EBOOK
STREETLIGHT
2020
U.S. Transportation
Climate Impact
Index

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Top Ten

I. Top Ten

COVID-19 had an unprecedented impact on transportation. Unemployment increased, as did working from home, along with ecommerce and restaurant delivery. Transit and airplane travel shrank, but more people rode bikes and walked outdoors. Some city dwellers fled to more spacious locations, and significant numbers of college students left campus and adopted remote learning.

The pandemic continues to wreak financial, medical, and social havoc on the world, but travel shutdowns in the U.S. gave us a peek at what might be possible: A healthy economy and population, but with less driving, and more bicycle and pedestrian travel.

For the 2020 U.S. Transportation Climate Impact Index, our data scientists analyzed six factors involved in transportation emissions. We ranked the 100 largest metro areas in the U.S. by how well (and how badly) they are managing those factors.

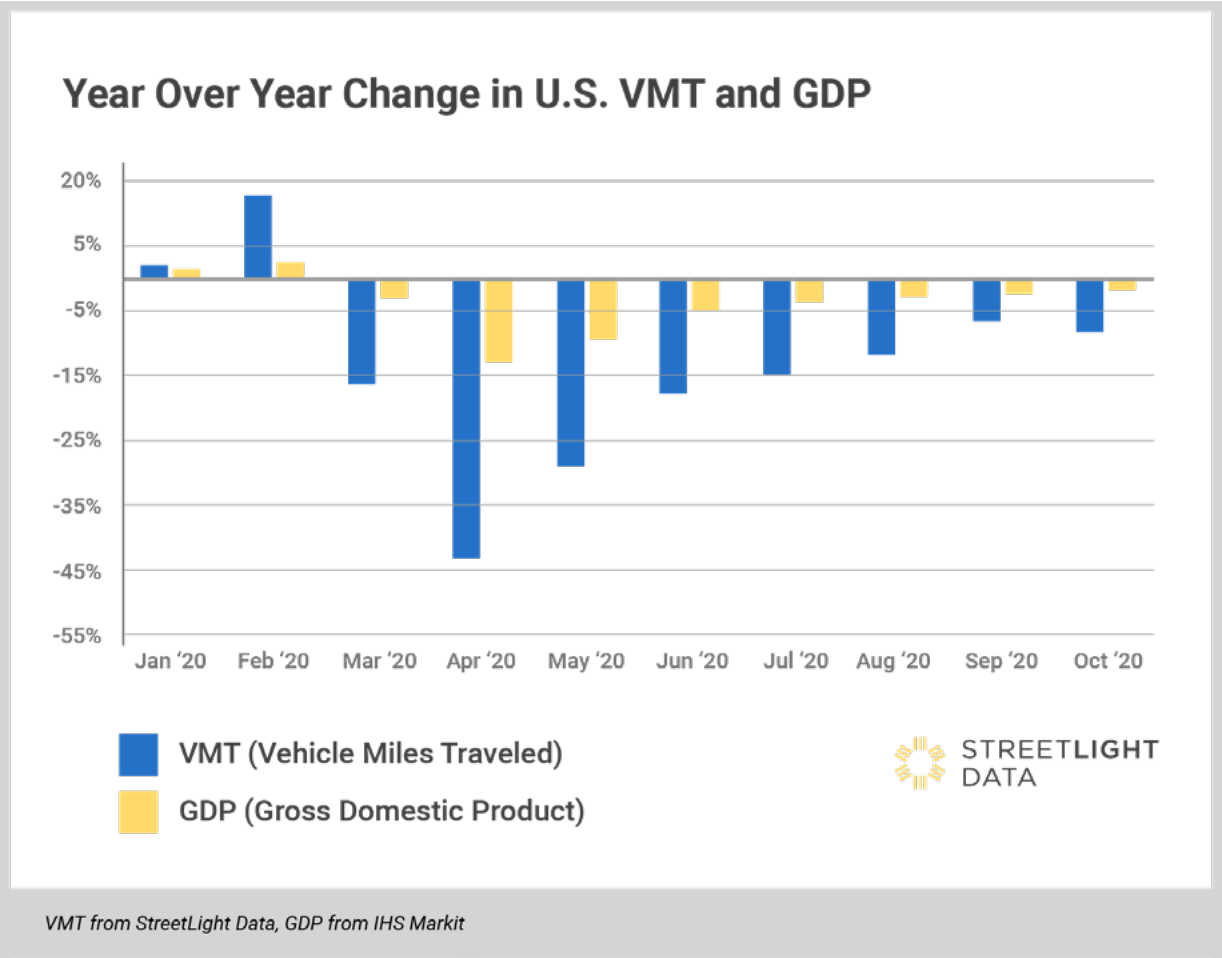
Our analysis uncovered three key takeaways from 2020.

> 2020 VMT dropped to unprecedented lows, but GDP didn't follow suit

Driving an Economic Growth Aren't Connected

We saw 2020 VMT drop to unprecedented lows, but GDP didn't follow suit, suggesting that decoupling VMT and GDP is possible. Encouragingly, the UN also noted that emissions have already peaked in GDP growth countries, indicating that VMT can drop while economic growth continues.

"Many OECD economies have had a peak in greenhouse gas emissions, with efficiency improvements and growth in low-carbon energy sources more than offsetting the growth in economic activity," notes the United Nations in the Emissions Gap Report 2020, again suggesting a decoupled future.



