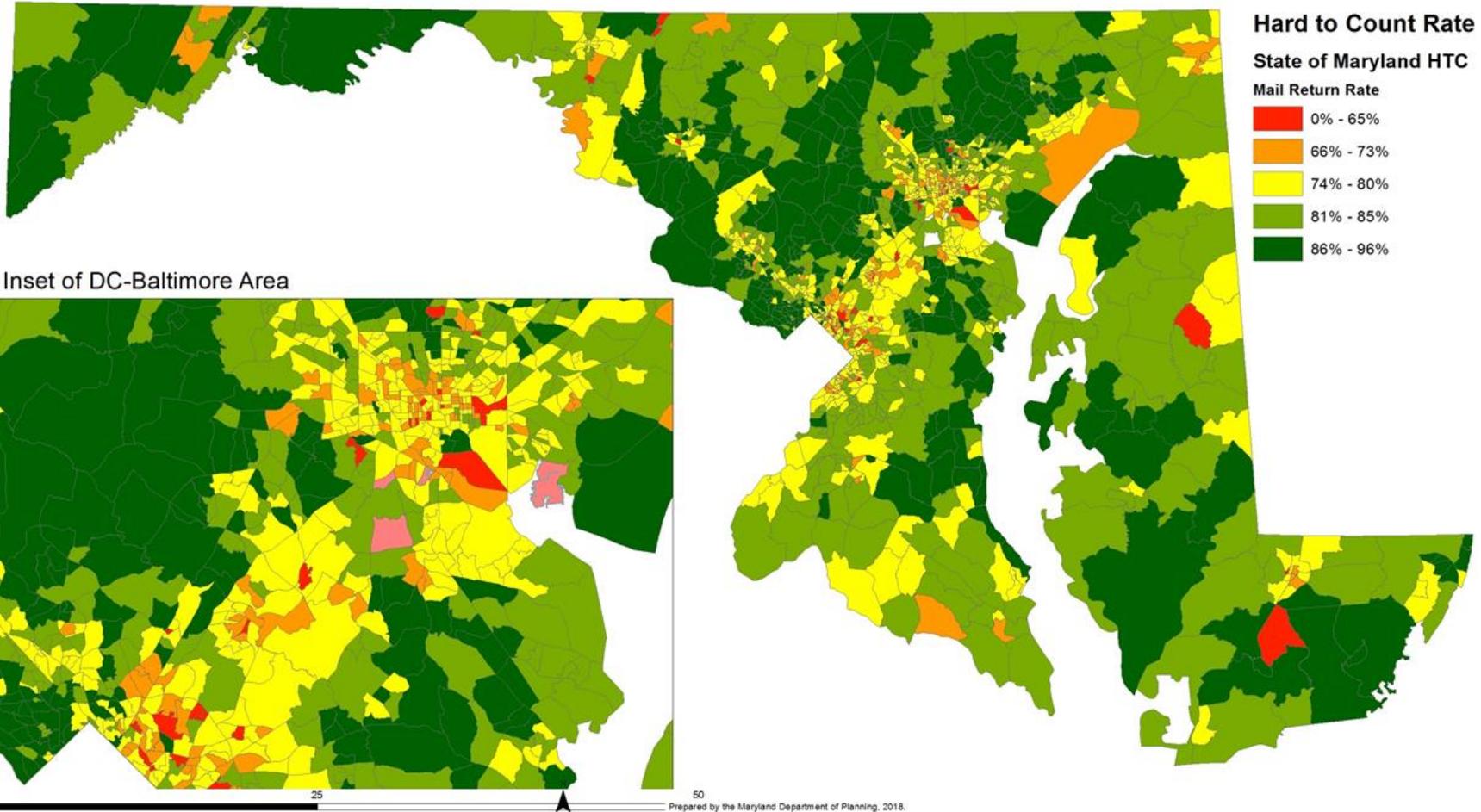
p* < .05; *p* < .01; ****p* < .001.



