

Appendix - Chapter 4

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Parcel-Geocoded Pediatric Asthma Sample (2001-2008) - Neighborhood Housing Conditions Survey (NHCS) Ratings & Environmental Exposure Covariates

Structure Ratings by Category & Year - Model Sample (2001-2008)

Figure A.4.1: Structure Profile

- 1 = Single Level
- 2 = 2-Story
- 3 = 3-Story
- 4 = 4-6 Floors
- 5 = Over 6 Floors

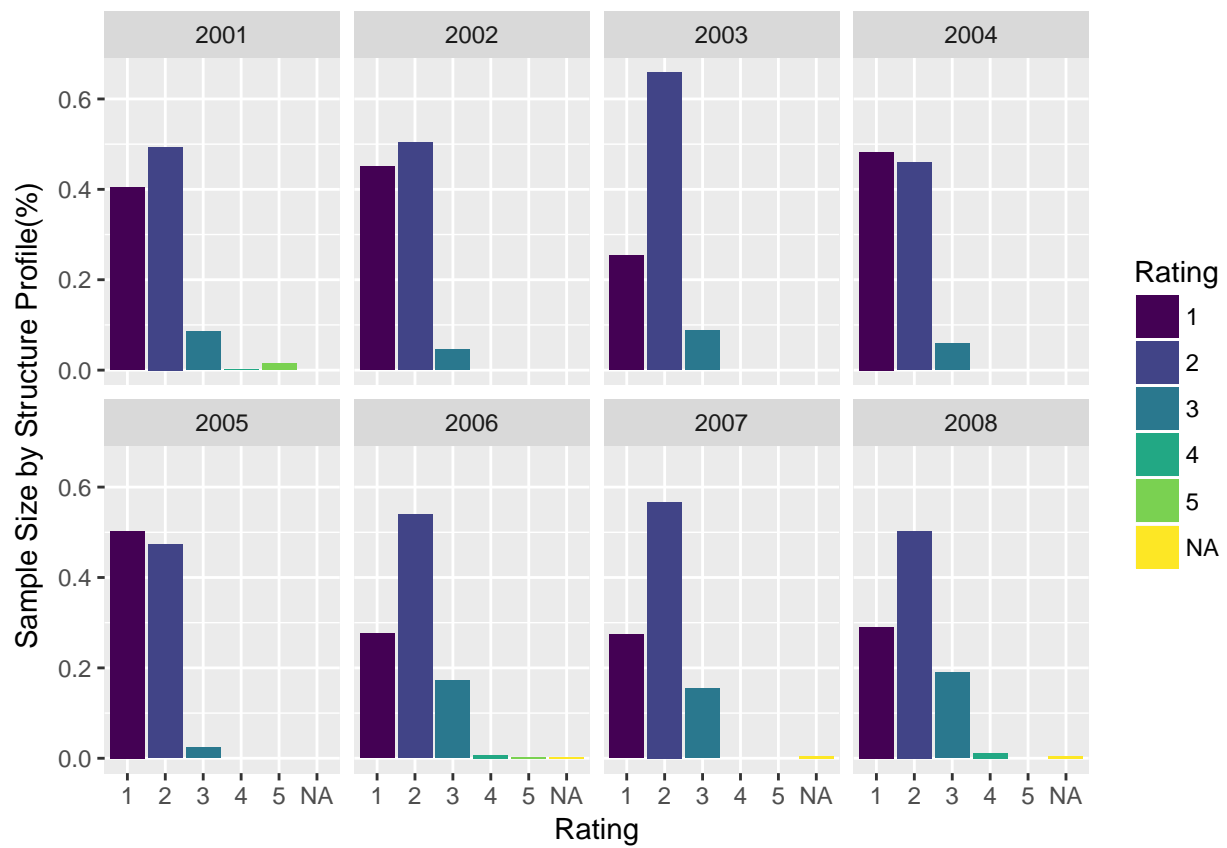


Figure A.4.2: Roof

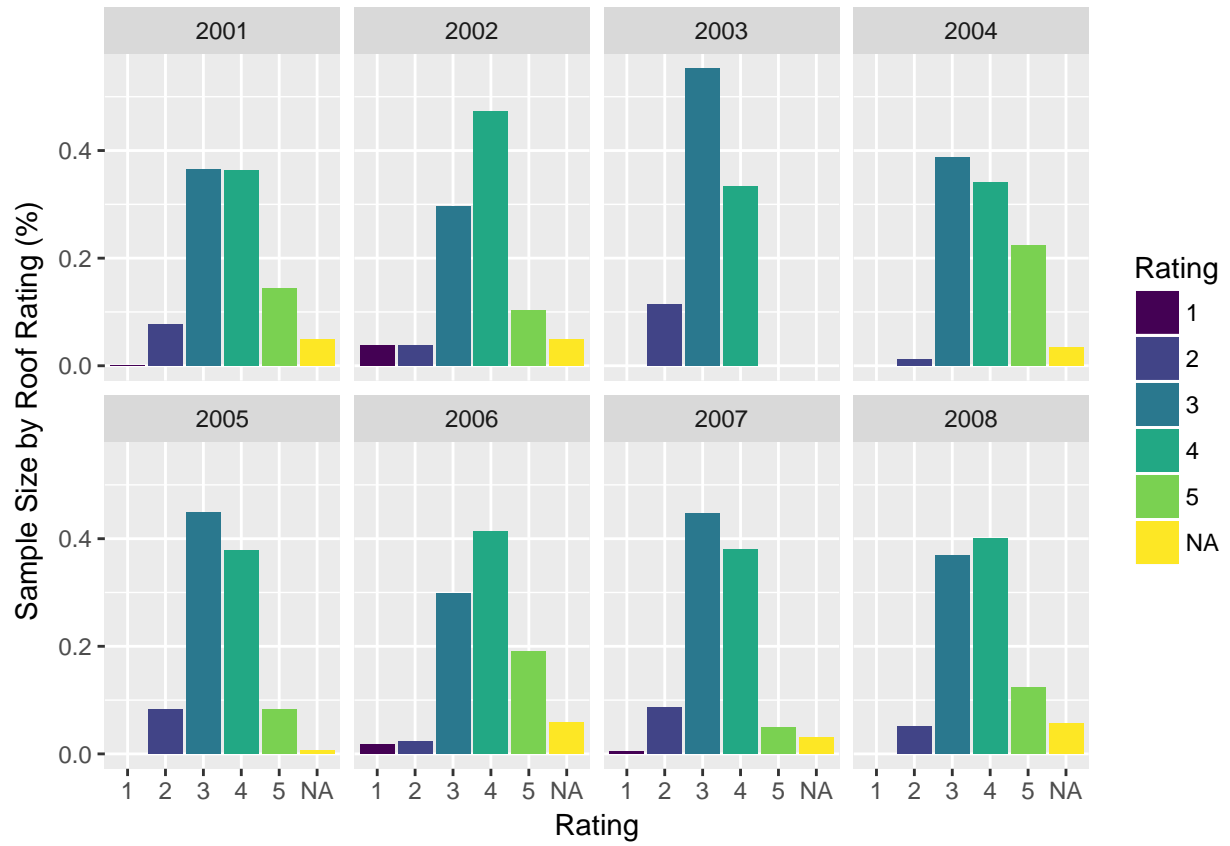


Figure A.4.3: Foundation

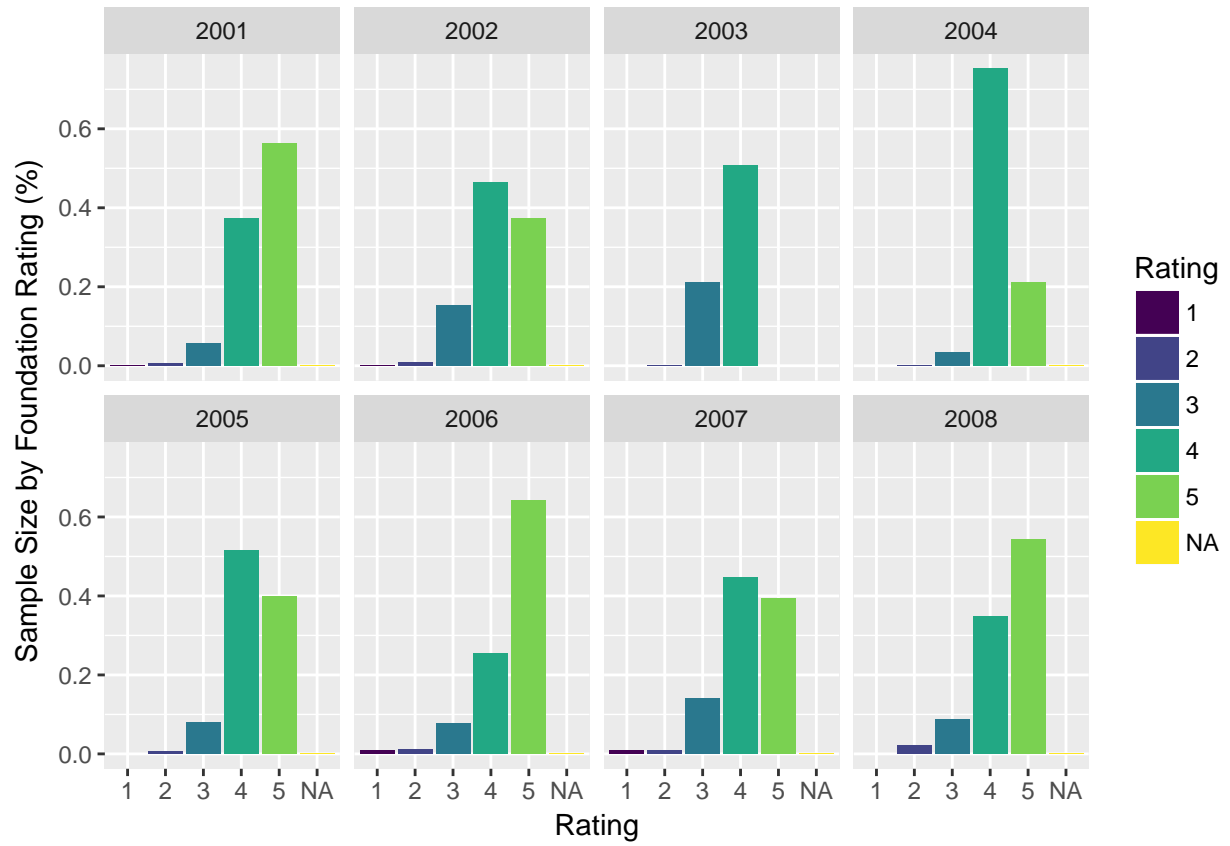


Figure A.4.4: Windows & Doors

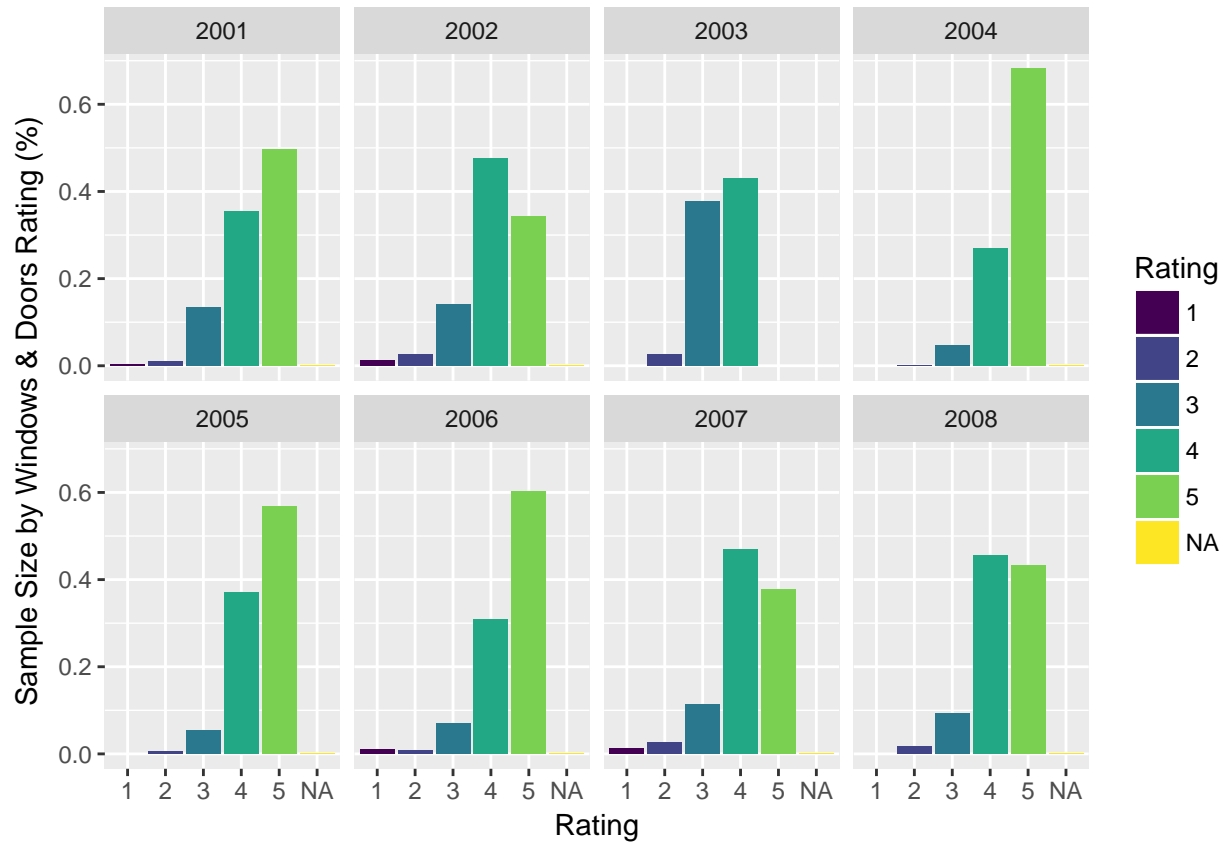


Figure A.4.5: Porch

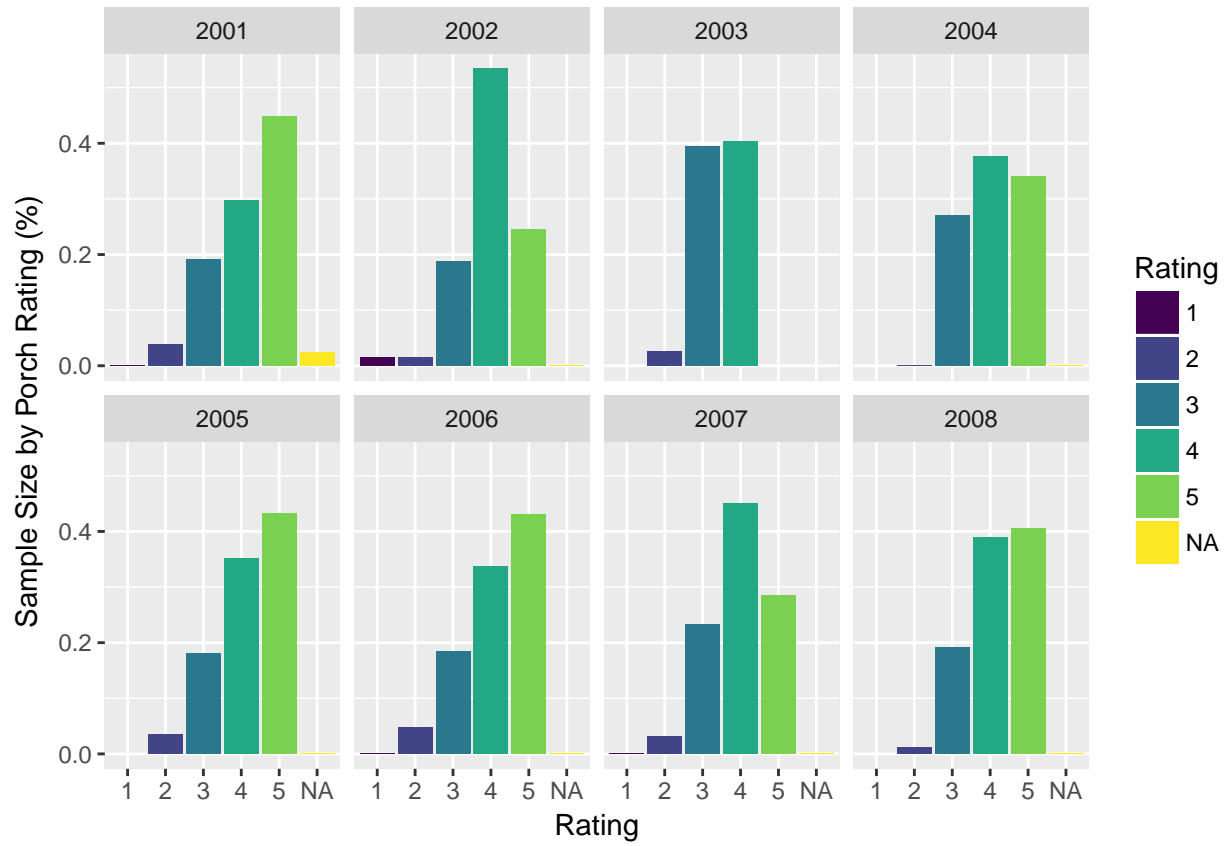
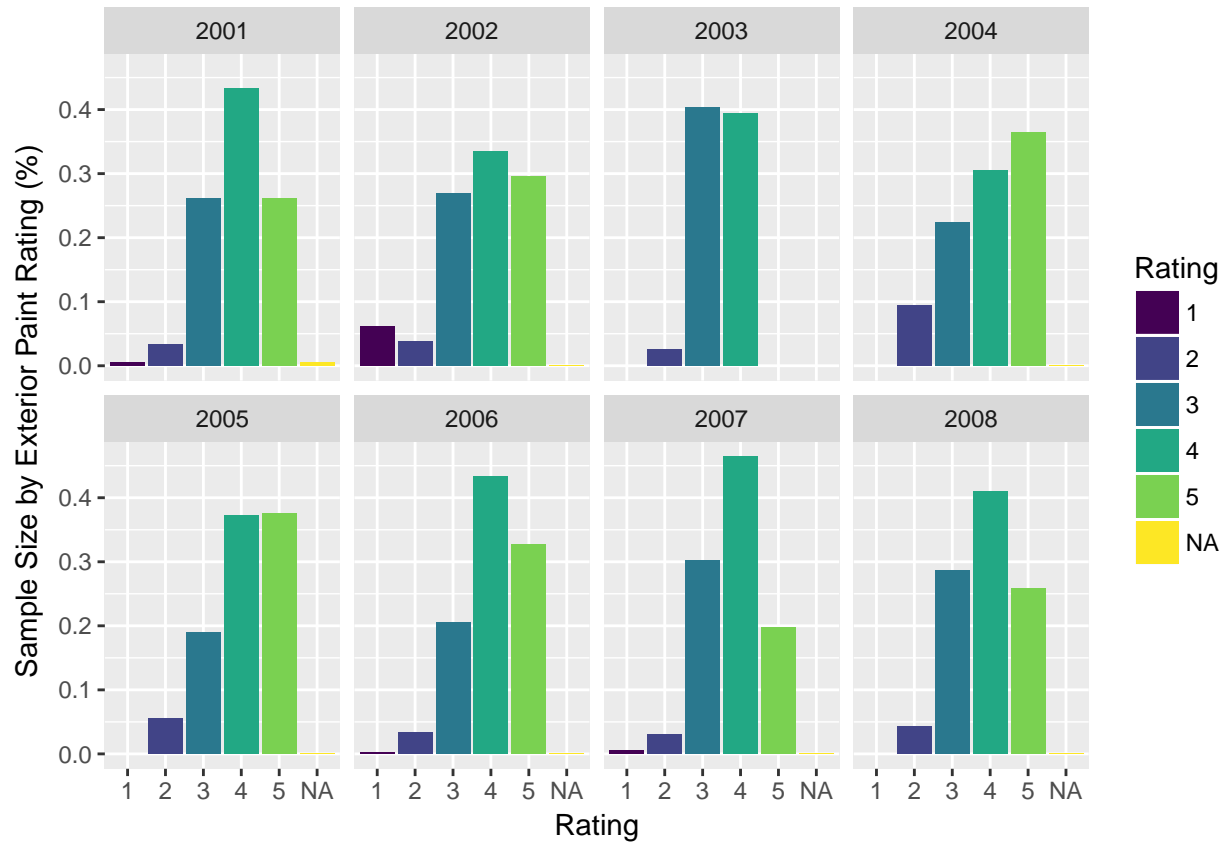


