

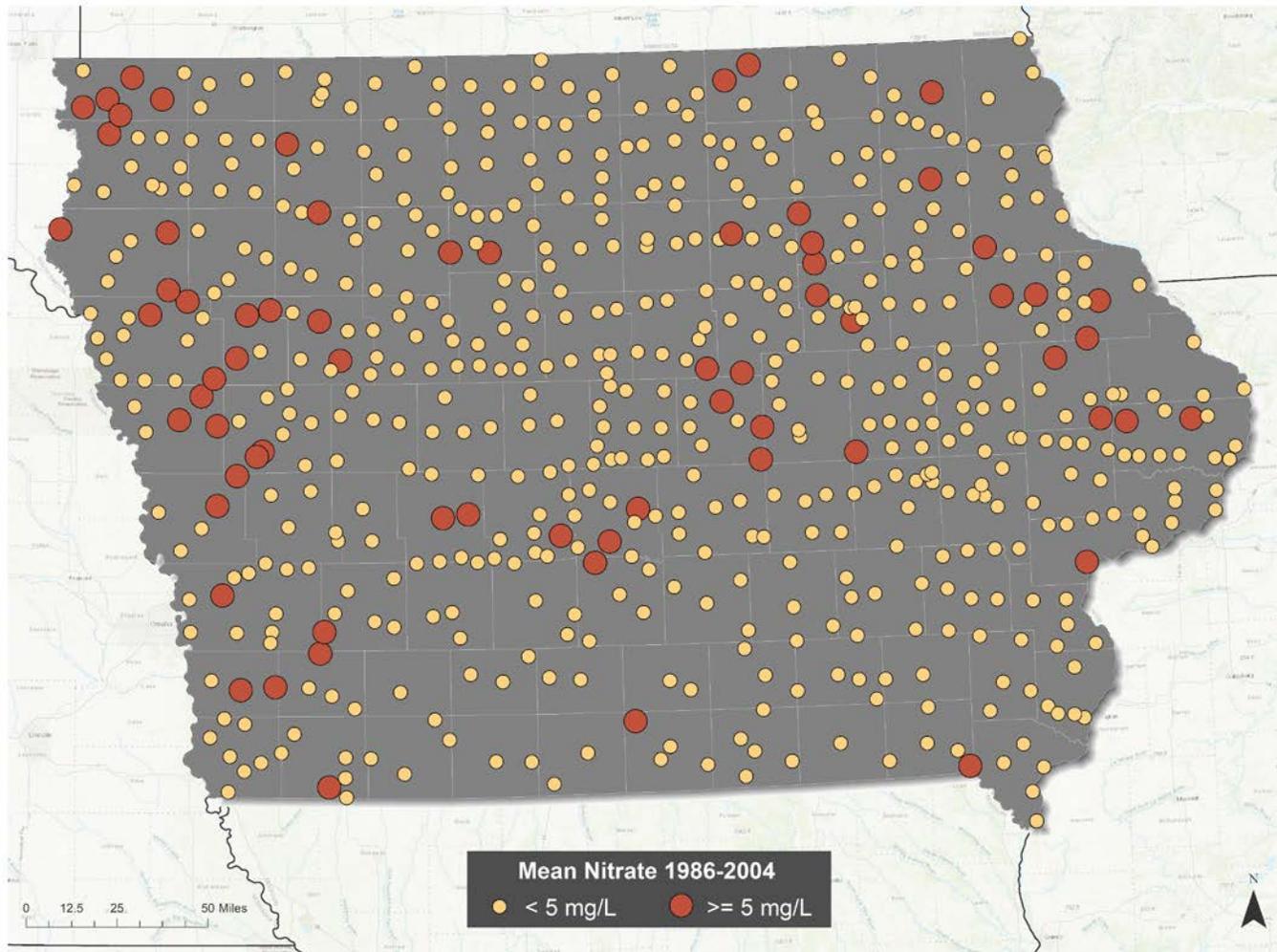
eTable 1. Geocoding status^a and town size^b of enrollment address

Town size	Well-geocoded address	Poor-geocoded address	No address
	n (%)	n (%)	n (%)
<10,000	12272 (38)	3182 (35)	-
10,000 to <100,000	11857 (37)	565 (6)	-
≥100,000	3636 (11)	31 (0)	-
Unincorporated place	3815 (12)	5353 (59)	-
Missing	871 (3)	-	68
Total	32451 (78)	9131 (22)	68 (0)

