Urban Accounting and Welfare: Online Appendix

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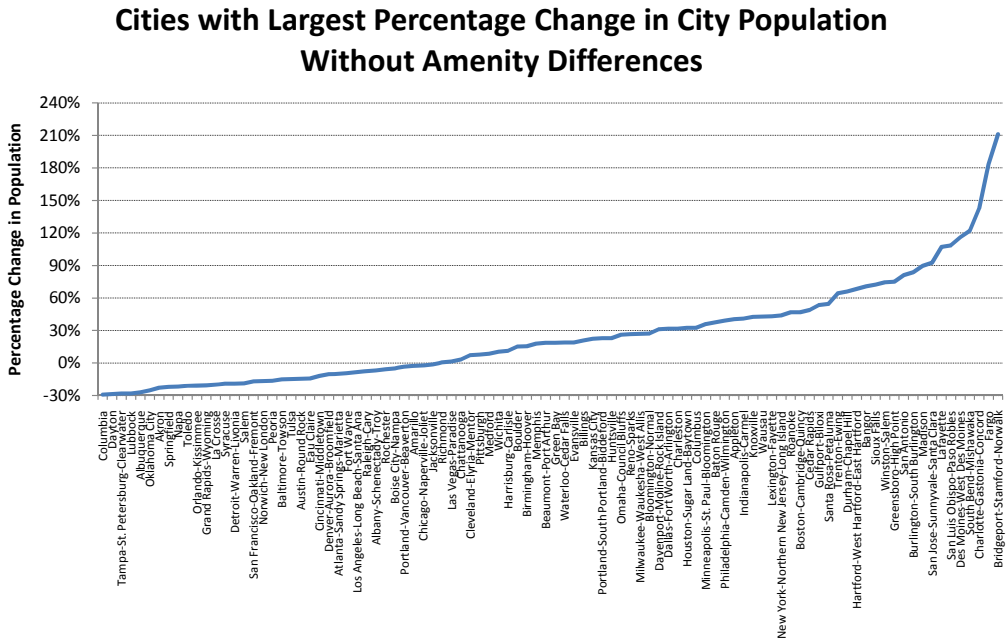
APPENDIX A: CITY CHARACTERISTICS AND ROBUSTNESS



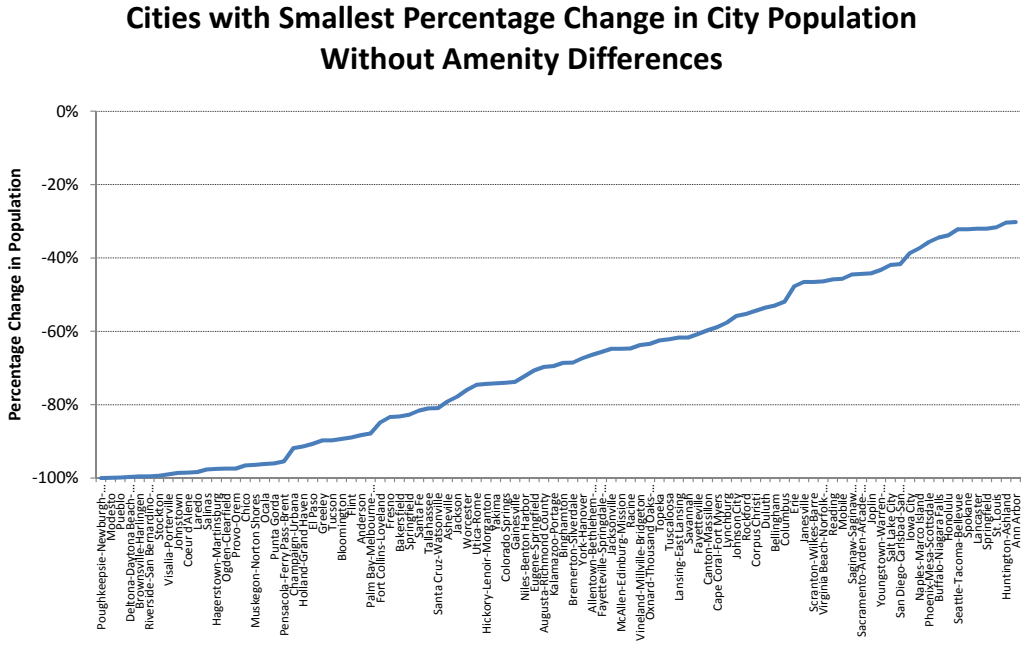
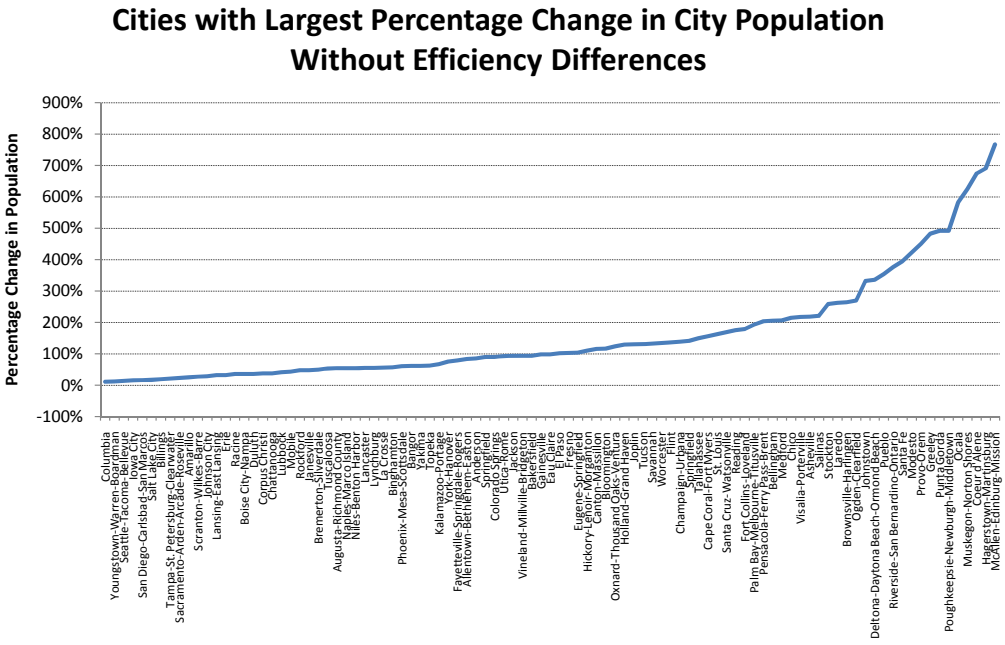


Figure A1: Changes in Population Sizes with Average Amenities



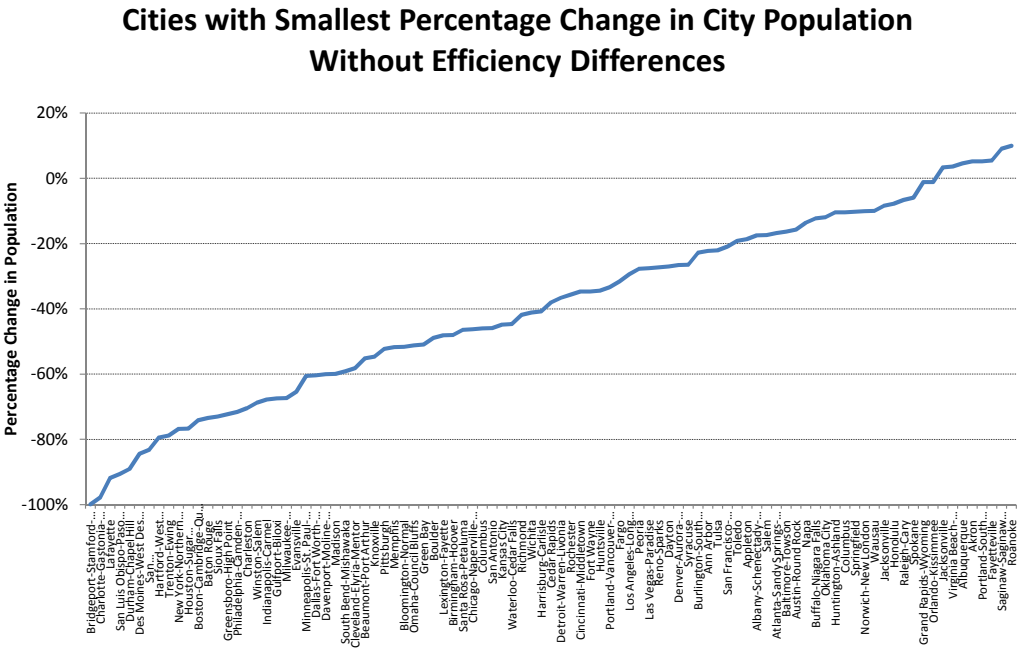
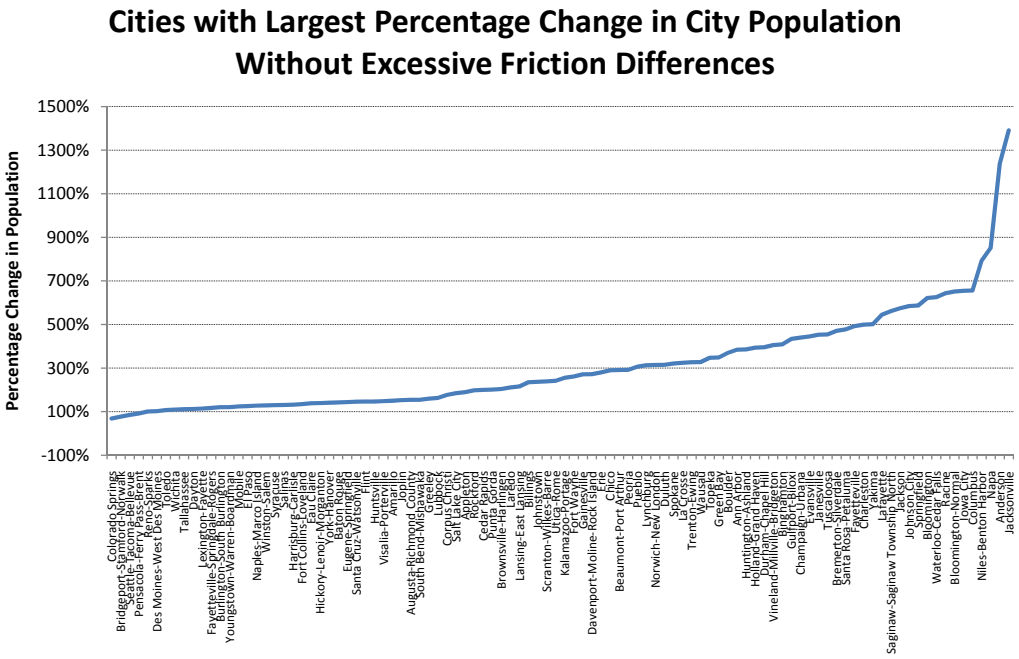