Figure A.4.6: Exterior Paint



Grounds Conditions Ratings by Category & Year - Model Sample (2001-2008)

Figure A.4.7: Private Sidewalks & Driveways

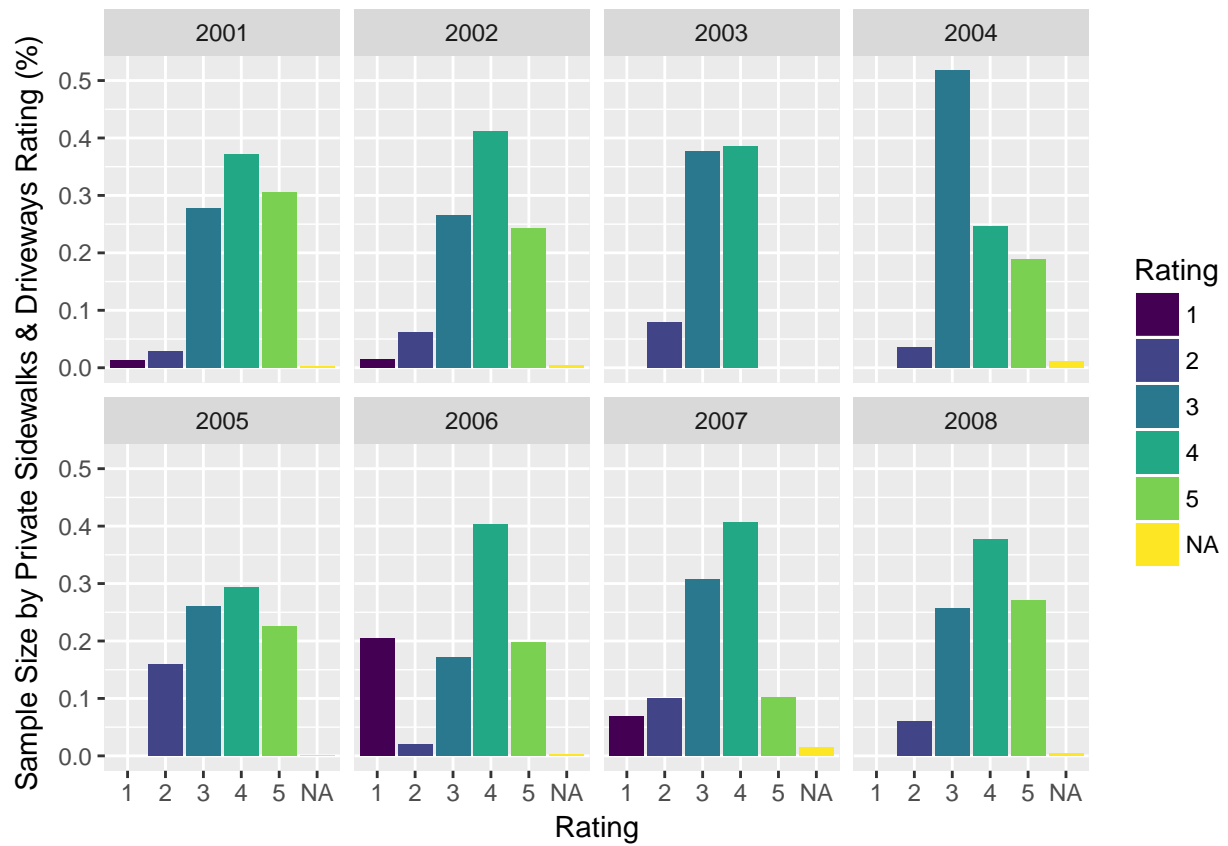


Figure A.4.8: Lawn

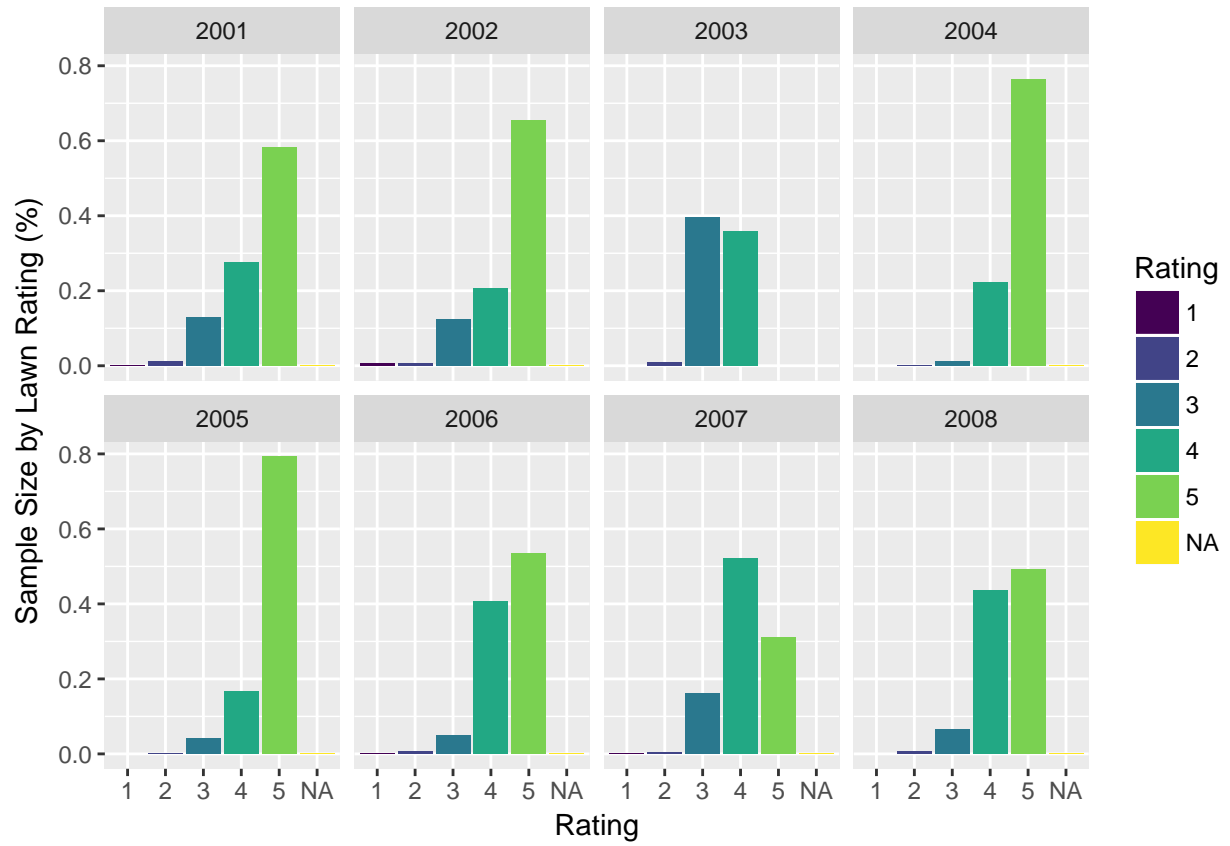


Figure A.4.9: Vehicles

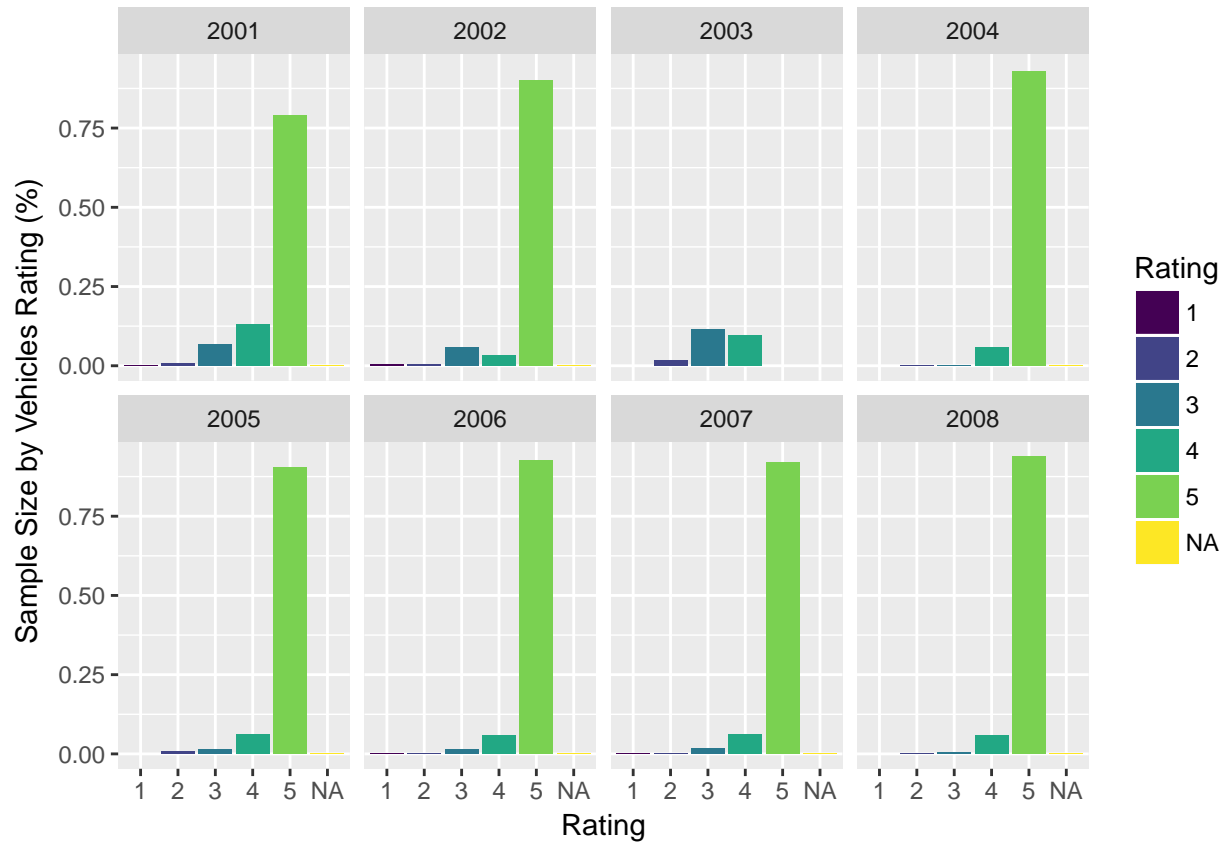


Figure A.4.10: Litter

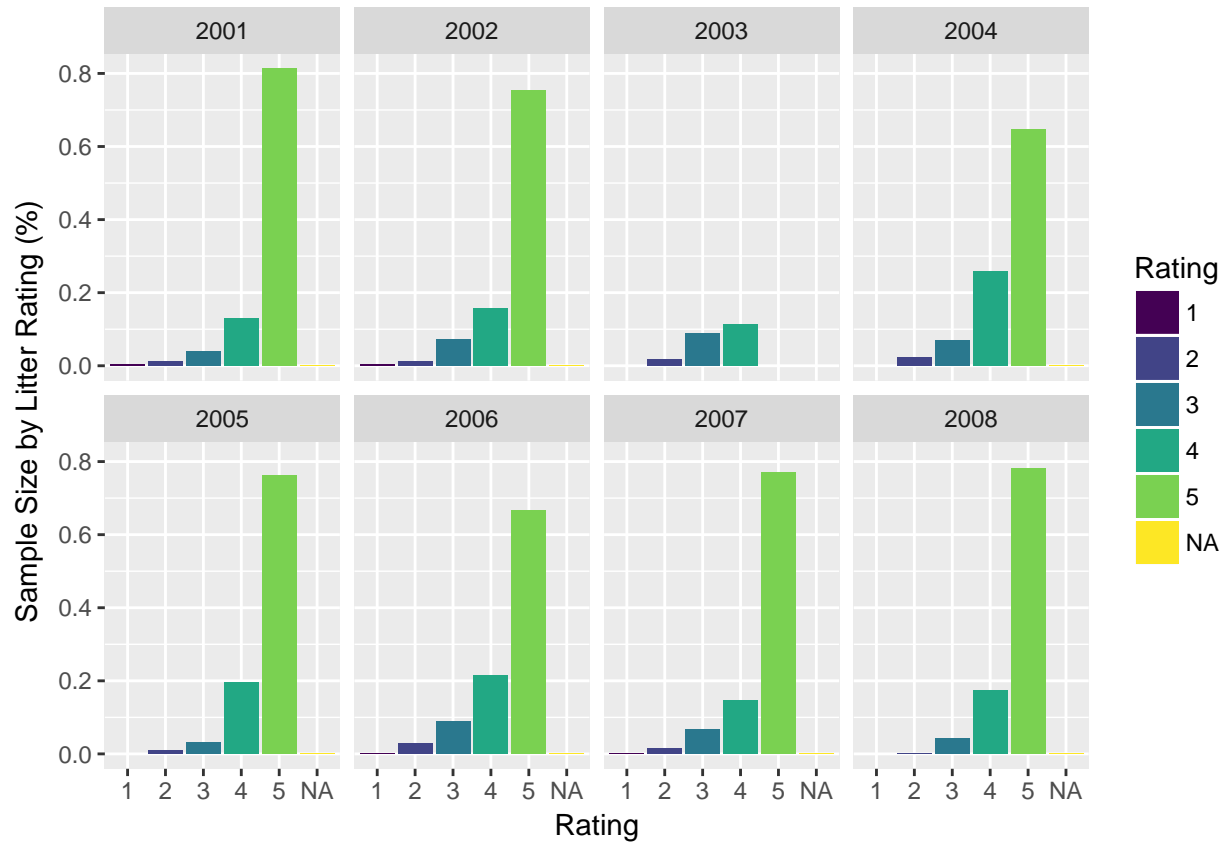
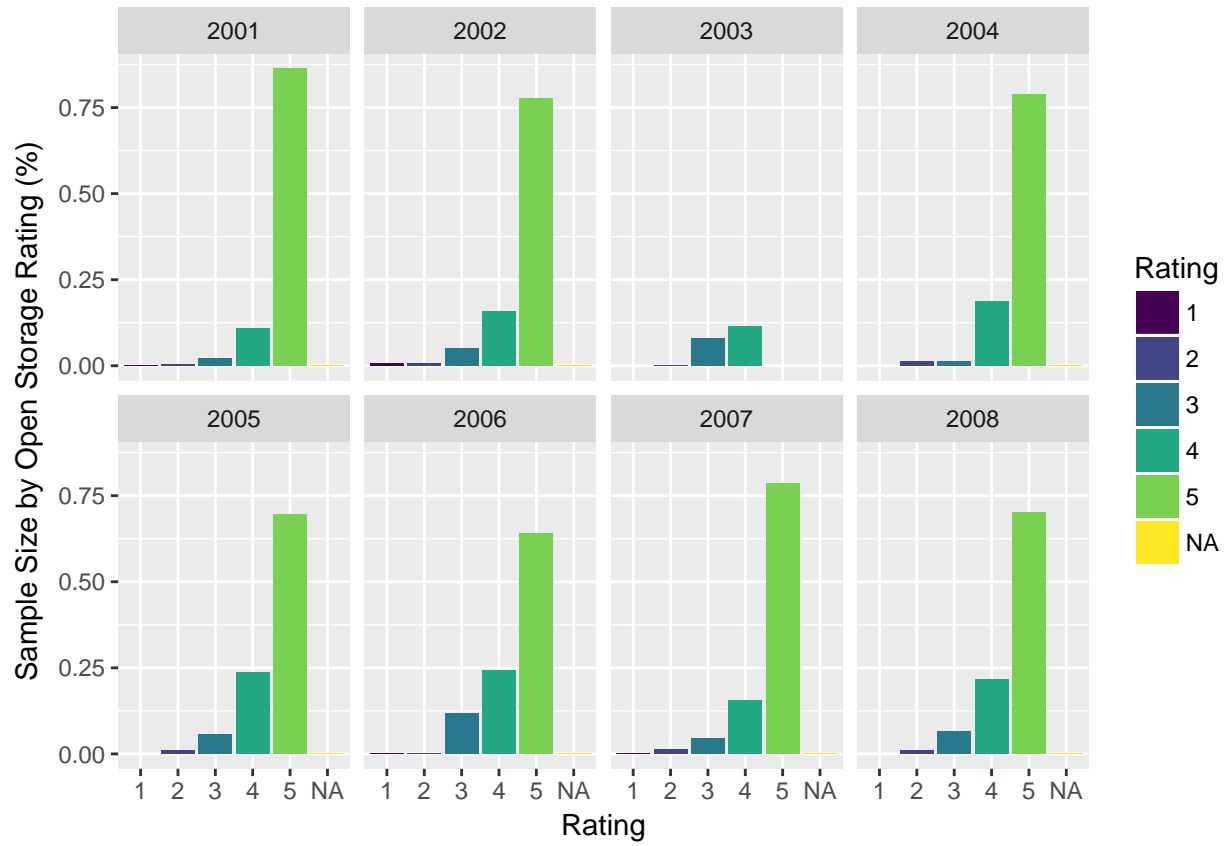