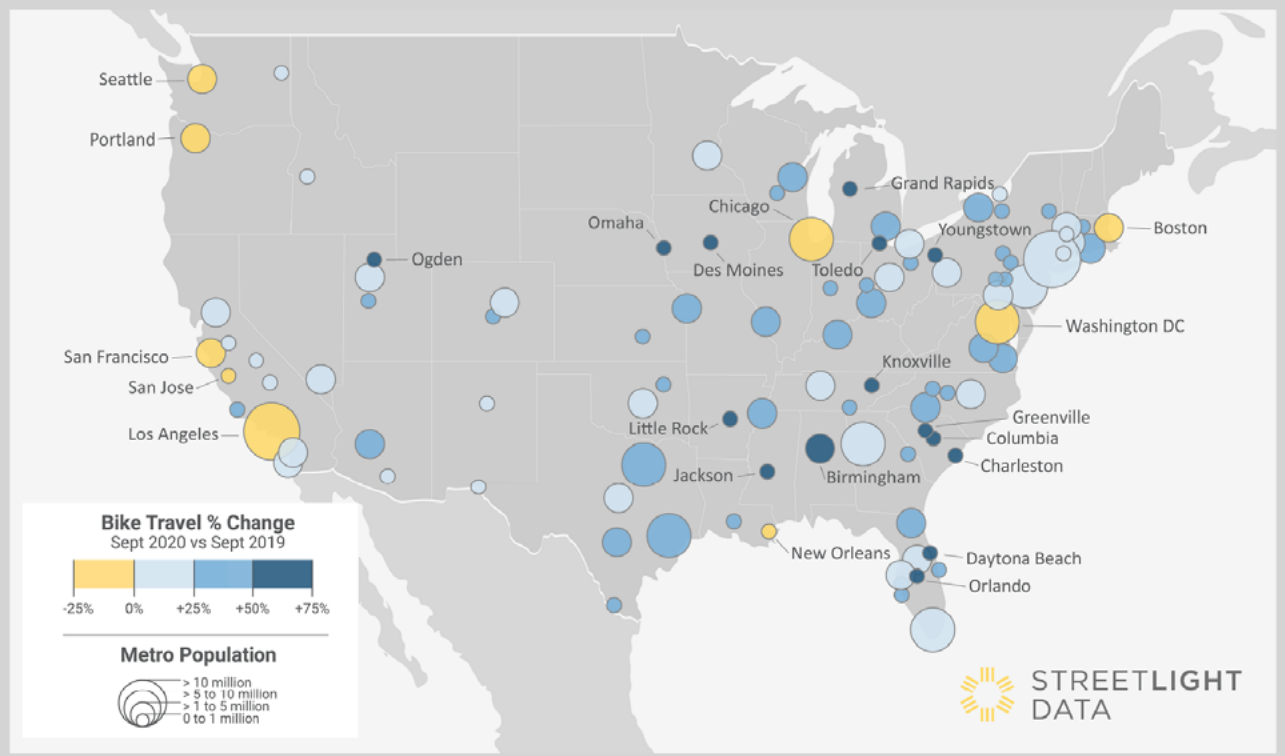
VMT from StreetLight Data, GDP from IHS Markit

Active Transportation Plays a Larger Role

Many metro areas across the U.S. saw bicycles and pedestrians become more active in 2020. Although cycling activity increased in many areas, it actually dropped in many major cities – most notably in cities with a history of very active bike commuting. This isn't surprising for a year with widespread work-from-home mandates.

Our analysis found that even in those cities, bicycling did not drop as much as driving. This indicates that bike riding took up a larger share of total miles traveled in 2020.

Four of our Top 10 made it to the list on the strength of relatively high bike travel, and three of those also have Top 10 pedestrian travel.