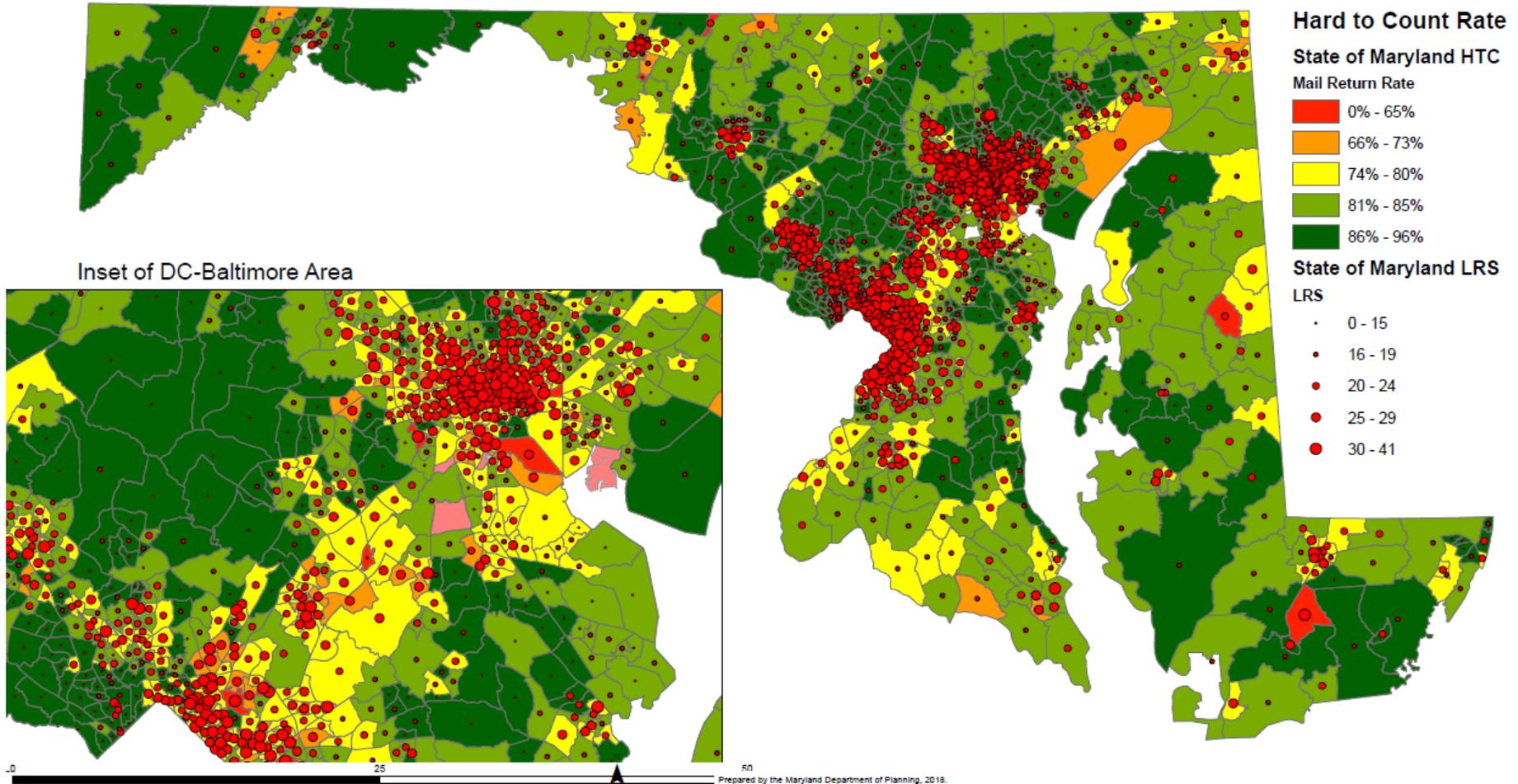
LOW RESPONSE SCORE - STATE OF MARYLAND



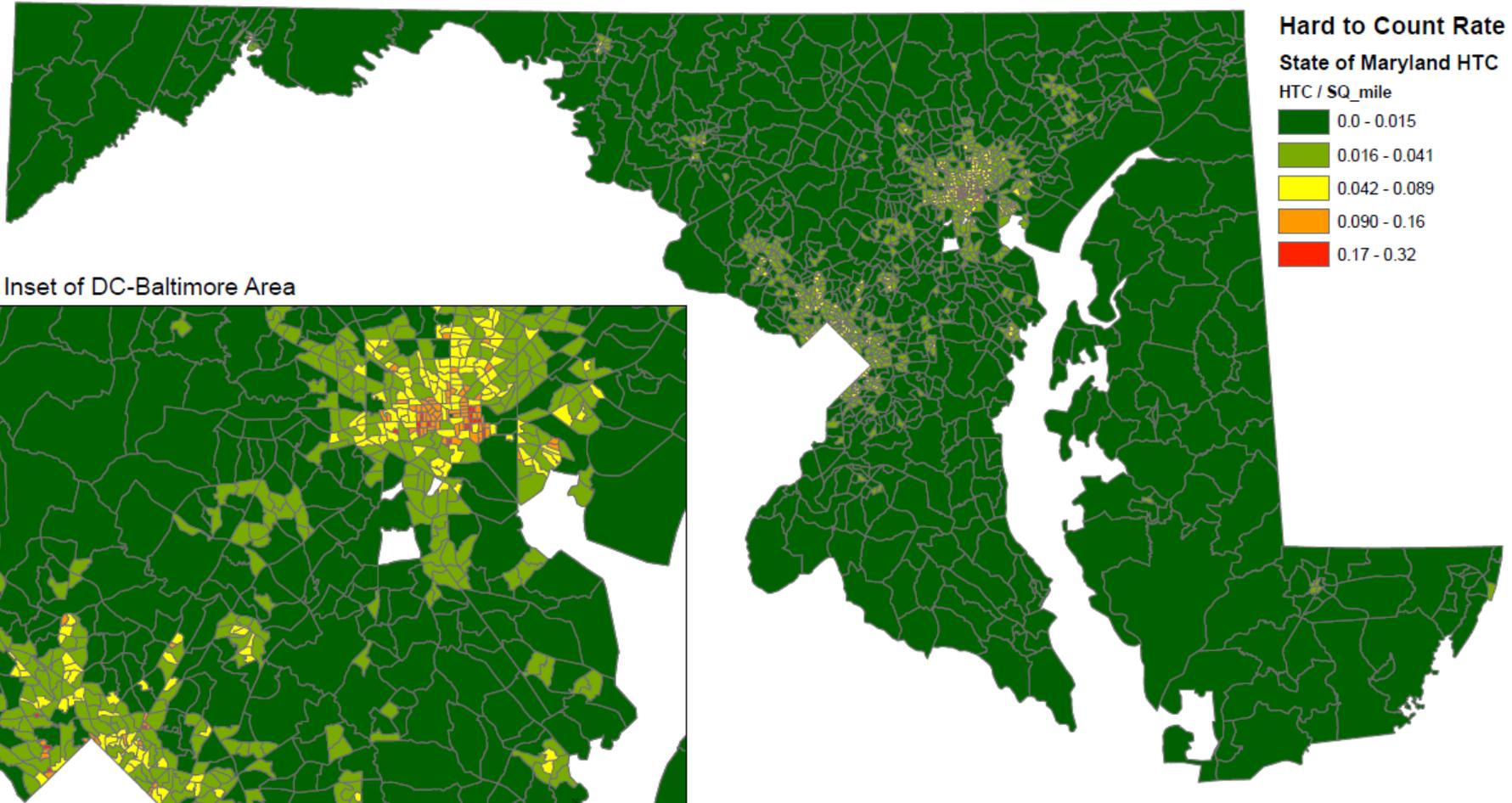
HARD TO COUNT - STATE OF MARYLAND



LRS VALUES OVERLAYING HTC TRACTS



HARD TO COUNT POPULATION PER SQUARE MILE



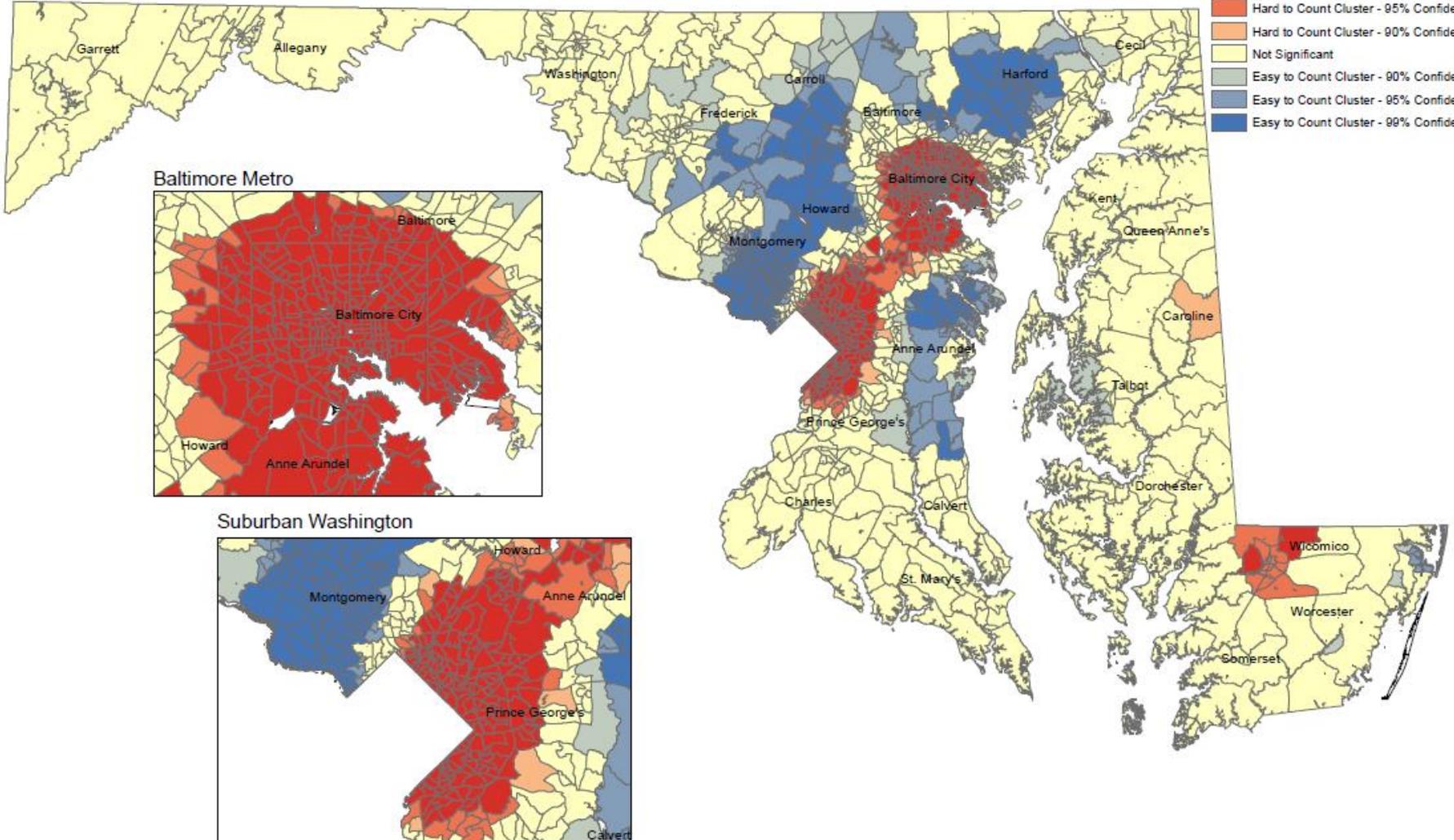
OPTIMIZED HOT SPOT ANALYSIS

Hot Spot Analysis

HTC Optimized Hot Spot

Gi_Bin

- Hard to Count Cluster - 99% Confidence