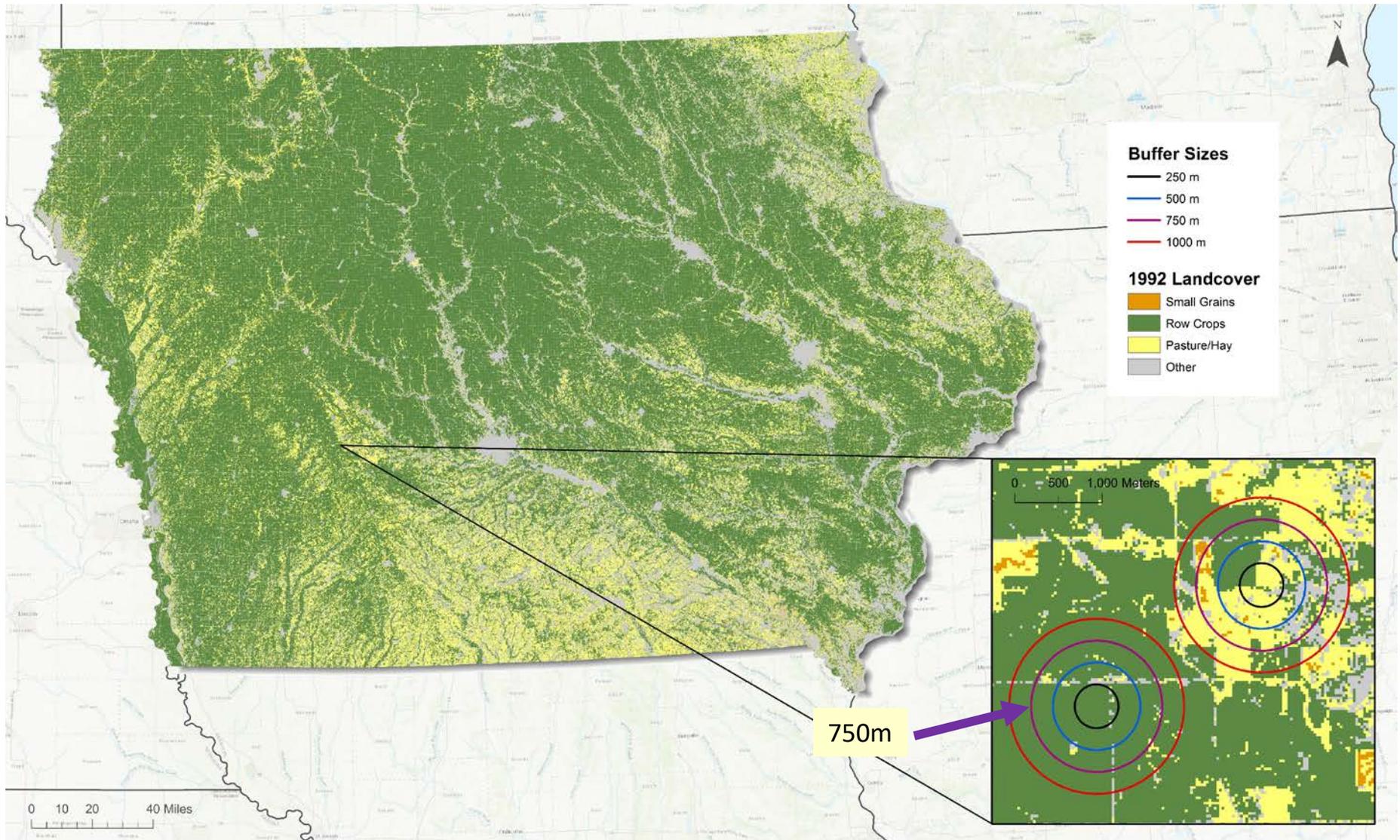
^aWell-geocoded addresses: geocodes placed at the complete street address or nearest intersection. Poor-geocoded addresses: geocodes placed at the zip code centroid.