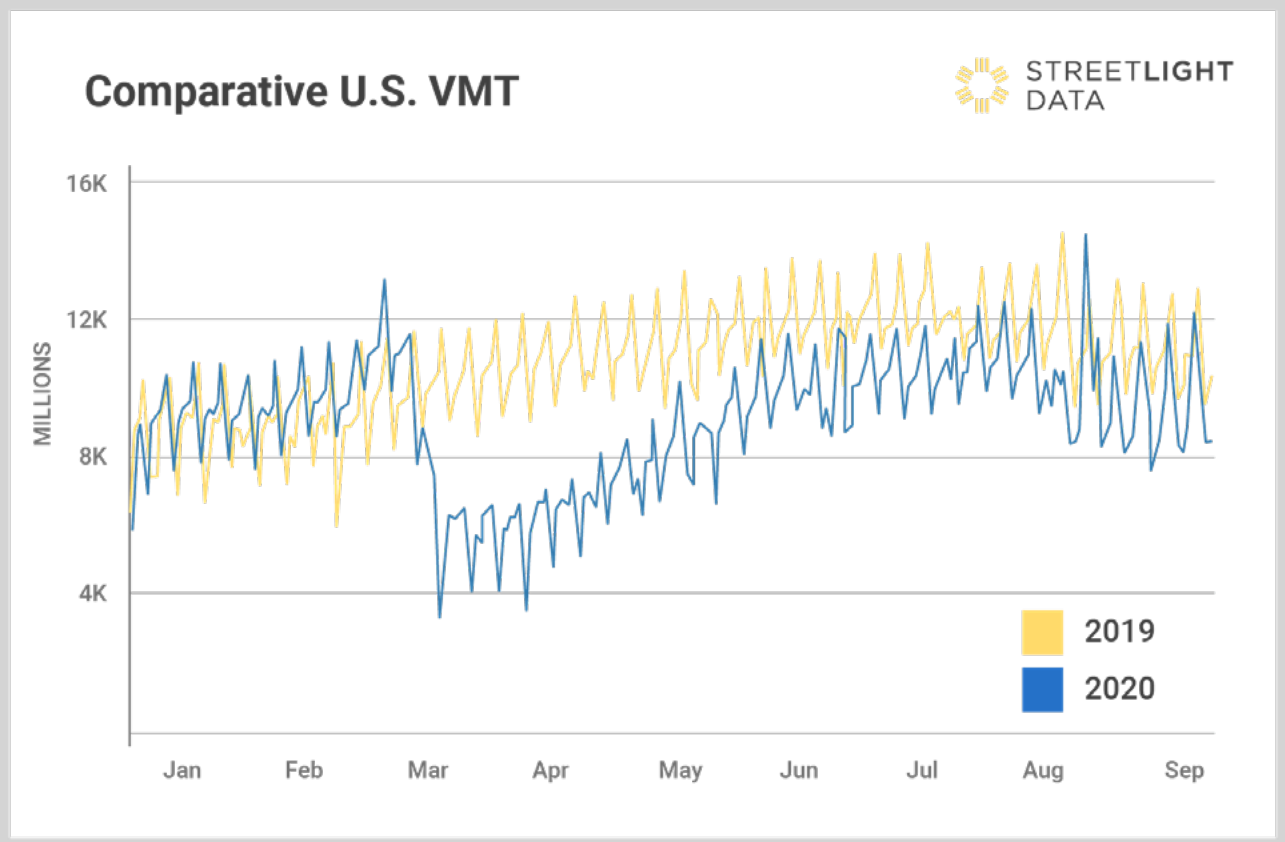


Source: StreetLight Data

Work-From-Home Isn't a Silver Bullet

Although widespread work-from-home policies were still in place at the end of 2020, the fall in commuting did not translate to permanent or drastically lower amounts of driving. In fact, by August, VMT had begun to climb back to pre-pandemic levels, albeit with peak traffic spread over more hours during the day.

Our analysis of hourly vehicle volume for major metros captured the reduction of peak AM rush hour. We saw similar travel patterns from Chicago, Los Angeles, Washington, D.C., and San Francisco: less driving from 6:00 to 9:00 am compared to 2019, with more comparative volume midday, building to a longer afternoon rush hour.



Source: StreetLight Data

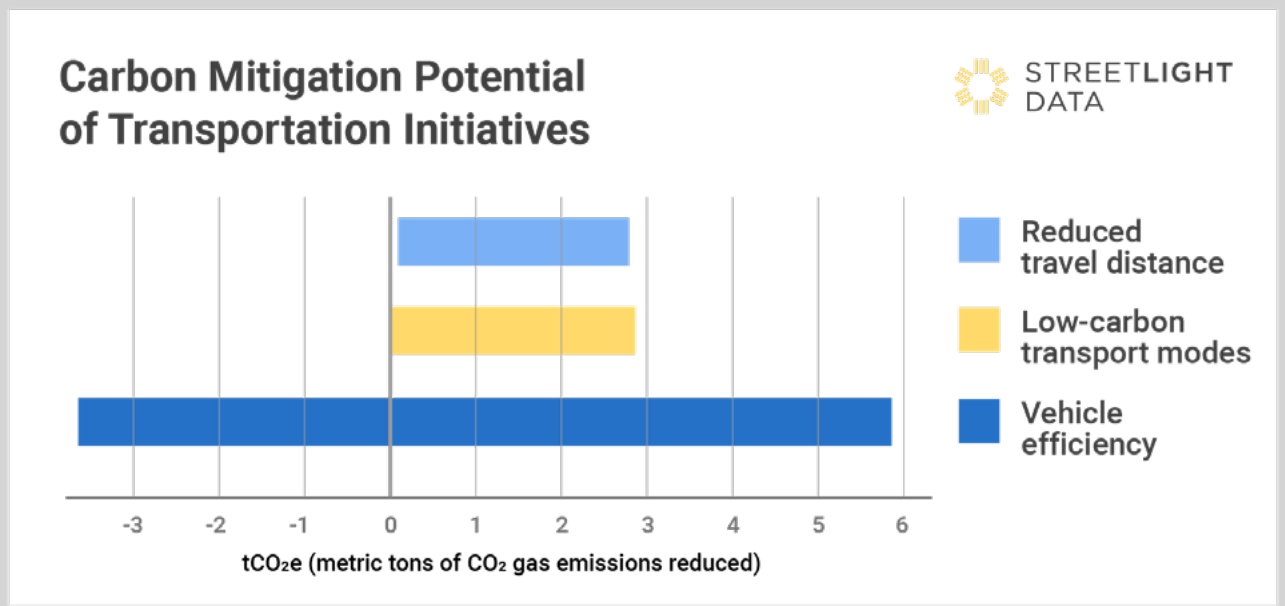
Work-from-home policies did not translate to permanently lower amounts of driving

Where We See Potential for Change

Given the potential for decoupling economic growth from VMT, now is the time to create more financial and other incentives for reducing climate impact. If we don't build that into our economic recovery, we risk obliterating any short-term gains made during COVID-19 travel shutdowns.

Transportation has the potential to move the needle. As noted in the Emissions Gap Report 2020, reduced travel distance and low-carbon travel modes could lower emissions by nearly six metric tons per year. Vehicle efficiency has the power to either increase emissions by three metric tons or decrease it by almost six metric tons annually.

One of the most encouraging 2020 takeaways: In 2020, many cities moved quickly to adjust transportation infrastructure to help citizens and businesses. This included closing streets to vehicles, opening sidewalks for restaurant seating, and adjusting parking options for delivery services. Cities should incorporate this "rapid planning" stance long-term, as transportation technology, behaviors, and economics will continue to evolve rapidly.



Source: Emissions Gap Report 2020, the United Nations.

