

Exploratory Cluster Analysis for Josie Schafer

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Cleaning Data

This first code block loads the data and performs any necessary cleaning, rescaling, etc.

I'm focusing primarily on broader demographic and institutional indicators for now, but also some more targeted variables that would likely help to explain disparate economic outcomes. For example, high-research universities granting PhDs or a higher number of community hospital beds. There are other variables that we could include that might be useful for some purposes (e.g. Medicare recipients by region) but I expect that these will be closely tracking other age-related demographic variables.

```
# Read in data and select relevant variables for clusters.
# Focus is on demographic and anchor institution variables.

# Read in raw data file
data <- readxl::read_xlsx(here("data/anchor regions analysis.xlsx"))

# List of variables to include in clustering
varlist <- c("totpop_19",
             "popchange",
             "real_gdp_21",
             "labfor",
             "pov",
             "poc",
             "highed",
             "forborn",
             "net_mig",
             "highered_emp_qcew",
             "highered_estab_qcew",
             "hospital_emp_qcew",
             "hospital_estab_qcew",
```

```

    "inst_ipeds_enrollment_all",
    "inst_ipeds_doctoralunihighrese",
    "inst_ipeds_pellawards",
    "inst_hosp_ahacommunityhospitals",
    "inst_hosp_ahabeds",
    "inst_hosp_nihresearchfunding")

# Rescale the variables from 0-1
data.clean <- data |>
  mutate(across(varlist, # Variables to scale
    ~.x/max(.x), # Scale relative to
    .names = "{col}_max")) |> # Add "max" suffix
  dplyr::select(MSA, ends_with("_max")) |> # select chosen vari
  column_to_rownames("MSA")

```

```

Warning: There was 1 warning in `mutate()`.
i In argument: `across(varlist, ~.x/max(.x), .names = "{col}_max")`.
Caused by warning:
! Using an external vector in selections was deprecated in tidysselect 1.1.0.
i Please use `all_of()` or `any_of()` instead.
# Was:
data %>% select(varlist)

# Now:
data %>% select(all_of(varlist))

```

See <<https://tidysselect.r-lib.org/reference/faq-external-vector.html>>.

Clustering Methods

Here I start with agglomerative/hierarchical clustering methods. The goal as I understand it is to find a happy medium number of groups that illustrates the variability across regions and anchor institutions while still being tractable for analyses.

The priority here is to construct clusters on the basis of 1) anchor institution characteristics, and 2) demographic characteristics of the surrounding region. For now I'll combine these into a single cluster, but we may want to think about constructing two clusters, one on the basis of demographic traits and the other on the basis of anchor institution traits. This would help parse out effects later if the client is interested in using these as predictors in subsequent regression analyses.

I'm going to create a few different clusters and we can compare the characteristics and performance of each, and then choose which one the client likes best.

```
distance <- dist(data.clean) # calculate Euclidian distance between obs

hc.tree <- hclust(distance, method = "average") # Create cluster groupings based on distance

# List of distances to use in generating clusters
cluster.size.list <- list("5" = 5,
                          "10" = 10,
                          "15" = 15,
                          "20" = 20,
                          "25" = 25,
                          "30" = 30)

cluster.ids <- map(
  .x = seq_along(cluster.size.list),
  .f = ~ cutree(hc.tree, k = cluster.size.list[[.x]])
) |>
  bind_cols()
```

New names:

```
* `` -> `...1`
* `` -> `...2`
* `` -> `...3`
* `` -> `...4`
* `` -> `...5`
* `` -> `...6`
```

```
names(cluster.ids) <- c("cluster_5", "cluster_10", "cluster_15", "cluster_20", "cluster_25", "cluster_30")

data.out <- data.clean |>
  bind_cols(cluster.ids)

table.out <- kbl(data.out, longtable = TRUE) |>
  kable_styling(font_size = 9) |>
  scroll_box(height = "600px")

table.out
```