^bTown size for incorporated place (self-governing city, town, or village defined by Census 2000 Incorporated Places boundaries) otherwise unincorporated place

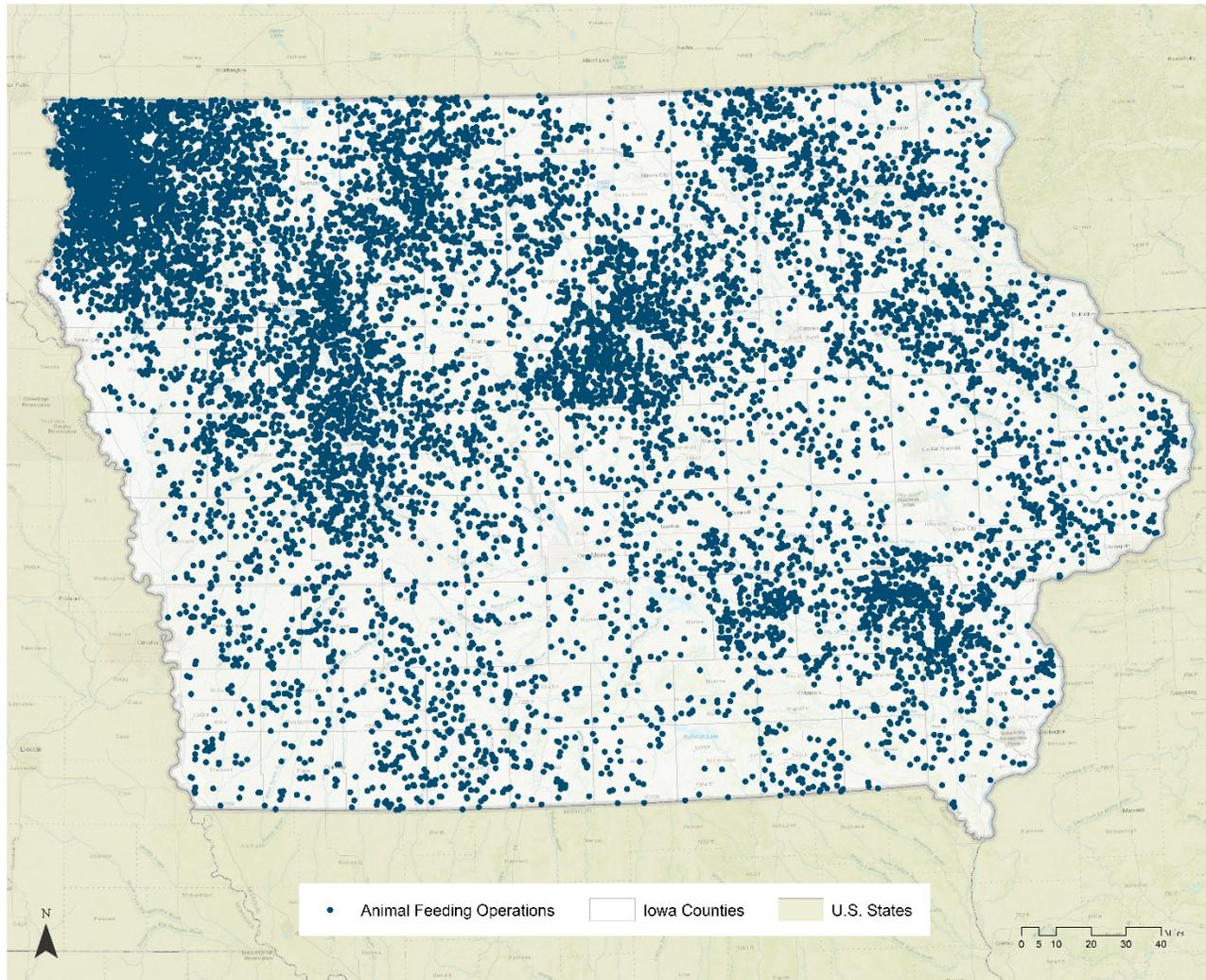
eFigure 1. Geographic distribution of average nitrate-nitrogen ($\text{NO}_3\text{-N}$) concentrations in Iowa public water supplies from 1986-2004. Red dots depict $\text{NO}_3\text{-N}$ levels above one-half the Environmental Protection Agency maximum contaminant level (MCL).