While working from home for white-collar workers didn't eliminate huge amounts of VMT, it did open up the possibility of reduced commute driving. For example, if companies permanently adopt a one-day-a-week work-from-home policy (as StreetLight has for years), it could reduce their commute VMT by 20%.

In addition, while we don't explicitly measure air travel in this report, the reduction in business travel was massive. Fewer conferences and meetings, or a few more virtual conferences instead of thousands of people flying to be together, can also lead to significant transportation emission reductions from white-collar business travel while, perhaps, improving productivity.

The bicycling boom could contribute to both lower emissions and economic recovery, argues a recent study from Portland State University[1]. The study of active transportation in six cities found that bike- and pedestrian-friendly street improvements had either positive impacts on the corridor's economic and business performance (by boosting business and employment), or nonsignificant impacts.

> The bicycling boom could contribute to both lower emissions and economic recovery

This year's StreetLight Top 10 captures some pandemic-related shifts that affected transportation emissions, but not others (see the Methodology for more details). We look forward to seeing which of these cities can keep transportation emissions low while the economy recovers in 2021.

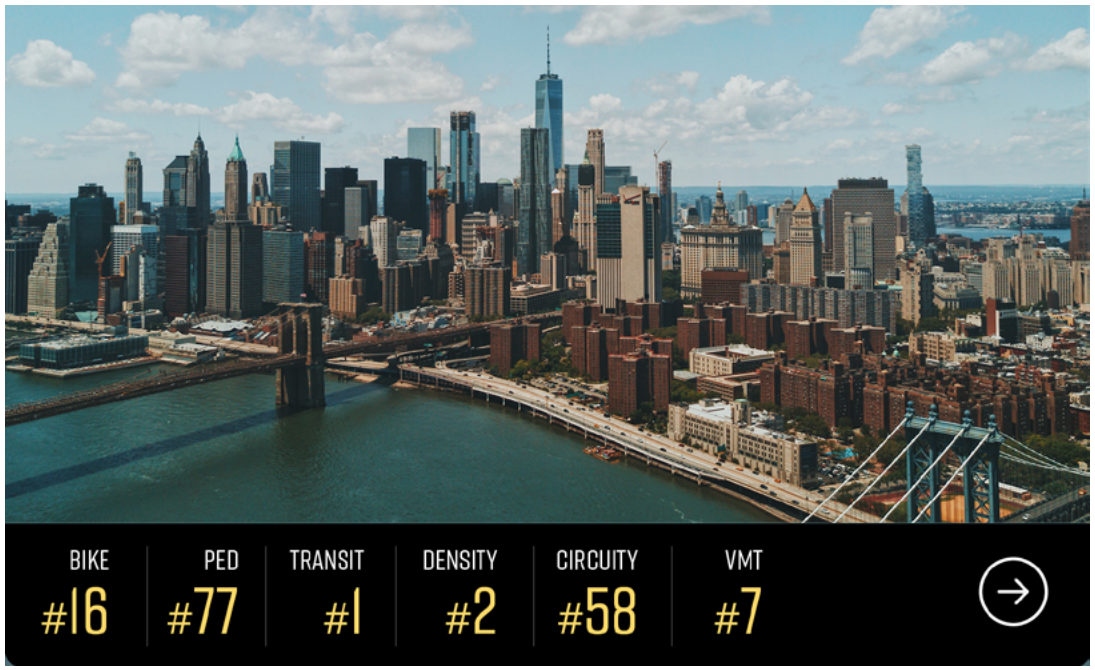
THE STREETLIGHT TOP TEN

Scroll to go deeper with more insights on our top ten cities.

1. Understanding Economic and Business Impacts of Street Improvements for Bicycle and Pedestrian Mobility – A Multi-City Multi-Approach Exploration, National Institute for Transportation and Communities, 2019.

The StreetLight Top 10

1. New York-Newark-Jersey City, NY-NJ-PA



For a second year, the New York metro area tops our list, but for very different reasons. In 2019, New York ranked first or second in bike, pedestrian, and transit miles traveled. Those scores vaulted it into our top slot despite an abysmal VMT ranking of #80, compared to the other CBSAs.

In 2020, New York's driving ground to a halt during the pandemic, placing it near the top of our VMT rankings. Transit activity per capita remained high, but bike and pedestrian activity slid farther down in our rankings, as compared to other cities in 2020.

Despite the fluctuations, New York remains an example of how cities can score well in our Index by adjusting a variety of factors, not just VMT. It's important to note that New York City experienced significant population shifts during 2020, which may have elevated its scores (see our Methodology for more information).

2. North Port-Sarasota-Bradenton, FL

Florida has several cities on this year's list, and Sarasota's debut on the Top 10 illustrates how quickly a few tweaks can affect an area's rank in our Index. Last year, Sarasota ranked #19 overall, with middle-of-the-road scores for all factors.

In 2020, Sarasota-area residents took advantage of the beautiful climate to engage in a lot of biking and walking. Sarasota tops our list for cycling activity, and places 4th for pedestrian travel. Those high scores combined with a top-third VMT rank boost Sarasota into second place on our overall list.

3. Portland-Vancouver-Hillsboro, OR-WA

Last year Portland's indexed VMT ranking was in the bottom quarter of the list but rose to #15 this year. At the same time, relative cycling activity in Portland rose a few rankings in 2020. The overall combination is enough to rate this city highly transportation climate-impact friendly.