- Hard to Count Cluster - 95% Confidence
- Hard to Count Cluster - 90% Confidence
- Not Significant
- Easy to Count Cluster - 90% Confidence
- Easy to Count Cluster - 95% Confidence
- Easy to Count Cluster - 99% Confidence



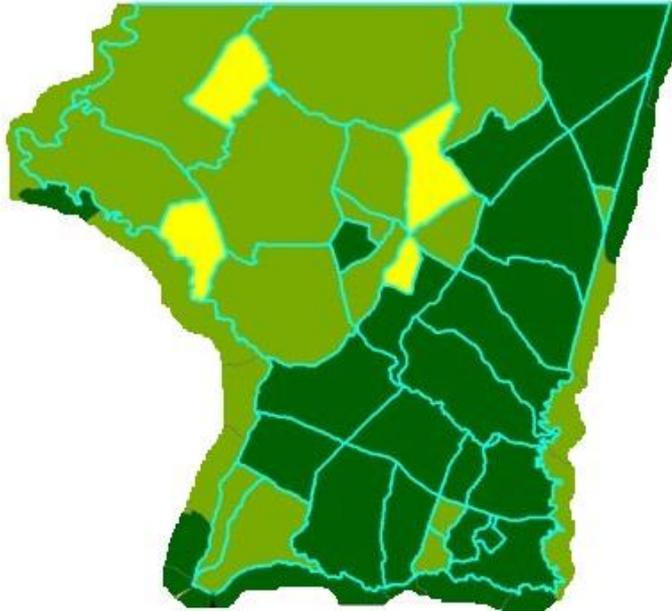
VARIATION IN MARYLAND

- Urban Centers Dominate population and “HTC” values
 - Rural data washed out by level of significance
 - Rural Challenges specified: Blacks in rural South, Hispanics in rural southwest, Native Americans and Alaskan Natives on reservations, residents of deep Appalachia, and migrant/seasonal farm workers.
 - (O’Hare 2017)
- Considerations
 - Smaller Geographies, less data
 - Larger Geographies - more data, more variance
 - Try to keep comparisons relatable
 - Every county is different

