Evidence-Based Smart Growth

Arthur C. Nelson, Ph.D., FAICP
Reid Ewing, Ph.D.
Dejan Eskic
Metropolitan Research Center
University of Utah
Rocky Mountain Land Use Institute
Denver, Colorado
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Mission

It seems an article of faith that more compact and integrated development patterns (aka "Smart Growth") generate more benefits than "Business-as-Usual".

This session introduces an objective measure of compact development patterns that also includes land-use integration → The ***Compactness Measure***.

Applies the ***Compactness Measure*** to key Smart Growth concerns.

Outline

Reid will present the ***Compactness Measure*** and apply it to VMT, transit use, greenhouse gas emissions, public health, public safety.

Chris will apply it to home values, metropolitan economic and fiscal outcomes with special reference to resiliency.

Dejan will apply it to farmland preservation, water consumption, jobs-housing balance, foreclosure rates.

All will summarize policy implications.

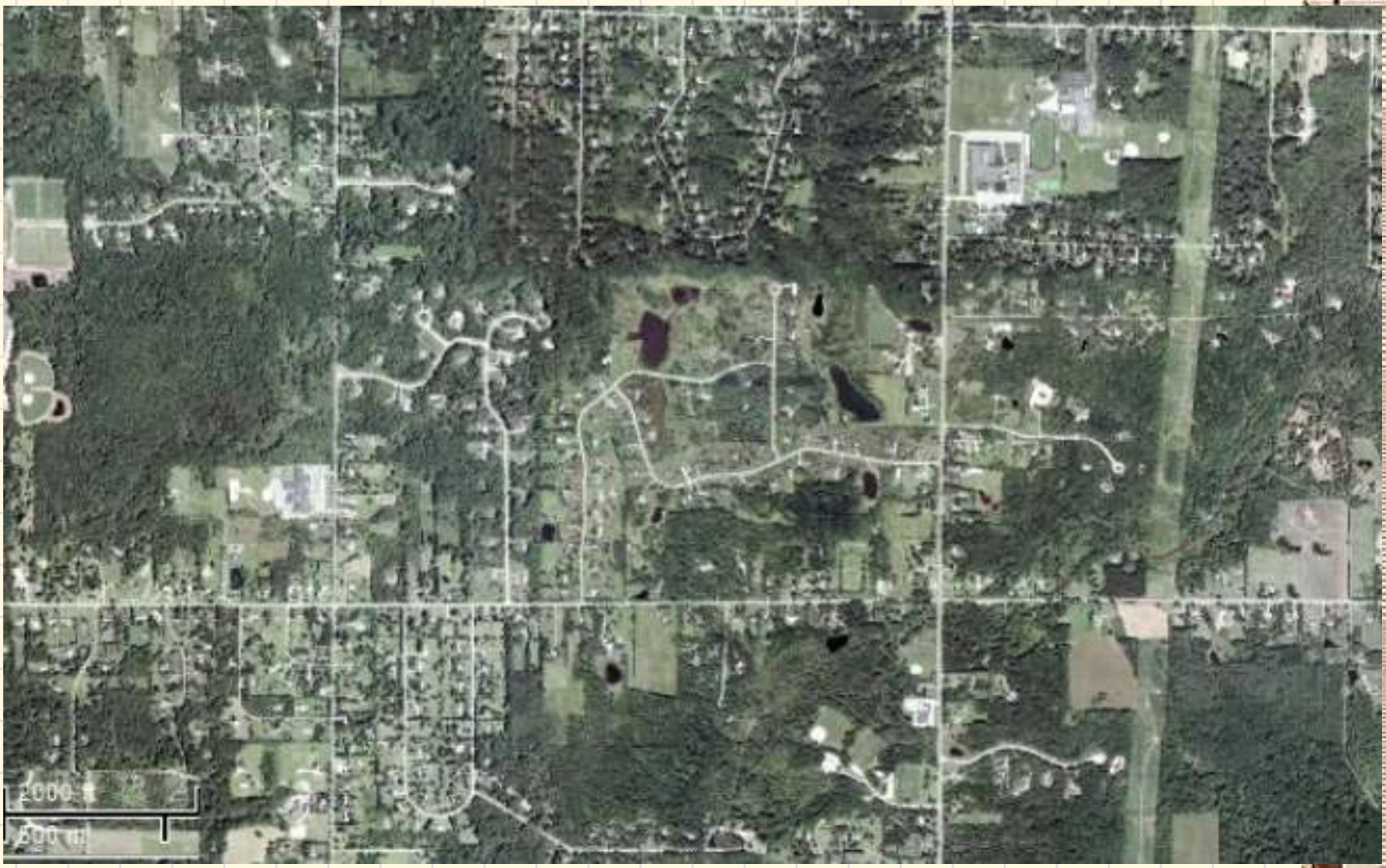
Q&A for balance of session.

Original Sprawl Measures 2002-2003

- Funded by EPA and Smart Growth America
- Purpose: Shift Debate from Subjective Argumentation to Objective Analysis
- Sprawl Measured at Two Different Scales: Metropolitan Area and County
- Sprawl/Compactness Indices Made Available to Research Community
- Dozens of Peer-Reviewed Studies

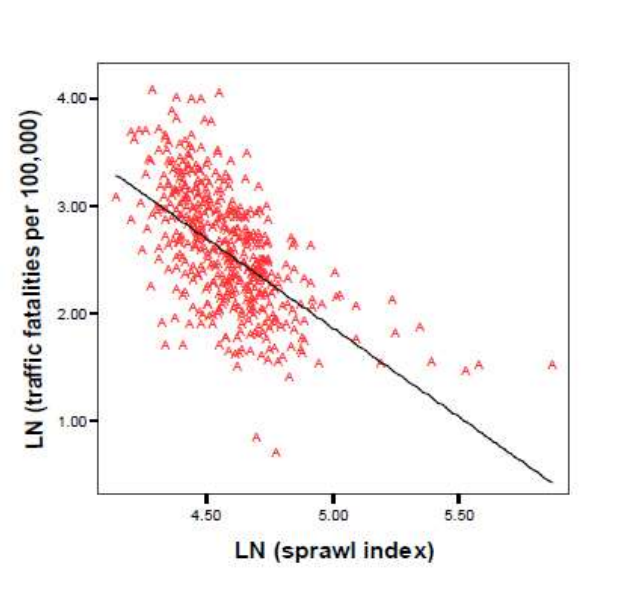
Most Compact

Most Sprawling



Peer-Reviewed Research with Original Indices

- Sprawl has been linked to traffic fatalities, physical inactivity, obesity, air pollution, residential energy use, emergency response times, teenage driving, social capital, and private-vehicle commute times. (5-24)



2010-2013 Update

- Funded by the National Institutes of Health and Ford Foundation
- Expansion of Numbers of Metropolitan Areas and Counties
- Refinement of Measures by Addition of Variables

Six Variables in Original County Index (updated to 2010)