	totpop_19_max	popchange_max	real_gdp_21_max	labfor_max
Bridgeport-Stamford-NorwalkCT	0.0489227	0.0187062	0.0495386	0.9037433
Virginia Beach-Norfolk-Newport NewsVA-NC	0.0913086	0.0260385	0.0551656	0.8930481
LimaOH	0.0053475	-0.0140466	0.0047577	0.8315508
Orlando-Kissimmee-SanfordFL	0.1300373	0.0896005	0.0865064	0.8582888
Pensacola-Ferry Pass-BrentFL	0.0253053	0.0418151	0.0123642	0.8048128
New Orleans-MetairieLA	0.0657076	0.0646487	0.0435803	0.8355615
SpartanburgSC	0.0159435	0.0464697	0.0093690	0.8221925
BismarckND	0.0066083	0.0916022	0.0042012	0.9491979
BillingsMT	0.0092811	0.0713106	0.0062377	0.8863636
HuntsvilleAL	0.0236860	0.0604353	0.0181842	0.8382353
Athens-Clarke CountyGA	0.0108041	0.0453603	0.0058690	0.8208556
JohnstownPA	0.0068937	-0.0355771	0.0026744	0.7339572
Hagerstown-MartinsburgMD-WV	0.0146752	0.0306810	0.0064328	0.8288770
HattiesburgMS	0.0087164	0.0917819	0.0036654	0.8101604
El PasoTX	0.0435610	0.0387597	0.0192853	0.8288770
ColumbiaSC	0.0427215	0.0472655	0.0247162	0.8582888
Kahului-Wailuku-LahainaHI	0.0086025	0.0000000	0.0052180	0.8930481
EvansvilleIN-KY	0.0163240	-0.0504403	0.0109535	0.8449198
Florence-Muscle ShoalsAL	0.0076358	0.0033593	0.0030579	0.7339572
WilmingtonNC	0.0149442	-0.0768353	0.0092775	0.8235294
East StroudsburgPA	0.0087089	0.0000000	0.0042460	0.8262032
MissoulaMT	0.0060800	0.0409968	0.0034269	0.9371658
WinchesterVA-WV	0.0071328	0.0428451	0.0042788	0.8328877
ReadingPA	0.0216658	0.0115467	0.0115861	0.8729947
ColumbusGA-AL	0.0165543	0.0441611	0.0083706	0.7981283
Lake Havasu City-KingmanAZ	0.0107646	0.0187710	0.0035250	0.6029412
Davenport-Moline-Rock IslandIA-IL	0.0197559	0.0051718	0.0127006	0.8475936
Des Moines-West Des MoinesIA	0.0352664	0.1012588	0.0317817	0.9572193
SpringfieldIL	0.0108409	0.0024838	0.0066837	0.8502674
Durham-Chapel HillNC	0.0324809	0.1241611	0.0317185	0.8636364
Omaha-Council BluffsNE-IA	0.0482931	0.0446070	0.0381353	0.9451872
LongviewWA	0.0055342	0.0239916	0.0030172	0.7526738
Austin-Round Rock-GeorgetownTX	0.1095893	0.1312995	0.1036072	0.9438503
Sioux CityIA-NE-SD	0.0074554	0.0063520	0.0051249	0.9264706
New BernNC	0.0064675	0.0000000	0.0032921	0.7794118
The VillagesFL	0.0064809	0.0000000	0.0027375	0.3008021
KankakeeIL	0.0057342	-0.0057283	0.0036816	0.8155080
North Port-Sarasota-BradentonFL	0.0416554	0.0687870	0.0228092	0.6818182
Providence-WarwickRI-MA	0.0838731	0.0042298	0.0496741	0.8703209
BakersfieldCA	0.0460055	0.0387153	0.0297355	0.7794118
AlbuquerqueNM	0.0472736	0.0254258	0.0257661	0.8155080
York-HanoverPA	0.0230932	0.0178266	0.0120477	0.8770053
San AngeloTX	0.0062629	0.0446797	0.0051926	0.8622995
Rapid CitySD	0.0071732	0.0546489	0.0038305	0.8970588
Sebring-Avon ParkFL	0.0053610	0.0000000	0.0015194	0.5655080
Lansing-East LansingMI	0.0283386	0.0787429	0.0153930	0.8475936
AnchorageAK	0.0206746	0.0363207	0.0144566	0.9264706
ReddingCA	0.0092884	0.0057215	0.0046898	0.7245989
Deltona-Daytona Beach-Ormond BeachFL	0.0334964	0.1329331	0.0129085	0.6951872

