Quantitative Analysis of Geomasking Methods: Supplementary Material

Results for Different Thresholds and Approaches for the Graph Theoretic Linkage Attack

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Adaptive Point Aggregation LGA

$\alpha = 0.1$		$\alpha = 0.5$	
precision	recall	precision	recall
0	0	0.14	0.17

Adaptive Random Perturbation LGA

$\alpha = 0.1$		$\alpha = 0.5$	
precision	recall	precision	recall
0.14	0.01	0.14	0.18

Anonymization of Distance Matrices via Lipschitz Embedding

$\alpha = 0.5$		$\alpha = 0.75$	
precision	recall	precision	recall
0.13	0.01	0	0

Distance Approximation Using Intersecting Sets of Grid Points (ISGP)

$\alpha = 0.1$		$\alpha = 0.5$		$\alpha = 0.75$		$\alpha = 0.9$	
precision	recall	precision	recall	precision	recall	precision	recall
0.02	0	0	0	0	0	0.06	0.004

MDAV

$n = 1,000$ sample of residential file

	$\alpha = 0.1$		$\alpha = 0.25$		$\alpha = 0.5$		$\alpha = 0.75$	
	precision	recall	precision	recall	precision	recall	precision	recall
3	0	0	0.35	0.06	0.44	0.08	0.55	0.84
25	0	0	0.58	0.63	–	–	–	–
50	–	–	0.38	0.39	–	–	–	–

$n = 10,000$ sample of residential file

	$\alpha = 0.1$		$\alpha = 0.25$		$\alpha = 0.5$		$\alpha = 0.75$		$\alpha = 0.9$	
	precision	recall	precision	recall	precision	recall	precision	recall	precision	recall
3	0.92	0.12	0.81	0.13	0.83	0.10	1.00	0.12	0.82	0.83
25	0.16	0.03	0.22	0.04	0.24	0.05	0.37	0.63	–	–
50	–	–	–	–	–	–	–	–	–	–

Random Perturbation Using a Uniform Distribution

maximum radius is half the range

	precision	recall
3	0.92	0.58
4	0.92	0.68
5	0.91	0.75
LGA 3	0.93	0.96
LGA 4	0.88	0.95
LGA 5	0.87	0.95

Voronoi Masking

	$\alpha = 0.1$		$\alpha = 0.5$		$\alpha = 0.75$		$\alpha = 0.9$	
	precision	recall	precision	recall	precision	recall	precision	recall
residential file	1.00	0.04	0.82	0.09	1.00	0.15	1.00	0.72
identification file	1.00	0.04	0.82	0.09	1.00	0.15	1.00	0.71