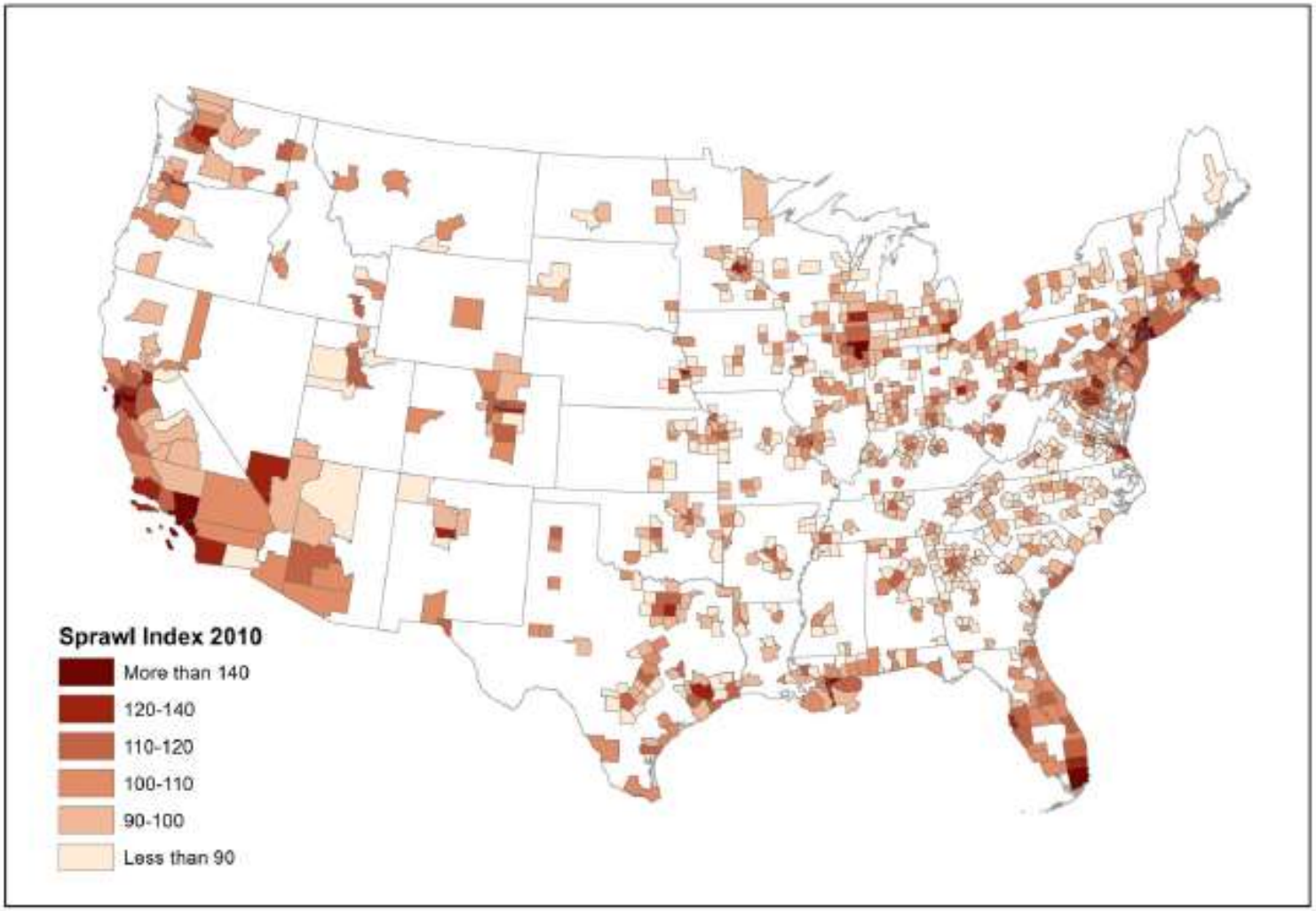
Observed variable	Factor loading*
gross population density	0.858
percentage of population living at low suburban densities	-0.658
percentage of population living at high urban densities	0.821
net population density of urban places	0.876
average block size	-0.664
percentage of small urban blocks	0.711
Explained variance	59.30%
* Correlation with county sprawl index	

Four Factors in New County Index

denfac (six variables)	1	.463**	-.217**	.594**
cenfac (three variables)	.463**	1	-.464**	.619**
mixfac (three variables)	-.217**	-.464**	1	-.213**
strfac (four variables)	.594**	.619**	-.213**	1

** Correlation is significant at the 0.01 level (2-tailed).

New County Indices



10 Most Compact According to Original Index

		Metropolitan Area	Index
1	New York County, NY	New York-Northern New Jersey-Long Island, NY-NJ-PA	463.9
2	Kings County, NY	New York-Northern New Jersey-Long Island, NY-NJ-PA	341.4
3	Bronx County, NY	New York-Northern New Jersey-Long Island, NY-NJ-PA	331.5
4	Queens County, NY	New York-Northern New Jersey-Long Island, NY-NJ-PA	272.1
5	San Francisco County, CA	San Francisco-Oakland-Fremont, CA	247.8
6	Hudson County, NJ	New York-Northern New Jersey-Long Island, NY-NJ-PA	228.8
7	Suffolk County, MA	Boston-Cambridge-Quincy, MA-NH	217.1
8	Philadelphia County, PA	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	216.8
9	District of Columbia, DC	Washington-Arlington-Alexandria, DC-VA-MD-WV	193.3
10	Richmond County, NY	New York-Northern New Jersey-Long Island, NY-NJ-PA	190.1

10 Most Compact According to New Index

		Metropolitan Area	Index
1	New York County, NY	New York-Northern New Jersey-Long Island, NY-NJ-PA	386.17
2	Kings County, NY	New York-Northern New Jersey-Long Island, NY-NJ-PA	304.57
3	Bronx County, NY	New York-Northern New Jersey-Long Island, NY-NJ-PA	248.74
4	Queens County, NY	New York-Northern New Jersey-Long Island, NY-NJ-PA	224.98
5	San Francisco County, CA	San Francisco-Oakland-Fremont, CA	221.25
6	Philadelphia County, PA	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	208.64
7	Hudson County, NJ	New York-Northern New Jersey-Long Island, NY-NJ-PA	184.54
8	District of Columbia, DC	Washington-Arlington-Alexandria, DC-VA-MD-WV	176.31
9	Alexandria city, VA	Washington-Arlington-Alexandria, DC-VA-MD-WV	173.92
10	Cook County, IL	Chicago-Joliet-Naperville, IL-IN-WI	173.46

Most Compact (New York County - Manhattan)

Second Most Compact (Kings County - Brooklyn)

10 Most Sprawling According to Original Index

		Metropolitan Area	Index
985	Ford County, IL	Champaign-Urbana, IL	67.3
986	Osage County, KS	Topeka, KS	66.9
987	Jasper County, IN	Chicago-Joliet-Naperville, IL-IN-WI	66.8
988	Grant County, AR	Little Rock-North Little Rock-Conway, AR	66.8
989	Tipton County, IN	Kokomo, IN	66.4
990	Chester County, TN	Jackson, TN	65.4
991	Morrow County, OH	Columbus, OH	63.4
992	Greene County, NC	Greenville, NC	63.3
993	Polk County, MN	Grand Forks, ND-MN	61.1
994	Jackson County, KS	Topeka, KS	54.6

Most Sprawling According to Original Index (Jackson County,

Second Most Sprawling According to Original Index (Polk County, MN)