Figure A.4.11: Open Storage



Infrastructure Conditions Ratings by Category & Year - Model Sample (2001-2008)

Figure A.4.12: Public Sidewalks

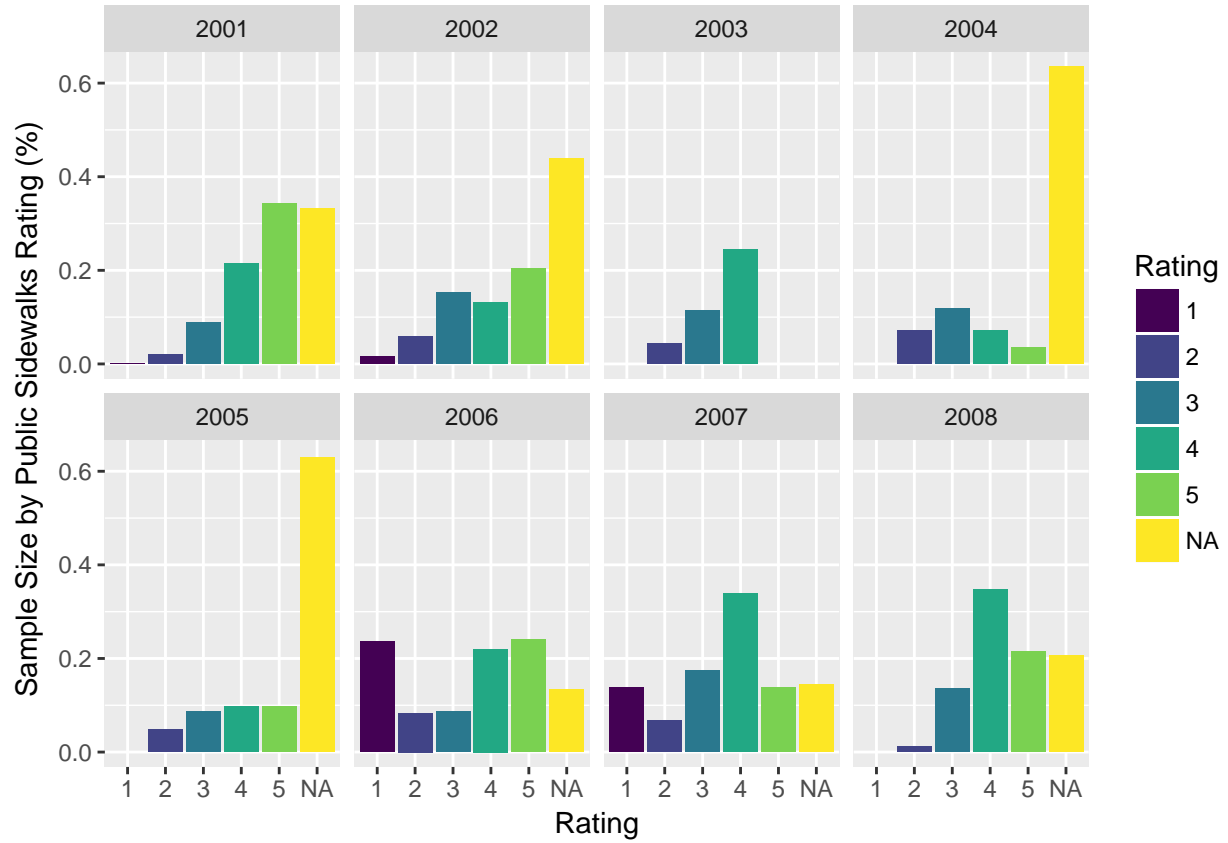


Figure A.4.13: Curbs

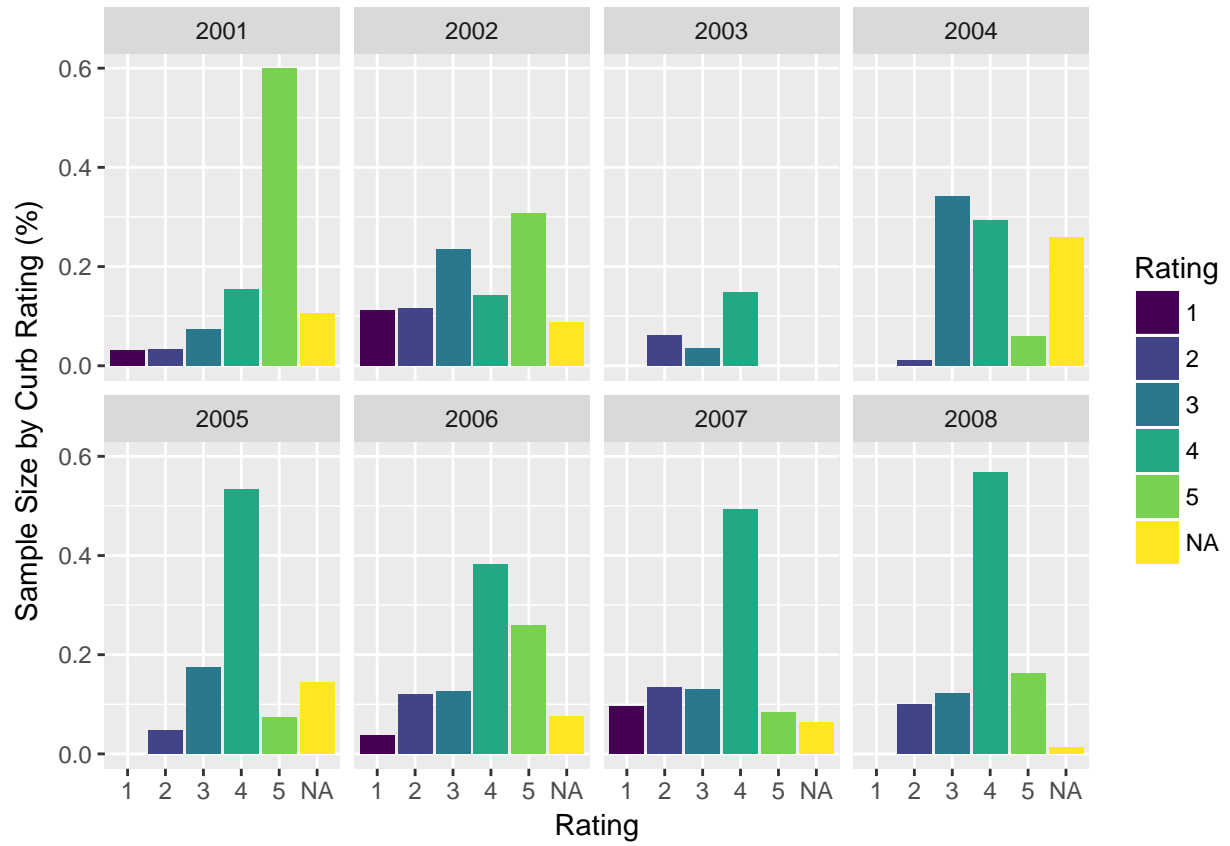


Figure A.4.14: Streetlights

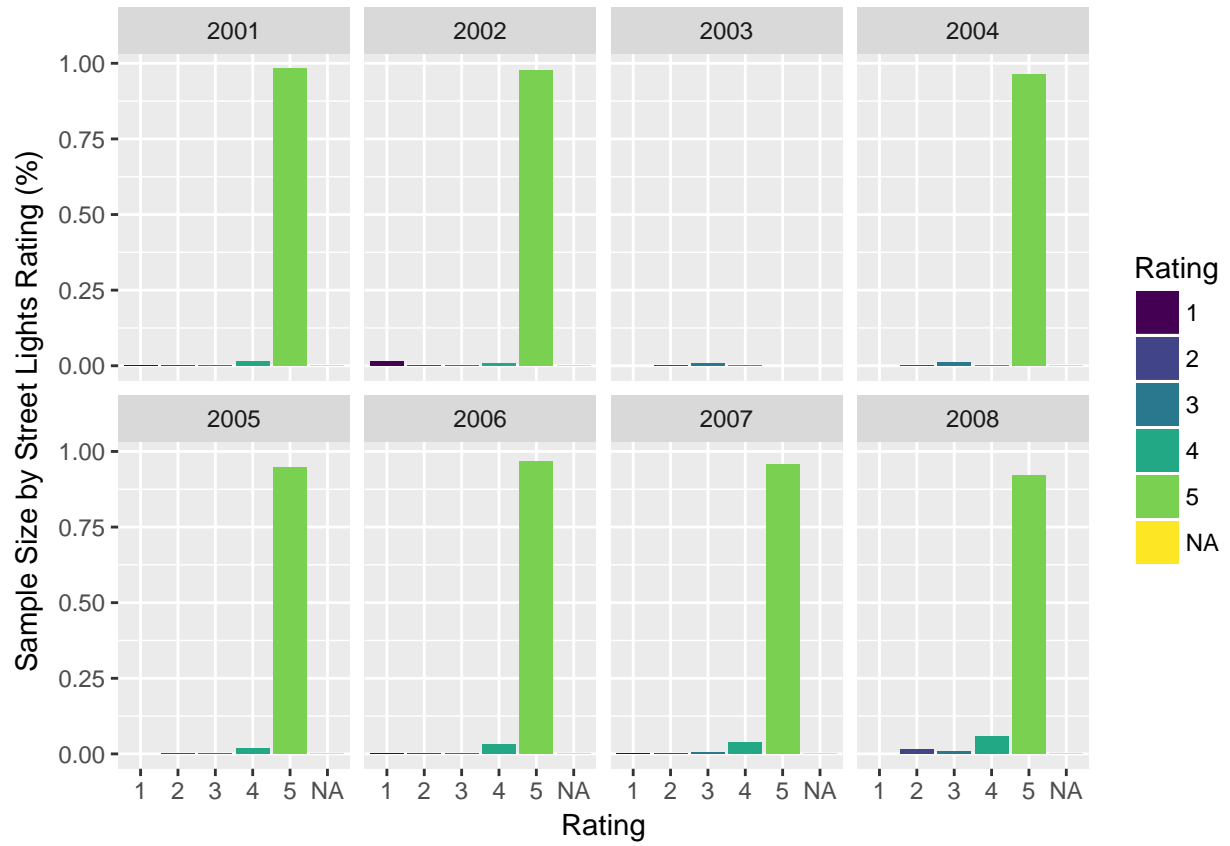


Figure A.4.15: Catch Basins

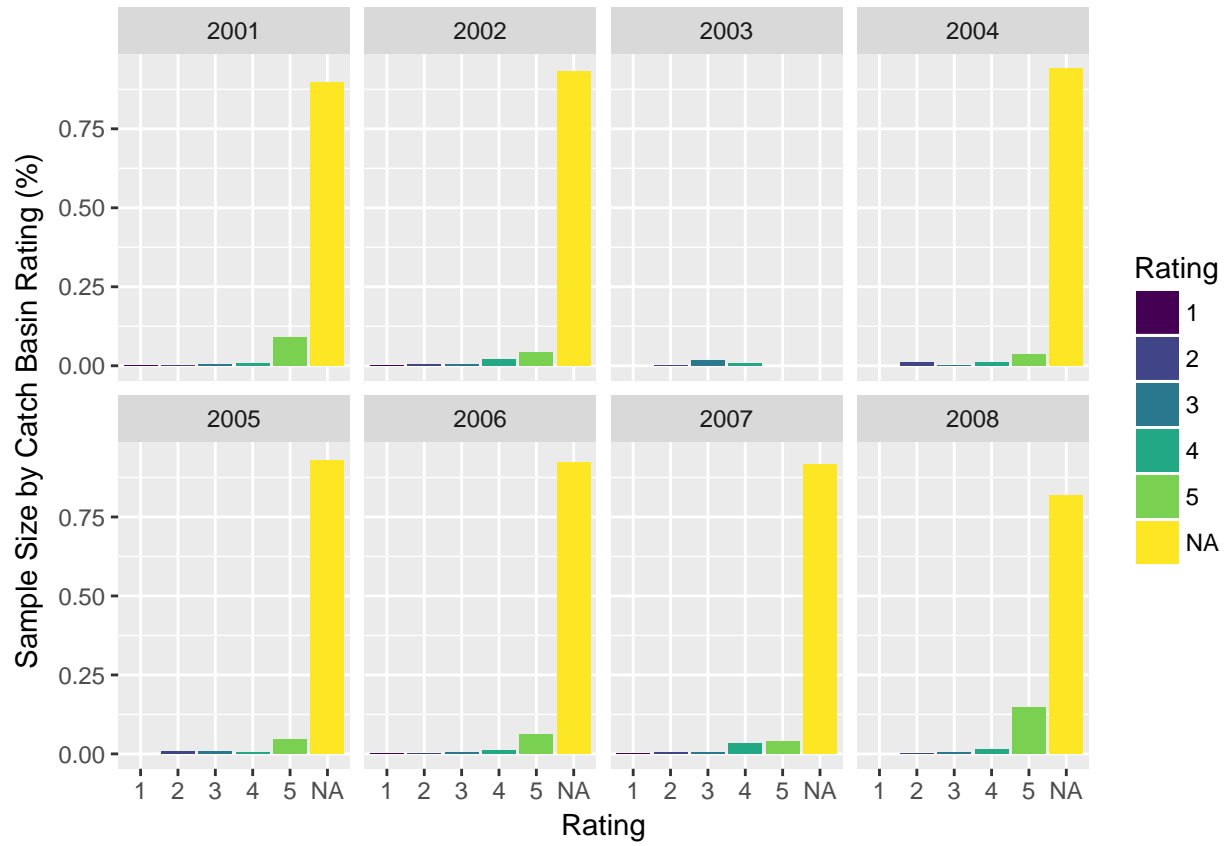
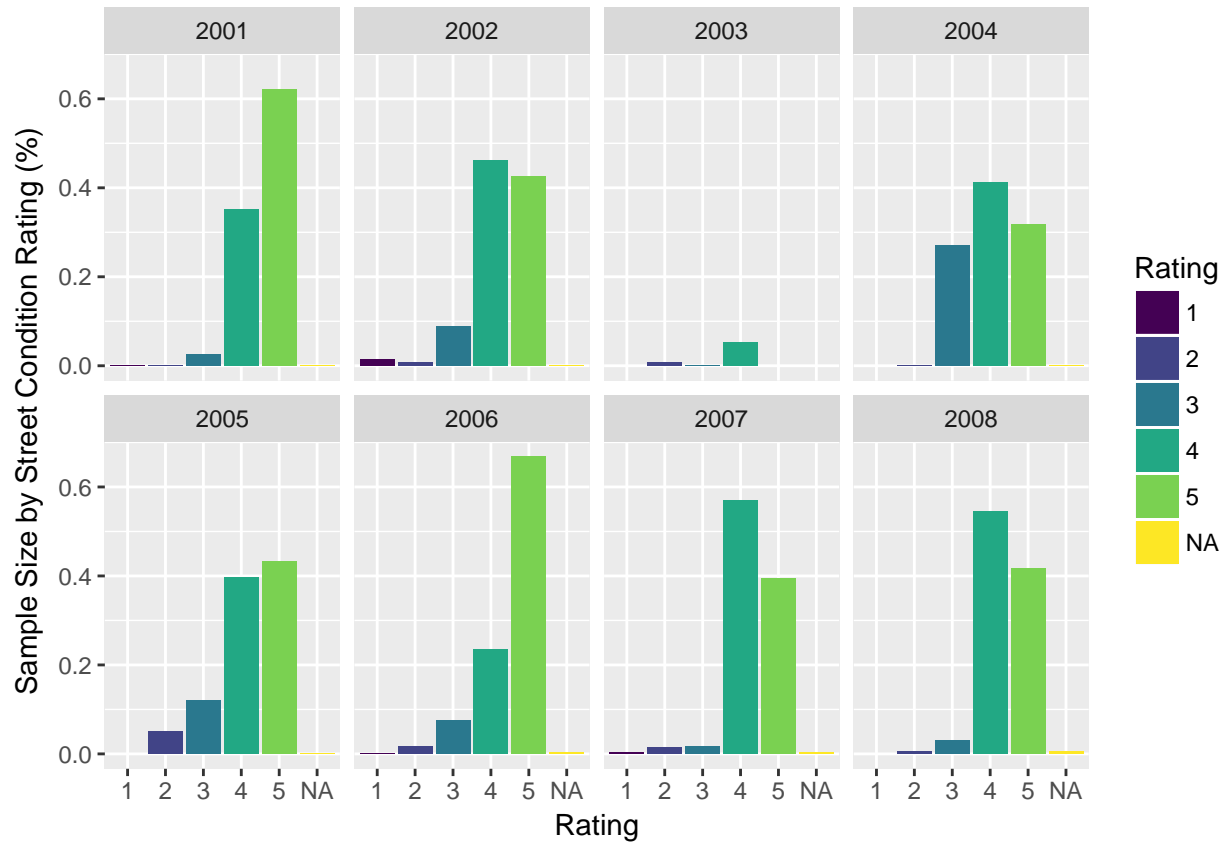
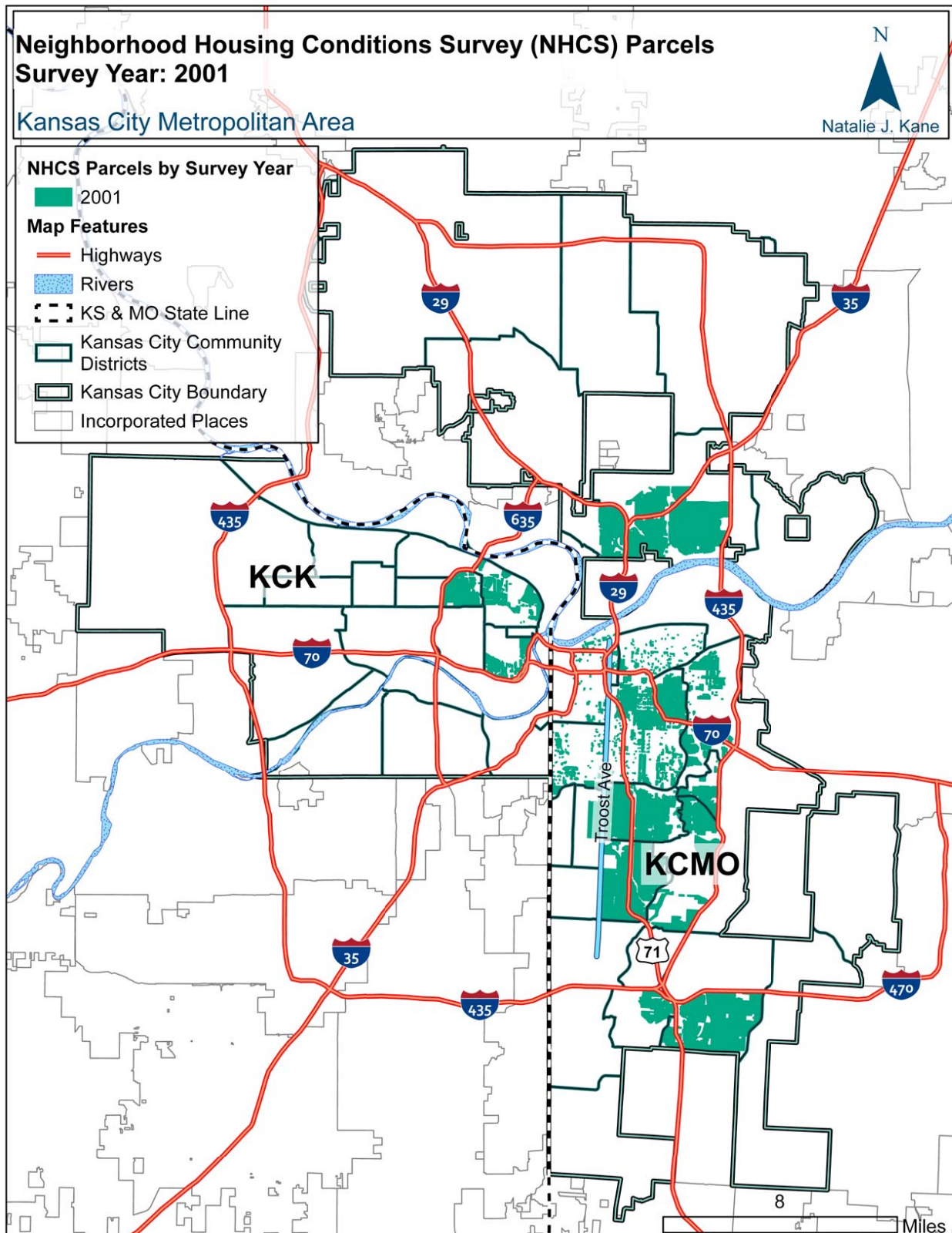