Figure A2: Changes in Population Sizes with Average Efficiency



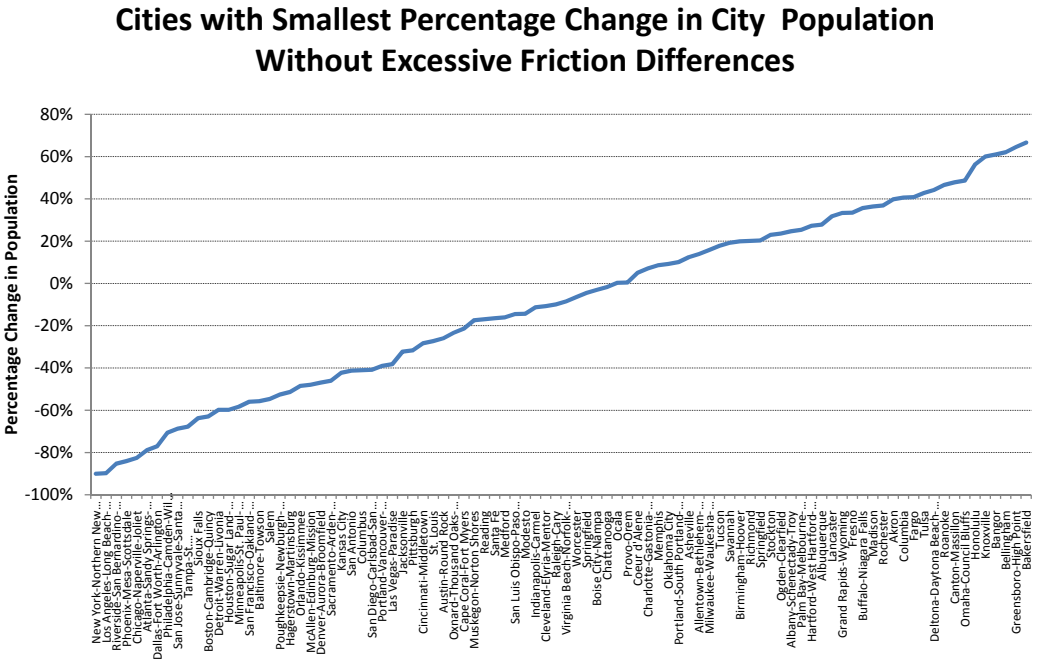
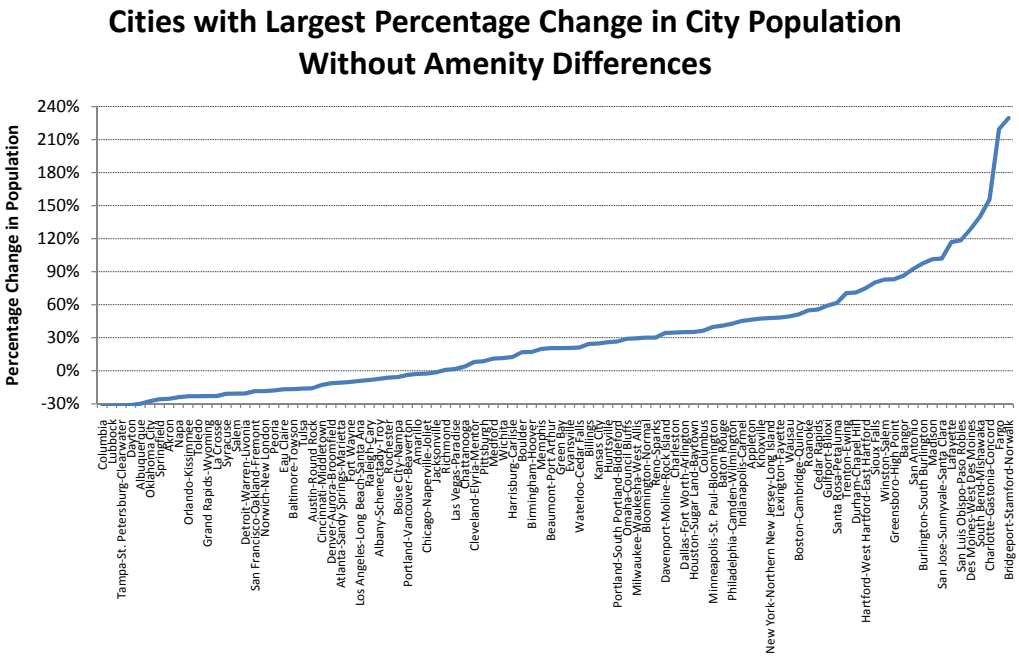


Figure A3: Changes in Population Sizes with Average Excessive Frictions



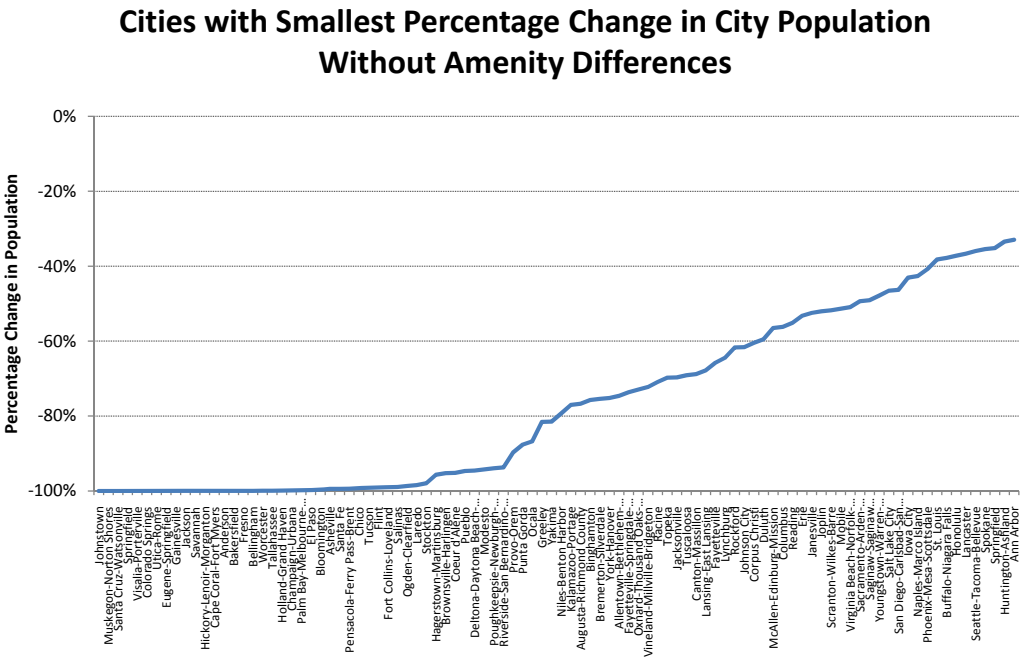


Figure A4: Changes in Population Sizes with Average Amenities (with Externalities)