10 Most Sprawling According to the New Index

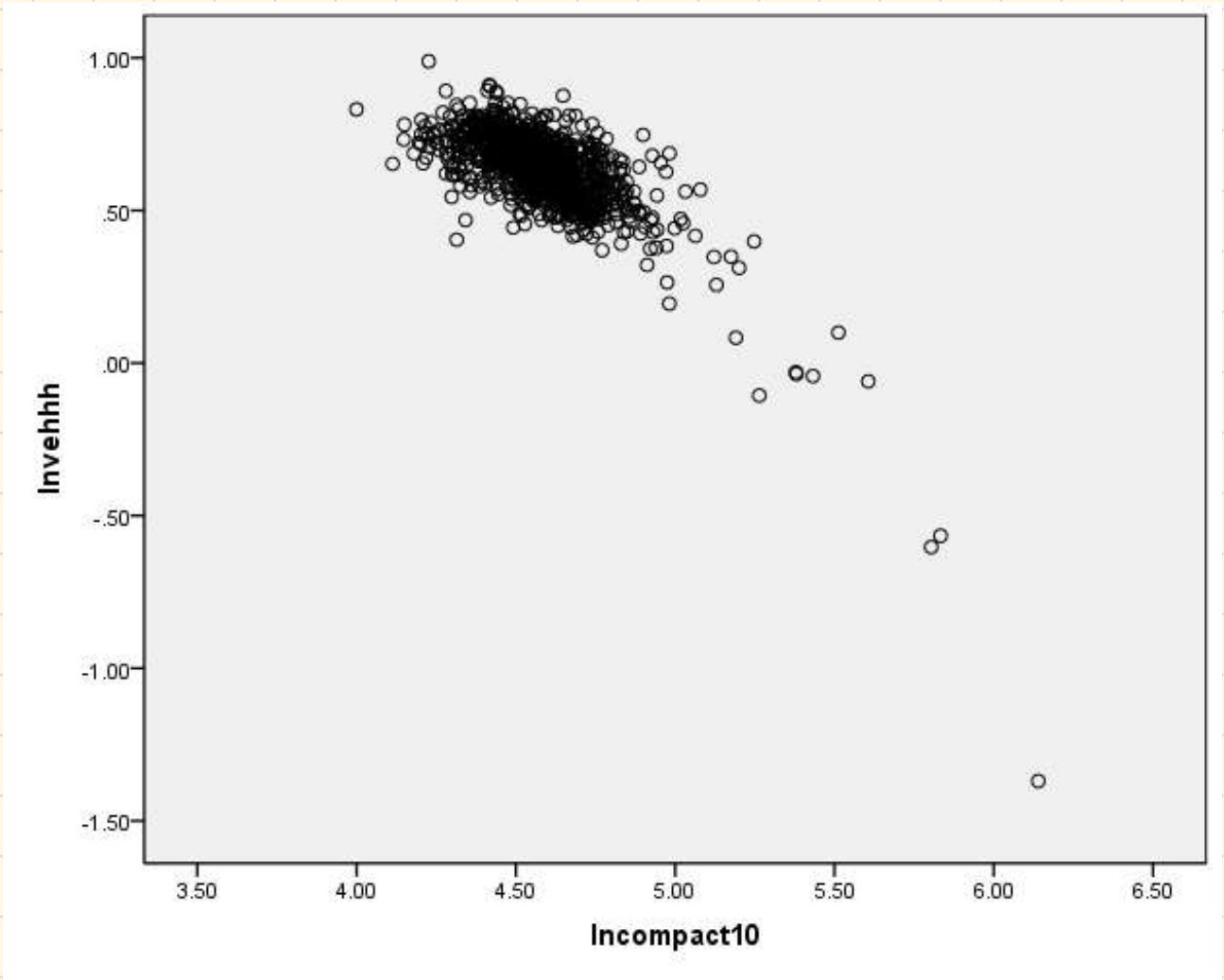
		Metropolitan Area	Index
969	Mathews County, VA	Virginia Beach-Norfolk-Newport News, VA-NC	48.67
970	Fayette County, TN	Memphis, TN-MS-AR	45.73
971	Grainger County, TN	Morristown, TN	44.78
972	Brown County, IN	Indianapolis-Carmel, IN	44.60
973	Edgefield County, SC	Augusta-Richmond County, GA-SC	42.93
974	Blount County	Birmingham-Hoover, AL	41.18
975	Harris County, GA	Columbus, GA-AL	37.62
976	Oglethorpe County, GA	Athens-Clarke County, GA	32.57
977	Elbert County, CO	Denver-Aurora-Broomfield, CO	26.49
978	Grant Parish, LA	Alexandria, LA	16.05

Most Sprawling According to New Index (Grant Parish, LA)

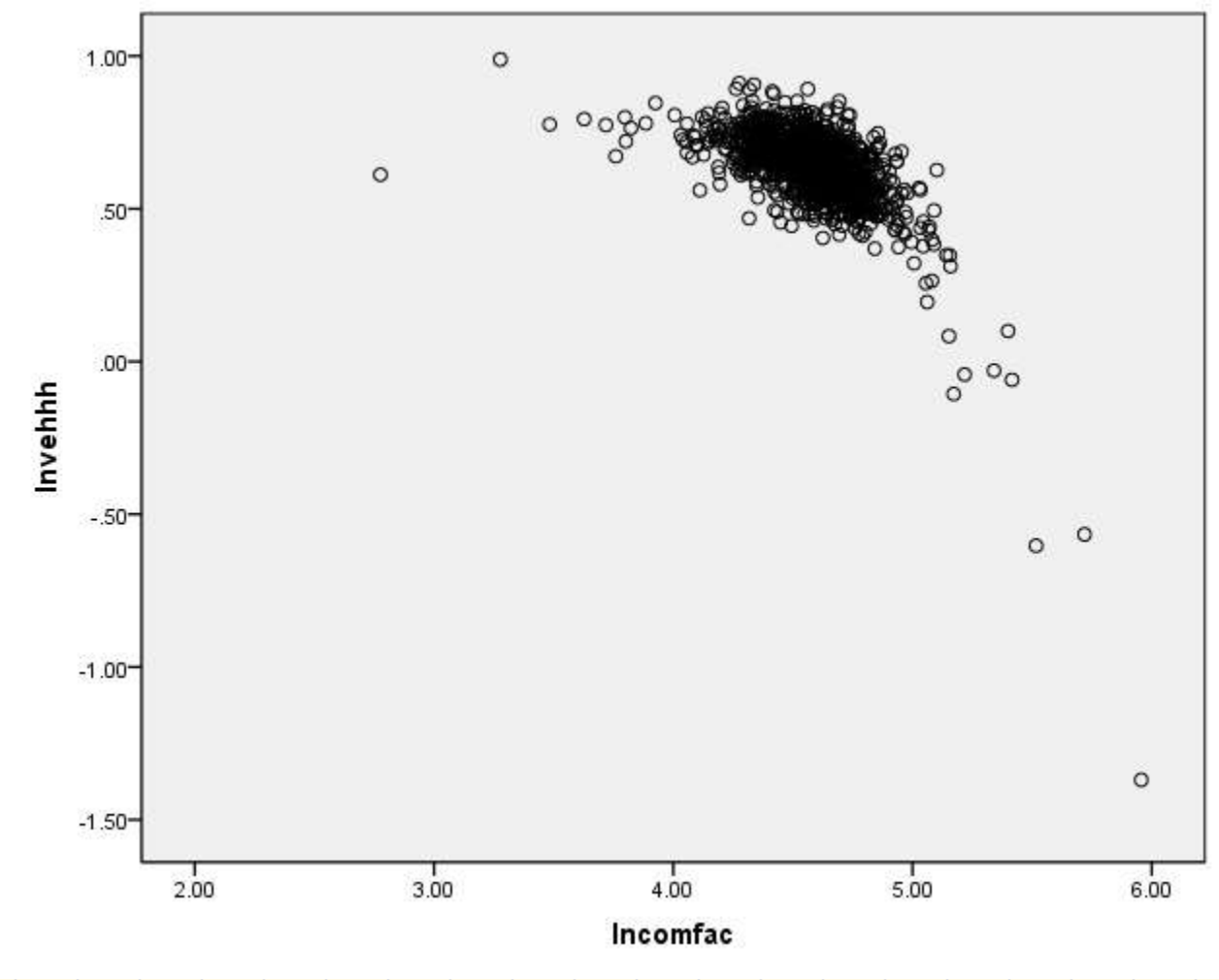
Second Most Sprawling According to New Index (Elbert County, CO)