CARROLL COUNTY - NORTHERN SUBURBAN COUNTY

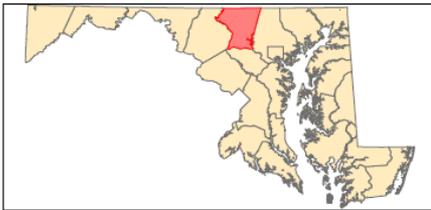
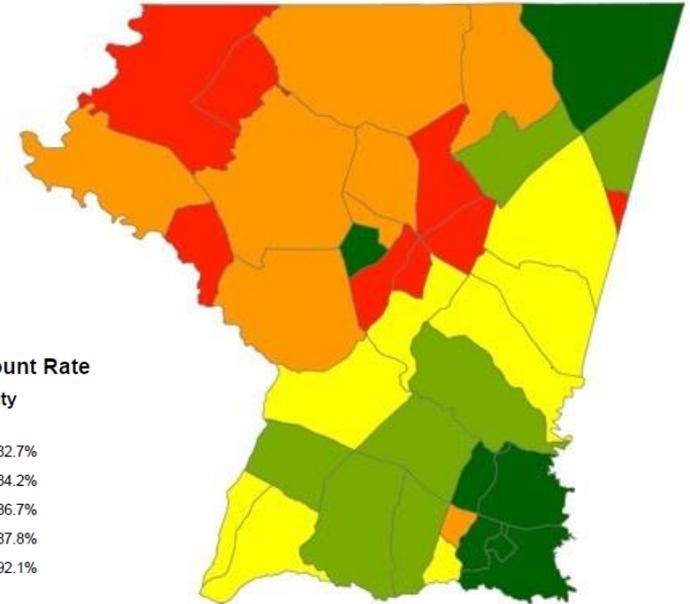
Maryland HTC
State of Maryland HTC
Mail Return Rate