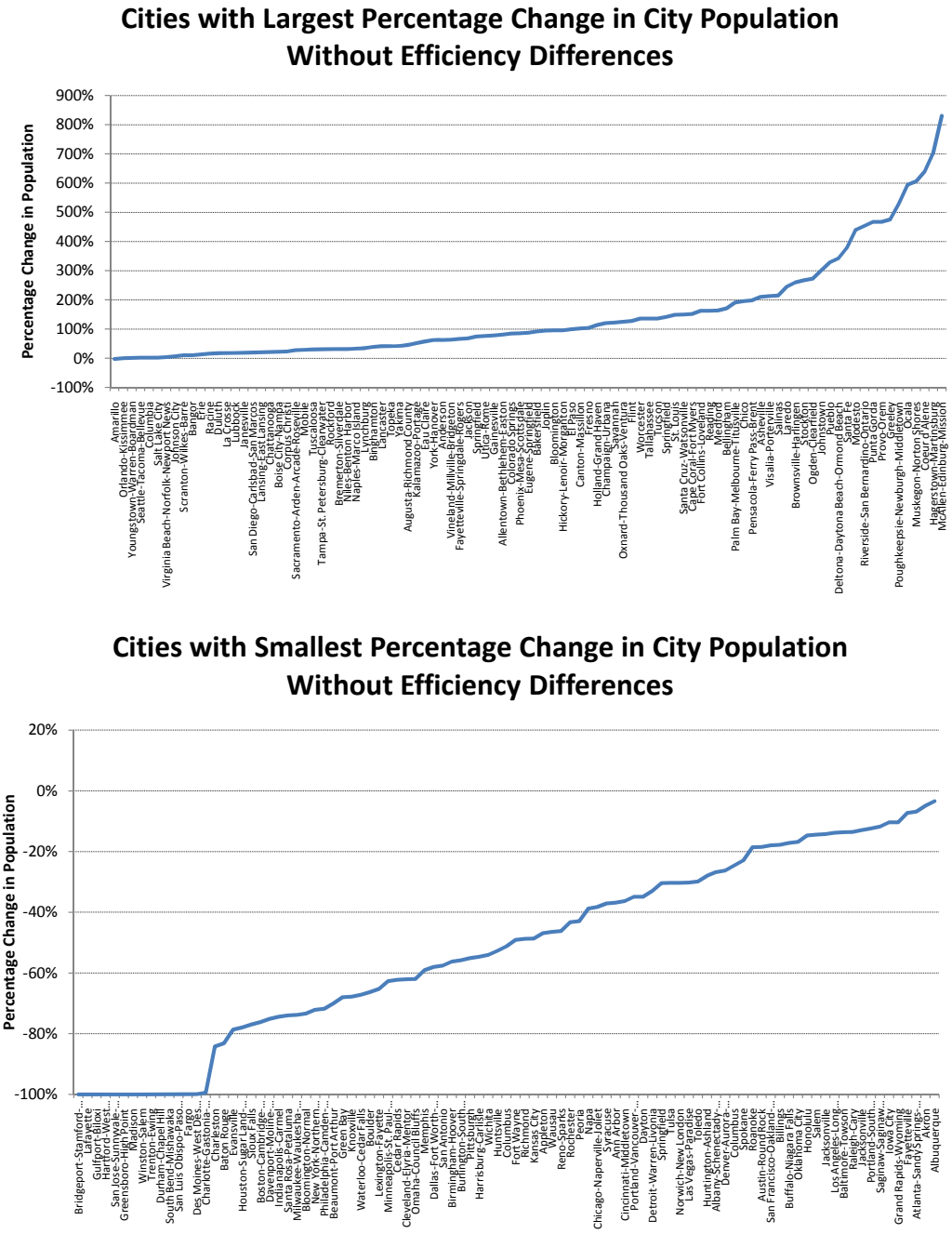
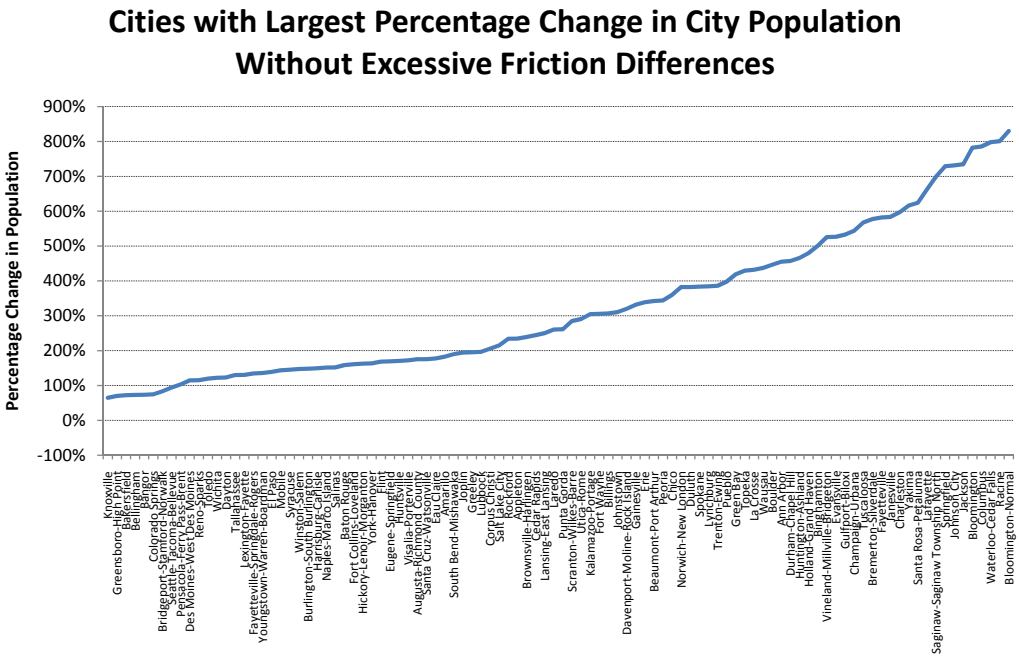


Figure A5: Changes in Population Sizes with Average Efficiency (with Externalities)



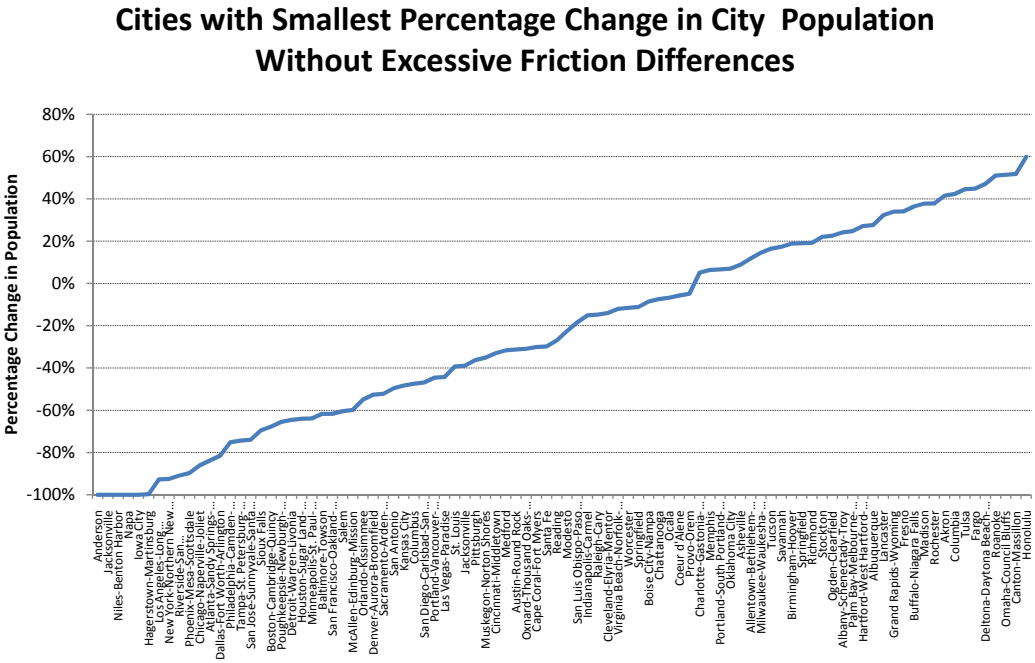
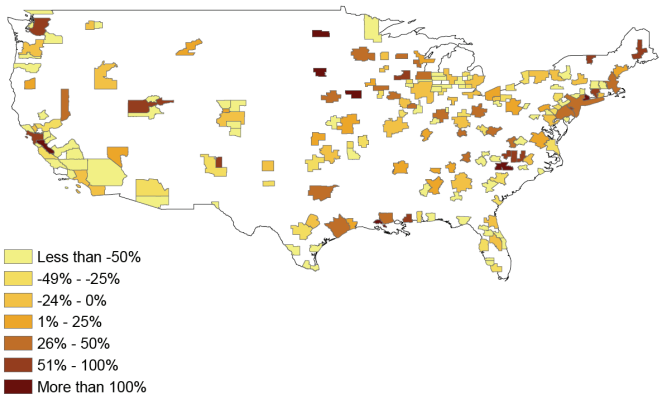
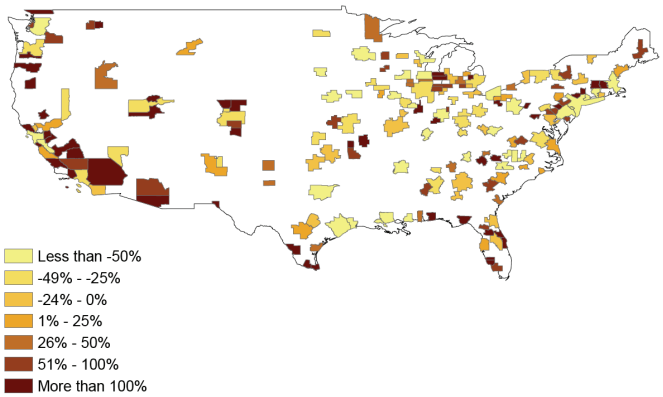


Figure A6: Changes in Population Sizes with Average Excessive Frictions (with Externalities)

Without Differences in Amenities:



Without Differences in Efficiency:



Without Differences in Excessive Frictions:

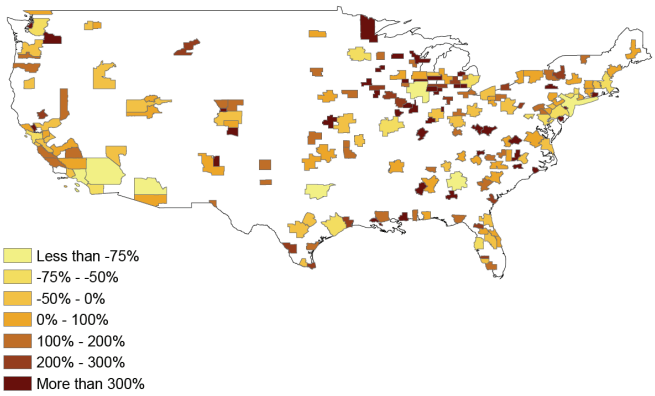


Figure A7: Maps of Changes in Population Sizes

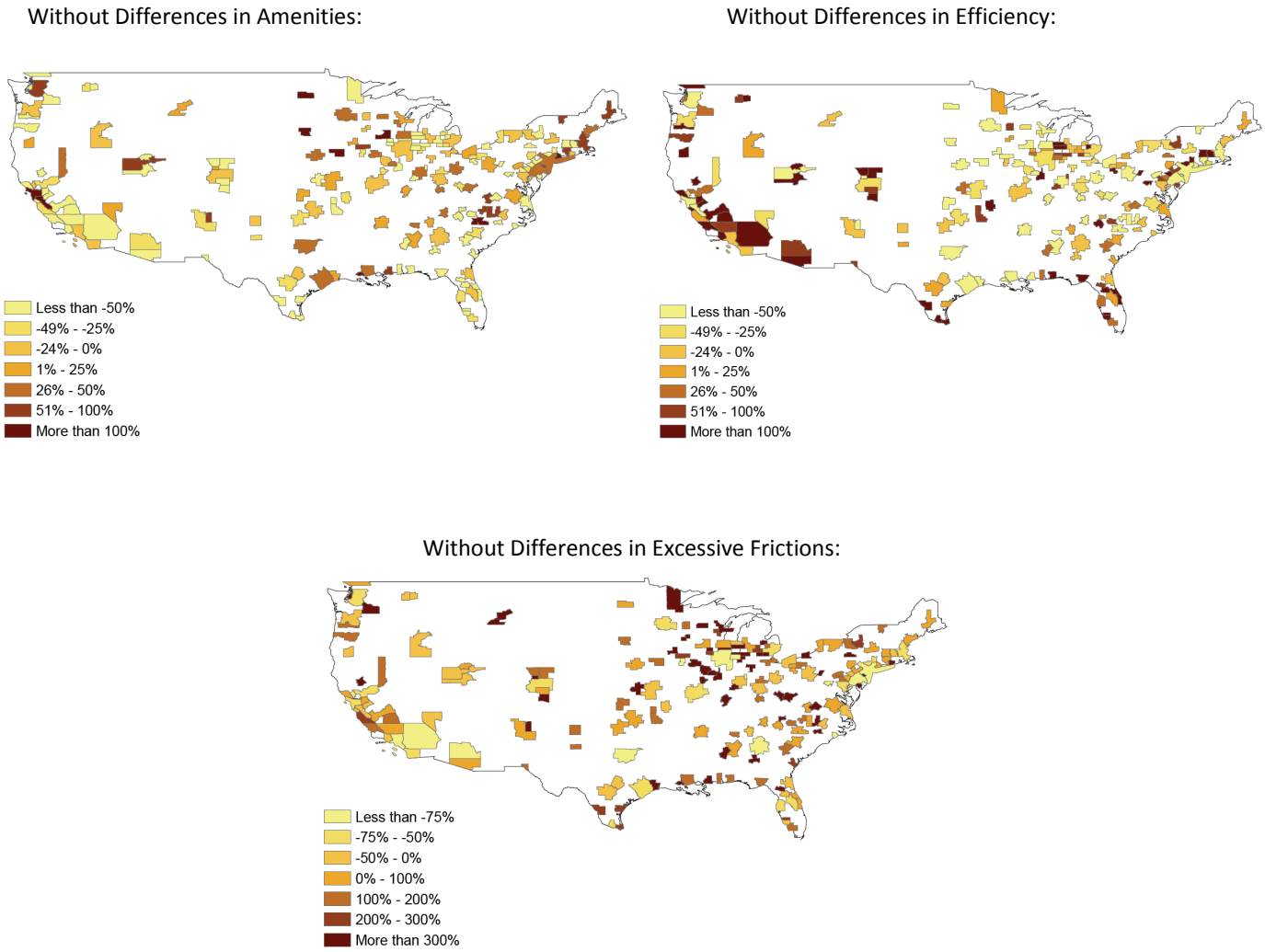


Figure A8: Maps of Changes in Population Sizes with Externalities, $\omega = 0.02$

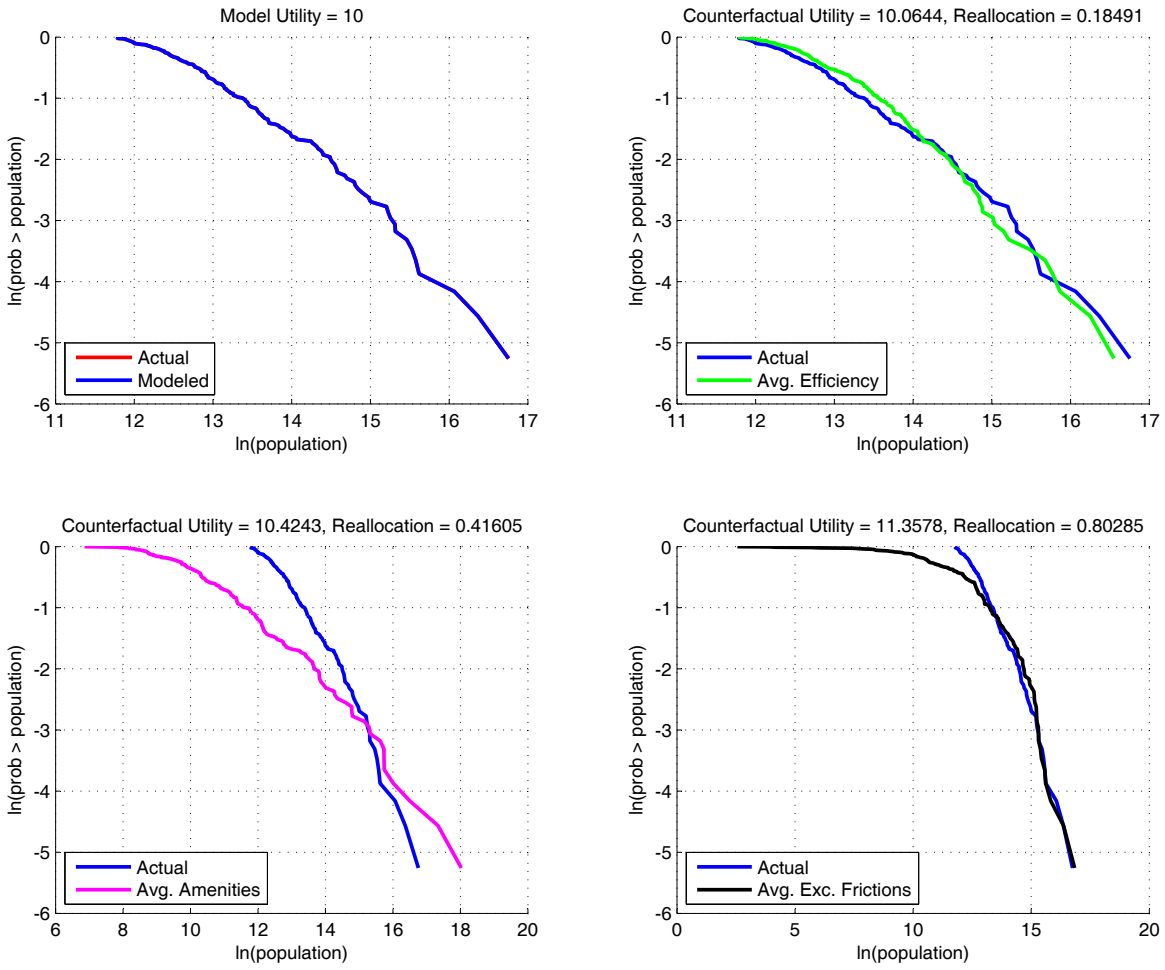


Figure A9: Elasticity of Commuting Costs with Respect to Population Equal to 0.25