Validation Exercises

Old Compactness vs. Average Vehicle Ownership



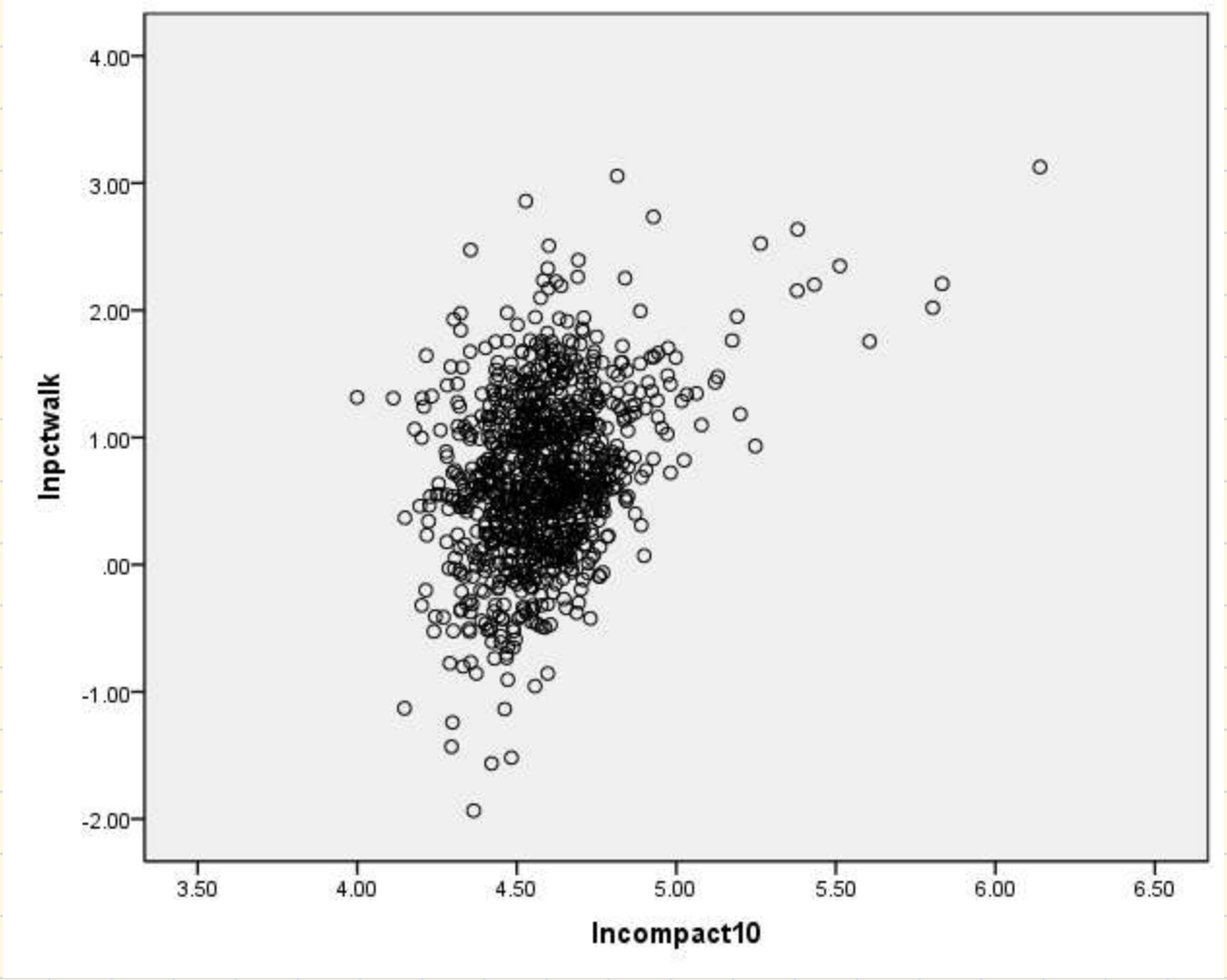
New Compactness vs. Average Vehicle Ownership



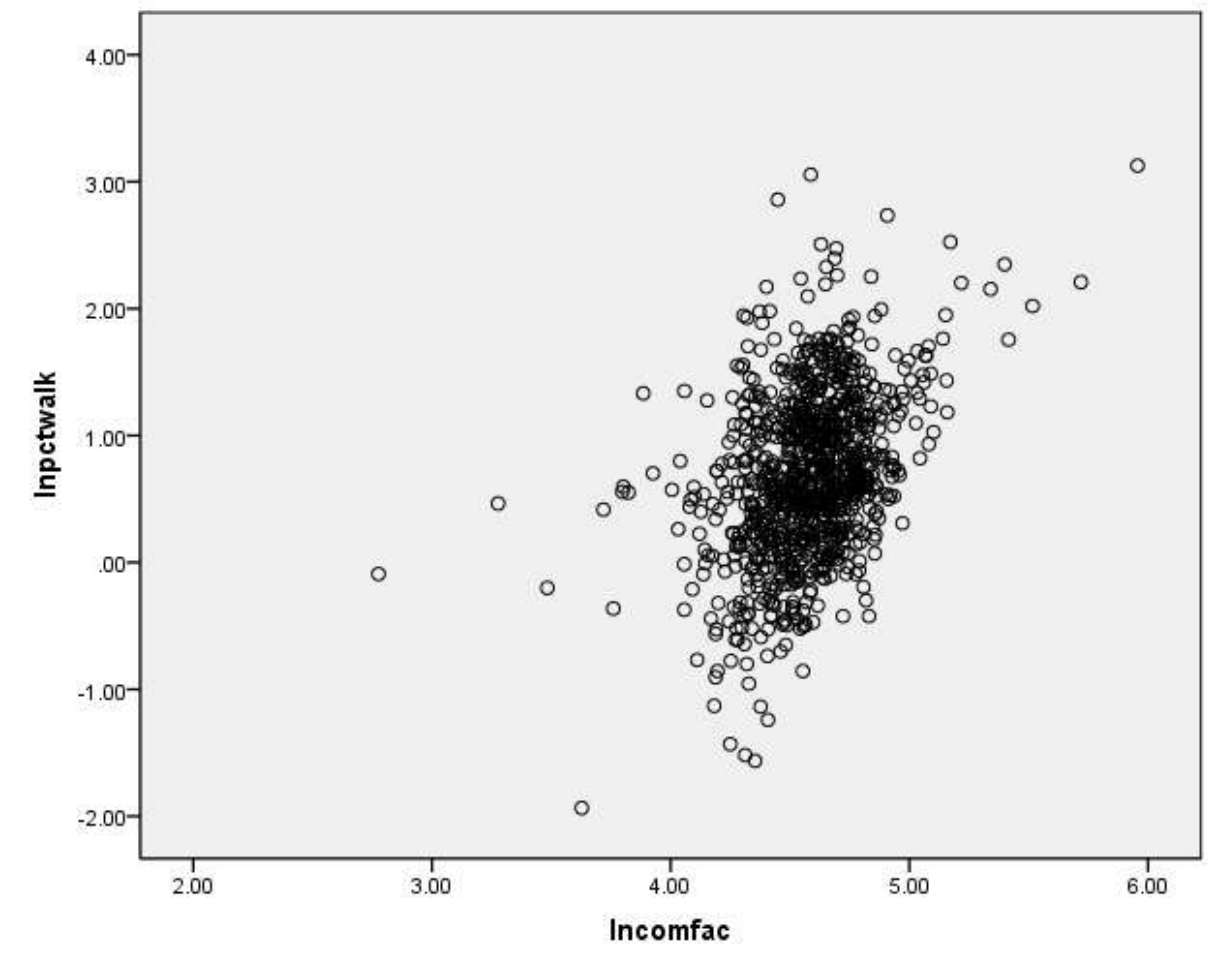
Multivariate Regression – Household Vehicle Ownership