AbileneTX	0.0088456	0.0203918	0.0045748	0.8061497
TucsonAZ	0.0532391	0.0285551	0.0260376	0.7780749
BangorME	0.0078663	-0.0033292	0.0039473	0.8074866
Hilton Head Island-BlufftonSC	0.0111304	0.0000000	0.0057635	0.7553476
OwensboroKY	0.0061405	0.0188920	0.0033439	0.8168449
Vineland-BridgetonNJ	0.0078731	-0.0100233	0.0037212	0.7433155
FargoND-MN	0.0124608	0.0847837	0.0090638	1.0000000
Little Rock-North Little Rock-ConwayAR	0.0381987	0.0355376	0.0219965	0.8342246
State CollegePA	0.0083942	0.0305805	0.0049779	0.7660428
SumterSC	0.0072931	0.1404587	0.0028383	0.7606952
PeoriaIL	0.0210883	0.0359933	0.0120265	0.8181818
Raleigh-CaryNC	0.0690523	0.1077590	0.0575318	0.9237968
Mount Vernon-AnacortesWA	0.0065103	0.0395421	0.0042331	0.7981283
Shreveport-Bossier CityLA	0.0207118	0.0069953	0.0130787	0.7901070
Coeur d'AleneID	0.0081538	0.0731406	0.0040999	0.8155080
Greenville-AndersonSC	0.0464357	0.0000000	0.0269525	0.8302139
Utica-RomeNY	0.0151349	-0.0100587	0.0075049	0.7794118
FlintMI	0.0211397	-0.0255203	0.0092881	0.7794118
LongviewTX	0.0147607	0.1556925	0.0093224	0.7740642
DothanAL	0.0076837	0.0170196	0.0037891	0.7433155
MuncieIN	0.0059614	-0.0086929	0.0022943	0.7834225
Youngstown-Warren-BoardmanOH-PA	0.0280833	-0.0231205	0.0119895	0.7713904
CharlottesvilleVA	0.0111663	0.0404174	0.0080179	0.8382353
JonesboroAR	0.0068021	0.0491202	0.0032810	0.8302139
LubbockTX	0.0164025	0.0641127	0.0084513	0.8676471
Eau ClaireWI	0.0086765	0.0236502	0.0054128	0.8983957
MidlandTX	0.0090087	0.1385954	0.0247110	0.9438503
ManhattankS	0.0068895	0.0458608	0.0039708	0.9438503
ClarksvilleTN-KY	0.0155212	0.0598583	0.0074798	0.8596257
Barnstable TownMA	0.0110653	-0.0080466	0.0075599	0.7994652
Indianapolis-Carmel-AndersonIN	0.1051854	0.0798004	0.0833265	0.8997326
JacksonMI	0.0082219	-0.0079679	0.0039652	0.7606952
WacoTX	0.0139089	0.0741282	0.0077758	0.8034759
MercedCA	0.0140654	0.0362119	0.0056223	0.7981283
Watertown-Fort DrumNY	0.0058485	0.0000000	0.0035565	0.8516043
Prescott Valley-PrescottAZ	0.0118205	0.0394479	0.0045003	0.6417112
Harrisburg-CarlislePA	0.0295950	0.0237020	0.0229523	0.8743316
Huntington-AshlandWV-KY-OH	0.0187534	0.1142288	0.0089708	0.6898396
RockfordIL	0.0175366	-0.0115977	0.0087637	0.8609626
TexarkanaTX-AR	0.0077376	0.0484640	0.0030831	0.7219251
DaltonGA	0.0074613	0.0129510	0.0041852	0.8302139
Kennewick-RichlandWA	0.0150059	0.0941179	0.0092083	0.8462567
Oshkosh-NeenahWI	0.0088322	0.0143062	0.0062354	0.8703209
Baton RougeLA	0.0442784	0.0369634	0.0309110	0.8435829
MorgantownWV	0.0072124	0.0470245	0.0043003	0.7847594
SpringfieldMA	0.0362533	0.0053100	0.0189385	0.8302139
Urban HonoluluHI	0.0510422	0.0224090	0.0346371	0.8903743
Hanford-CorcoranCA	0.0078102	-0.0012518	0.0038003	0.7433155
GreeleyCO	0.0158257	0.1129301	0.0132560	0.9117647
SalisburyMD-DE	0.0209605	1.0000000	0.0128868	0.7673797