- 0% - 65%
- 66% - 73%
- 74% - 80%
- 81% - 85%
- 86% - 96%

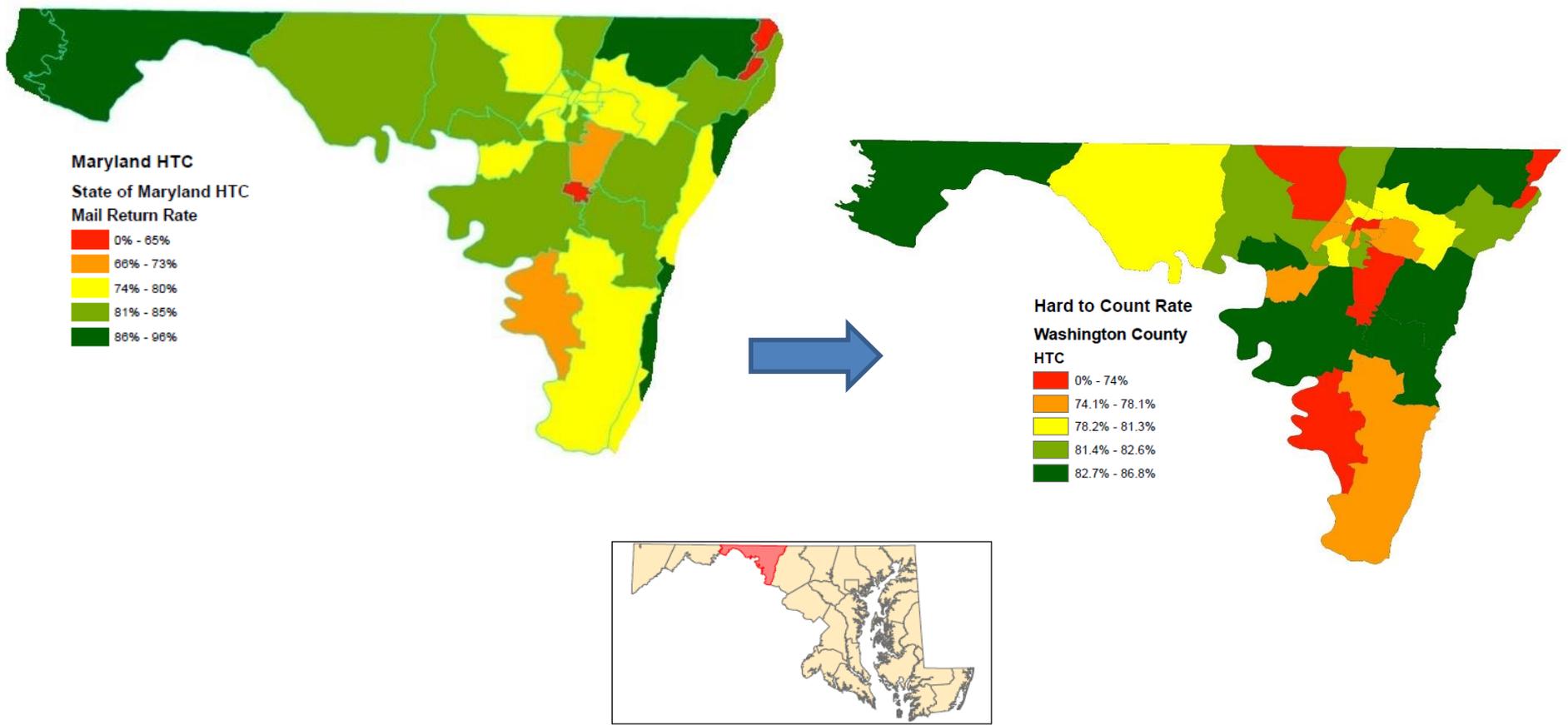


Hard to Count Rate
Carroll County
HTC

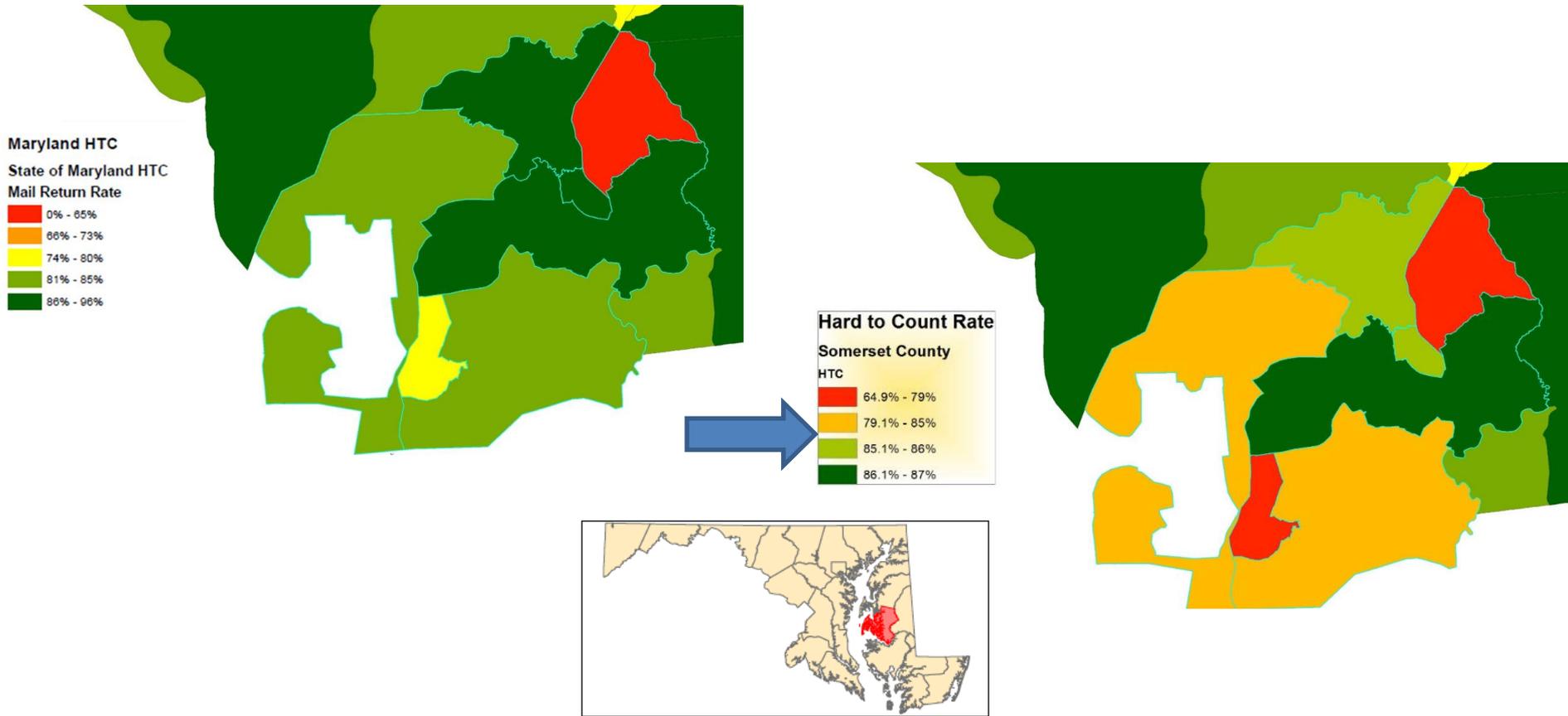
- 78.8% - 82.7%
- 82.8% - 84.2%
- 84.3% - 86.7%
- 86.8% - 87.8%
- 87.9% - 92.1%