	Model 1			Model 2			Model 3		
	coeff.	t-ratio	p-value	coeff.	t-ratio	p-value	coeff.	t-ratio	p-value
constant	0.473	2.61	0.01	-0.151	-0.68	0.49	1.251	5.86	<0.001
hhsize	0.498	8.56	<0.001	0.560	7.80	<0.001	0.482	10.7	<0.001
hhinc	0.149	10.8	<0.001	0.130	6.37	<0.001	0.173	13.6	<0.001
pctwhite	0.119	9.14	<0.001	0.162	9.20	<0.001	0.094	8.14	<0.001
pct1524	-0.006	-0.57	0.57	-0.040	-3.44	0.001	0.011	0.95	0.34
metpop	-0.004	-1.41	0.16	-0.010	-3.57	0.001	-0.002	-0.66	0.51
cdd	-0.030	-6.36	<0.001	-0.033	-6.50	<0.001	-0.035	-7.89	<0.001
fuel	-0.347	-4.20	<0.001	-0.436	-5.00	<0.001	-0.235	-3.13	0.002
indexo	-0.396	16.4	<0.001						
indexn				-0.203	-8.39	<0.001			
denfac							-0.513	-14.8	<0.001
mixfac							-0.014	-1.66	0.096
cenfac							-0.056	-4.32	<0.001
strfac							-0.043	-3.58	0.001
pseudo-R2		0.73			0.69			0.79	