Twin FallsID	0.0056286	0.0000000	0.0031202	0.8783422
AlbanyGA	0.0076933	-0.0253333	0.0032598	0.7807487
South Bend-MishawakaIN-MI	0.0166754	0.0038367	0.0088023	0.8395722
Nashville-Davidson-Murfreesboro-FranklinTN	0.0970188	0.0940644	0.0852638	0.9171123
LynchburgVA	0.0135611	0.0227807	0.0058508	0.7901070
FlorenceSC	0.0106510	0.0043202	0.0056719	0.7754011
LawtonOK	0.0066144	0.0282533	0.0029133	0.8435829
AkronOH	0.0364795	0.0004695	0.0212972	0.8596257
BrunswickGA	0.0060847	0.0333964	0.0025362	0.7727273
MemphisTN-MS-AR	0.0694313	0.0129443	0.0437459	0.8569519
Fond du LacWI	0.0053175	0.0072981	0.0030247	0.8970588
FlagstaffAZ	0.0073221	0.0314650	0.0042889	0.8382353
Macon-Bibb CountyGA	0.0118950	-0.0031670	0.0060514	0.7500000
JacksonMS	0.0309796	0.0526819	0.0159006	0.8221925
SavannahGA	0.0200078	0.0653932	0.0129259	0.8810160
BeckleyWV	0.0061587	0.0000000	0.0024013	0.6590909
Blacksburg-ChristiansburgVA	0.0086443	0.0157346	0.0042442	0.7566845
Elizabethtown-Fort KnoxKY	0.0078217	0.1372909	0.0035421	0.8328877
Eugene-SpringfieldOR	0.0193498	0.0331056	0.0094549	0.7994652
JacksonvilleFL	0.0779287	0.0613469	0.0519045	0.8542781
College Station-BryanTX	0.0133734	0.0780859	0.0091943	0.8088235
Las Vegas-Henderson-ParadiseNV	0.1130910	0.0663377	0.0696255	0.8582888
Panama CityFL	0.0094412	0.0404274	0.0051877	0.8195187
Louisville/Jefferson CountyKY-IN	0.0651536	-0.0016478	0.0430108	0.8716578
Sierra Vista-DouglasAZ	0.0065236	0.0000000	0.0028079	0.6617647
TopekaKS	0.0120646	0.0026405	0.0068097	0.8529412
WilliamsportPA	0.0059256	-0.0077167	0.0036166	0.7994652
Punta GordaFL	0.0093845	0.0597093	0.0035078	0.5481283
SpringfieldOH	0.0069827	-0.0146378	0.0026623	0.8088235
NapaCA	0.0072365	0.0182445	0.0062956	0.8716578
StocktonCA	0.0384883	0.0449537	0.0188785	0.8074866
GadsdenAL	0.0053253	-0.0055590	0.0016246	0.7259358
BinghamtonNY	0.0125361	-0.0179395	0.0064344	0.7794118
LancasterPA	0.0280394	0.0255405	0.0170070	0.8850267
DuluthMN-WI	0.0149914	0.0172046	0.0082830	0.8315508
Idaho FallsID	0.0075415	0.0730896	0.0051195	0.8609626
Wausau-WestonWI	0.0084554	0.1009126	0.0058323	0.8997326
Oxnard-Thousand Oaks-VenturaCA	0.0439128	0.0207142	0.0304320	0.8770053
ValdostaGA	0.0075315	0.0348320	0.0032614	0.7794118
Spokane-Spokane ValleyWA	0.0285142	0.0845930	0.0164143	0.8088235
St. JosephMO-KS	0.0065394	0.0004980	0.0033900	0.7941176
Gulfport-BiloxiMS	0.0213595	0.3112659	0.0110508	0.8088235
HarrisonburgVA	0.0069221	0.0402907	0.0049878	0.8235294
Naples-Marco IslandFL	0.0192520	0.0755087	0.0120737	0.7018717
Charlotte-Concord-GastoniaNC-SC	0.1319337	0.2232080	0.1046383	0.8957219
AmarilloTX	0.0136712	0.0332966	0.0085750	0.8649733
Myrtle Beach-Conway-North Myrtle BeachSC-NC	0.0240480	0.3496211	0.0109094	0.7259358
Port St. LucieFL	0.0244639	0.0615276	0.0104479	0.7125668
Hickory-Lenoir-MorgantonNC	0.0190045	0.0048568	0.0086463	0.7954545
Las CrucesNM	0.0111986	0.0313387	0.0042838	0.7633690