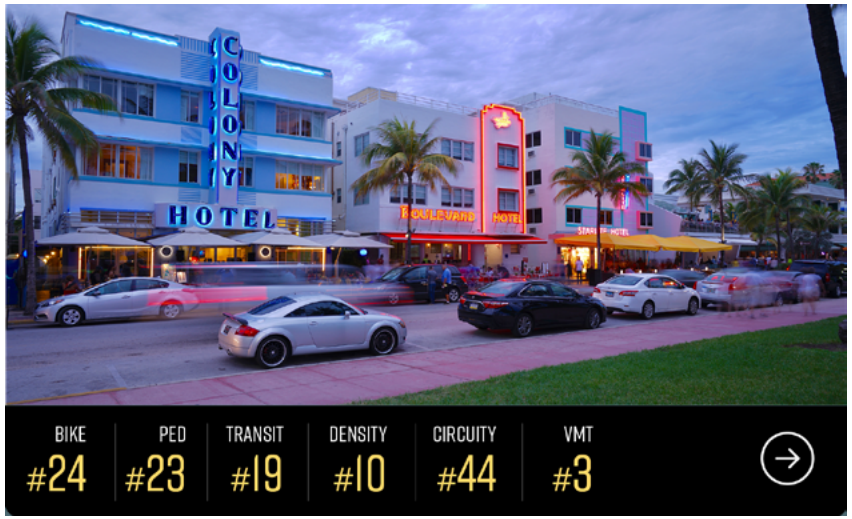
4. Cape Coral-Ft Myers, FL

Cape Coral just missed making our Top 10 last year, but small adjustments in 2020 popped it up in the overall rankings. The city's bicycle and pedestrian activity ranks higher this year compared to its peers. Ironically, VMT activity ranks slightly worse than in 2019, showing how our indexed transportation scores can be affected by a mix of initiatives rather than a single factor.

5. San Francisco-Oakland-Hayward, CA

Last year's number two city drops in our overall rankings, largely because other cities caught up on bike and pedestrian scores. As in New York, San Francisco's VMT ranking improved markedly in 2020 because people stopped driving. But relative to other cities, Bay Area residents didn't ride bikes or walk quite as much in 2020.

6. Miami-Fort Lauderdale-West Palm Beach, FL



Miami made a remarkable jump compared to last year, largely on the strength of an impressive improvement in VMT ranking. In the worst 20 of last year's VMT ranking, Miami places third-best this year, possibly related to a drop in tourism. Although the metro area's bike and pedestrian rankings were worse this year compared to 2019, that giant drop in driving makes up for it.

7. Colorado Springs, CO

Last year, Colorado Springs was in or near the bottom half of our rankings for every single factor. But in 2020 it vaulted into the best 10 cities for both bike and pedestrian activity. Those scores and a slightly better VMT ranking helped this metro area move from an overall bottom third ranking to Top 10.

8. San Diego-Carlsbad, CA

San Diego made the largest jump of any city on our entire list. Last year, it was the fifth-worst metro area compared to its peers. This year, San Diego stands out with the second-lowest VMT/capita on our list. Not only did residents reduce driving in 2020, but they kept using public transportation, preserving San Diego's already-healthy transit ranking.

9. Minneapolis-St. Paul-Bloomington, MN-WI

Another city where residents did an impressive job to reduce driving during the pandemic, the Minneapolis metro area rose from #95 for VMT/capita last year to #19 in 2020. The rest of its rankings remained almost unchanged from 2019, but Minneapolis stands out for dropping VMT/capita so markedly compared to its 2020 peers.

10. Seattle-Tacoma-Bellevue, WA

Seattle's densely populated metro area with high transit use had the potential to place higher than #63 last year, but drivers relegated it to #85 on our VMT/capita ranking. This year, curtailed driving made a big difference, with Seattle jumping to #14 on VMT/capita ranking. Moderate bike and pedestrian scores helped Seattle break into the Top 10.

REGIONAL RANKINGS

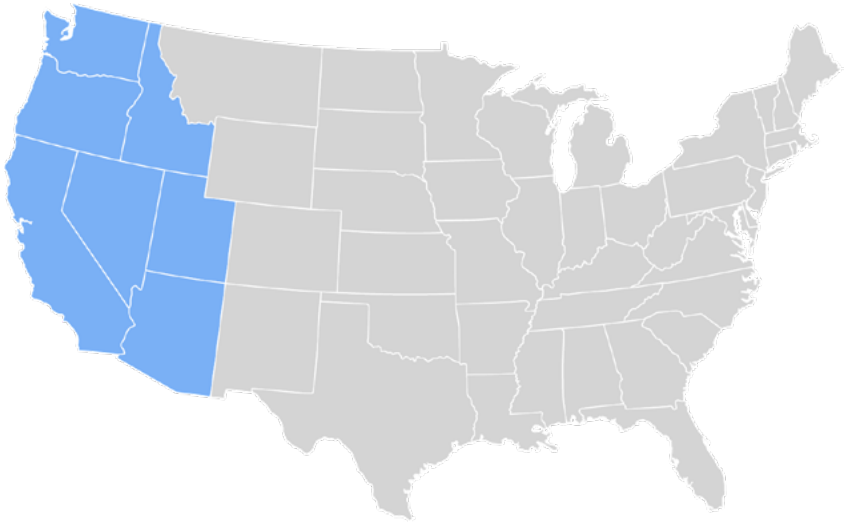
Learn more about the top 100 cities ranked by region.