Old Compactness vs. Walk Mode Share



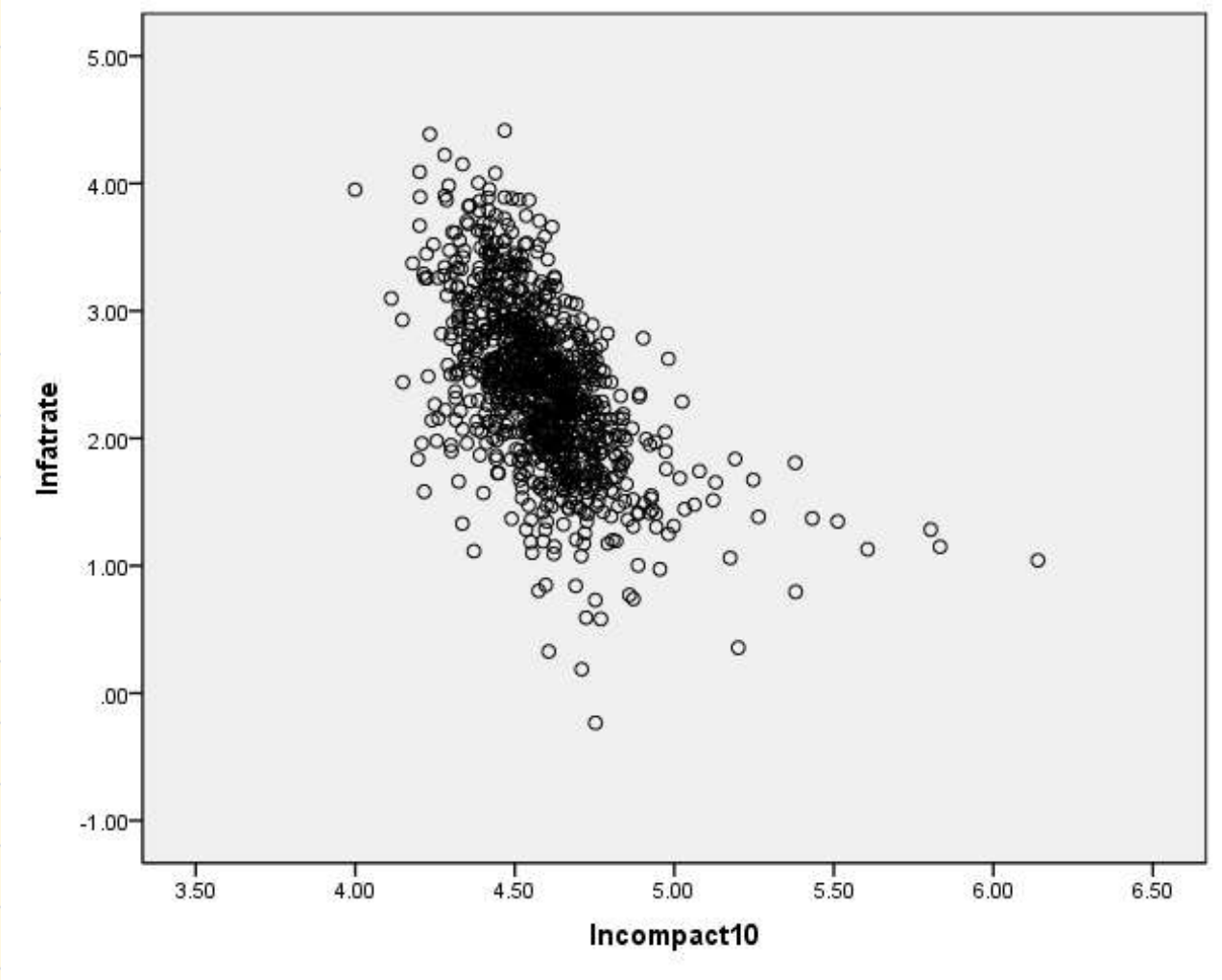
New Compactness vs. Walk Mode Share



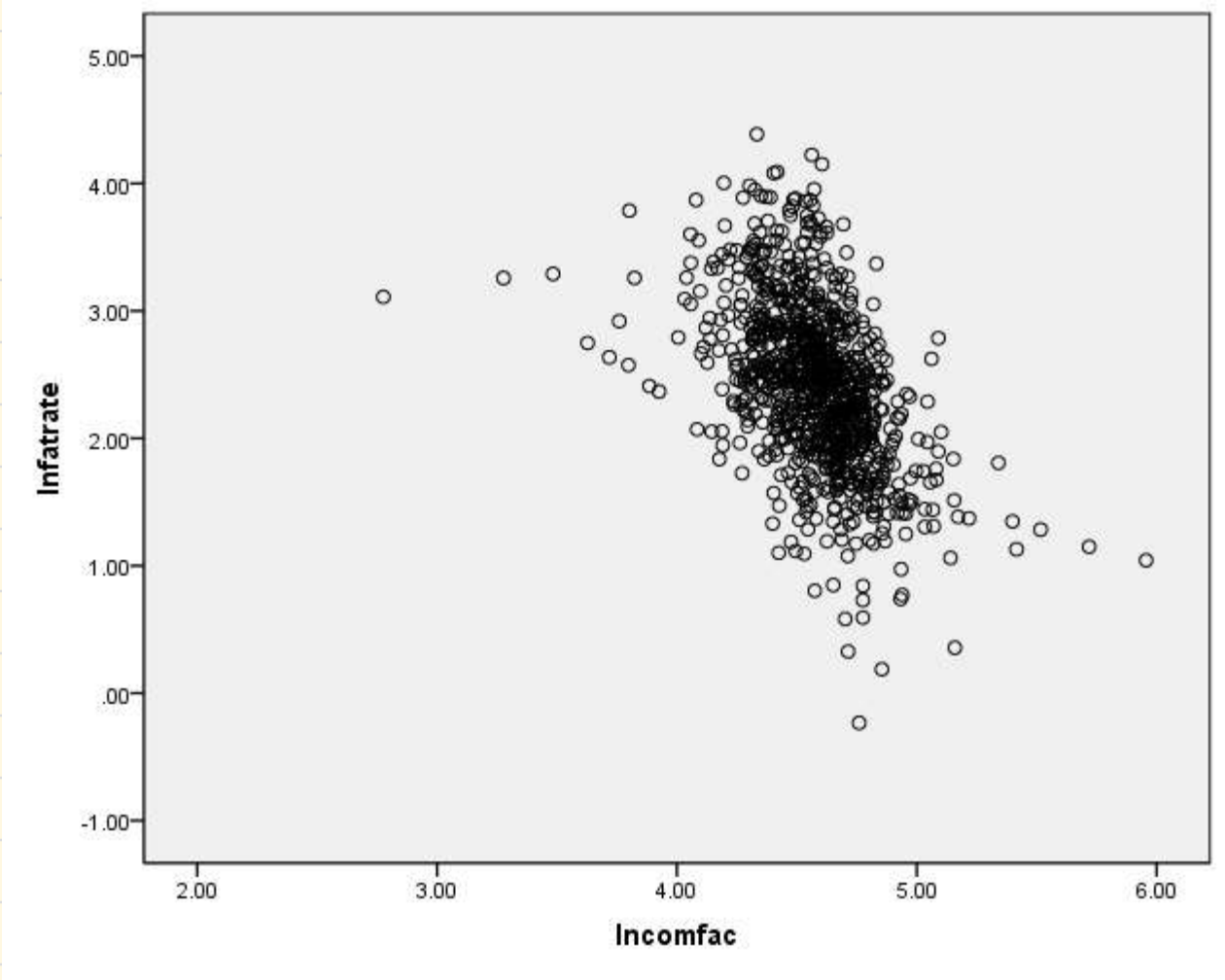
Multivariate Regression - Walk Mode Share

	]\Model 1			Model 2			Model 3		
	coeff.	t-ratio	p-value	coeff.	t-ratio	p-value	coeff.	t-ratio	p-value
constant	-13.0	-4.95	<0.001	-16.6	-5.35	<0.001	-19.6	-6.42	<0.001
hhsize	-2.79	-10.5	<0.001	-2.67	-11.1	<0.001	-2.72	-11.3	<0.001
pctmale	1.88	2.91	0.004	2.89	3.77	<0.001	2.64	3.54	0.001
pct1524	1.33	19.6	<0.001	1.34	20.3	<0.001	1.35	20.3	<0.001
crime	-0.0681	-6.28	<0.001	-0.0645	-6.39	<0.001	-0.0442	-3.17	0.002
cdd	-0.162	-4.75	<0.001	-0.142	-4.32	<0.001	-0.157	-4.84	<0.001
fuel	2.99	5.80	<0.001	2.84	5.74	<0.001	2.57	5.27	<0.001
indexo	0.875	5.54	<0.001						
indexn				0.764	6.99	<0.001			
denfac							1.40	6.37	<0.001
mixfac							0.245	2.19	0.029
cenfac							-0.308	-2.46	0.014
strfac							0.371	3.51	0.001
pseudo-R2		0.49			0.51			0.53	

Old Compactness vs. Traffic Fatality Rate



New Compactness vs. Traffic Fatality Rate



Multivariate Regression - Traffic Fatality Rate

	Model 1			Model 2			Model 3		
	coeff.	t-ratio	p-value	coeff.	t-ratio	p-value	coeff.	t-ratio	p-value
constant	23.85	7.49	<0.001	24.73	7.49	<0.001	26.02	8.45	<0.001
hhsize	-1.08	-4.29	<0.001	-1.03	-3.45	0.001	-0.81	-3.08	0.003
hhinc	-1.05	-10.04	<0.001	-1.14	-8.96	<0.001	-0.87	-7.82	<0.001
pct1564	-1.96	-4.019	<0.001	-3.10	-5.94	<0.001	-1.54	-2.91	0.004
pctmale	1.92	2.65	0.009	2.07	2.52	0.012	1.17	1.60	0.109
pctwhite	-0.35	-4.22	<0.001	-0.18	-2.02	0.043	-0.43	-5.07	<0.001
metpop	0.07	4.05	<0.001	0.05	2.79	0.006	0.06	3.37	0.001
indexo	-1.86	-12.16	<0.001						
indexn				-1.04	-9.51	<0.001			
denfac							-1.35	-3.77	<0.001
mixfac							-0.05	-0.83	0.405
cenfac							-0.73	-6.77	<0.001
strfac							-0.26	-2.35	0.019
pseudo-R2	0.44			0.40			0.47		

General Analytic Form

H_0 = no effect of compactness on outcomes, ceteris paribus.

Ordinary least squares.

Double-log regressions so outcomes are interpreted as a ***X***% change in independent variable associated with/causes ***Y***% change in dependent variable.

Depending on situation, independent variables include base year metrics on population, income, job mix, region, and the dependent variable.

Compactness Increases Home Values over Time

Dependent Variable = Ratio of Home Value in 2012 to Home Value in 2000

Hypothesis: Higher compactness associated with/causes higher home ratios in 2012 relative to 2000

Variable, Metric	Unstandardized Coefficient	Standard Error	T-Ratio	Sig (1-tail), Metric
Constant	-0.3953	0.0672	-5.8777	
LogPop2000	-0.0877	0.0242	-3.6271	0.01
LogPopRatio95-05	-0.1812	0.0605	-2.9933	0.01
LogIncome2000	0.0203	0.0350	0.5795	
LogManJobs2000	-0.0580	0.0108	-5.3940	0.01
LogGovJobs2000	0.0811	0.0173	4.6953	0.01
NE-Div	0.0700	0.0181	3.8746	
MA-Div	0.0843	0.0144	5.8554	
ENC-Div	-0.0527	0.0137	-3.8362	
SE-Div	0.0276	0.0131	2.1144	
ESC-Div	0.0338	0.0159	2.1244	
WSC-Div	0.0700	0.0154	4.5457	
MT-Div	0.0064	0.0162	0.3972	
PAC-Div	0.0294	0.0148	1.9893	
LogCompact2010	**0.2802**	**0.0550**	**5.0918**	**0.01**
R-squared				0.44
N				563

Compactness Increases Home Values over Time

Interpretation

A 10% increase in Compactness is associated with/caused 2.8% ***increase*** in the mean ratio of home values in 2012 compared to 2000.