ChicoCA	0.0117039	0.0144184	0.0050644	0.7540107
RochesterNY	0.0556061	0.0096332	0.0358390	0.8462567
NilesMI	0.0079886	-0.0086511	0.0043274	0.8195187
Lakeland-Winter HavenFL	0.0355660	0.0714801	0.0168641	0.7379679
GreenvilleNC	0.0092480	-0.0098801	0.0055025	0.8502674
WenatcheeWA	0.0061289	0.0409766	0.0037353	0.8315508
Kansas CityMO-KS	0.1101115	0.0273928	0.0814564	0.9117647
Santa Cruz-WatsonvilleCA	0.0141992	0.0291493	0.0093538	0.8529412
WorcesterMA-CT	0.0487886	0.0828583	0.0282983	0.8836898
RoanokeVA	0.0162229	0.0115331	0.0093921	0.8155080
StauntonVA	0.0063050	0.0000000	0.0029930	0.8008021
Jefferson CityMO	0.0078403	0.0103990	0.0045553	0.8221925
Kalamazoo-PortageMI	0.0136178	-0.0827968	0.0081921	0.8930481
Waterloo-Cedar FallsIA	0.0087879	0.0098405	0.0056866	0.9024064
Bremerton-Silverdale-Port OrchardWA	0.0137804	0.0329119	0.0073458	0.8328877
Canton-MassillonOH	0.0207179	-0.0060619	0.0107336	0.8342246
Kingsport-BristolTN-VA	0.0158880	-0.0015566	0.0076829	0.7165775
Terre HauteIN	0.0096872	0.0378606	0.0044373	0.7754011
Fort SmithAR-OK	0.0129457	-0.0666276	0.0056373	0.7606952
KnoxvilleTN	0.0442276	0.1075974	0.0272746	0.8061497
Chambersburg-WaynesboroPA	0.0079893	0.0000000	0.0035392	0.8422460
GettysburgPA	0.0053109	0.0000000	0.0021923	0.8422460
California-Lexington ParkMD	0.0058199	0.0000000	0.0044842	0.8943850
ColumbiaMO	0.0106441	0.0970354	0.0061617	0.8810160
Portland-South PortlandME	0.0275769	0.0161973	0.0201927	0.9064171
JacksonTN	0.0092485	0.2470867	0.0050315	0.7660428
Burlington-South BurlingtonVT	0.0113393	0.0197115	0.0081976	0.9237968
Portland-Vancouver-HillsboroOR-WA	0.1267612	0.0555955	0.0996053	0.8943850
PittsfieldMA	0.0065525	-0.0170293	0.0038691	0.8342246
Winston-SalemNC	0.0345293	0.1846730	0.0194456	0.8061497
MobileAL	0.0223204	0.0236692	0.0122856	0.7540107
ChattanoogaTN-GA	0.0288277	0.0321143	0.0177279	0.8114973
San Luis Obispo-Paso RoblesCA	0.0146243	0.0274153	0.0099475	0.7820856
Grand Rapids-KentwoodMI	0.0550627	0.1646184	0.0357518	0.9037433
GoldsboroNC	0.0064062	0.0127948	0.0029431	0.8061497
Salt Lake CityUT	0.0622488	0.0443392	0.0605816	0.9545455
WheelingWV-OH	0.0073325	-0.0203524	0.0059467	0.7352941
Fort CollinsCO	0.0178699	0.0808378	0.0127281	0.9010695
Santa Rosa-PetalumaCA	0.0259027	0.0238190	0.0177299	0.8716578
Battle CreekMI	0.0069561	-0.0092835	0.0040632	0.8008021
Glens FallsNY	0.0065249	-0.0098932	0.0038098	0.8114973
BendOR	0.0096532	0.0899698	0.0064084	0.8435829
BloomingtonIN	0.0086708	0.0015534	0.0042168	0.8235294
MansfieldOH	0.0062765	-0.0170023	0.0027246	0.7553476
WichitaKS	0.0330508	0.0203889	0.0213091	0.8863636
JacksonvilleNC	0.0101102	0.0670863	0.0050869	0.9451872
TulsaOK	0.0513389	0.0350124	0.0327020	0.8542781
Beaumont-Port ArthurTX	0.0204815	0.0120875	0.0132764	0.7620321
Crestview-Fort Walton Beach-DestinFL	0.0141004	0.2169119	0.0097313	0.8328877
Lafayette-West LafayetteIN	0.0118450	0.0687543	0.0065862	0.8569519