Regional Rankings

II. Regional Rankings

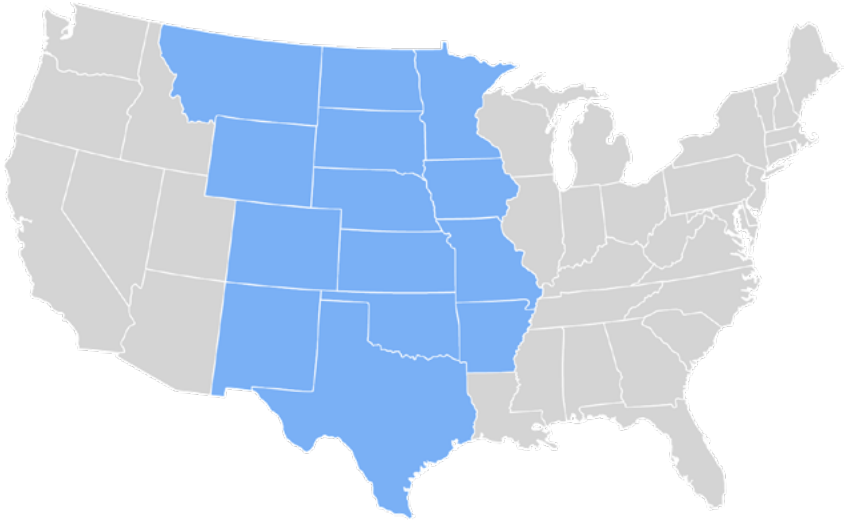
The top 100 metro areas ranked by regions: West, Central, Mid, and East.

West



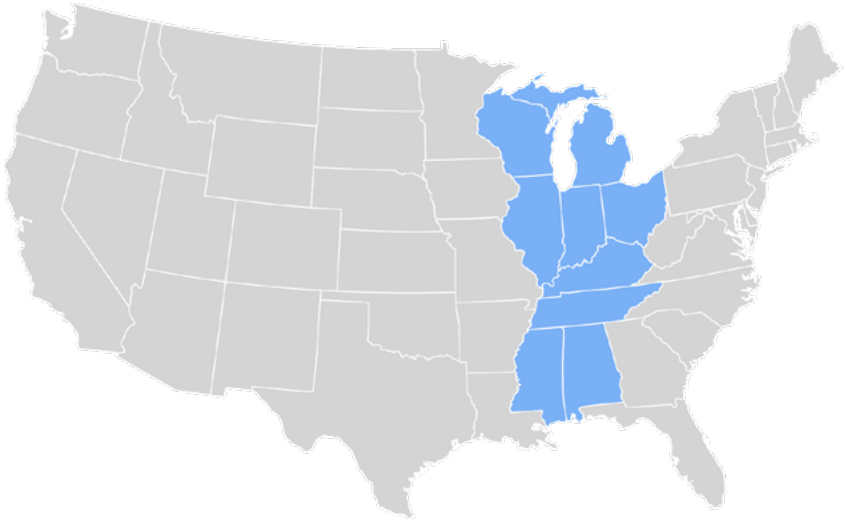
#3 Portland-Vancouver-Hillsboro, OR-WA
#5 San Francisco-Oakland-Hayward, CA
#8 San Diego-Carlsbad, CA
#10 Seattle-Tacoma-Bellevue, WA
#12 Los Angeles-Long Beach-Anaheim, CA
#14 San Jose-Sunnyvale-Santa Clara, CA
#16 Spokane-Spokane Valley, WA
#17 Fresno, CA
#18 Boise City, ID
#20 Provo-Orem, UT
#21 Sacramento–Roseville–Arden-Arcade, CA
#22 Phoenix-Mesa-Scottsdale, AZ
#23 Salt Lake City, UT
#24 Ogden-Clearfield, UT
#38 Tucson, AZ
#43 Las Vegas-Henderson-Paradise, NV
#72 Bakersfield, CA
#74 Oxnard-Thousand Oaks-Ventura, CA
#88 Riverside-San Bernardino-Ontario, CA
#91 Stockton-Lodi, CA

Central



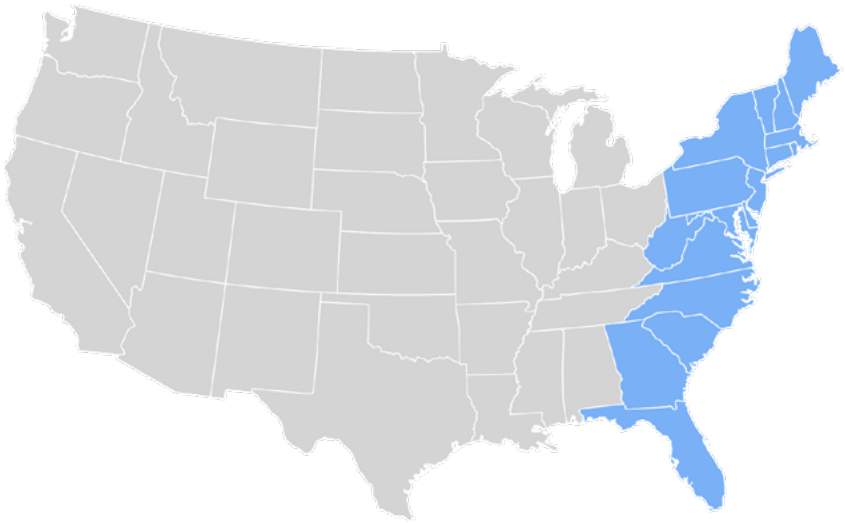
#7	Colorado Springs, CO
#9	Minneapolis-St. Paul-Bloomington, MN-WI
#13	Denver-Aurora-Lakewood, CO
#15	Grand Rapids-Wyoming, MI
#29	Wichita, KS
#32	Austin-Round Rock, TX
#36	McAllen-Edinburg-Mission, TX
#37	Omaha-Council Bluffs, NE-IA
#41	Albuquerque, NM
#42	New Orleans-Metairie, LA
#44	El Paso, TX
#45	Des Moines-West Des Moines, IA
#55	St. Louis, MO-IL
#58	Kansas City, MO-KS
#71	Houston-The Woodlands-Sugar Land, TX
#76	Oklahoma City, OK
#78	Memphis, TN-MS-AR
#82	San Antonio-New Braunfels, TX
#83	Tulsa, OK
#89	Little Rock-North Little Rock-Conway, AR
#90	Dallas-Fort Worth-Arlington, TX
#94	Baton Rouge, LA