Figure A.4.16: Street Condition

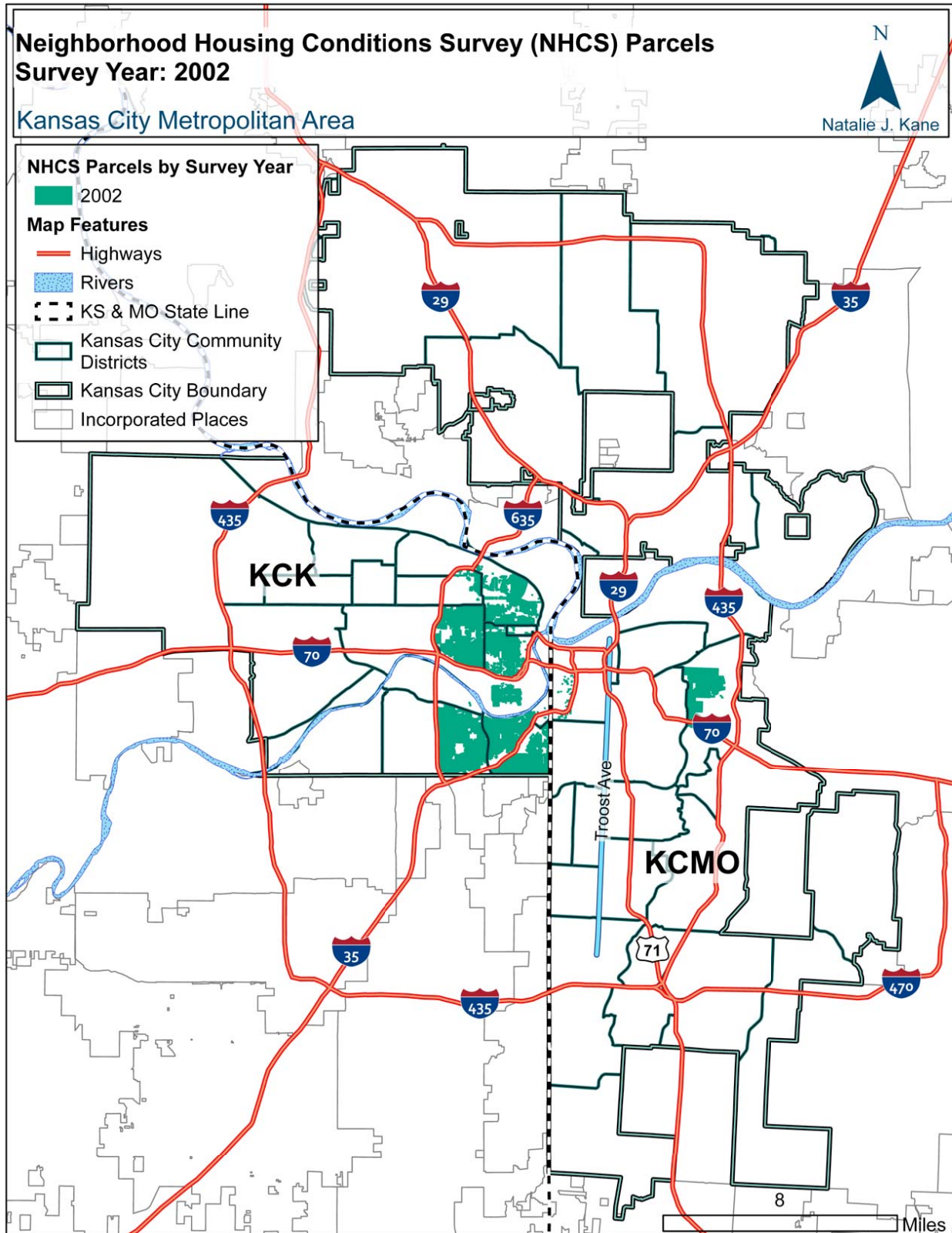


Maps: NHCS Parcels by Survey Year

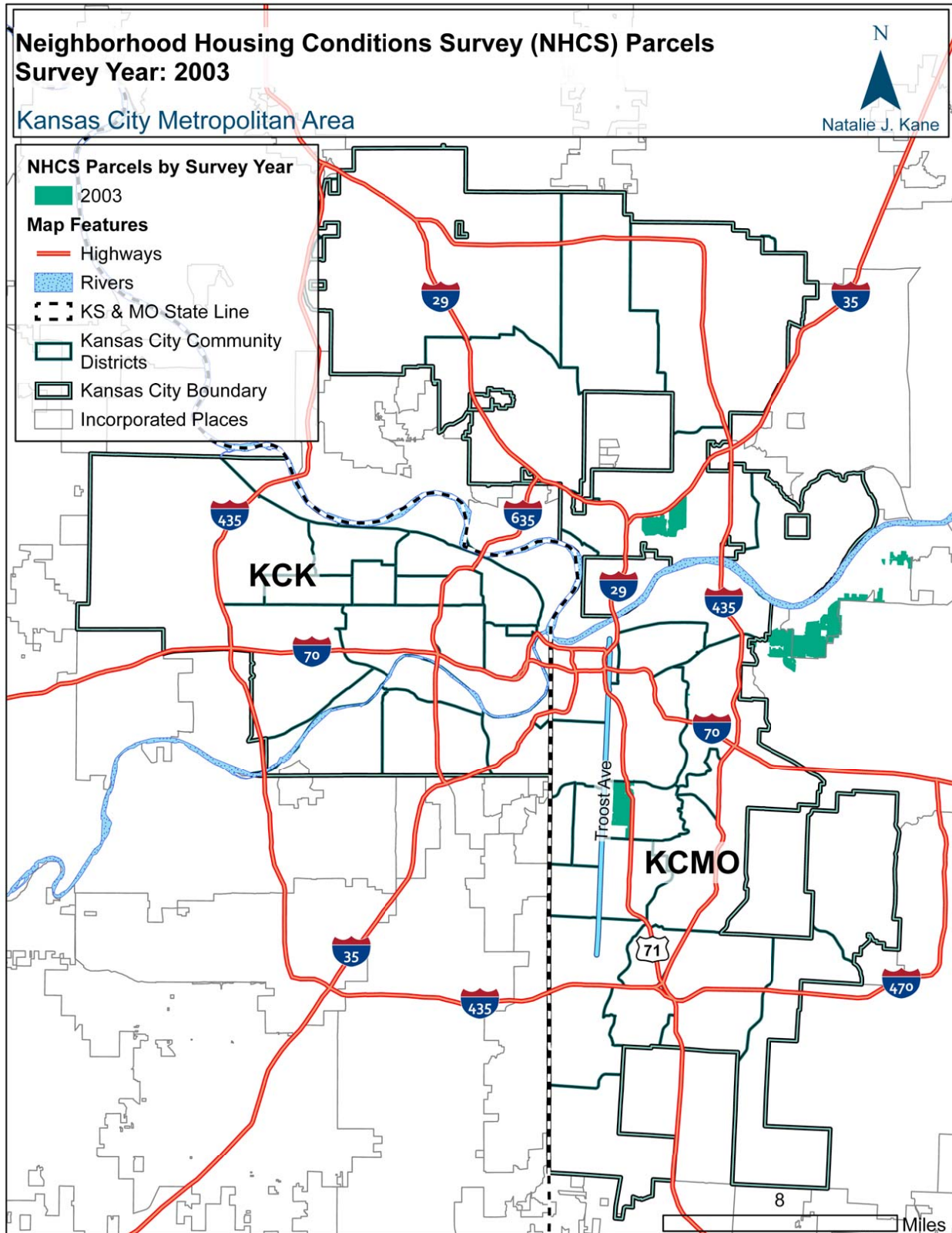
Map A.4.17: Survey Year - 2001



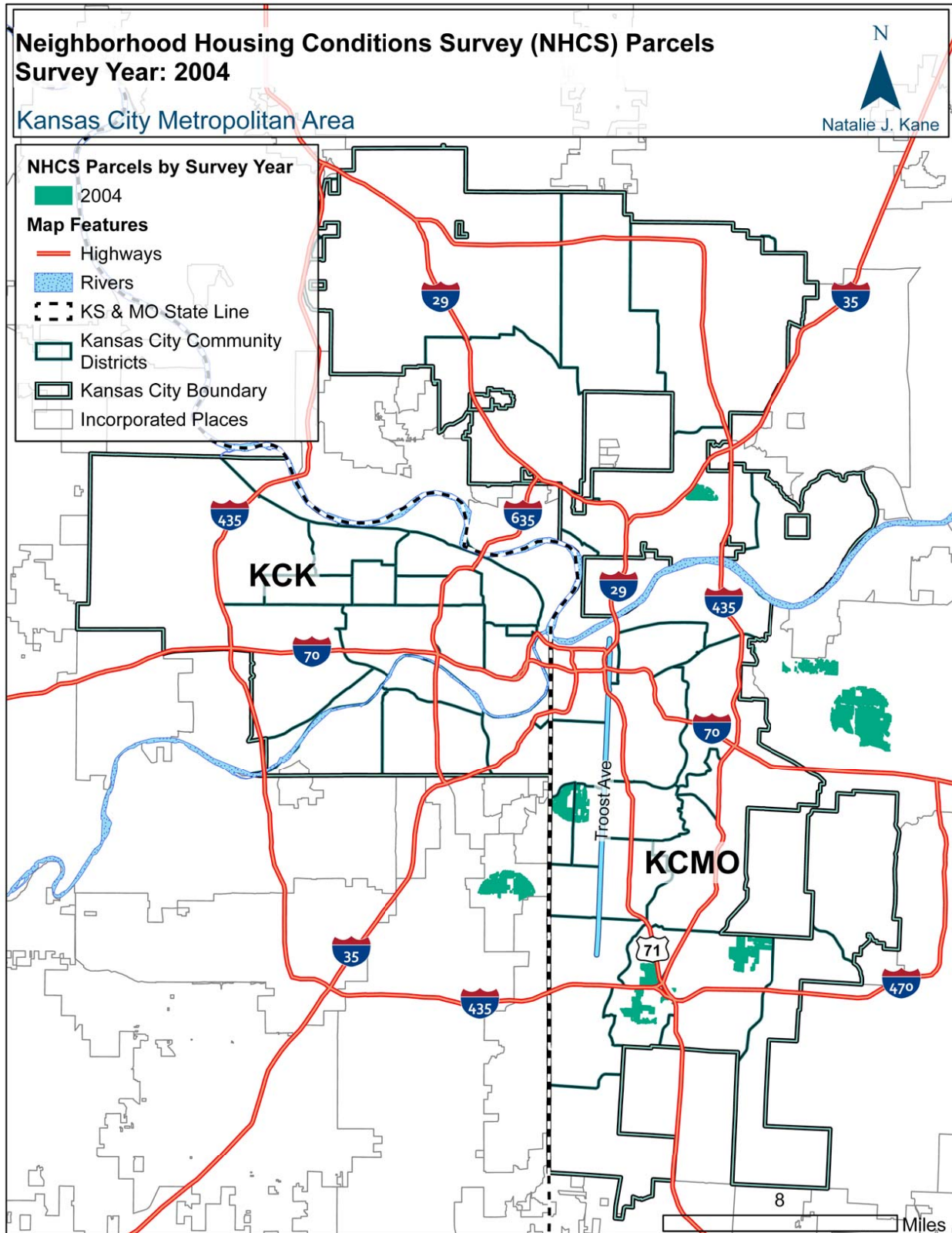
Map A.4.18: Survey Year - 2002



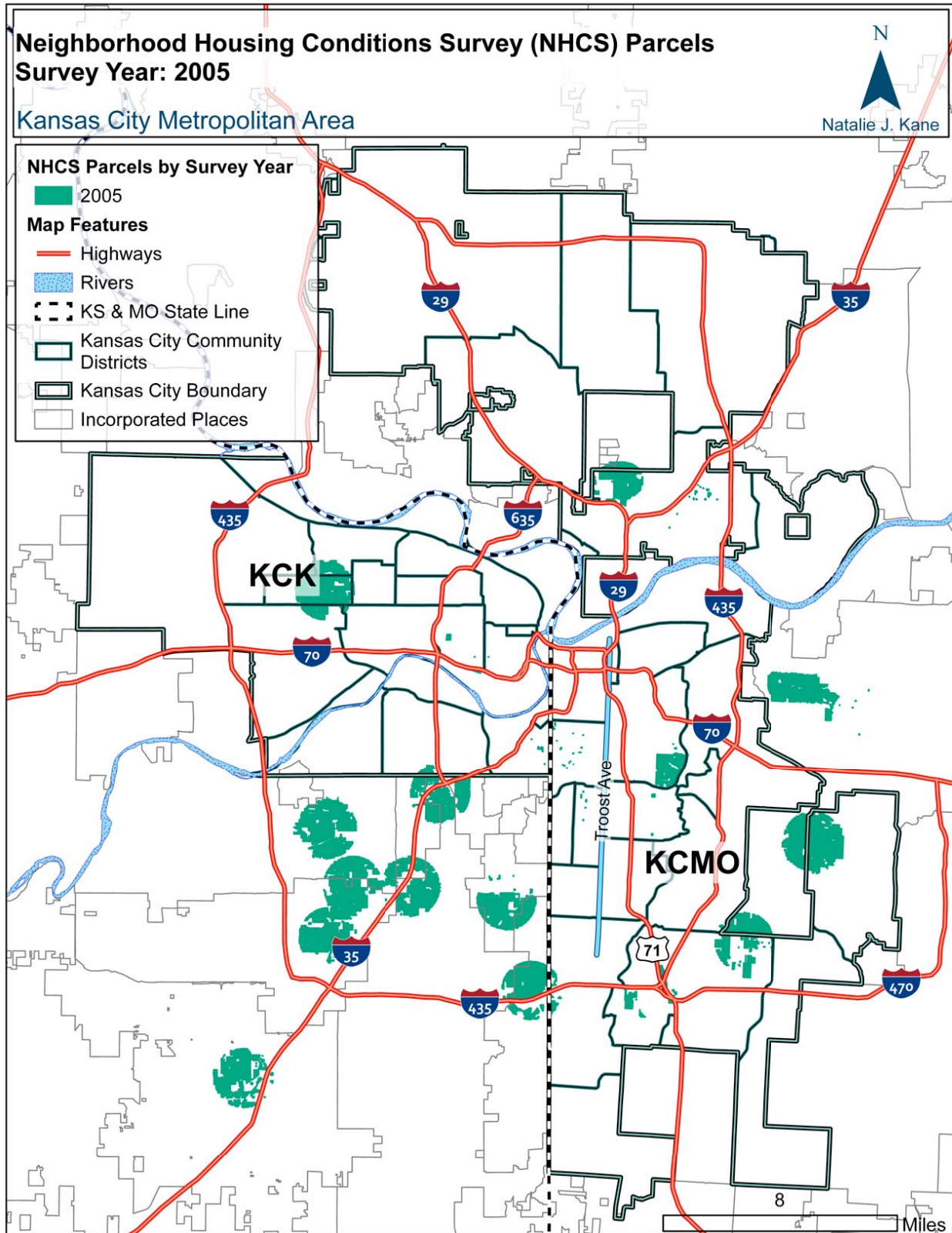
Map A.4.19: Survey Year - 2003



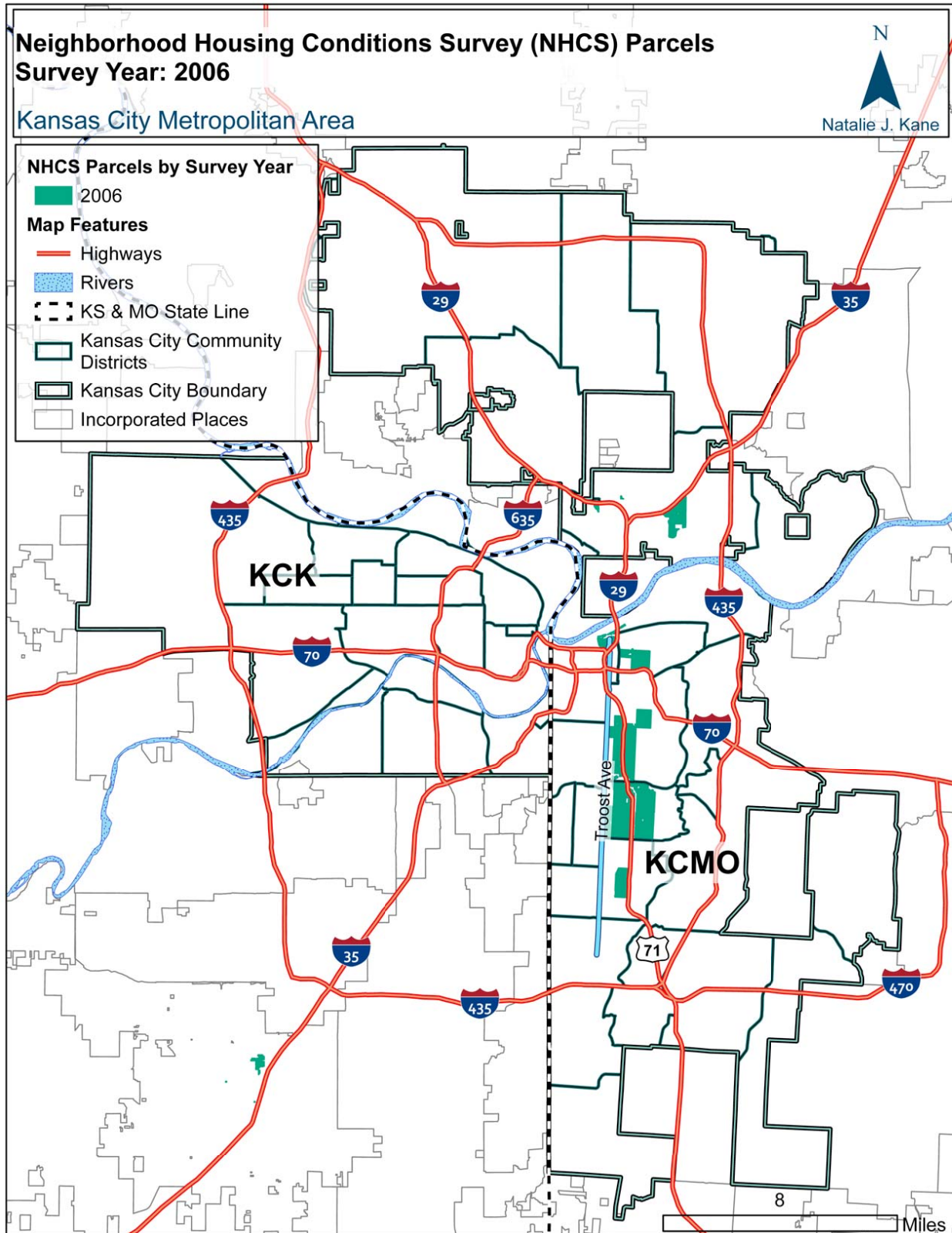
Map A.4.20: Survey Year - 2004