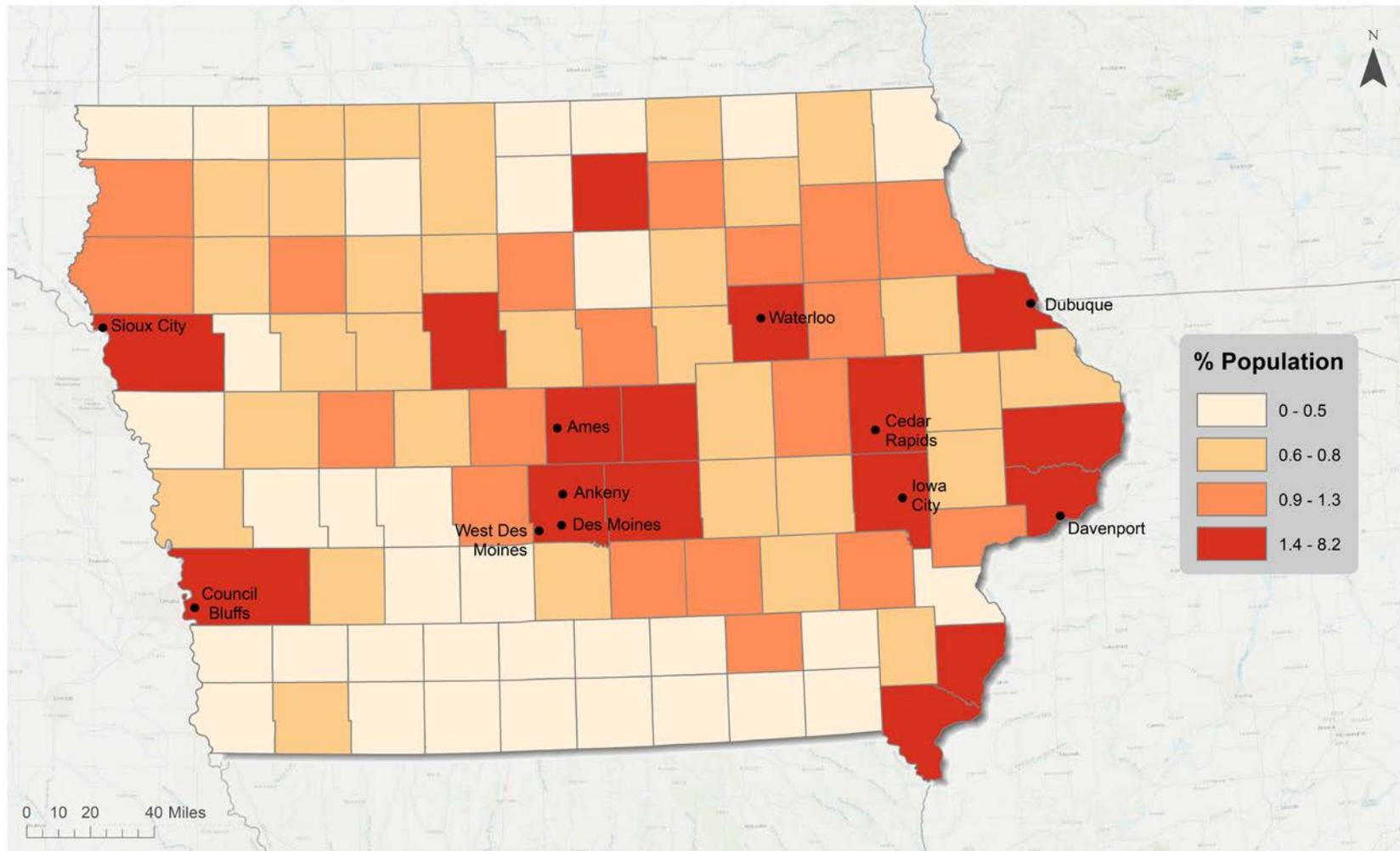
eFigure 2. Geographic distribution of agricultural land by crop type in Iowa (1992)



eFigure 3. Geographic distribution of concentrated animal feeding operations in Iowa (2003-2011)



eFigure 4. Geographic distribution of the percentage of Iowa Women’s Health Study participants by county of residence at enrollment



eTable 2. Characteristics of Iowa Women’s Health Study participants included and not included in bias analysis (N=41,650)