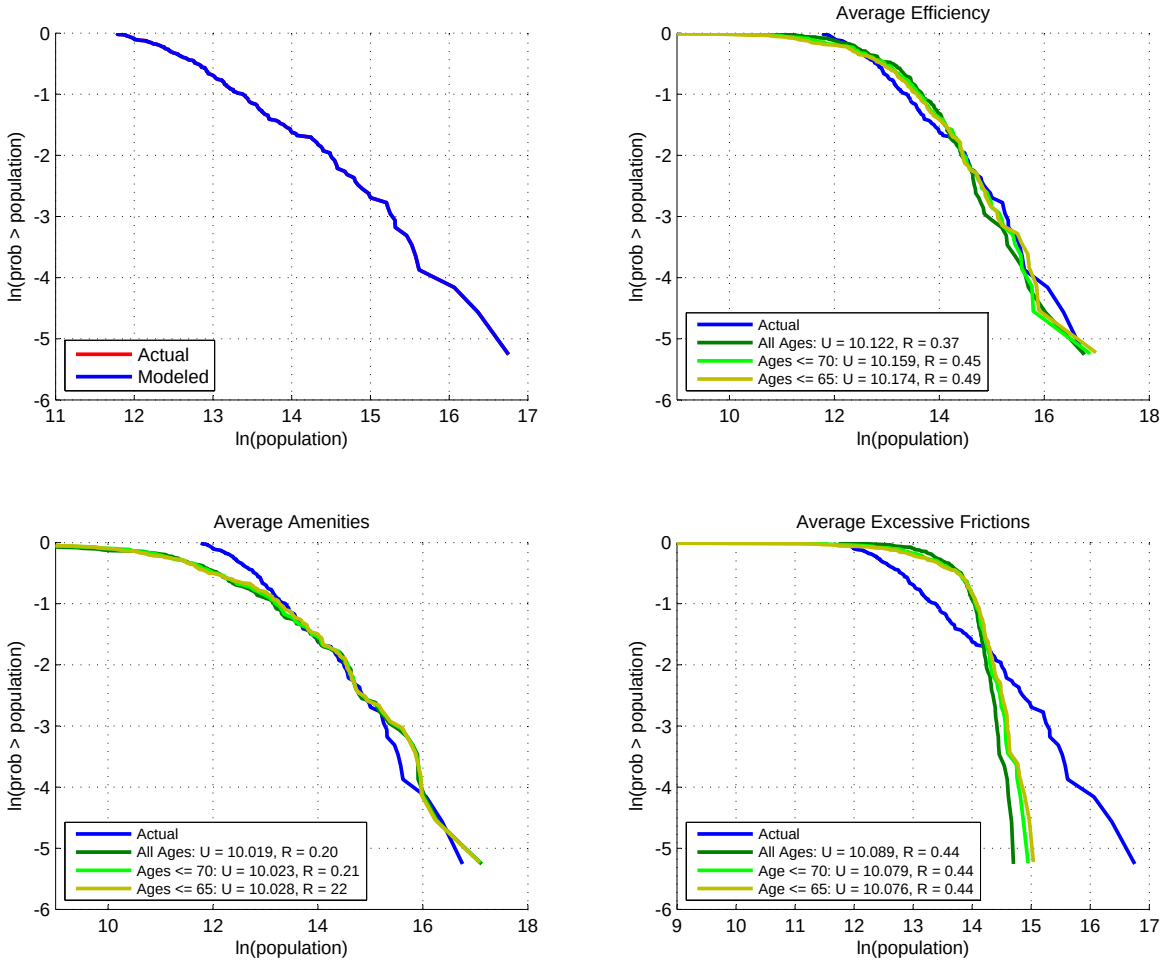


Figure A10: Equalizing Differences in One City Characteristic with Age Cutoffs for Hours Worked

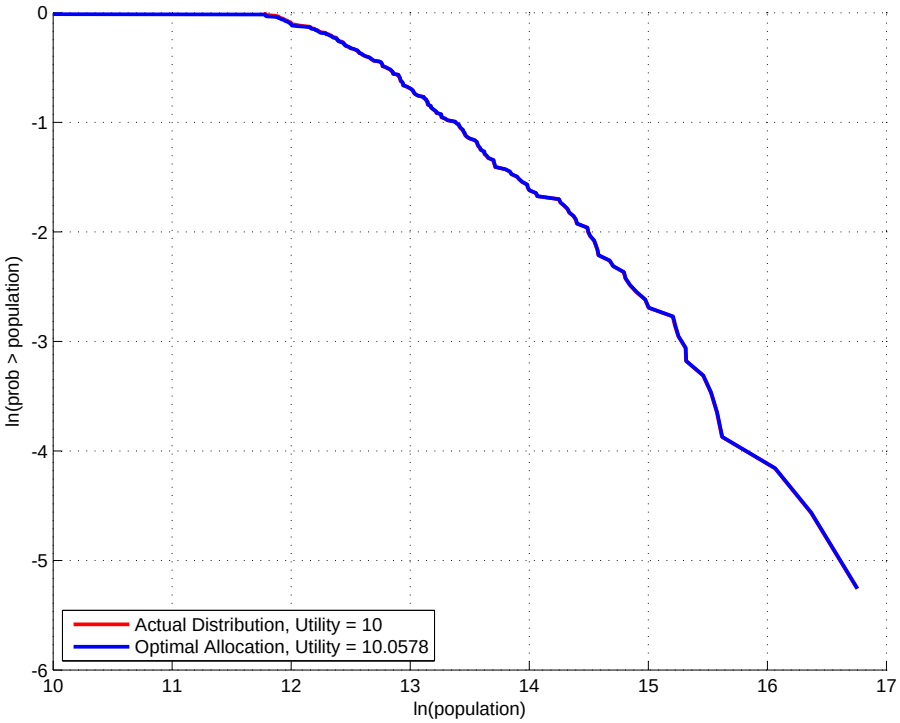


Figure A11: Optimal Allocation with Externalities, $\omega = 0.02$

APPENDIX B: DATA APPENDIX

B.1 United States

This section provides a detailed description of the U.S. metropolitan data we use.

Unit of observation. The unit of observation is the metropolitan statistical area (MSA). A metropolitan statistical area is a collection of counties with at least one urbanized area of 50,000 or more inhabitants. We use data from 2005 to 2008. Going further back in time is complex, since the definition of MSAs changed in 2003, and there was a subsequent lag in the adoption of the new definitions. More recent data (for 2009) are not available yet for some of the relevant variables.

Production. Measured by Gross Domestic Product by Metropolitan Area. Source: Bureau of Economic Analysis, Regional Economic Accounts.

Population. Data on population come from the Bureau of Economic Analysis, Regional Economic Accounts.

Private consumption. The measure of consumption used to compute the labor wedge is private consumption. There are no ready-to-use data on private consumption at the metropolitan area level. We start by decomposing private consumption into private consumption net of housing services and private consumption of housing services.

We proxy private consumption net of housing services by retail earnings. In particular, we use retail earnings (at the MSA level) multiplied by private consumption net of housing (at the U.S. level) divided by retail earnings (at the U.S. level). Data on retail earnings are defined as personal earnings from retail trade and come from the Bureau of Economic Analysis Regional Economic Accounts, Table CA05. Data on private consumption net of housing come from the Bureau of Economic Analysis National Income and Product Accounts (NIPA), Table 2.3.5. In using this proxy, we follow the literature on interregional risk sharing, which has used retail sales as a proxy for private consumption (Asdrubali et al., 1996, Hess and Shin, 1997, Lustig and Van Nieuwerburgh, 2010). Note that those papers use retail

sales, rather than retail earnings, by using data from the Survey of Buying Power published by Sales & Marketing Management. However, that survey was interrupted during the period 2006-2008. Both proxies are very similar, though. For 2005 and 2008 the correlation between retail earnings and retail sales at the MSA level is about 0.80. In addition, the correlation between private consumption and retail earnings at the U.S. level for the years 2001-2008 is 0.99.

We proxy private consumption of housing services by taking the sum of aggregate gross rent of renter-occupied housing and the rental value of the aggregate value of owner-occupied housing. Both variables are available at the MSA level and come from the annual American Community Survey run by the U.S. Census Bureau. To compute the rental value of owner-occupied housing, we assume that the aggregate value of owner-occupied housing is the discounted sum of future rental flows, taking into account depreciation. The rental value of owner-occupied housing is then computed as the aggregate value of owner-occupied housing multiplied by $r+\delta$ and divided by $1+r$. For the benchmark calculation, we take $r = \delta = 0.02$, as in the rest of the paper.

Capital stock. Again, there are no ready-to-use capital stock data at the MSA level. We start by decomposing the capital stock into non-residential and residential capital.

We proxy non-residential capital at the MSA level by using sectoral non-residential capital stock data at the U.S. level and allocating it to the different MSAs as a function of their sectoral weights. This is similar to the approach taken by Garofalo and Yamarik (2002) when estimating state capital stocks. Sectoral non-residential capital stock data come from the National Economic Accounts from the BEA. We take the sum of private and public capital. For private non-residential capital we take current-cost net stock of private fixed assets by industry (Table 3.1ES); for public non-residential capital we take current-cost net stock of government fixed assets at both the federal level and the state and local level (Table 7.1B). We then allocate the sectoral capital stock to the MSAs as a function of their shares of sectoral earnings. In particular, capital stock in sector s in MSA i is computed as the capital stock in sector s in the U.S. multiplied by earnings in sector s in MSA i divided by earnings in sector s in the U.S. Data on sectoral earnings both at the MSA and the U.S. levels come

from the Regional Economic Accounts of the Bureau of Economic Analysis (Table CA05N).

Residential capital at the MSA level is easier to come by. We take the sum of the aggregate value of renter-occupied and owner-occupied housing. In the case of owner-occupied housing, that information is available from the American Community Survey of the U.S. Census Bureau. In the case of renter-occupied housing, the same data source gives information on the aggregate gross rent. This allows us to compute the value of rental-occupied housing as the aggregate gross rent multiplied by $1 + r$ divided by $r + \delta$. This assumes, as before, that the value of housing is equal to the discounted sum of future rental streams, where future rental streams are the same as today's rental stream corrected for depreciation.

Hours worked. To compute average hours worked we take the total hours worked divided by the population age 16 years old and above. We use data from the Current Population Survey (CPS) and compute total hours worked at the MSA level by summing up the total hours worked by individuals (weighted by their representativeness in the sample) and then dividing them by all individuals age 16 and above in the sample (weighted by their representativeness in the sample). To limit errors due to small sample problems, we leave out MSAs that have information on less than 50 individuals. The share of time worked is then equal to the average hours worked per day divided by 14.

Wages. Data on average wages per job come from the Bureau of Economic Analysis.

Housing rental prices. As a measure for housing rental prices, we take the median gross rent of rental-occupied housing. Data at the MSA level are available from the American Community Survey from the U.S. Census Bureau.

Labor tax rate. We measure the labor tax rate as the federal and state income tax liability (after credits) divided by total income. Data come from the Current Population Survey (CPS). As with the case of hours worked, we aggregate federal and state income tax liability across individuals at the MSA level and divide it by the sum of total income across those same individuals. As before, individuals are weighted by their representativeness in the CPS.

Consumption tax rate. We take the sum of (i) the sales tax revenue by all local governments within the MSA and (ii) the sales tax revenue by the state which we assign to the different MSAs in function of their weights in the state's retail income. Data on sales tax revenue come from State & Local Government Finance, U.S. Census Bureau. This dataset gives detailed information on all types of revenue for all types of local and state governments.