VallejoCA	0.0228995	0.0340260	0.0167644	0.8449198
Allentown-Bethlehem-EastonPA-NJ	0.0434124	0.0138284	0.0267813	0.8582888
Olympia-Lacey-TumwaterWA	0.0144971	0.0651423	0.0081678	0.8355615
MadisonWI	0.0338819	0.0755336	0.0299812	0.9598930
SheboyganWI	0.0059696	-0.0005709	0.0040479	0.8890374
Warner RobinsGA	0.0093630	0.1489507	0.0046155	0.8636364
MorristownTN	0.0073033	0.0196429	0.0031591	0.7473262
Albany-LebanonOR	0.0064811	0.0000000	0.0028299	0.7847594
Fort WayneIN	0.0210584	-0.0061376	0.0133064	0.8930481
LawrenceKS	0.0062345	0.0452320	0.0028281	0.9491979
Killeen-TempleTX	0.0230492	0.0635797	0.0112779	0.8502674
Rocky MountNC	0.0076022	-0.0115697	0.0039221	0.7914439
Santa Maria-Santa BarbaraCA	0.0230550	0.0303602	0.0178500	0.8569519
Provo-OremUT	0.0319676	0.1069773	0.0194795	0.9237968
SalinasCA	0.0224632	0.0279826	0.0163366	0.8168449
TallahasseeFL	0.0198089	0.0265578	0.0102517	0.8275401
BloomingtonIL	0.0089445	-0.0386946	0.0080863	0.8783422
ModestoCA	0.0281532	0.0288597	0.0137348	0.8155080
RacineWI	0.0101378	0.0019519	0.0046380	0.8529412
ClevelandTN	0.0063523	0.0334584	0.0027926	0.8048128
McAllen-Edinburg-MissionTX	0.0443229	0.0703991	0.0130616	0.7807487
MontgomeryAL	0.0193604	0.0035417	0.0104395	0.7941176
YumaAZ	0.0108565	0.0436377	0.0047055	0.7286096
GainesvilleFL	0.0167822	0.1057554	0.0093548	0.7727273
TuscaloosaAL	0.0129925	0.0758263	0.0069692	0.7633690
Daphne-Fairhope-FoleyAL	0.0110308	0.0000000	0.0048988	0.7713904
CincinnatiOH-KY-IN	0.1141139	0.0189977	0.0885918	0.8810160
Iowa CityIA	0.0088460	0.0651417	0.0060156	0.9505348
VisaliaCA	0.0239397	0.0332145	0.0108616	0.7901070
Ogden-ClearfieldUT	0.0343561	0.1138024	0.0183048	0.9157754
Hartford-East Hartford-MiddletownCT	0.0625926	0.0014052	0.0567219	0.8823529
JoplinMO	0.0092307	0.0140128	0.0042895	0.8409091
FarmingtonNM	0.0065571	-0.0034490	0.0032158	0.7580214
OdessaTX	0.0083226	0.0909561	0.0069430	0.9131016
EriePA	0.0141926	-0.0084866	0.0065160	0.8088235
Carbondale-MarionIL	0.0071303	0.0000000	0.0032229	0.7326203
AppletonWI	0.0122124	0.0261923	0.0084309	0.9451872
BurlingtonNC	0.0084649	0.0485028	0.0038059	0.8382353
KingstonNY	0.0092600	-0.0098864	0.0043182	0.8155080
Milwaukee-WaukeshaWI	0.0816422	0.0100692	0.0580802	0.8890374
Lexington-FayetteKY	0.0264663	0.0485799	0.0173092	0.8877005
Sebastian-Vero BeachFL	0.0079811	0.0598251	0.0041029	0.6377005
GainesvilleGA	0.0102967	0.0593573	0.0068742	0.8435829
Albany-Schenectady-TroyNY	0.0456476	0.0074781	0.0376708	0.8689840
LaredoTX	0.0141766	0.0605940	0.0080287	0.7994652
HammondLA	0.0068444	0.0000000	0.0025293	0.8114973
MonroeLA	0.0105450	0.0714996	0.0045433	0.7286096
Houma-ThibodauxLA	0.0108925	0.0076561	0.0049505	0.7834225
St. CloudMN	0.0102922	0.0294999	0.0063047	0.9598930
Trenton-PrincetonNJ	0.0190690	0.0041876	0.0224933	0.8609626