	Included bias analysis^a	Excluded bias analysis
Total, n (%)	29226 (70)	12424 (30)
Age, mean (sd)		
Years	61.7 (4.24)	61.6 (4.25)
Race, n (%)		
White non-Hispanic	28564 (98)	12160 (98)
Other	266 (1)	79 (1)
Missing	396 (1)	185 (1)
Body mass index (BMI), n (%)		
<25	11872 (41)	4610 (37)
25-<30	10717 (37)	4623 (37)
30+	6637 (23)	3191 (26)
Smoking status, n (%)		
Never	18087 (62)	8664 (70)
Current	4609 (16)	1562 (13)
Former	6076 (21)	2001 (16)
Missing	454 (2)	197 (2)
Occupation, n (%)		
Homemaker	10340 (35)	5248 (42)
Farmer	810 (3)	684 (6)
Outside Home	18076 (62)	6492 (52)
Education level, n (%)		
More than High School	11523 (39)	4583 (37)
High school or less	17630 (60)	7801 (63)
Missing	73 (0)	40 (0)
Town size (enrollment), n (%)		
<10,000	10443 (36)	5011 (40)
10,000 to <100,000	11136 (38)	1286 (10)
≥100,000	3370 (12)	297 (2)
Unincorporated place	3451 (12)	5717 (46)
Missing	826 (3)	113 (1)
Participation in 5th follow-up (2004), n (%)		
No	6705 (23)	2952 (24)
Yes	14661 (50)	6176 (50)
Missing/censored ^b	7860 (27)	3296 (27)
Drinking water source ^c , n (%)		

Public Water Supply	20784 (71)	6625 (53)
Private Well	3386 (12)	3248 (26)
Bottled Water	497 (2)	269 (2)
Other	320 (1)	166 (1)
Missing/Don't know ^d	4239 (15)	2116 (17)

^aParticipants with well-geocoded addresses were included in bias analysis

^bCensored due to cancer diagnosis or death

^cReported in the 1989 survey

^dValues were missing from a combination of not completing the questionnaire, non-response, or answered 'Don't Know' on the questionnaire inquiring on their main water source

eTable 3. Distribution of Euclidean distances (km) between moves for each follow-up period^a

Survey periods	Years	N	Mean	Minimum	25th percentile	Median	75th percentile	Maximum
Enrollment to 1st Follow-Up	1986 to 1987	1248	262.66	0.25	1.40	5.34	98.66	2630.67
1st to 2nd Follow-Up	1987 to 1989	1690	248.70	0.25	1.50	5.68	93.20	2645.77
2nd to 3rd Follow-Up	1989 to 1992	1288	243.78	0.25	1.56	5.33	69.61	6099.02
3rd to 4th Follow-Up	1992 to 1997	3955	226.62	0.25	1.51	5.30	45.64	6594.05
4th to 5th Follow-Up	1997 to 2004	5381	268.37	0.25	2.08	8.66	101.31	7522.46

^aBetween address pairs that were well-geocoded (geocodes placed at the complete street address or nearest intersection) for subsequent survey periods

eTable 4. Relationship between exposure prevalence and sensitivity and specificity of exposure assignment when using the enrollment address^a and attenuation of a hypothetical odds ratio (OR) of 2.0

Exposure type	Exposure prevalence	Sensitivity (%)	Specificity (%)	OR_{observed}^b
NO₃-N in drinking water				
annual average concentration (mg/L)				
≥50 th percentile	50	98.3	98.4	1.95
≥75 th percentile	25	93.5	98.7	1.92
≥95 th percentile	5	97.5	99.7	1.95
Agricultural land				
Percentage within 750m of home				
Row crops				
≥50 th percentile	50	94.3	94.3	1.84
≥75 th percentile	25	94.7	98.2	1.91
≥95 th percentile	5	86.0	99.3	1.85
Pasture/hay in 750m				
≥50 th percentile	50	94.3	94.1	1.84
≥75 th percentile	25	94.1	98.0	1.90
≥95 th percentile	5	91.0	99.5	1.90
CAFOs				
number within 5km of home				
1+ operation(s)	40	98.9	96.9	1.94
2+ operations	25	98.5	98.3	1.94
8+ operations	5	98.8	99.6	1.93

^aCompared to exposure estimated across all addresses over 19 years of follow-up (true exposure; gold standard)

^bWhere OR_{true}=2.0