To compute the sales tax revenue by all local governments at the MSA level, note that the data are available at the county level, which we then aggregate up to the MSA level. We select all revenue categories that correspond to sales tax revenue (T09, T10, T11, T12, T13, T14, T15, T16, and T19). One issue is that the dataset only has information on counties that respond, but not all do. For those counties that did not respond, the U.S. Census Bureau imputes values, but only makes those imputed values available at the state level, without providing a breakdown at the county level. For counties with missing records, we impute the data by taking the sales tax revenue at the local level in revenue category x (at the state level) multiplied by retail personal income (at the MSA level) divided by retail personal income (at the state level). Retail personal income comes from the Regional Economic Accounts of the BEA. Once we have sales revenue data (reported or imputed) in all categories at the county level, we aggregate them to the MSA level. For sales tax revenue by states, we assign it to the MSAs within states using their relative weights in retail personal earnings from the Regional Economic Accounts of the BEA. The consumption tax rate is then sales tax revenue divided by private consumption.

Places. Population data of U.S. places come from the 2010 Census.

Amenities. To validate our estimates of amenities, we collect data on 23 observed amenities at the MSA level. First, we use data on 8 climate variables from www.weatherbase.com typically used in the literature on amenities: average low in January, annual days in excess of 90 degrees, annual days below 32 degrees, annual precipitation, number of days with precipitation, number of days with precipitation > 0.2 inch, relative humidity in July, and July heat index (average of relative humidity and high temperature). Second, we use the quality-of-life variables in Rappaport (2008). These come from the *Places Rated Almanac* by Savageau (2000) and the *Cities Ranked & Rated* by Sperling and Sander (2004). From

the *Places Rated Almanac* we take 6 variables (transport, education, crime, arts, health, and recreation) and from the *Cities Ranked & Rated* we use 7 variables (education, health, crime, transport, leisure, arts & culture, and quality of life). All of the 13 variables from the *Places Rated Almanac* and *Cities Ranked & Rated* are constructed such that lower values correspond to "better" amenities. Third, from Rappaport and Sachs (2003) we use 2 variables on proximity to water: closeness (< 20 km) to a body of water (Ocean, Gulf, Great Lakes) and closeness (< 20 km) to a body of water or major river. In Table B.1 we report the correlations between our estimate of amenities and those 23 measures.

Government spending. We split up government spending into federal government spending and state and local government spending. To estimate federal spending by MSA we take earnings by federal civilian government and military at the MSA level, and multiply it by the ratio of federal government spending in the state of the MSA to the earnings by federal civilian government and military in the state of the MSA. This way of proceeding is reasonable, given that the correlation between federal spending and federal earnings at the state level ranges between 0.95 and 0.98. Federal civilian and military earnings come from the Regional Economic Accounts of the BEA. Federal government spending by state comes from the Consolidated Federal Funds Report of the U.S Census Bureau. It measures the sum of procurement contracts, salaries and wages, and grants, and thus leaves out transfers and loans. To estimate state and local government spending, we follow a similar procedure. We take state and local government wages at the MSA level, and multiply it by the ratio of state and local government spending in the state of the MSA to the state and local government wages in the state of the MSA. Once again, the rationale is based on the high correlation at the state level between state and local spending and state and local wages (0.99). State and local government wages come from the Regional Economic Accounts of the BEA. State and local government spending by state comes from the State and Local Government Finance data of the U.S. Census Bureau. It measures the sum of current operations and capital outlays, thus leaving out transfers and subsidies.

Other measures of excessive frictions. When validating our estimates of excessive frictions, we use a number of additional variables. Time spent commuting comes from the

American Community of the U.S. Census Bureau. Data on unionization come from the Union Membership and Coverage Database constructed by Hirsch and Macpherson, and is available online at www.unionstats.com. Finally, to measure land regulation, we use the Wharton Residential Land Use Regulatory Index. For a description of the data, see Gyourko, Saiz and Summers (2008).

B.2 China

This section provides a detailed description of the Chinese city-level data we use.

Unit of observation. The unit of observation is *Districts under Prefecture-Level Cities*. This corresponds to the urban part of *Prefecture-Level Cities*, sometimes referred to as the *city proper*. Note that *Prefecture-Level Cities* cover the entire Chinese geography and include both the urban parts (proxied for by *Districts under Prefecture-Level Cities*) and the rural hinterlands. We focus on 2005 and have data on 212 cities.

Production. Measured by Gross Domestic Product at the level of *Districts under Prefecture-Level Cities*. Source: China City Statistics, China Data Center.

Private consumption. To compute private consumption at the level of *Districts under Prefecture-Level Cities*, we multiply retail sales of consumer goods at the level of *Districts under Prefecture-Level Cities* by the ratio of final consumption expenditure to total retail sales of consumer goods at the national level. Source: China City Statistics and National Statistics, China Data Center.

Population. Population and Population age 15 years and above. Source: China City Statistics, China Data Center.

Hours worked. To compute average hours worked we take the total hours worked divided by the population 15 years old and above. We use the *2005 1% Population Survey* to get data on the population age 15 years and above, population employed, and average hours worked by the employed. We then multiply population employed by average hours worked

by employed and divide it by the population age 15 years and above. These data are available for most *Prefecture-Level Cities* but often not for *Districts under Prefecture-Level Cities*. In order not to lose too many observations, we use the data at the level of *Prefecture-Level Cities*.

Parameter values. Bai et al. (2006) provide time series estimates for the capital share of income and for the real interest rate. Taking the average for 2000-2005, we set $\theta = 0.5221$ and $r = 0.2008$. To be consistent with the case of the U.S., where we took ψ from McGrattan and Prescott (2010), we use the same formula as they do: $\psi = \frac{(1-\tau_h)(1-\theta)(1-h)}{1+\tau_c)ch}$, where c is consumption per capita (data defined above), h are hours worked as share of total hours (average hours worked per year as defined above divided by 5110), τ_h is the tax rate on labor (defined as personal income tax as a share of personal income) and τ_c the tax rate on consumption (defined as the sum of consumption tax and value added tax as a share of total consumption expenditures). The data needed to compute these tax rates come from the National Bureau of Statistics of China and are for 2004. This gives us a value $\psi = 1.5247$.

Appendix References

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Table B.1: Correlation between Estimated Amenities and Standard Measures of Amenities			
	Correlation	P-value	Expected Sign
Weather			
Average low in January	0.2306	0.0015	Yes
Annual days in excess of 90 degrees	0.2744	0.0001	No
Annual days below 32	-0.1628	0.0276	Yes
Annual precipitation	-0.1581	0.0285	Yes
Number of days with precipitation	-0.2523	0.0005	Yes
Number of days with precipitation > 0.2 inch	-0.2640	0.0058	Yes
Relative humidity in July	-0.2006	0.0103	Yes
July heat index	-0.0942	0.2315	Yes
Places Rated Almanac			
Transport	-0.4950	0.0000	Yes
Education	-0.4923	0.0000	Yes
Crime	-0.0542	0.4616	Yes
Arts	-0.4950	0.0000	Yes
Health	-0.5252	0.0000	Yes
Recreation	-0.3075	0.0000	Yes
Cities Ranked & Rated			
Education	-0.3996	0.0000	Yes
Health	-0.1310	0.0739	Yes
Crime	-0.0824	0.2625	Yes
Transport	-0.3489	0.0000	Yes
Leisure	-0.0377	0.6084	Yes
Arts & Culture	-0.3879	0.0000	Yes
Quality of Life	-0.2258	0.0019	Yes
Distance to Water			
< 20 km to a body of water	0.0957	0.1867	Yes
< 20 km to a body of water or major river	0.1195	0.0988	Yes

Table B.2: Correlation between Efficiency and Standard Measures of Productivity			
	Correlation	P-value	Expected Sign
Wages	0.7925	0.0000	Yes
Labor productivity	0.9003	0.0000	Yes

Table B.3: Correlation between Labor Wedges and Standard Measures of Frictions			
	Correlation	P-value	Expected Sign
Taxes			
Labor tax rate	0.1915	0.0078	Yes
Consumption tax rate	0.2032	0.0047	Yes
Joint income & consumption tax*	0.2667	0.0002	Yes
Government spending			
Federal spending per person	0.2589	0.0003	Yes
State & local spending per person	0.1472	0.0416	Yes
Total government spending per person	0.2821	0.0001	Yes
Commuting costs			
Share of work time spent commuting	0.3947	0.0000	Yes
Unionization			
Percentage unionization	0.1038	0.1702	Yes
Percentage unionization private sector	0.1523	0.0436	Yes
Percentage unionization public sector	0.0229	0.7633	Yes
Land regulation			
Wharton index (WRLURI)	-0.0728	0.3711	No

*This is the correlation between $(1-\tau)$ and $(1-\tau_h)/(1-\tau_c)$. All other correlations are with τ.