Ann ArborMI	0.0190212	0.0294189	0.0149273	0.8636364
LoganUT-ID	0.0071332	0.0662709	0.0038553	0.9171123
Weirton-SteubenvilleWV-OH	0.0061269	-0.0241670	0.0035192	0.7393048
Augusta-Richmond CountyGA-SC	0.0310775	0.0447136	0.0159407	0.7941176
El CentroCA	0.0093655	0.0330372	0.0052630	0.7005348
Lewiston-AuburnME	0.0055769	-0.0011392	0.0028880	0.8756684
Janesville-BeloitWI	0.0084042	0.0060036	0.0043738	0.8770053
Champaign-UrbanaIL	0.0117301	-0.0045392	0.0067560	0.8328877
Tampa-St. Petersburg-ClearwaterFL	0.1605588	0.0563589	0.0989311	0.8008021
Green BayWI	0.0165542	0.0241329	0.0115628	0.9157754
Cape Coral-Fort MyersFL	0.0382222	0.0950767	0.0201402	0.7032086
Fayetteville-Springdale-RogersAR	0.0266535	0.0676009	0.0175438	0.8649733
PuebloCO	0.0086027	0.0273562	0.0037591	0.7500000
LebanonPA	0.0072420	0.0280316	0.0036132	0.8622995
Cleveland-ElyriaOH	0.1066069	-0.0062457	0.0764993	0.8489305
Scranton-Wilkes-BarrePA	0.0287983	-0.0042796	0.0155666	0.8141711
Oklahoma CityOK	0.0716712	0.0590268	0.0496336	0.8716578
Bay CityMI	0.0053956	-0.0164441	0.0021442	0.7860963
Johnson CityTN	0.0104720	0.0141588	0.0046977	0.7566845
La Crosse-OnalaskaWI-MN	0.0070768	0.0149483	0.0047349	0.8983957
Manchester-NashuaNH	0.0214072	0.0148082	0.0172519	0.9371658
SalemOR	0.0219070	0.0446649	0.0108474	0.8195187
Grand JunctionCO	0.0078375	0.0275600	0.0038428	0.8315508
LafayetteLA	0.0253917	0.3655413	0.0122572	0.8302139
CharlestonWV	0.0136887	-0.0576315	0.0071000	0.6978610
Sherman-DenisonTX	0.0067903	0.0438626	0.0031209	0.8288770
Charleston-North CharlestonSC	0.0401419	0.0906513	0.0260422	0.8716578
Bowling GreenKY	0.0090440	0.1895905	0.0043723	0.8382353
Anniston-OxfordAL	0.0059405	-0.0094830	0.0026559	0.7580214
FayettevilleNC	0.0269045	0.1990821	0.0124124	0.8435829
BellinghamWA	0.0114449	0.0556021	0.0082230	0.8342246
OcalaFL	0.0183229	0.0358477	0.0065292	0.6216578
SyracuseNY	0.0338140	-0.0042606	0.0235976	0.8275401
SpringfieldMO	0.0239675	0.0357943	0.0121943	0.8141711
Sioux FallsSD	0.0134417	0.0759411	0.0123575	0.9933155
RochesterMN	0.0112968	0.0843872	0.0083775	0.9425134
RichmondVA	0.0657984	0.0121388	0.0506197	0.8863636
Homosassa SpringsFL	0.0075240	0.0000000	0.0025973	0.5347594
MuskegonMI	0.0089818	0.0001875	0.0035822	0.7887701
AltoonaPA	0.0063831	-0.0135196	0.0034945	0.7847594
IthacaNY	0.0053198	0.0088560	0.0035884	0.7927807
Lake CharlesLA	0.0108089	0.0271180	0.0084775	0.8141711
Dayton-KetteringOH	0.0416468	-0.0206522	0.0258240	0.8342246
Birmingham-HooverAL	0.0562515	-0.0118655	0.0363184	0.8195187
AshevilleNC	0.0235485	0.0401466	0.0124496	0.7914439
Greensboro-High PointNC	0.0394969	0.0327556	0.0234403	0.8288770
Elkhart-GoshenIN	0.0106020	0.0171753	0.0109669	0.8810160
BoulderCO	0.0167154	0.0489072	0.0182400	0.9171123
Corpus ChristiTX	0.0222112	0.0050044	0.0131986	0.8302139
Wichita FallsTX	0.0078114	-0.0006920	0.0038180	0.8221925