Compactness Made Home Values More Resilient during the Great Recession

Dependent Variable = Ratio of Home Value in 2012 to Home Value in 2005

Hypothesis: Higher compactness associated with/causes higher home ratios in 2012 relative to 2005

Variable, Metric	Unstandardized Coefficient	Standard Error	T-Ratio	Sig (1-tail), Metric
Constant	-2.3608	0.1074	-21.9861	
LogPop2005	0.1943	0.0354	5.4889	0.01
LogPopRatio05-10	0.3829	0.2239	1.7098	0.05
LogIncome2000	1.2858	0.0543	23.6587	0.01
LogManJobs2000	-0.1618	0.0165	-9.8183	0.01
LogGovJobs2000	-0.0539	0.0259	-2.0807	0.01
NE-Div	0.1943	0.0289	6.7256	
MA-Div	0.0372	0.0228	1.6310	
ENC-Div	-0.0100	0.0220	-0.4558	
SE-Div	0.0344	0.0208	1.6529	
ESC-Div	-0.0250	0.0254	-0.9827	
WSC-Div	-0.1412	0.0247	-5.7123	
MT-Div	0.0647	0.0259	2.5025	
PAC-Div	0.2542	0.0236	10.7845	
LogCompact2010	**0.4922**	**0.0864**	**5.6974**	**0.01**
R-squared				0.78
N				563

Compactness Made Home Values More Resilient during the Great Recession

Interpretation

A 10% increase in Compactness is associated with/caused 4.9% ***increase*** in the mean ratio of home values in 2012 compared to 2005.

Compactness Increases Economic Productivity over Time

Dependent Variable = Ratio of Metro Gross Regional Product in 2010 to GRP in 2000

Hypothesis: Higher compactness associated with/causes higher change to GRP ratio 2000-2010

Variable, Metric	Unstandardized Coefficient	Standard Error	T-Ratio	Sig (1-tail), Metric
Constant	-0.4527	0.0470	-9.6364	
LogPop2000	0.0040	0.0142	0.2852	
LogPopRatio00-10	0.6476	0.0337	19.2200	0.01
LogIncHH2000	0.1226	0.0249	4.9154	0.01
LogNatJob2000	0.0351	0.0049	7.1018	0.01
LogManJob2000	-0.0546	0.0066	-8.2949	0.01
LogGovJob2000	0.0996	0.0120	8.2938	0.01
LogGRP2000	-0.0927	0.0172	-5.3784	0.01
NE-Div	-0.0149	0.0096	-1.5537	
MA-Div	-0.0020	0.0074	-0.2683	
ENC-Div	-0.0371	0.0061	-6.0672	
SE-Div	-0.0308	0.0058	-5.3397	
ESC-Div	-0.0239	0.0068	-3.5034	
WSC-Div	0.0397	0.0069	5.7639	
MT-Div	-0.0321	0.0084	-3.8272	
PAC-Div	-0.0285	0.0084	-3.3953	
LogCompact2010	**0.0998**	**0.0307**	**3.2478**	**0.01**
R-squared				0.64
N				957

Compactness Increases Economic Productivity over Time

Interpretation

A 10% increase in Compactness is associated with/caused 1.0% ***increase*** in the mean ratio of ratio of metropolitan Gross Regional Product between 2000 and 2010.

Compactness Improved Economic Resilience during the Great Recession

Dependent Variable = Ratio of Metro Gross Regional Product Home Value in 2010 to GRP in 2005

Hypothesis: Higher compactness associated with/causes higher change to GRP ratio 2000-2010

Variable, Metric	Unstandardized Coefficient	Standard Error	T-Ratio	Sig (1-tail), Metric
Constant	-0.1881	0.0257	-7.3168	
LogPop2005	-0.0404	0.0080	-5.0466	0.01
LogPopRatio95-05	0.1462	0.0179	8.1869	0.01
LogIncHH2005	0.0417	0.0143	2.9242	0.01
LogNatJob2005	0.0118	0.0027	4.4179	0.01
LogManJob2005	-0.0202	0.0035	-5.7942	0.01
LogGovJob2005	0.0554	0.0067	8.3172	0.01
LogGRP2005	-0.0149	0.0096	-1.5516	0.05
NE-Div	-0.0104	0.0052	-1.9903	
MA-Div	-0.0047	0.0040	-1.1754	
ENC-Div	-0.0250	0.0033	-7.4810	
SE-Div	-0.0291	0.0032	-9.1681	
ESC-Div	-0.0180	0.0037	-4.8537	
WSC-Div	0.0272	0.0037	7.2729	
MT-Div	-0.0127	0.0046	-2.7730	
PAC-Div	-0.0145	0.0046	-3.1681	
LogCompact2010	**0.0500**	**0.0170**	**2.9417**	**0.01**
R-squared				0.51
N				957

Compactness Improved Economic Resilience during the Great Recession

Interpretation

A 10% increase in Compactness is associated with/caused 0.5% ***increase*** in the mean ratio of ratio of metropolitan Gross Regional Product between 2005 and 2010.

Compactness Improves Local Government Fiscal Capacity over Time

Dependent Variable = Ratio of Share of Income to Local Expenditures 1992 to 2007

Hypothesis: Higher compactness associated with/causes higher local fiscal capacity 1992-2007

Variable, Metric	Unstandardized Coefficient	Standard Error	T-Ratio	Sig (1-tail), Metric
Constant	0.6181	0.0819	7.5474	
LogPop1990	-0.0453	0.0251	-1.8044	0.05
LogPopRatio90-10	0.1985	0.0300	6.6099	0.01
LogNatJobs2000	0.0056	0.0085	0.6574	
LogManJobs2000	0.0379	0.0092	4.1051	0.01
LogGovJobs2000	0.0414	0.0174	2.3842	0.01
Log2005HHinc2000	-0.2520	0.0377	-6.6937	0.01
LogExpendIncRatio92	-0.2762	0.0211	-13.0811	0.01
NE-Div	-0.0174	0.0168	-1.0330	
MA-Div	0.0225	0.0132	1.7037	
ENC-Div	0.0465	0.0107	4.3625	
SE-Div	0.0086	0.0101	0.8556	
ESC-Div	0.0110	0.0120	0.9190	
WSC-Div	-0.0356	0.0121	-2.9355	
MT-Div	-0.0447	0.0149	-2.9965	
PAC-Div	0.0033	0.0146	0.2226	
LogCompact2010	**0.1333**	**0.0560**	**2.3794**	**0.01**
R-squared				0.26
N				945

Compactness Improves Local Government Fiscal Capacity over Time

Interpretation

A 10% increase in Compactness is associated with/caused 1.3% ***increase*** in the mean ratio of expenditures to income 1992 and 2010, an indicator of local fiscal capacity.