Table B.4: Data and Estimated City Characteristics								
	Data					City Characteristics		
Name	Pop ('000s)	GDP (m$)	Cons (m$)	Cap (m$)	Hours (Annual)	$\ln A_i$	$\ln \gamma_i$	$\ln g_i$
Akron, OH	699	26777	19525	101675	1210	7.518	1.013	-0.112
Albany-Schenectady-Troy, NY	851	36605	25750	153250	1209	7.563	0.995	-0.176
Albuquerque, NM	823	33174	23325	138000	1215	7.519	1.019	-0.163
Allentown-Bethlehem-Easton, PA-NJ	797	27946	21375	131250	1188	7.400	1.070	-0.209
Amarillo, TX	241	8763	6776	30900	1260	7.492	0.990	0.220
Anderson, IN	131	3214	2313	13600	942	7.354	1.151	0.976
AnnArbor, MI	346	17743	9458	97525	1219	7.583	1.030	0.471
Appleton, WI	217	8953	6674	29525	1324	7.558	0.955	0.290
Asheville, NC	400	12730	11450	60025	1228	7.314	1.067	-0.149
Atlanta-SandySprings-Marietta, GA	5174	258875	153500	1160000	1361	7.562	0.998	-1.066
Augusta-RichmondCounty, GA-SC	525	16913	11800	71100	1114	7.425	1.090	0.164
Austin-RoundRock, TX	1559	73118	45450	322000	1292	7.561	1.004	-0.443
Bakersfield, CA	777	25476	17825	130500	1126	7.363	1.118	-0.045
Baltimore-Towson, MD	2659	125750	83800	630500	1215	7.562	1.005	-0.701
Bangor, ME	148	5062	5459	19775	1152	7.470	0.950	0.108
BatonRouge, LA	759	35904	19375	110450	1151	7.765	0.939	0.119
Beaumont-PortArthur, TX	377	13840	10121	42575	1021	7.675	0.965	0.372
Bellingham, WA	191	6958	6212	35925	1278	7.352	1.028	0.077
Billings, MT	149	6159	5310	28825	1213	7.502	0.972	0.386
Binghamton, NY	246	7093	5535	28400	1034	7.423	1.085	0.515
Birmingham-Hoover, AL	1104	51878	33750	213000	1179	7.647	0.970	-0.211
Bloomington, IN	182	5381	3538	23100	1172	7.328	1.136	0.687
Bloomington-Normal, IL	162	7698	4268	24575	1348	7.653	0.958	0.712
BoiseCity-Nampa, ID	574	23479	18875	101075	1290	7.479	0.992	-0.245
Boston-Cambridge-Quincy, MA-NH	4484	280550	153750	1382500	1205	7.759	0.930	-0.813
Boulder, CO	287	16504	9513	87000	1270	7.650	0.970	0.470
Bremerton-Silverdale, WA	238	8128	6813	51525	950	7.431	1.088	0.567
Bridgeport-Stamford-Norwalk, CT	892	78101	45500	380500	1183	7.999	0.769	-0.029
Brownsville-Harlingen, TX	382	6836	6532	30400	903	7.163	1.203	0.263
Buffalo-NiagaraFalls, NY	1131	41466	27225	158000	1094	7.557	1.035	-0.160
Burlington-SouthBurlington, VT	207	9724	7929	40925	1324	7.561	0.931	0.186
Canton-Massillon, OH	408	12708	10700	48100	1213	7.384	1.048	-0.042
CapeCoral-FortMyers, FL	573	21443	21100	136500	1149	7.365	1.041	-0.328
CedarRapids, IA	251	11535	8286	42150	1313	7.599	0.945	0.292
Champaign-Urbana, IL	222	7530	4575	37275	1291	7.306	1.139	0.548
Charleston, WV	304	13520	7628	40900	1113	7.750	0.946	0.572
Charlotte-Gastonia-Concord, NC-SC	1612	112575	52075	332500	1343	7.934	0.826	-0.285
Chattanooga, TN-GA	511	19778	17050	84250	1231	7.479	0.985	-0.228
Chicago-Naperville-Joliet, IL-IN-WI	9474	494675	272750	2340000	1204	7.653	0.991	-1.190
Chico, CA	218	5717	6061	37450	936	7.255	1.137	0.412
Cincinnati-Middletown, OH-KY-IN	2130	94574	53300	348750	1232	7.615	1.003	-0.478
Cleveland-Elyria-Mentor, OH	2101	101402	53800	388000	1151	7.703	0.978	-0.381
Coeurd'Alene, ID	132	3899	4360	22925	1190	7.212	1.071	-0.024
ColoradoSprings, CO	604	22581	16600	127750	1184	7.383	1.087	-0.022
Columbia, SC	709	28344	20225	118750	1223	7.507	1.020	-0.111
Columbus, GA-AL	288	10265	6191	51500	928	7.556	1.075	0.679
Columbus, OH	1743	86089	56300	341750	1292	7.629	0.955	-0.548
CorpusChristi, TX	413	14643	10731	64825	1136	7.459	1.058	0.217

Table B.4: Data and Estimated City Characteristics (cont'd)

	Data					City Characteristics		
Name	Pop ('000s)	GDP (m$)	Cons (m$)	Cap (m$)	Hours (Annual)	$\ln A_i$	$\ln \gamma_i$	$\ln g_i$
Dallas-FortWorth-Arlington, TX	6067	349575	195000	1565000	1295	7.689	0.951	-1.041
Davenport-Moline-RockIsl, IA-IL	375	15734	10488	49375	1131	7.688	0.952	0.351
Dayton, OH	840	33268	18975	123250	1125	7.598	1.029	0.054
Deltona-Daytona-Ormond, FL	495	12019	12625	78025	987	7.172	1.165	-0.070
Denver-Aurora-Broomfield, CO	2430	141075	75125	754500	1387	7.588	1.000	-0.617
DesMoines-WestDesMoines, IA	540	32351	18150	104425	1418	7.765	0.879	0.064
Detroit-Warren-Livonia, MI	4466	199875	119250	934750	1081	7.627	1.014	-0.778
Duluth, MN-WI	274	9359	6959	39150	1124	7.461	1.056	0.421
Durham-ChapelHill, NC	473	29531	11675	95050	1215	7.894	0.895	0.463
EauClaire, WI	157	5645	4742	20850	1331	7.425	0.998	0.248
ElPaso, TX	726	23903	16250	163250	1026	7.332	1.154	0.090
Erie, PA	279	8941	6948	32375	1116	7.469	1.046	0.381
Eugene-Springfield, OR	341	10888	9882	55850	1069	7.379	1.074	0.179
Evansville, IN-KY	349	15175	8434	48050	1096	7.733	0.962	0.523
Fargo, ND-MN	191	9104	7030	31625	1470	7.567	0.898	0.025
Fayetteville, NC	350	14065	7462	77925	1060	7.514	1.090	0.559
Fayetteville-Springd-Rog, AR-MO	427	16421	10020	66975	1396	7.404	1.069	0.112
Flint, MI	435	11748	9961	54575	1044	7.319	1.123	0.164
FortCollins-Loveland, CO	284	10246	8405	62275	1222	7.314	1.091	0.180
FortWayne, IN	407	16263	9900	52875	1184	7.613	1.000	0.333
Fresno, CA	889	27071	21800	142250	1044	7.355	1.114	-0.150
Gainesville, FL	254	9035	6540	44600	1221	7.378	1.084	0.379
GrandRapids-Wyoming, MI	773	32458	22150	134500	1248	7.530	1.011	-0.140
Greeley, CO	238	6649	4890	39525	1341	7.091	1.194	0.237
GreenBay, WI	300	13655	8099	45250	1255	7.656	0.966	0.448
Greensboro-HighPoint, NC	690	31718	23100	106250	1151	7.716	0.913	-0.042
Gulfport-Biloxi, MS	237	9128	6650	31723.089	1090	7.707	0.930	0.538
Hagerstown-Martinsburg, MD-WV	257	7474	7335	34325	1316	7.217	1.065	-0.391
Harrisburg-Carlisle, PA	526	26279	15900	108850	1292	7.622	0.975	0.124
Hartford-W and E Hartford, CT	1185	70031	40075	285750	1227	7.774	0.909	-0.190
Hickory-Lenoir-Morganton, NC	358	11617	8316	44850	1275	7.369	1.081	0.167
Holland-GrandHaven, MI	257	9101	5217	46050	1321	7.312	1.141	0.499
Honolulu, HI	902	45003	28425	281500	1175	7.545	1.032	-0.083
Houston-SugarLand-Baytown, TX	5529	359325	149250	1605000	1228	7.804	0.941	-0.790
Huntington-Ashland, WV-KY-OH	284	8774	6708	28625	1009	7.551	1.027	0.485
Huntsville, AL	382	17655	11250	61950	1348	7.598	0.965	0.174
Indianapolis-Carmel, IN	1680	91450	50500	346750	1267	7.721	0.939	-0.370
IowaCity, IA	146	6497	4036	31075	1299	7.497	1.034	0.722
Jackson, MI	162	4741	3612	20050	1103	7.375	1.097	0.666
Jacksonville, FL	1284	57619	41575	258250	1258	7.543	0.989	-0.465
Jacksonville, NC	162	6008	3065	39750	931	7.519	1.107	1.012
Janesville, WI	159	4856	4441	19425	1046	7.451	1.040	0.584
JohnsonCity, TN	192	5575	4466	20850	997	7.472	1.064	0.660
Johnstown, PA	146	3710	3264	15025	1219	7.224	1.118	0.391
Joplin, MO	170	5161	4725	18125	1220	7.390	1.025	0.261
Kalamazoo-Portage, MI	322	11246	8018	54800	1152	7.411	1.083	0.342
KansasCity, MO-KS	1970	95462	59225	360250	1298	7.630	0.964	-0.566
Knoxville, TN	675	27894	24025	113750	1028	7.655	0.944	-0.052
LaCrosse, WI-MN	131	4910	3732	17775	1341	7.455	1.005	0.493
Lafayette, LA	254	16222	8403	58200	1261	7.861	0.866	0.616