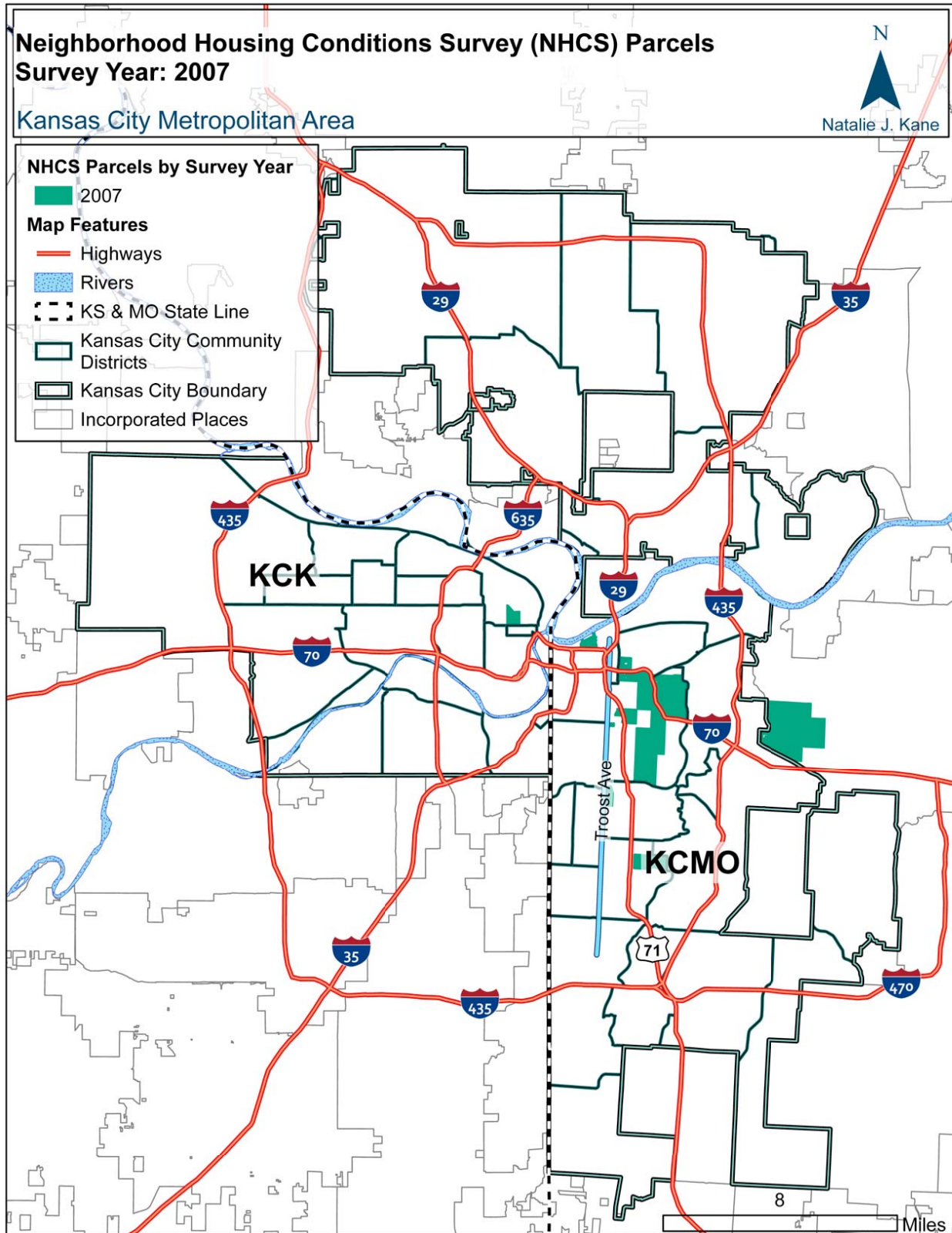
Map A.4.21: Survey Year - 2005



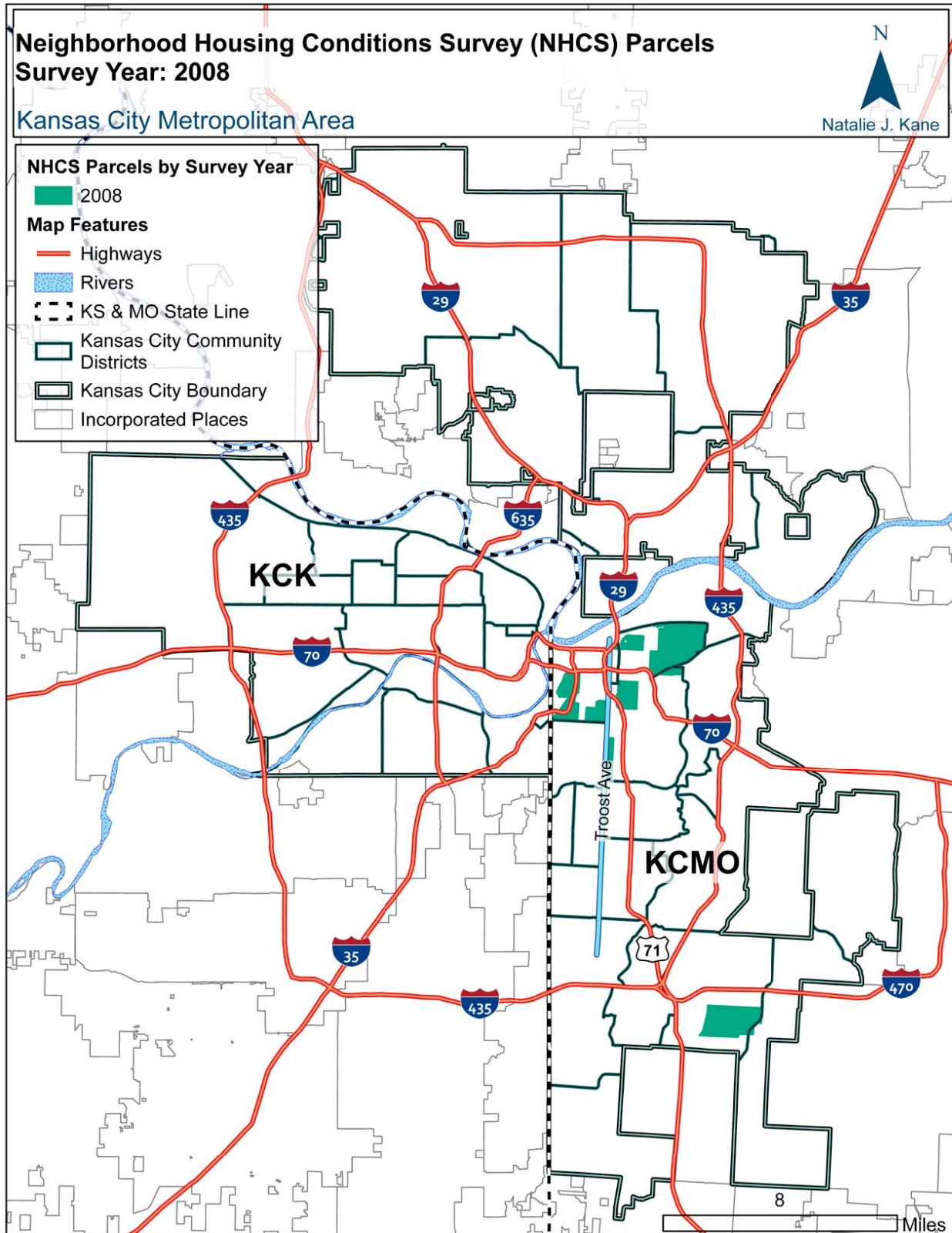
Map A.4.22: Survey Year - 2006



Map A.4.23: Survey Year - 2007

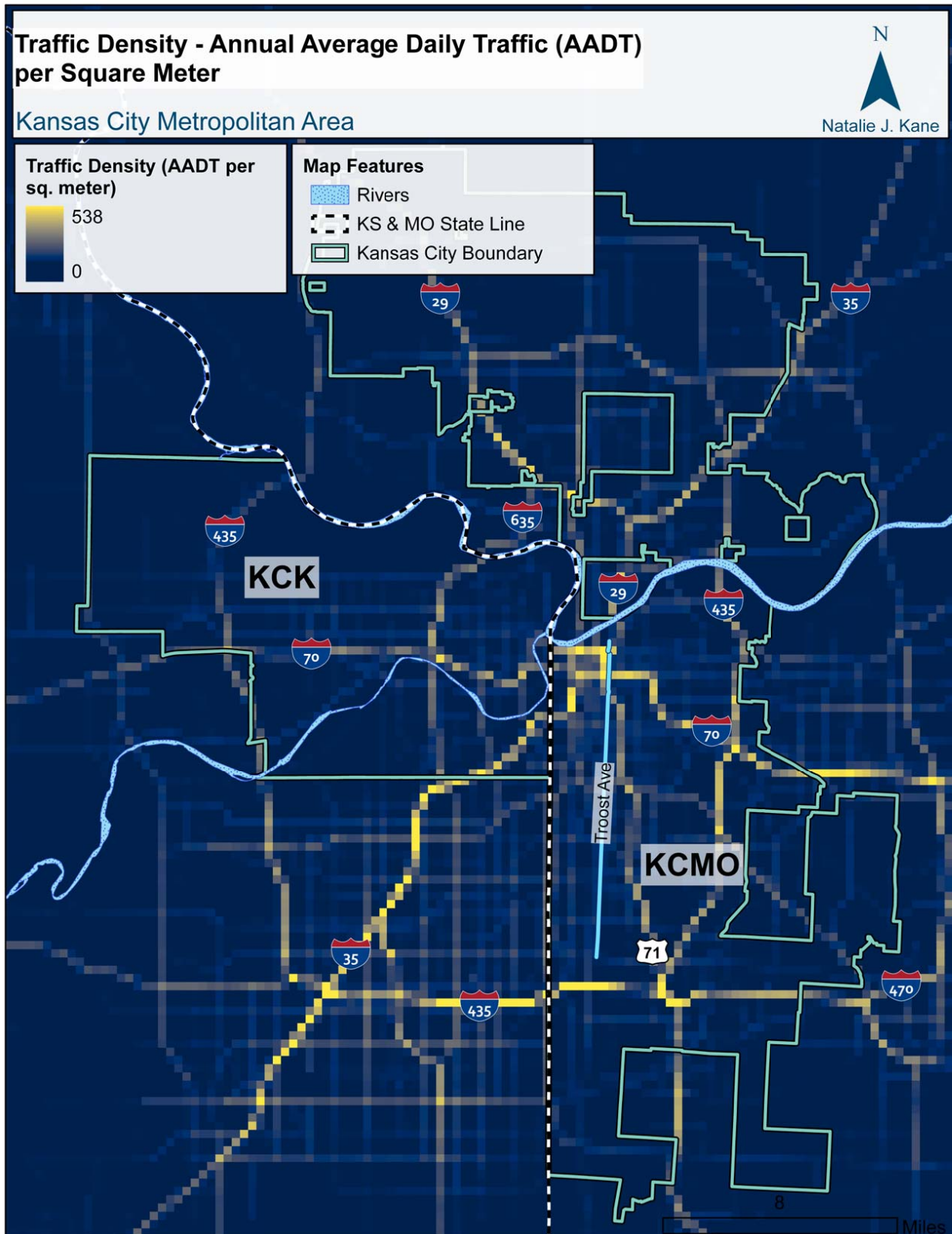


Map A.4.24: Survey Year - 2008

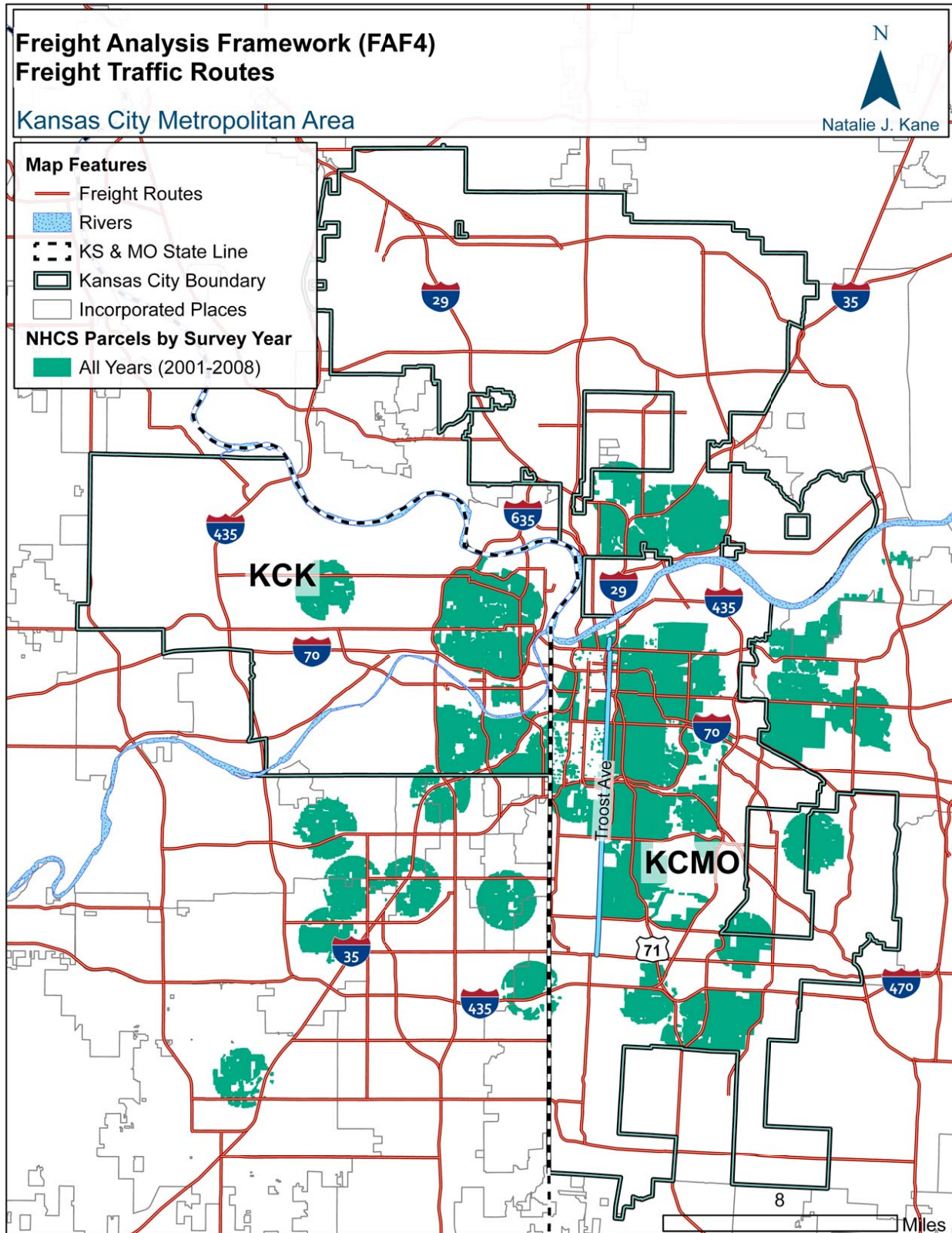


Maps: Environmental Exposure Covariates

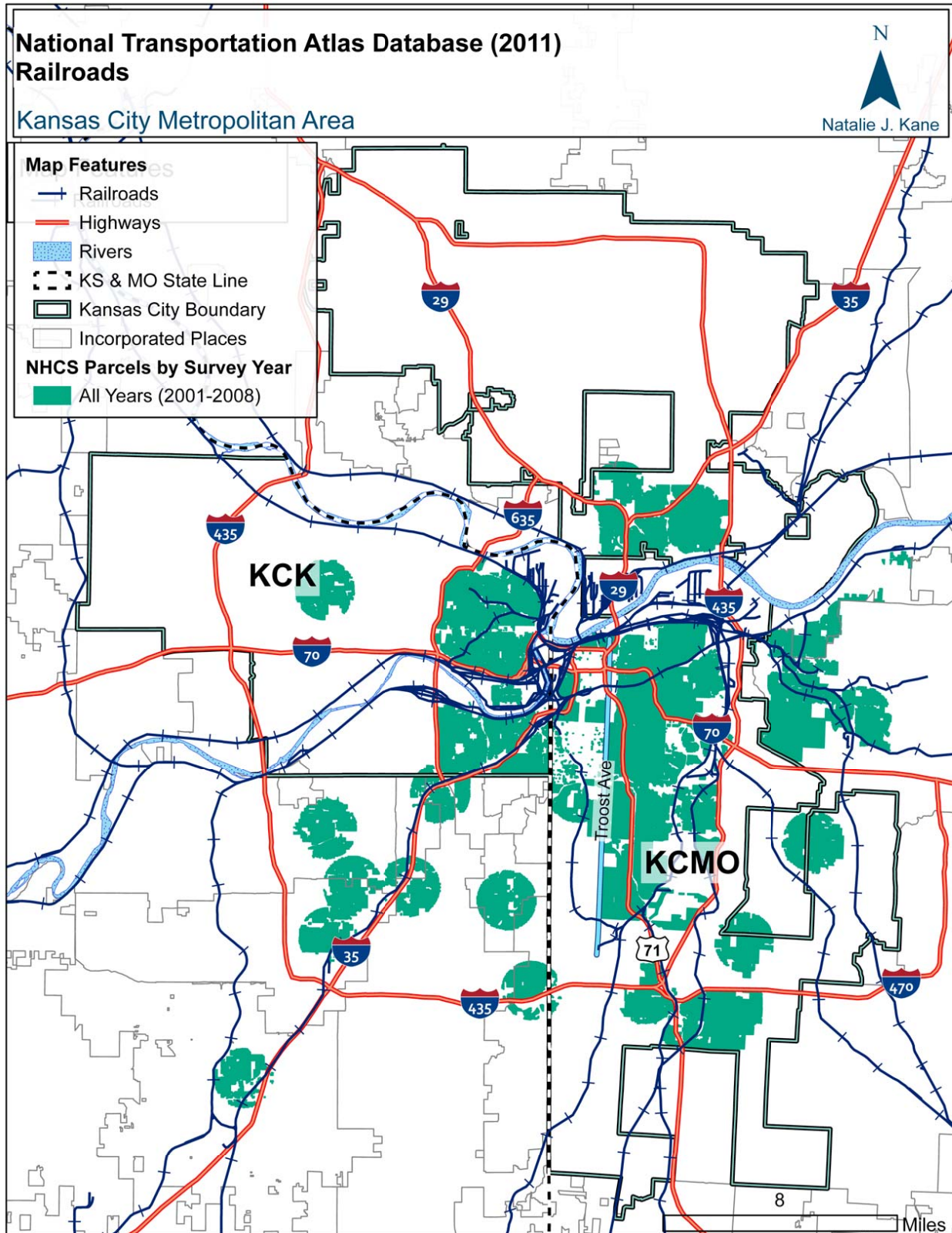
Map A.4.25: Traffic Density - (AADT per m²)