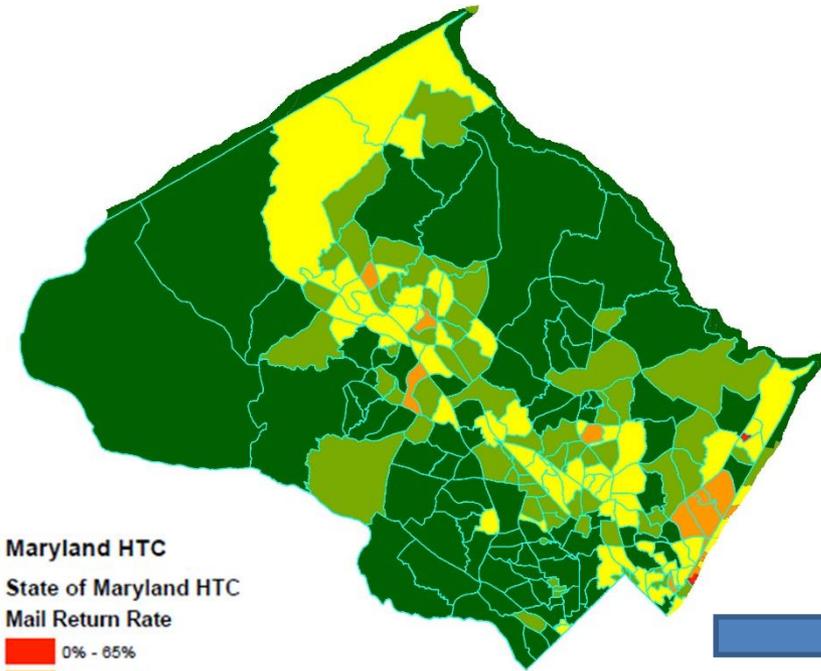
WASHINGTON COUNTY - RURAL WESTERN MARYLAND