Mid



#9 Minneapolis-St. Paul-Bloomington, MN-WI
#28 Milwaukee-Waukesha-West Allis, WI
#31 Chicago-Naperville-Elgin, IL-IN-WI
#39 Detroit-Warren-Dearborn, MI
#54 Cleveland-Elyria, OH
#55 St. Louis, MO-IL
#56 Chattanooga, TN-GA
#58 Kansas City, MO-KS
#59 Louisville/Jefferson County, KY-IN
#61 Cincinnati, OH-KY-IN
#63 Youngstown-Warren-Boardman, OH-PA
#64 Akron, OH
#68 Madison, WI
#75 Indianapolis-Carmel-Anderson, IN
#78 Memphis, TN-MS-AR
#79 Toledo, OH
#86 Dayton, OH
#87 Knoxville, TN
#93 Columbus, OH
#95 Jackson, MS
#98 Nashville-Davidson–Murfreesboro–Franklin, TN
#100 Birmingham-Hoover, AL

East



#1 New York-Newark-Jersey City, NY-NJ-PA
#2 North Port-Sarasota-Bradenton, FL
#4 Cape Coral-Fort Myers, FL
#6 Miami-Fort Lauderdale-West Palm Beach, FL
#11 Deltona-Daytona Beach-Ormond Beach, FL
#19 Philadelphia-Camden-Wilmington, PA-NJ-DE-MD
#25 Tampa-St Petersburg-Clearwater, FL
#26 Rochester, NY
#27 Buffalo-Cheektowaga-Niagara Falls, NY
#30 Boston-Cambridge-Newton, MA-NH
#33 Washington-Arlington-Alexandria, DC-VA-MD-WV
#34 Virginia Beach-Norfolk-Newport News, VA-NC
#35 Palm Bay-Melbourne-Titusville, FL
#40 Orlando-Kissimmee-Sanford, FL

#46 Providence-Warwick, RI-MA
#47 Lakeland-Winter Haven, FL
#48 Lancaster, PA
#49 Baltimore-Columbia-Towson, MD
#50 Allentown-Bethlehem-Easton, PA-NJ
#51 Springfield, MA
#52 Augusta-Richmond County, GA-SC
#53 Pittsburgh, PA
#56 Chattanooga, TN-GA
#57 Bridgeport-Stamford-Norwalk, CT
#60 Charleston-North Charleston, SC
#62 Greenville-Anderson-Mauldin, SC
#63 Youngstown-Warren-Boardman, OH-PA
#65 New Haven-Milford, CT
#66 Scranton–Wilkes-Barre–Hazleton, PA
#67 Hartford-West Hartford-East Hartford, CT
#69 Worcester, MA-CT
#70 Syracuse, NY
#73 Albany-Schenectady-Troy, NY
#77 Atlanta-Sandy Springs-Roswell, GA
#80 Jacksonville, FL
#81 Columbia, SC
#84 Harrisburg-Carlisle, PA
#85 Winston-Salem, NC
#92 Richmond, VA
#96 Greensboro-High Point, NC
#97 Charlotte-Concord-Gastonia, NC-SC
#99 Raleigh, NC

Best & Worst

III. Best & Worst

Our annual “Best and Worst” rankings look at the Top 10 and Bottom 10 cities by individual factors. Which do a great job at keeping vehicle travel per capita low? Which cities stand out for impressive amounts of cycling activity? Which ones benefit from excellent planning, resulting in low circuity and high population density? And which can do better on mitigating transportation-related greenhouse gas emissions?

All of our metrics are based on per-capita normalization. We know that residents of many CBSAs, most notably New York City, left the urban core during the pandemic, relocating for long periods of time to other areas. Any city that lost actual population will get an extra boost in scores that are per capita. This will improve VMT ranking but damage bicycle or transit rankings. See the Methodology for more details of our analysis, including adjustments for COVID-19 population shifts.

VEHICLE MILES TRAVELED (VMT)

BICYCLE TRAVEL

PEDESTRIAN TRAVEL

TRANSIT

CIRCUITY

DENSITY

Vehicle Miles Traveled (VMT)

One of the most commonly used metrics in the transportation industry, annual VMT captures how many total miles motorized vehicles in a city travel each year. VMT for specific roadways is used to estimate demand for services like maintenance and traffic signals, and prioritize infrastructure updates like bike lanes or new road paint.

VMT is the dominant metric in our Index as vehicles directly cause emissions (transit vehicles cause them too, but drastically fewer). To normalize between metro areas, we divided the total VMT by the population (as measured in the 2018 Census – for more on the implications of this population measure during 2020, see the Methodology). We refer to this VMT/capita ratio as our VMT ranking.

In the top metro areas on our VMT ranking, residents drove less in 2020 than their counterparts in other metro areas. Here is where more residents stayed close to home during the pandemic.