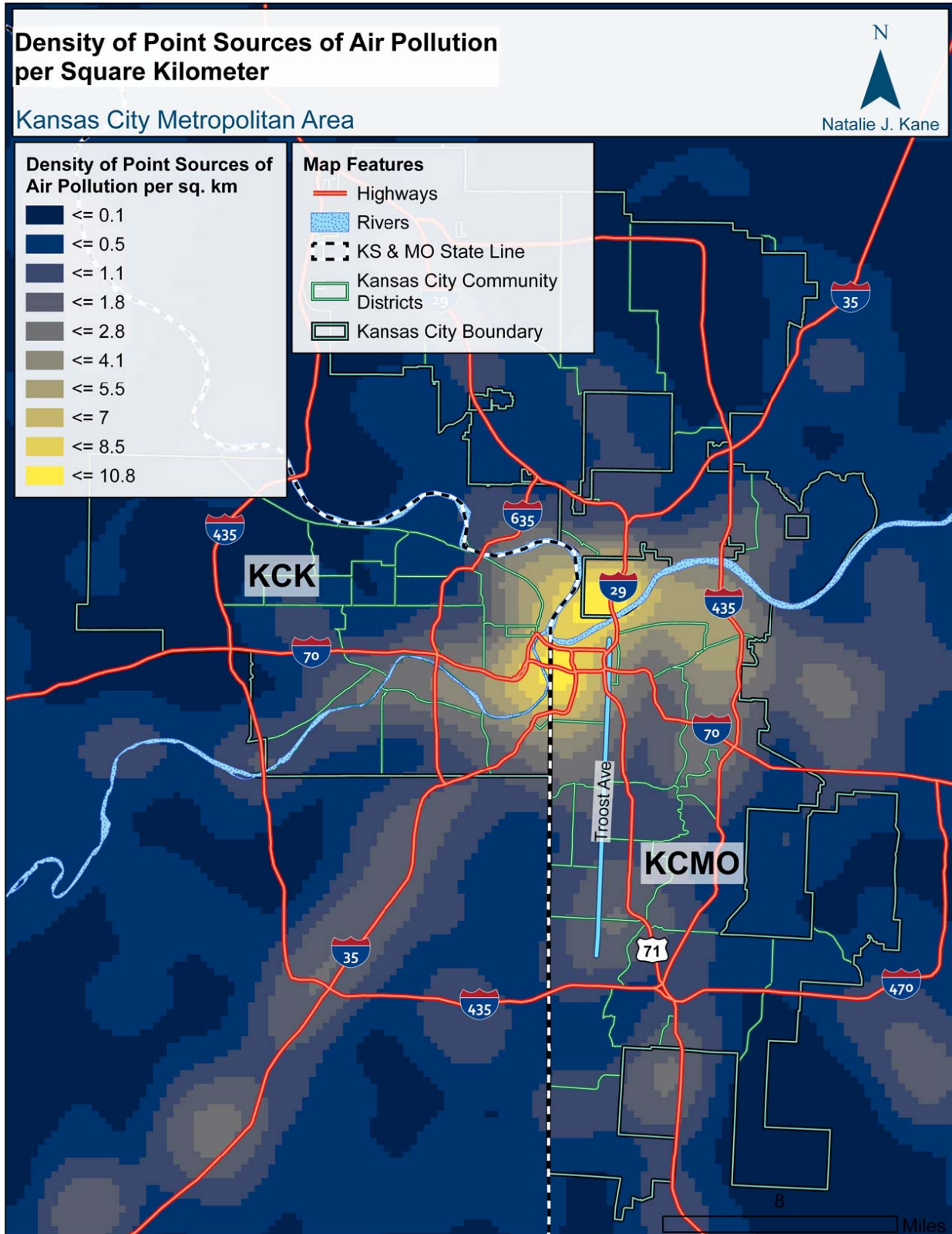
Map A.4.26: Freight Traffic Routes



Map A.4.27: Railroads



Map A.4.28: Density of Point Sources of Air Pollution (per km²)



Bayesian Profile Regression (BPR) Model Trial Results

Figures & Graphs - Model 1

Figure A.4.29: Risk Profile Box Plots (Group 1)

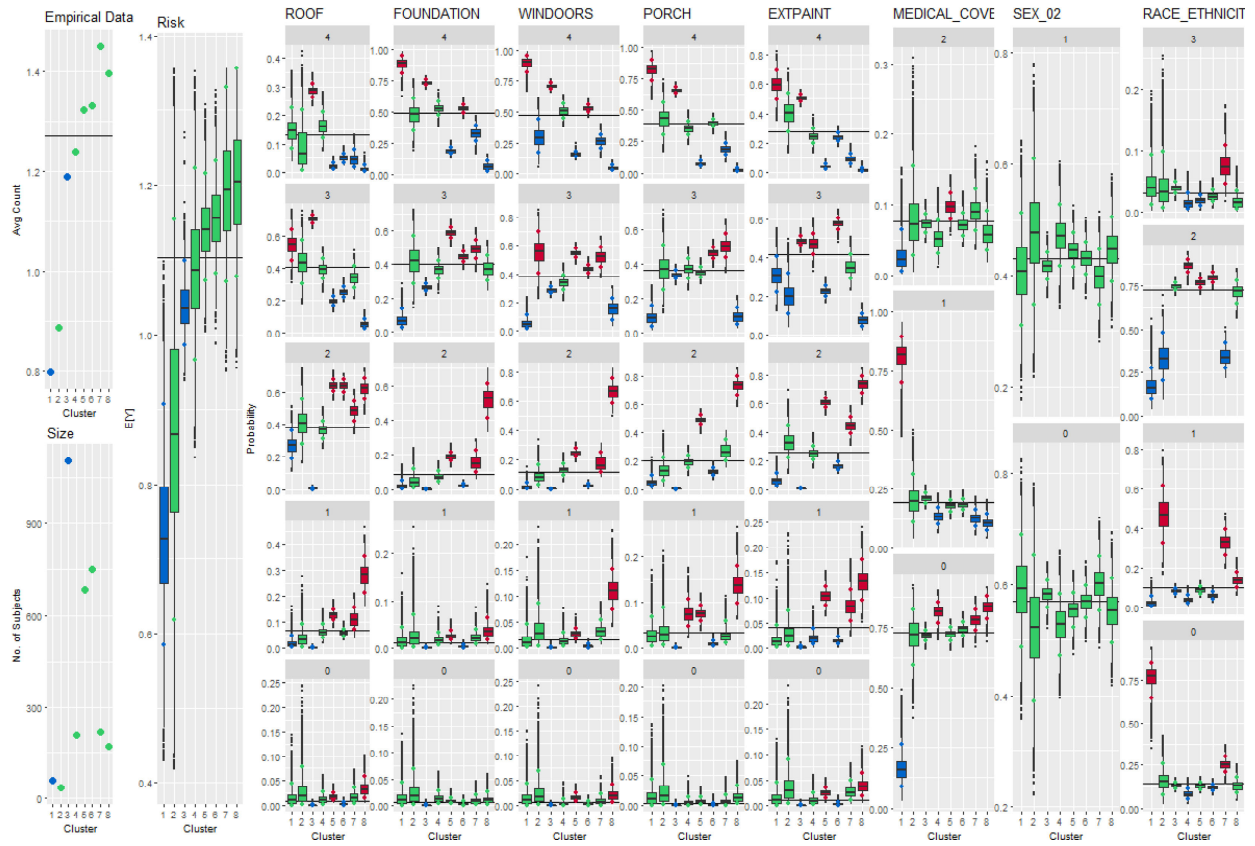


Figure A.4.30: Risk Profile Box Plots (Group 2)