Table B.4: Data and Estimated City Characteristics (cont'd)								
	Data					City Characteristics		
Name	Pop ('000s)	GDP (m$)	Cons (m$)	Cap (m$)	Hours (Annual)	$\ln A_i$	$\ln \gamma_i$	$\ln g_i$
Lancaster, PA	496	18342	14775	75575	1244	7.450	1.018	-0.107
Lansing-EastLansing, MI	455	17650	11350	89775	1150	7.462	1.078	0.268
Laredo, TX	229	5573	5192	25225	1090	7.232	1.136	0.315
LasVegas-Paradise, NV	1792	91456	59575	458000	1263	7.586	0.986	-0.530
Lexington-Fayette, KY	443	21499	14625	83150	1284	7.631	0.946	0.103
Los Angeles-L Beach-S Ana, CA	12817	683025	433750	3972500	1207	7.596	0.998	-1.441
Lubbock, TX	267	8788	8033	35175	1105	7.466	1.015	0.231
Lynchburg, VA	241	7897	5695	28250	1209	7.435	1.059	0.428
Madison, WI	551	31061	20325	127750	1404	7.651	0.914	-0.103
McAllen-Edinburg-Mission, TX	696	12419	13850	54400	1078	7.041	1.190	-0.510
Medford, OR	198	6091	8251	34200	982	7.386	0.983	-0.164
Memphis, TN-MS-AR	1272	61145	39400	258750	1163	7.660	0.967	-0.264
Milwaukee-Waukesha-W Allis, WI	1541	78537	40800	276500	1206	7.735	0.952	-0.248
Minneapolis-St.Paul-Bl., MN-WI	3181	182875	103200	797500	1315	7.686	0.947	-0.740
Mobile, AL	402	14009	10853	56200	1180	7.456	1.039	0.130
Modesto, CA	506	14674	13750	91375	1186	7.182	1.131	-0.281
Muskegon-NortonShores, MI	174	4635	5132	23025	1151	7.224	1.066	-0.150
Napa, CA	132	6876	4618	46325	1169	7.557	1.014	0.828
Naples-MarcoIsland, FL	311	14415	12000	102625	1186	7.449	1.025	0.160
New York-N NJ-L Isl, NY-NJ-PA	18897	1166000	609000	5540000	1164	7.784	0.930	-1.479
Niles-BentonHarbor, MI	160	5207	3442	24400	1095	7.421	1.098	0.787
Norwich-NewLondon, CT	265	12835	8498	66950	1243	7.548	1.007	0.422
Ocala, FL	317	7339	8088	41375	1066	7.143	1.136	-0.166
Ogden-Clearfield, UT	511	15400	11975	73375	1291	7.240	1.125	-0.136
OklahomaCity, OK	1181	51753	32475	227250	1225	7.554	1.019	-0.256
Omaha-CouncilBluffs, NE-IA	824	42101	24550	159000	1325	7.652	0.959	-0.098
Orlando-Kissimmee, FL	2003	98517	63775	514250	1299	7.530	1.011	-0.616
Oxnard-Th Oaks-Ventura, CA	793	34443	26950	224500	1295	7.376	1.053	-0.371
PalmBay-Melbourne-Titusv, FL	532	16982	14175	86725	1205	7.301	1.098	-0.134
Pensacola-FerryPass-Brent, FL	450	12945	10575	67700	1138	7.265	1.133	0.055
Peoria, IL	370	15944	8647	54125	1291	7.594	1.009	0.374
Philadel-Cam-Wil, PA-NJ-DE-MD	5813	314925	178750	1302500	1157	7.750	0.939	-0.932
Phoenix-Mesa-Scottsdale, AZ	4089	179325	142750	1029250	1257	7.443	1.022	-1.164
Pittsburgh, PA	2360	107675	65500	418750	1131	7.671	0.977	-0.506
Portland-S Portl-Biddeford, ME	512	23439	18675	110400	1294	7.520	0.969	-0.183
Portland-Vanc-Beav, OR-WA	2147	105034	62375	451500	1272	7.606	0.992	-0.549
Poughkeepsie-Newb-Middlet, NY	667	19865	19650	124000	1204	7.187	1.114	-0.540
Provo-Orem, UT	505	12487	10836	58375	1241	7.144	1.158	-0.218
Pueblo, CO	153	3612	3589	18725	1066	7.177	1.154	0.460
PuntaGorda, FL	152	3461	4492	27675	895	7.135	1.157	0.341
Racine, WI	198	6753	4027	24925	1202	7.455	1.084	0.694
Raleigh-Cary, NC	1021	49081	30550	212750	1379	7.540	0.995	-0.327
Reading, PA	399	13992	12075	61225	1300	7.368	1.023	-0.266
Reno-Sparks, NV	405	19833	14475	93025	1271	7.579	0.963	0.083
Richmond, VA	1201	58495	33100	235500	1260	7.633	0.987	-0.216
Riverside-S Bernard-Ontario, CA	4009	109250	108250	741000	1086	7.169	1.155	-1.194
Roanoke, VA	295	12060	9356	42050	1362	7.515	0.955	-0.012
Rochester, NY	1034	43501	26400	150500	1206	7.614	0.995	-0.150

Table B.4: Data and Estimated City Characteristics (cont'd)								
	Data					City Characteristics		
Name	Pop ('000s)	GDP (m$)	Cons (m$)	Capital (m$)	Hours (Annual)	$\ln A_i$	$\ln \gamma_i$	$\ln g_i$
Rockford, IL	347	11746	8171	42100	1227	7.446	1.056	0.262
Sacramento-Arden-Arc-Rosev, CA	2070	90391	69250	581250	1111	7.485	1.042	-0.599
Saginaw-Sag Township N, MI	204	6461	5181	25950	991	7.509	1.047	0.642
St.Louis, MO-IL	2797	120875	73275	460500	1269	7.566	1.010	-0.695
Salem, OR	382	11301	9027	63600	1160	7.244	1.145	0.147
Salinas, CA	406	17801	13150	116000	1108	7.496	1.040	0.231
SaltLakeCity, UT	1083	57691	40825	245250	1382	7.611	0.925	-0.509
SanAntonio, TX	1957	74146	53200	323000	1155	7.496	1.039	-0.555
SanDiego-Carlsbad-S Marcos, CA	2957	158650	104000	1045000	1177	7.575	1.008	-0.712
SanFrancisco-Oakl-Frem, CA	4206	293150	181750	1627500	1227	7.778	0.891	-0.883
SanJose-Sunnyvale-StaClara, CA	1778	137975	74900	730000	1273	7.841	0.869	-0.390
SanLuisObispo-PasoRobles, CA	261	10093	9309	83125	1109	7.327	1.082	0.206
SantaCruz-Watsonville, CA	251	9547	10199	76625	1186	7.278	1.051	-0.202
SantaFe, NM	142	6360	6021	36250	1004	7.621	0.939	0.612
SantaRosa-Petaluma, CA	463	19457	17275	141000	1193	7.373	1.049	-0.141
Savannah, GA	325	12295	8880	55500	1167	7.477	1.045	0.322
Scranton-Wilkes-Barre, PA	549	18089	15200	68675	1070	7.502	1.024	0.024
Seattle-Tacoma-Bellevue, WA	3274	202025	128000	992500	1258	7.723	0.914	-0.802
SiouxFalls, SD	224	13177	7905	48325	1584	7.636	0.902	0.235
SouthBend-Mishawaka, IN-MI	316	11807	7571	41625	1187	7.541	1.029	0.416
Spokane, WA	452	16456	14875	74225	1219	7.426	1.005	-0.226
Springfield, IL	206	8049	5224	33025	1138	7.551	1.030	0.657
Springfield, MA	687	21010	18075	106400	1107	7.335	1.096	-0.174
Springfield, MO	414	13598	12750	53375	1255	7.383	1.010	-0.320
Stockton, CA	665	18548	17275	121250	1052	7.218	1.152	-0.162
Syracuse, NY	645	25158	16350	93400	1123	7.592	1.012	0.106
Tallahassee, FL	350	12234	8531	60250	1301	7.335	1.088	0.118
Tampa-St.Petersb-Clearwater, FL	2693	107575	83950	500500	1187	7.491	1.017	-0.836
Toledo, OH	652	25597	16875	95175	1159	7.571	1.014	0.062
Topeka, KS	228	8136	5129	30000	1323	7.423	1.067	0.466
Trenton-Ewing, NJ	364	22767	12400	102475	1238	7.774	0.913	0.413
Tucson, AZ	983	29976	23750	168500	1068	7.319	1.130	-0.211
Tulsa, OK	898	41612	24175	168250	1303	7.577	1.005	-0.122
Tuscaloosa, AL	203	7598	4863	32550	1269	7.434	1.070	0.566
Utica-Rome, NY	294	8256	7021	33325	1061	7.381	1.087	0.332
Vineland-Millville-Bridgeton, NJ	155	4726	4226	20825	1085	7.395	1.061	0.549
VirginiaBeach-Norf-Newp, VA-NC	1657	72609	42475	362500	1204	7.520	1.053	-0.356
Visalia-Porterville, CA	416	10626	8933	58875	1042	7.228	1.164	0.171
Waterloo-CedarFalls, IA	163	7018	4393	21725	1271	7.632	0.967	0.697
Wausau, WI	129	5379	4010	17800	1360	7.543	0.955	0.498
Wichita, KS	593	25810	16400	88275	1235	7.624	0.976	0.071
Winston-Salem, NC	457	21390	14225	64750	1269	7.697	0.916	0.128
Worcester, MA	781	26898	22275	143250	1178	7.352	1.078	-0.289
Yakima, WA	231	6877	5143	30400	1028	7.410	1.101	0.592
York-Hanover, PA	416	14247	10681	65325	1169	7.406	1.075	0.159
Youngstown-War-Boardm, OH-PA	573	17030	15000	66275	948	7.504	1.044	0.097