SOMERSET COUNTY - RURAL EASTERN SHORE

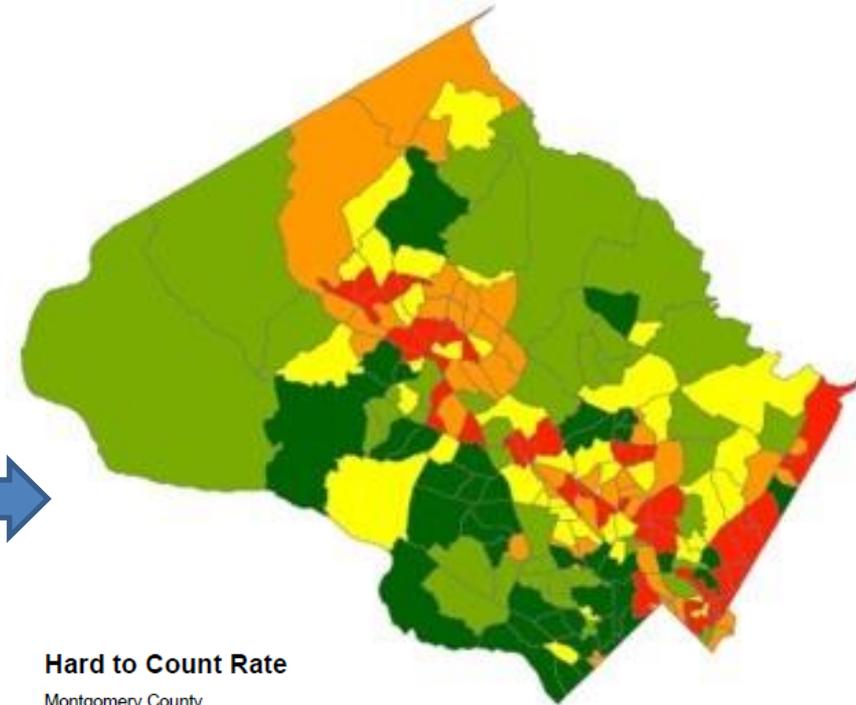


MONTGOMERY COUNTY - DC URBAN-SUBURB



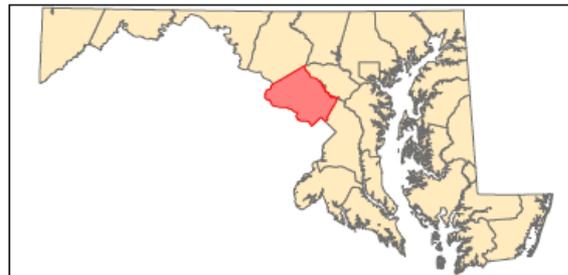
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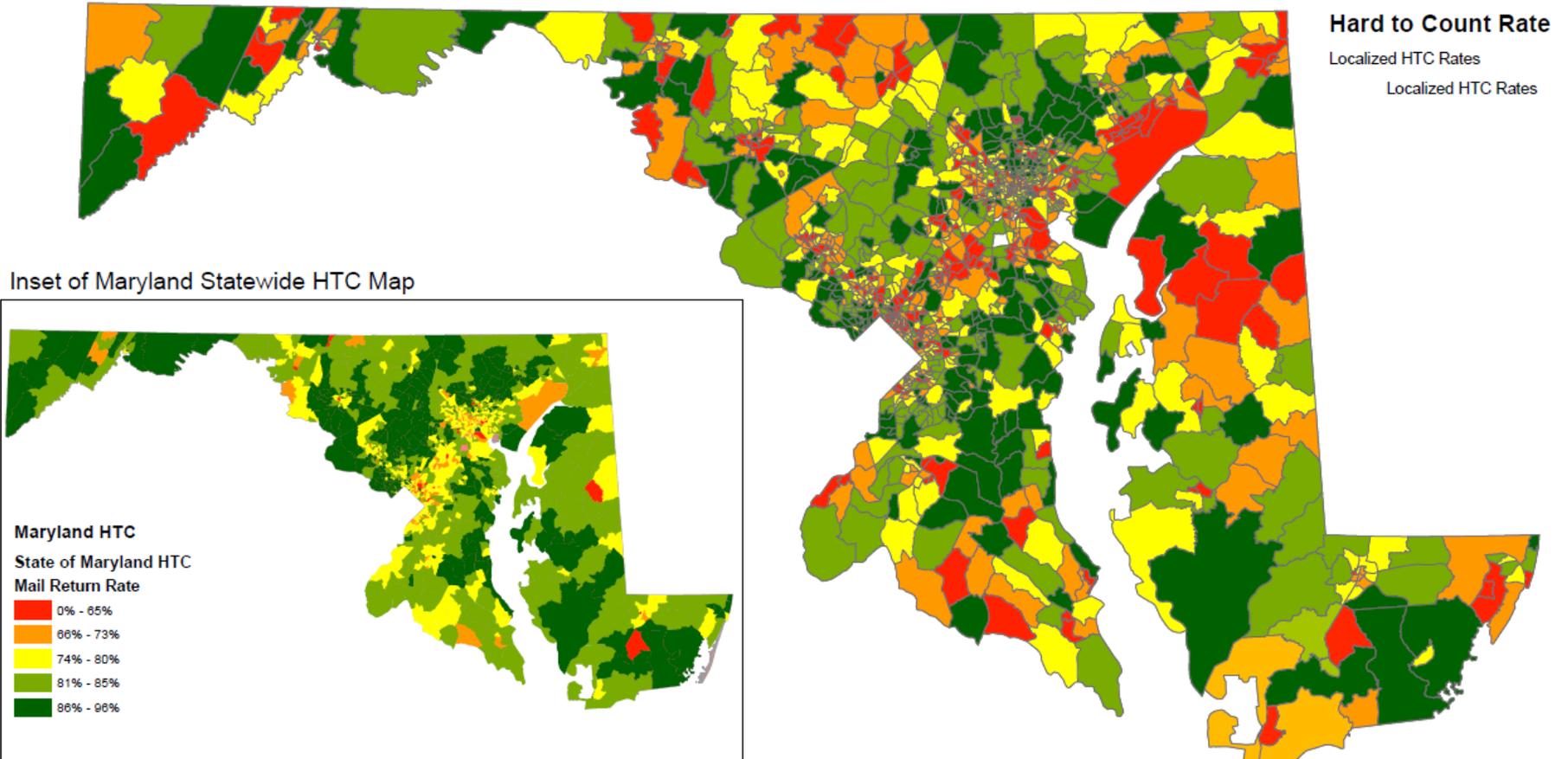


Hard to Count Rate
Montgomery County
HTC

- 64.3% - 77.6%
- 77.7% - 81.8%
- 81.9% - 84.9%
- 85% - 87.7%
- 87.8% - 95.5%



MARYLAND STATEWIDE VERSUS LOCALIZED VISUALIZATIONS





THANK YOU SO MUCH, ANY QUESTIONS?

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<https://planning.maryland.gov/msdc/Pages/default.aspx>



SOURCES

- Erdman, C. and Bates, N. 2017. The Low Response Score: A Metric to Locate, Predict, and Manage Hard-to-Survey Populations. *Public Opinion Quarterly*. 81 (1). 144-156.
<https://doi.org/10.1093/poq/nfw040>
- O'hare, W.P. 2017. 2020 Census Faces Challenges in Rural America. *Carsey Research: National Issue Brief# 131*. University of New Hampshire Carsey School of Public Policy.