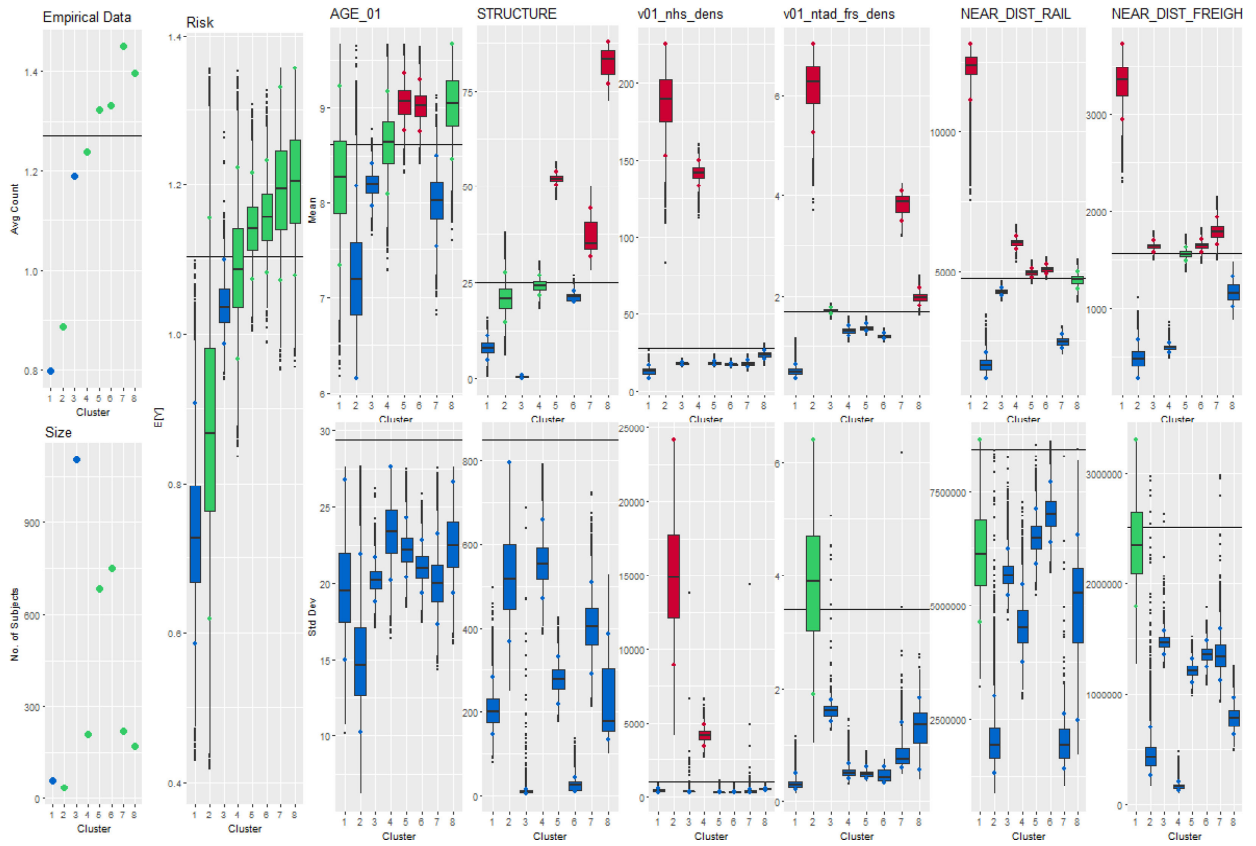


Figure A.4.31: Trace Plot - Alpha

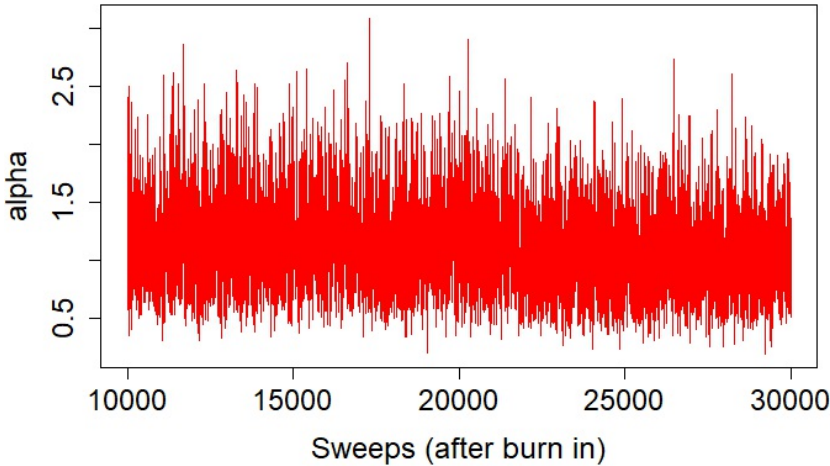


Figure A.4.32: Trace Plot - Number of Clusters

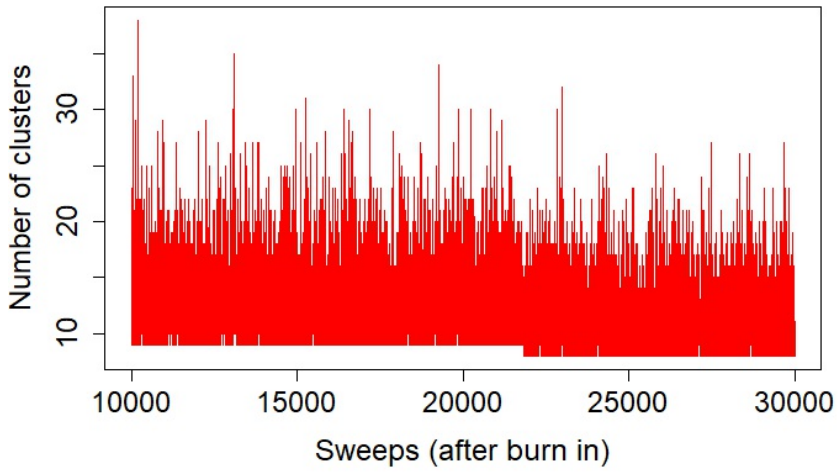
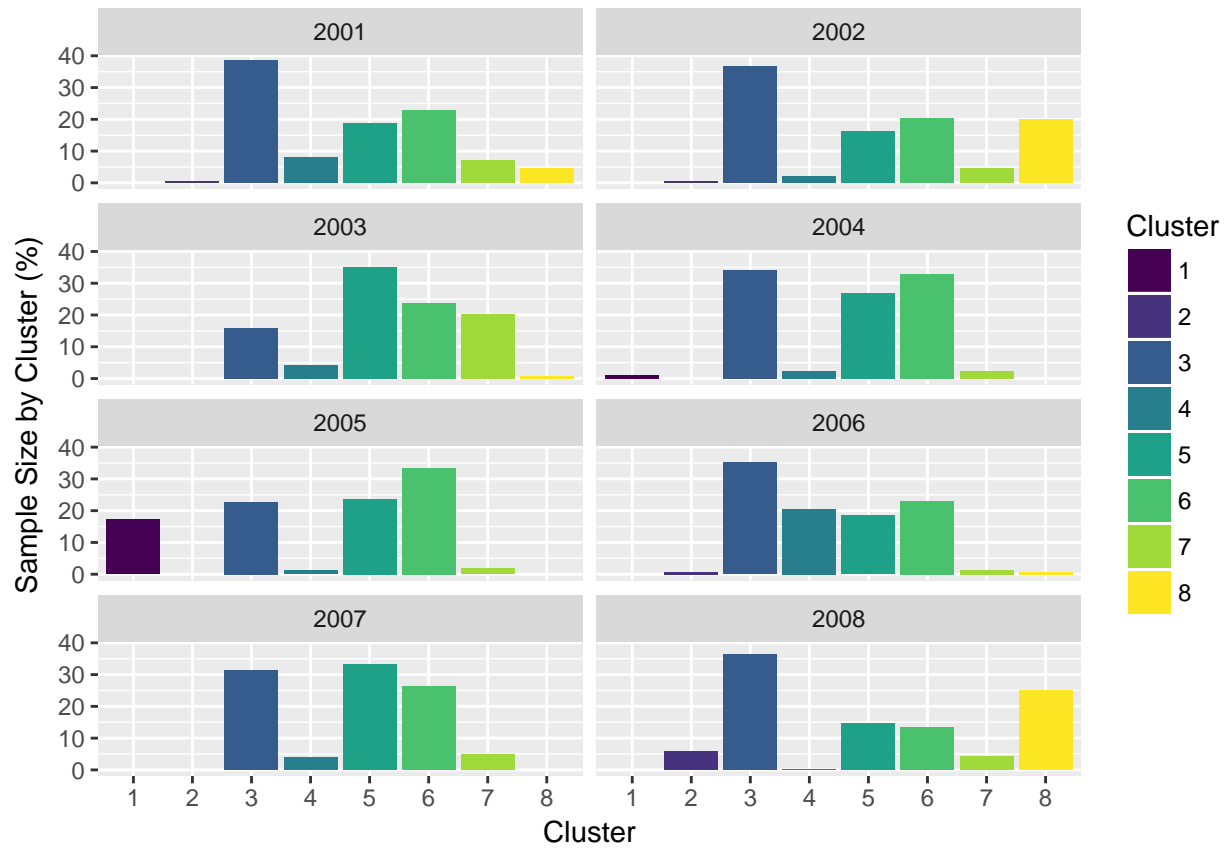


Figure A.4.33: Cluster Sample Size by Survey Year (%)



Figures & Graphs - Model 2

Figure A.4.34: Risk Profile Box Plots (Group 1)

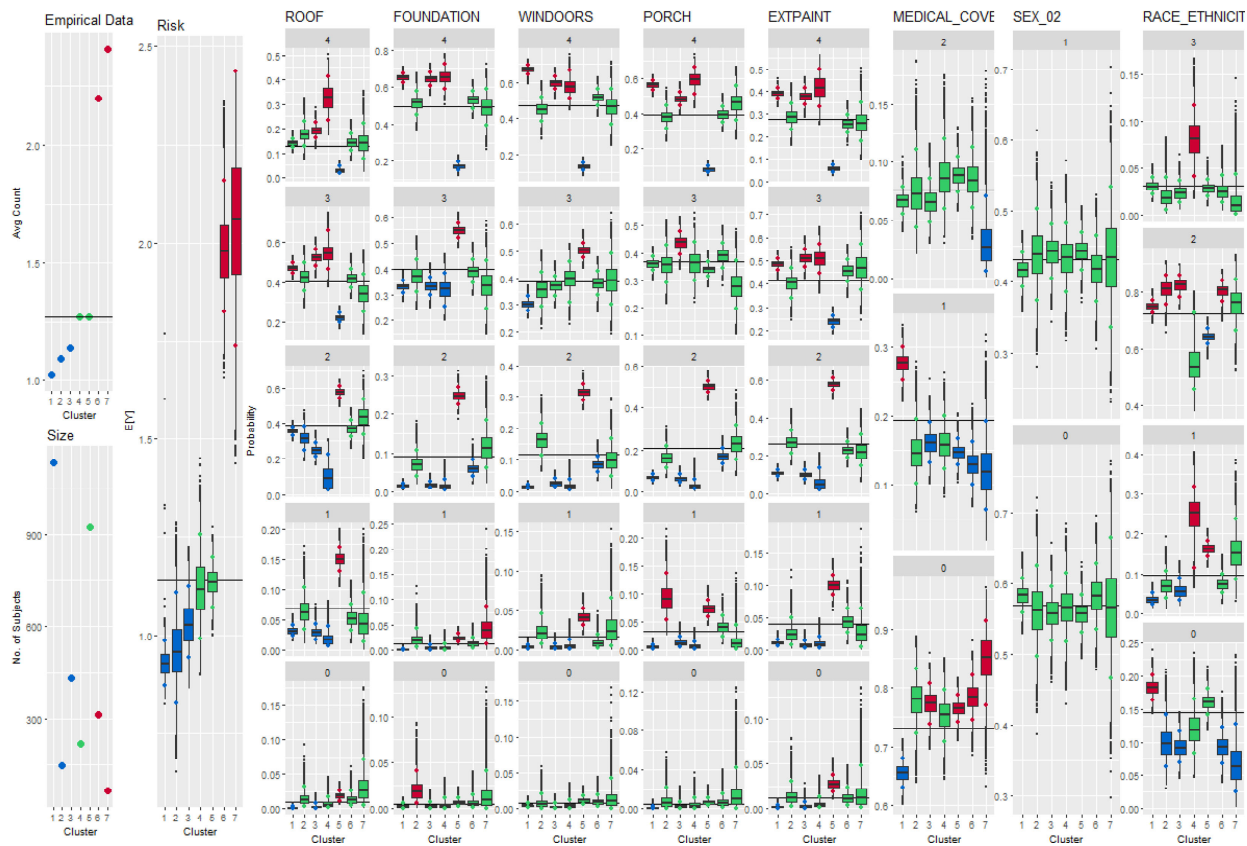


Figure A.4.35: Risk Profile Box Plots (Group 2)