RenoNV	0.0238892	0.0463963	0.0178317	0.8877005
TylerTX	0.0117884	0.0519132	0.0069637	0.8128342
MedfordOR	0.0112248	0.0349828	0.0054816	0.7673797
YakimaWA	0.0129415	0.0244103	0.0062426	0.8288770
FresnoCA	0.0510267	0.0365554	0.0261645	0.8155080
St. GeorgeUT	0.0085938	0.1040651	0.0042105	0.7540107
DoverDE	0.0091581	0.0553306	0.0050861	0.8288770
Brownsville-HarlingenTX	0.0218545	0.0313385	0.0067202	0.7459893
Boise CityID	0.0368371	0.0821159	0.0227075	0.8676471
MonroeMI	0.0077602	-0.0087823	0.0033742	0.8114973
Auburn-OpelikaAL	0.0083523	0.0849890	0.0036902	0.8155080
Atlantic City-HammontonNJ	0.0137919	-0.0113394	0.0077622	0.8636364
ColumbusOH	0.1076882	0.0681885	0.0799346	0.9037433
San Antonio-New BraunfelsTX	0.1279239	0.0875406	0.0768500	0.8542781
Colorado SpringsCO	0.0374981	0.0709606	0.0227506	0.9037433
Yuba CityCA	0.0089389	0.0210395	0.0041402	0.7847594
ToledoOH	0.0333849	-0.0063880	0.0217194	0.8569519
Santa FeNM	0.0077377	0.0235133	0.0038055	0.7820856
AlexandriaLA	0.0079459	0.0024037	0.0034703	0.7379679
LincolnNE	0.0171206	0.0508122	0.0115482	0.9545455
Cedar RapidsIA	0.0139967	0.0266988	0.0105441	0.9197861
Buffalo-CheektowagaNY	0.0585758	-0.0027368	0.0389991	0.8342246
Norwich-New LondonCT	0.0138585	-0.0080095	0.0106411	0.8957219
Palm Bay-Melbourne-TitusvilleFL	0.0303462	0.0364759	0.0163059	0.7286096
Denver-Aurora-LakewoodCO	0.1498927	0.0761668	0.1342107	0.9545455
New Haven-MilfordCT	0.0444440	0.0004227	0.0298519	0.8729947
Minneapolis-St. Paul-BloomingtonMN-WI	0.1852164	0.0468162	0.1563846	0.9612299
Seattle-Tacoma-BellevueWA	0.2006466	0.0673847	0.2588965	0.9157754
Sacramento-Roseville-FolsomCA	0.1200348	0.0435131	0.0817537	0.8262032
PittsburghPA	0.1208365	-0.0050002	0.0884125	0.8409091
Miami-Fort Lauderdale-Pompano BeachFL	0.3156725	0.0490120	0.2135227	0.8422460
Phoenix-Mesa-ChandlerAZ	0.2467889	0.0732378	0.1637320	0.8395722
St. LouisMO-IL	0.1453901	0.0020248	0.0981776	0.8756684
Detroit-Warren-DearbornMI	0.2237895	-0.0028410	0.1511540	0.8355615
San Jose-Sunnyvale-Santa ClaraCA	0.1030280	0.0474572	0.2406815	0.9037433
Riverside-San Bernardino-OntarioCA	0.2363644	0.0475453	0.1072330	0.8074866
Atlanta-Sandy Springs-AlpharettaGA	0.3038433	0.0631448	0.2497078	0.8983957
Baltimore-Columbia-TowsonMD	0.1449517	0.0185788	0.1158555	0.8943850
San Diego-Chula Vista-CarlsbadCA	0.1718686	0.0426375	0.1407384	0.8823529
San Francisco-Oakland-BerkeleyCA	0.2436651	0.0471966	0.3612064	0.9024064
Washington-Arlington-AlexandriaDC-VA-MD-WV	0.3211625	0.0631963	0.3198561	0.9572193
Houston-The Woodlands-Sugar LandTX	0.3567976	0.0903191	0.2898129	0.8917112
Dallas-Fort Worth-ArlingtonTX	0.3794223	0.0831880	0.3215611	0.9197861
Boston-Cambridge-NewtonMA-NH	0.2504554	0.0335453	0.2780320	0.9251337
Philadelphia-Camden-WilmingtonPA-NJ-DE-MD	0.3150749	0.0124359	0.2501160	0.8729947
Chicago-Naperville-ElginIL-IN-WI	0.4928210	0.0057969	0.3942262	0.8930481
Los Angeles-Long Beach-AnaheimCA	0.6867136	0.0181394	0.5944476	0.8676471
New York-Newark-Jersey CityNY-NJ-PA	1.0000000	0.0139305	1.0000000	0.8649733