Compactness Improved Local Government Fiscal Resilience during Great Recession

Dependent Variable = Ratio of Share of Income to Local Expenditures 2007 to 2010

Hypothesis: Higher compactness associated with/causes higher capacity to support expenditures 2007-10

Variable, Metric	Unstandardized Coefficient	Standard Error	T-Ratio	Sig (1-tail), Metric
Constant	0.6181	0.0819	7.5474	
LogPop2005	-0.0644	0.0420	-1.5345	0.05
LogPopRatio0510	-0.1475	0.2091	-0.7054	
LogIncHH2005	0.0049	0.0691	0.0703	
LogNatJob2005	0.0420	0.0149	2.8093	0.01
LogManJob2005	0.0264	0.0165	1.5961	0.05
LogGovJob2005	0.1196	0.0301	3.9724	0.01
ExpendIncRatio07	-0.5685	0.2514	-2.2617	0.01
NE-Div	-0.0503	0.0304	-1.6540	
MA-Div	-0.0652	0.0232	-2.8095	
ENC-Div	-0.0306	0.0194	-1.5737	
SE-Div	-0.0408	0.0185	-2.2069	
ESC-Div	-0.0795	0.0217	-3.6546	
WSC-Div	-0.0252	0.0217	-1.1623	
MT-Div	-0.0458	0.0264	-1.7330	
PAC-Div	-0.1196	0.0263	-4.5535	
LogCompact2010	**0.1278**	**0.1016**	**1.2573**	**0.05**
R-squared				0.19
N				933

Compactness Improved Local Government Fiscal Resilience during Great Recession

Interpretation

A 10% increase in Compactness is associated with/caused 1.3% ***increase*** in the mean ratio of expenditures to income 2007 and 2010, an indicator of fiscal resilience.

Compactness Increases Relative Farmland Change over Time

Dependent Variable = Ratio of Farmland in 2007 to Farmland in 1992

Hypothesis: Higher compactness associated with/causes higher relative farmland change over time

Variable, Metric	Unstandardized Coefficient	Standard Error	T-Ratio	Sig (1-tail), Metric
Constant	1.5745	0.3252	4.8419	0.01
LogPop2000	-0.0788	0.0999	-0.7887	
LogPopRatio90-05	-0.0943	0.0457	-2.0653	0.01
LogIncome2000	-0.1512	0.1472	-1.0272	0.10
LogNatJob2000	0.0746	0.0347	2.1532	0.01
LogManJob2000	-0.0218	0.0369	-0.5913	
LogGovJob2000	-0.0713	0.0684	-1.0433	0.10
NE-Div	0.2208	0.0671	3.2889	
MA-Div	0.1015	0.0513	1.9793	
ENC-Div	-0.0303	0.0423	-0.7154	
SE-Div	-0.0095	0.0406	-0.2334	
ESC-Div	0.0247	0.0476	0.5185	
WSC-Div	0.1188	0.0485	2.4496	
MT-Div	-0.0723	0.0604	-1.1979	
PAC-Div	-0.0000	0.0580	-0.0001	
LogCompact2010	**0.2608**	**0.2574**	**1.0131**	**0.10**
R-squared				0.09
N				931

Compactness Increases Relative Farmland Change over Time

Interpretation

A 10% increase in Compactness is associated with/caused 2.6% ***increase*** in the mean ratio of farmland in 2007 to farmland in 1992.

Compactness Reduces Water Consumption over Time

Dep. Variable = Ratio of Domestic Water Consumption per Capita in 2005 to Consumption in 1990

Hypothesis: Higher compactness associated with/causes lower consumption per capita over time

Variable, Metric	Unstandardized Coefficient	Standard Error	T-Ratio	Sig (1-tail), Metric
Constant	-0.8252	0.1214	-6.7958	0.01
LogPop90	-0.0193	0.0112	-1.7215	0.05
LogWaterCap90	0.5979	0.0269	22.2650	0.01
LogPopRatio90-05	-0.1396	0.0502	-2.7822	0.01
NE-Div	0.0582	0.0246	2.3668	
MA-Div	0.0320	0.0185	1.7286	
ENC-Div	0.0892	0.0154	5.7751	
SE-Div	0.0019	0.0148	0.1268	
ESC-Div	0.0185	0.0173	1.0677	
WSC-Div	-0.0746	0.0169	-4.4040	
MT-Div	-0.1540	0.0222	-6.9241	
PAC-Div	-0.0847	0.0207	-4.0833	
LogCompact2010	**-0.1401**	**0.0713**	**-1.9640**	**0.01**
R-squared				0.38
N				957

Compactness Reduces Water Consumption over Time

Interpretation

A 10% increase in Compactness is associated with/caused 1.4% ***decrease*** in the mean per capita water consumption between 1990 and 2005.

Compactness Increases Jobs-Housing Balance over Time

Dependent Variable = Ratio of Jobs-Housing Balance in 2010 to Balance in 2000

Hypothesis: Higher compactness associated with/causes higher increase in jobs-housing balance over time

Variable, Metric	Unstandardized Coefficient	Standard Error	T-Ratio	Sig (1-tail), Metric
Constant	0.8938	0.0878	10.1787	
LogHH00	-0.0294	0.0086	-3.4229	0.01
RatioHH00-10	-0.1326	0.0195	-6.7856	0.01
LogJobHH00	-0.1324	0.0273	-4.8555	0.01
NE-Div	0.0209	0.0179	1.1698	
MA-Div	0.0194	0.0138	1.4111	
ENC-Div	-0.0676	0.0113	-5.9811	
SE-Div	-0.0312	0.0108	-2.8861	
ESC-Div	-0.0379	0.0126	-3.0146	
WSC-Div	0.0305	0.0120	2.5423	
MT-Div	-0.0085	0.0152	-0.5597	
PAC-Div	-0.0225	0.0146	-1.5378	
LogCompact10	**0.1458**	**0.0518**	**2.8149**	**0.01**
R-squared				0.20
N				957

Compactness Increases Jobs-Housing Balance over Time

Interpretation

A 10% increase in Compactness is associated with/caused 1.5% ***increase*** in the mean ratio of jobs-housing balance between 2000 and 2010.

Compactness Reduced Bank-Owned Homes during Great Recession

Dependent Variable = Ratio of Bank-Owned Homes to all Homes in 2011 to Bank-Owned Home Ratio in 2006

Hypothesis: Higher compactness associated with/causes lower bank-owned homes During Great Recession

Variable, Metric	Unstandardized Coefficient	Standard Error	T-Ratio	Sig (1-tail), Metric
Constant	2.8132	0.3738	7.5263	
LogPop2000	1.5909	0.0358	44.4223	0.01
LogPopRatio00-06	1.8088	0.1505	12.0212	0.01
NE-Div	-0.2265	0.0764	-2.9629	
MA-Div	-0.4814	0.0582	-8.2733	
ENC-Div	0.1832	0.0491	3.7311	
SE-Div	0.1506	0.0475	3.1687	
ESC-Div	-0.0209	0.0561	-0.3728	
WSC-Div	0.0074	0.0522	0.1412	
MT-Div	0.2459	0.0667	3.6850	
PAC-Div	0.2006	0.0633	3.1703	
LogCompact2010	**-1.9281**	**0.2308**	**-8.3524**	**0.01**
R-squared				0.80
N				901

Compactness Reduced Bank-Owned Homes during Great Recession

Interpretation

A 10% increase in Compactness is associated with/caused 19% ***decrease*** in the mean share of homes owned by banks between 2006 and 2011.

Bottom Line: Compactness …

- Reduces VMT and increases transit use.
- Reduces greenhouse gas emissions.
- Improves traffic safety.
- Increases home values and improves value resiliency.
- Reduces foreclosure risk.
- Increases employment and improves employment resiliency.
- Increases economic productivity and improves economic resiliency.
- Increases local fiscal capacity and improves local fiscal resiliency.
- Enhances farmland supply.
- Reduces domestic water consumption per capita.
- Increases the jobs-housing balance.