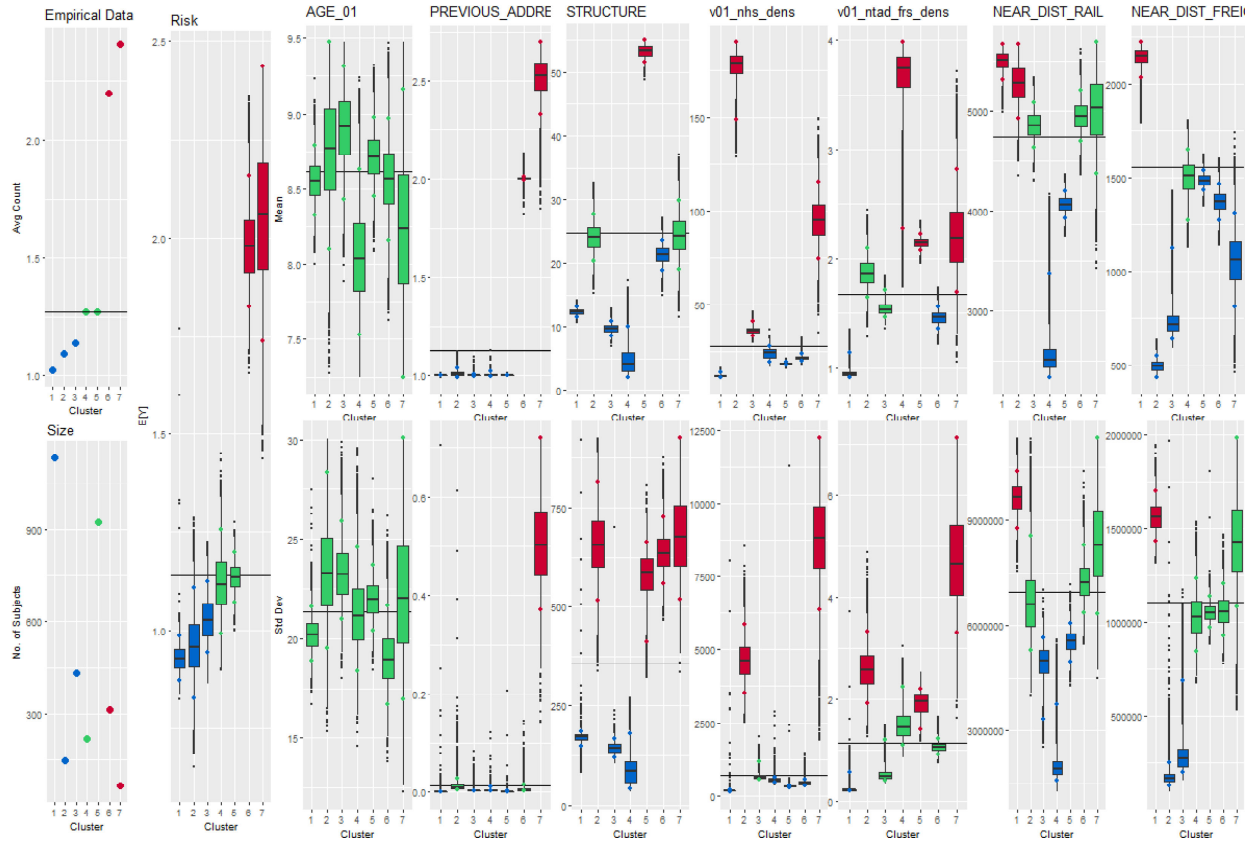


Figure A.4.36: Trace Plot - Alpha

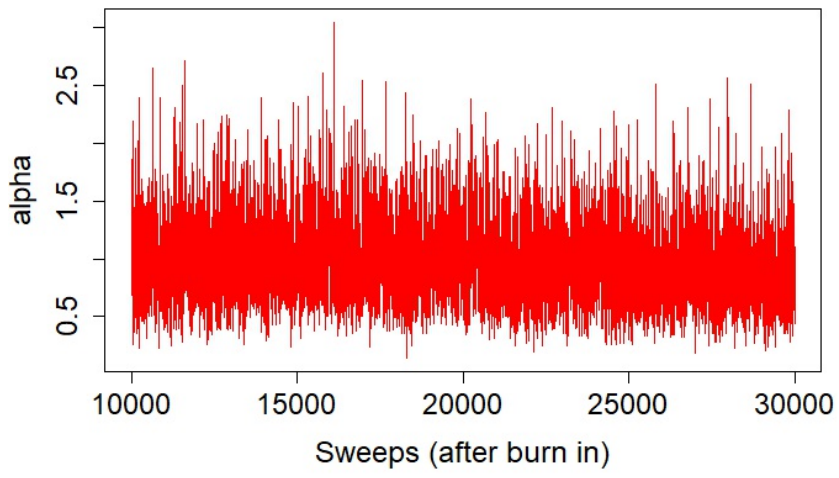


Figure A.4.37: Trace Plot - Number of Clusters

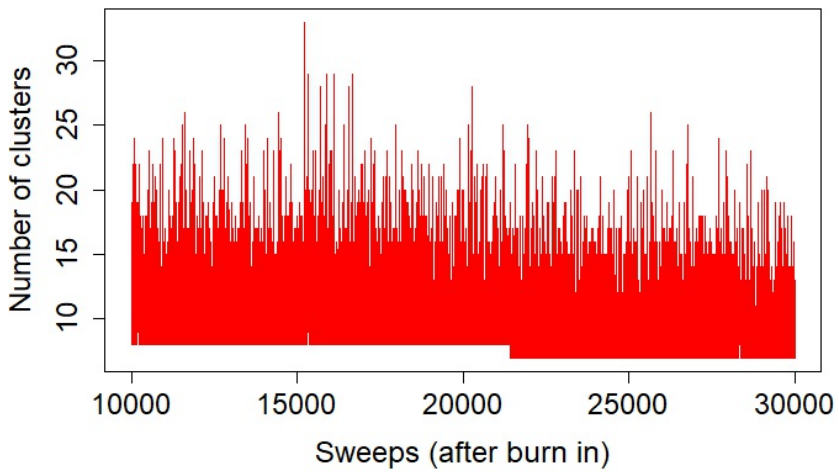
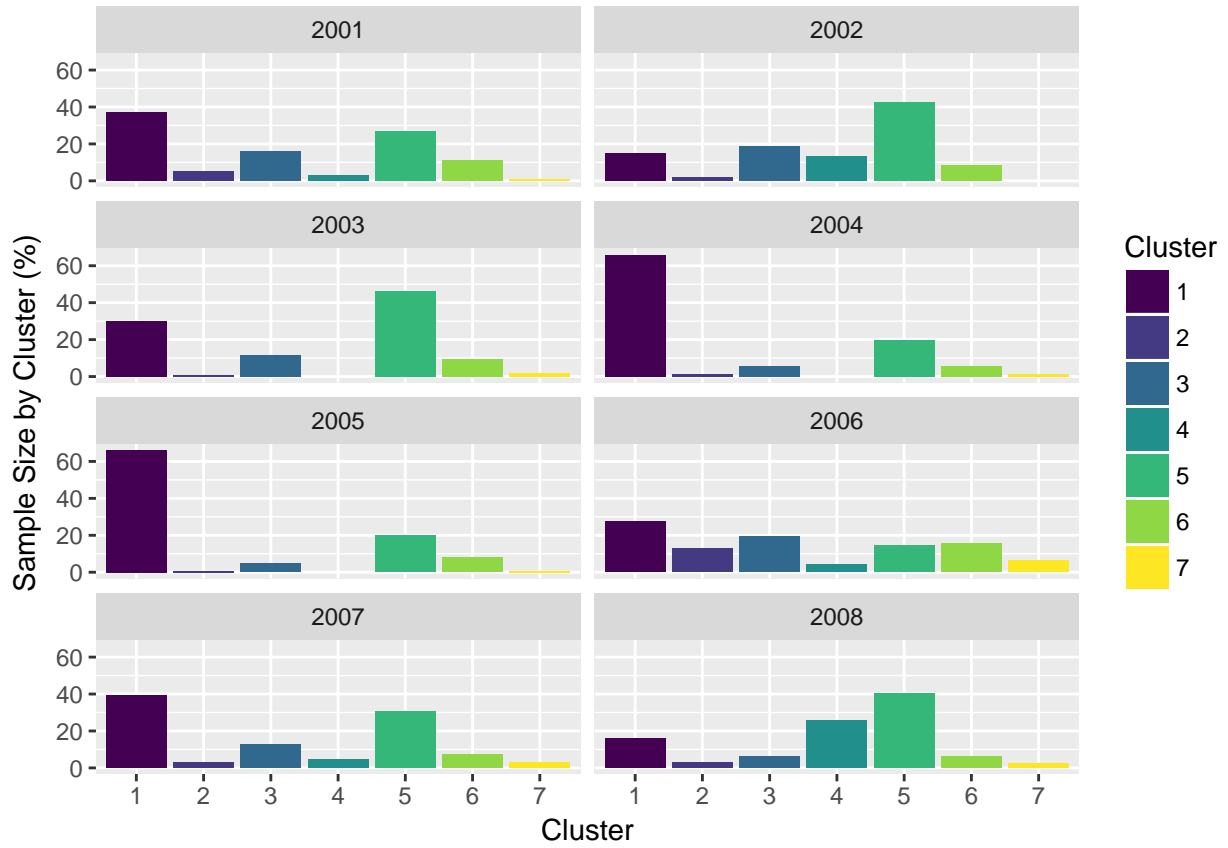


Figure A.4.38: Cluster Sample Size by Survey Year (%)



Neighborhood Housing Conditions Survey (NHCS) - Ratings Guide Summary

Parcel Classification

Table A.4.39: Structure Type

Rating	Description
1 - Residential	The structure was built for residential use.
2 - Non-residential	The structure was built for other than residential use.
3 - Vacant Lot	There is no structure on the parcel.
4 - Parking Lot	The parcel is used for parking.
5 - Park	The parcel has a park
6 - Common Area	A parcel common to townhome or condominium type properties.

Table A.4.40: Use Type

Rating	Description
1 - Residential	The structure is being used residentially.
2 - Non-residential	The structure is being used other than residentially.
3 - Mixed	The structure is being used both residentially and non-residentially.
4 - Un-ratable	The parcel's current use cannot be determined.
5 - Not applicable	Applies to parcels with no structure.

Table A.4.41: Residential Type

Rating	Description
1 - Detached-1	Single family dwelling
2 - Detached-2	Duplex (designed and built as a duplex, not converted from single-family).
3 - Attached	Structures such as row housing, sharing roofs and outside walls.
4 - Apartments	All other (non-institutional) multi-family residential units.
5 - Non-residential	Applies to all non-residential structure types.
6 - Not applicable	Applies to parcels with no structure.

Table A.4.42: Structure Profile

Rating	Description
1 - Single level	NA
2 - 2-story	NA
3 - 3-story	NA
4 - 4-6 floors	NA
5 - Over 6 floors	NA
6 - Not applicable	Applies to parcels with no structure.

Table A.4.43: Visible Address

Rating	Description
1 - Yes	The parcel has a visible address
2 - No	The parcel has no visible address

Structure Conditions

Table A.4.44: Roof

Rating	Description
1 - Severely Deteriorated	There are holes visible through roof sheathing. Rafters are sagging or collapsed. Soffits and fascia boards are missing or display severe rot and deterioration.
2 - Seriously Deteriorated	There are no holes present. The roof has sagging rafters, but sagging is not severe. Roofing shingles are extremely deteriorated. More than five shingles are currently missing on the front exposure of the roof. It appears some sheathing needs to be replaced. Soffits and fascia boards display moderate rot and deterioration.
3 - Substandard	There are no holes or sagging. Roofing shingles are deteriorated and should be removed before new shingles are installed. Less than five shingles are missing on the entire roof. Soffits and fascia boards display slight rot deterioration.
4 - Good	Roof shingles show slight wear. (discoloration can be seen from street, or faded color do to loss of rock). There are no holes or sagging rafters. Soffits and fascia boards may need painting, but there is no rot or deterioration.
5 - Excellent	Roofing shingles show no wear. Soffits and fascia boards display no rot nor deterioration and are adequately installed.
6 - Not applicable	Characteristic does not apply to rated parcel (e.g., roof rating for parcels with no structure, public sidewalk rating for parcels with no sidewalks, etc.).
7 - Un-ratable	Characteristic applies to rated parcel, but rating could not be determined (e.g., roof rating for structures with flat roofs, or where line of sight to roof is obscured by trees).

Table A.4.45: Foundation and Walls

Rating	Description
1 - Severely Deteriorated	There are large holes, bulges, and/or leaning walls indicating a partial structural failure. More than 25% of the siding material displays rot or deterioration and needs to be replaced.
2 - Seriously Deteriorated	There is slight leaning, but no sign of structural failure. More than 25% of the siding material displays rot or deterioration and needs to be replaced.
3 - Substandard	There is no leaning. Some siding materials need replacing, but it is less than 25%.
4 - Good	There is no leaning nor siding that needs to be replaced, and surfaces do need some painting.
5 - Excellent	There is no leaning nor siding to be replaced. Surfaces are adequately painted.
6 - Not applicable	Characteristic does not apply to rated parcel (e.g., roof rating for parcels with no structure, public sidewalk rating for parcels with no sidewalks, etc.).

Table A.4.46: Windows and Doors

Rating	Description
1 - Severely Deteriorated	There are numerous windows or doors missing or boarded. Frames show signs of severe rot and deterioration. The building is open to entry.
2 - Seriously Deteriorated	There are a couple of openings that are missing or boarded, but the building is not open to entry. Frames show signs of severe rot and deterioration.
3 - Substandard	All windows and doors are in place, but there are some broken glass in one or more windows. Frames show signs of moderate rot and deterioration, but mostly only need to be painted.
4 - Good	There is no broken glass present and doors are secure. Frames on windows or doors need paint, but nothing needs replacing.
5 - Excellent	There is not broken glass present and all frames are adequately painted.
6 - Not applicable	Characteristic does not apply to rated parcel (e.g., roof rating for parcels with no structure, public sidewalk rating for parcels with no sidewalks, etc.).

Table A.4.47: Porches

Rating	Description
1 - Severely Deteriorated	There is leaning of vertical support members or sagging of beams and joists. Rot and deterioration are extensive. Parts of the porch are missing. The porch does not appear safe.
2 - Seriously Deteriorated	There is slight leaning or sagging, but moderate to extensive rot and deterioration. All parts of the porch are present, and it appears safe to use.
3 - Substandard	There is slight leaning or sagging that needs to be corrected, but no rot or deterioration. Some painting is needed.
4 - Good	There is no leaning or sagging, but some painting is needed.
5 - Excellent	There is no leaning or sagging. All components are adequately painted or protected against weathering.
6 - Not applicable	Characteristic does not apply to rated parcel (e.g., roof rating for parcels with no structure, public sidewalk rating for parcels with no sidewalks, etc.).

Table A.4.48: Exterior Paint

Rating	Description
1 - Severely Deteriorated	Over 50 % of the exterior walls are peeling. Rot and deterioration are extensive. Parts of the exterior walls are missing. Extensive work to prepare for painting (more than two weeks).
2 - Seriously Deteriorated	Between 10 and 50% of the exterior walls are peeling. There is a moderate to extensive amount of rot and deterioration. Moderate to extensive work will be needed to prepare the walls for painting (less than two weeks).
3 - Substandard	Less than 10% of the exterior walls are peeling or faded in color. There is no rot or deterioration present. Some painting is needed.
4 - Good	There is no peeling paint, but some fading is present, some fresh paint is going to be needed.
5 - Excellent	All components are adequately painted or protected against weathering.
6 - Not applicable	Characteristic does not apply to rated parcel (e.g., roof rating for parcels with no structure, public sidewalk rating for parcels with no sidewalks, etc.).

Grounds Conditions

Table A.4.49: Private Sidewalks and Driveways

Rating	Description
1 - Severely Deteriorated	The sidewalk is broken and settled with more than one tripping hazard present and/or has sections missing. Has severely deteriorated pavement and does not prevent the tracking of mud into the street. If the driveway was gravel in the first place, will have severe weeds within the exposure.
2 - Seriously Deteriorated	The sidewalk displays numerous tracks over 1/2 inch wide and breaks there is no tripping hazard present. AND/OR the driveway was originally paved but has severe scaling, cracking, or other signs of deterioration. The full surface needs to be re-paved.
3 - Substandard	The sidewalk and driveway contain numerous cracks over 1/2 inch wide and over 50% of the surface needs to be repaved.
4 - Good	The sidewalk and driveway display only a few cracks over 1/2 inch wide, but some patching or sealing of cracks is all that is needed.
5 - Excellent	There are no cracks wider than 1/2 inch present in either the sidewalk or driveway.
6 - Not applicable	Characteristic does not apply to rated parcel (e.g., roof rating for parcels with no structure, public sidewalk rating for parcels with no sidewalks, etc.).

Table A.4.50: Lawn & Shrubs

Rating	Description
1 - Severely Deteriorated	The vegetation (grass) has grown over 3 feet high. Shrubs appear to have not been trimmed in several years (windows, doors covered).
2 - Seriously Deteriorated	The vegetation (grass) is between 1 and 3 feet high. Shrubs appear to have not been trimmed within the last year (overgrowing home).
3 - Substandard	Vegetation (grass) is about 1 foot high. Shrubs need trimming, but appear to have been trimmed within the last year (shrubs still have some shape).
4 - Good	Vegetation (grass) is under 1 foot and shrubs do not need trimming. There are lawn weeds, like dandelions, present. It appears the lawn does not receive supplemental fertilizer, but yard is cut regularly.
5 - Excellent	Vegetation (grass) is under 6 inches high and there are few or no lawn weeds, like dandelions, present. It appears the lawn regularly receives fertilizer and yard is cut regularly.

Table A.4.51: Vehicles

Rating	Description
1 - Severe Problem	There are over 3 vehicles parked in the yard and several appear to be disabled or unlicensed.
2 - Serious Problem	There are 1 to 3 vehicles parked in the yard. At least one appears to be disabled or unlicensed.
3 - Substandard	There is one vehicle parked in the yard but it appears to be operable and licensed. Or, there is one or more vehicles in the driveway that appears to be disabled or unlicensed.
4 - Good	There are no vehicles parked in the yard, but there may be one vehicle on a driveway that is unlicensed.
5 - Excellent	There are no vehicles parked in the yard. No disabled or unlicensed vehicles are present.

Table A.4.52: Litter

Rating	Description
1 - Severe Problem	There are piles of trash, which may include brush, present on the property. Due to the volume and size of trash items, it will take a dump truck to haul it all off in one load.
2 - Serious Problem	There are piles of trash, which may include brush, present. It will take a full size pick up to haul it off in one load. It is not practical to attempt to place the trash in plastic bags.
3 - Substandard	There is trash scattered across the property. It will not fill a pick up. There trash can be placed in trash bags and it will fill between one and five 30 gallon trash bags.
4 - Good	There is some litter scattered across the property. It can be placed in plastic bags and it will not fill one 30 gallon bag.
5 - Excellent	There is no litter present.

Table A.4.53: Open Storage

Rating	Description
1 - Severe Problem	There are numerous items stored in the yard that should be stored inside. The items are so numerous, they would more than fill an average 2 car garage.
2 - Serious Problem	There are numerous items stored in the yard that should be stored inside. The would fill a one car garage.
3 - Substandard	The items stored outside would fit inside a small (up to 9 by 12 feet) storage shed.
4 - Good	There are no unacceptable items stored outside, but there are numerous acceptable items that still present a clutter appearance.
5 - Excellent	There are no unacceptable items present. Acceptable items, if present, are few in number and do not present a cluttered appearance.

Public Infrastructure Conditions

Table A.4.54: Public Sidewalk

Rating	Description
1 - Severely Deteriorated	The sidewalk has sections missing, broken, or heaved. There is more than one tripping hazard present due to displacement of sections or missing sections. More than half the sections need replaced.
2 - Seriously Deteriorated	There are tipping hazards present due to displaced cracks, settling and heaving. 1/4 to 1/2 of the sections need to be replaced.
3 - Substandard	There are cracks over 1/2 wide present, but no tripping hazards. Less than 1/4 of the section need to be replaced.
4 - Good	There is only a few cracks present, however does not present a hazard. Some patching of cracks is needed, but no sections need replacement.
5 - Excellent	There are no cracks present. There is no settling or heaving creating tripping hazards. They are in great shape and will be there for a long time.
6 - Not applicable	Characteristic does not apply to rated parcel (e.g., roof rating for parcels with no structure, public sidewalk rating for parcels with no sidewalks, etc.).

Table A.4.55: Curbs

Rating	Description
1 - Severely Deteriorated	There are no curbs present, with or without open ditch drainage.
2 - Seriously Deteriorated	Curbs are present and display severe deterioration. There are sections missing. More than 1/2 of the curb would have to be replaced in order to fill in gaps.
3 - Substandard	Curbs show deterioration. Up to 1/2 the curb would have to be replaced to fill gaps.
4 - Good	There is some wear or deterioration but there are no sections missing.
5 - Excellent	There is no wear and are benefit to water control within the neighborhood.
6 - Not applicable	Characteristic does not apply to rated parcel (e.g., roof rating for parcels with no structure, public sidewalk rating for parcels with no sidewalks, etc.).

Table A.4.56: Streetlights

Rating	Description
1 - Severe Problem	There are no streetlights on the block.
2 - Serious Problem	Streetlights are more than 8 houses apart. Lights present appear to be broken, or tree limbs block illumination.
3 - Substandard	Streetlights are more than 6 houses apart. Lights work, but tree limbs block illumination.
4 - Good	Streetlights are 5 houses apart. Some tree limbs are near the lights, but not blocking illumination.
5 - Excellent	Streetlights are less than 5 houses apart. No tree limbs growing near lights.

Table A.4.57: Catch Basins

Rating	Description
1 - Severely Deteriorated	The catch basin is severely deteriorated. It is broken or collapsed and creating a danger to pedestrians or traffic (leaves water standing for days, or would be dangerous to evening walking).
2 - Seriously Deteriorated	The catch basin is severely deteriorated and needs replacing, but is not creating a dangerous situation (i.e. doesn't create traffic hazards during rains, etc.)
3 - Substandard	The catch basin is not deteriorated but it is substantially blocked with leaves and litter (just needs to be cleaned out).
4 - Good	There are leaves and litter in the catch basin, but it still functions adequately.
5 - Excellent	There are no defects or leaves and litter present. Catch basin is in perfect operational condition.
6 - Not applicable	Characteristic does not apply to rated parcel (e.g., roof rating for parcels with no structure, public sidewalk rating for parcels with no sidewalks, etc.).

Table A.4.58: Street Condition

Rating	Description
1 - Severely Deteriorated	The pavement is severely deteriorated. There are more than 7 potholes present. Vehicles cannot safely exceed 15 miles per hour due to the uneven surface. Resurfacing is needed on the whole block.
2 - Seriously Deteriorated	The pavement is deteriorated. There are 4-6 potholes present, but traffic flow is not substantially affected. Resurfacing is needed.
3 - Substandard	There are 3 or less potholes, mostly cracks in the surface. Patching, not resurfacing, is needed.
4 - Good	There are no potholes. There are some cracks, but none wider than 2 inches.
5 - Excellent	There are no cracks and no potholes present.