Lowest (Best) VMT per Capita

1. Fresno, CA
2. San Diego-Carlsbad, CA
3. Miami-Fort Lauderdale-West Palm Beach, FL
4. El Paso, TX
5. Los Angeles-Long Beach-Anaheim, CA
6. San Jose-Sunnyvale-Santa Clara, CA
7. New York-Newark-Jersey City, NY-NJ-PA
8. Buffalo-Cheektowaga-Niagara Falls, NY
9. San Francisco-Oakland-Hayward, CA
10. Rochester, NY

Highest (Worst) VMT per Capita

1. Raleigh, NC
2. Nashville-Davidson–Murfreesboro–Franklin, TN
3. Birmingham-Hoover, AL
4. Charlotte-Concord-Gastonia, NC-SC
5. Columbus, OH
6. Jacksonville, FL
7. Madison, WI
8. Dallas-Fort Worth-Arlington, TX
9. Greensboro-High Point, NC
10. Orlando-Kissimmee-Sanford, FL

Bicycle Travel

Bicycling does not directly reduce (or increase) greenhouse gas emissions. However, we include it for two reasons: Bicycle trips can replace car trips, and a rise in bicycle activity may indicate a less VMT-centric future as it relates to reduced driving and improved density.

Last year we incorporated only bicycle and pedestrian trips that occurred during commute times, assuming that recreational biking does not displace car miles and related emissions. However, in 2020 the concept of commuting started to lose meaning. Instead, we counted all cycling and pedestrian activity on all days – which means cities that saw a drastic drop in bike commuting didn't necessarily score high here.

Most Bicycle Travel per Capita

1. North Port-Sarasota-Bradenton, FL
2. Cape Coral-Fort Myers, FL
3. Colorado Springs, CO
4. Portland-Vancouver-Hillsboro, OR-WA
5. Deltona-Daytona Beach-Ormond Beach, FL
6. Des Moines-West Des Moines, IA
7. Denver-Aurora-Lakewood, CO
8. Tucson, AZ
9. Palm Bay-Melbourne-Titusville, FL
10. Tampa-St. Petersburg-Clearwater, FL

Least Bicycle Travel per Capita

1. Jackson, MS
2. El Paso, TX
3. Springfield, MA
4. Worcester, MA-CT
5. Bridgeport-Stamford-Norwalk, CT
6. Greensboro-High Point, NC
7. Hartford-West Hartford-East Hartford, CT
8. Albany-Schenectady-Troy, NY
9. New Haven-Milford, CT
10. Winston-Salem, NC

Pedestrian Travel

Pedestrian activity does not directly reduce (or increase) greenhouse gas emissions. However, we include it because a) walking trips can replace some car trips and b) a rise in walking may indicate a less VMT-centric future as it relates to reduced driving and improved density. Not surprisingly, half of our top pedestrian activity cities overlap with our top bike list. We also aren't surprised to see that all but one of our Top 10 are in warm climates, where residents would be more inclined to get outside year-round, and our Bottom 10 include some of the coldest winter parts of the country.

Most Pedestrian Travel per Capita

1. Orlando-Kissimmee-Sanford, FL
2. Cape Coral-Fort Myers, FL
3. Palm Bay-Melbourne-Titusville, FL
4. North Port-Sarasota-Bradenton, FL
5. Tampa-St. Petersburg-Clearwater, FL
6. Deltona-Daytona Beach-Ormond Beach, FL
7. Las Vegas-Henderson-Paradise, NV
8. Lakeland-Winter Haven, FL
9. Colorado Springs, CO
10. Austin-Round Rock, TX

Least Bicycle Travel per Capita

1. Bridgeport-Stamford-Norwalk, CT
2. Jackson, MS
3. Worcester, MA-CT
4. New Haven-Milford, CT
5. Albany-Schenectady-Troy, NY
6. Scranton–Wilkes-Barre–Hazleton, PA
7. Hartford-West Hartford-East Hartford, CT
8. Providence-Warwick, RI-MA
9. Syracuse, NY
10. Fresno, CA

Transit

Transit ridership took a direct hit during 2020 amid fears of virus transmission on packed buses and trains, but we still see many expected winners on our Transit Top 10. Note that Provo and Ogden, Utah, did not report transit ridership data to the Federal Transit Administration for the time period studied, and thus were not ranked (see Methodology for more transit information).

Most Transit Trips per Capita

1. New York-Newark-Jersey City, NY-NJ-PA
2. San Francisco-Oakland-Hayward, CA
3. Boston-Cambridge-Newton, MA-NH
4. Washington-Arlington-Alexandria, DC-VA-MD-WV
5. Seattle-Tacoma-Bellevue, WA
6. Chicago-Naperville-Elgin, IL-IN-WI
7. Philadelphia-Camden-Wilmington, PA-NJ-DE-MD
8. Portland-Vancouver-Hillsboro, OR-WA
9. Salt Lake City, UT
10. Los Angeles-Long Beach-Anaheim, CA

Least Transit Trips per Capita

1. McAllen-Edinburg-Mission, TX
2. Jackson, MS
3. Augusta-Richmond County, GA-SC
4. Greenville-Anderson-Mauldin, SC
5. Lakeland-Winter Haven, FL
6. Wichita, KS
7. Birmingham-Hoover, AL
8. Youngstown-Warren-Boardman, OH-PA
9. Boise City, ID
10. Tulsa, OK

Circuity

Circuity is simply the difference between a point-to-point straight line between A and B versus the actual route a driver takes to get there. Obviously people drive more, and create more emissions, in cities with higher circuity. Maybe drivers take roundabout routes because of congestion on more direct roads. Or they may be circling around searching for parking or waiting for passenger pickups.

While circuity doesn't directly impact greenhouse gas emissions, low circuity is an indicator that a region has reduced VMT due to vehicle-circling to a large extent, and has more direct routes between residences and important destinations, like jobs or shopping.

Lowest (Best) Circuity

1. Lancaster, PA
2. Riverside-San Bernardino-Ontario, CA
3. Los Angeles-Long Beach-Anaheim, CA
4. San Jose-Sunnyvale-Santa Clara, CA
5. Milwaukee-Waukesha-West Allis, WI
6. Madison, WI
7. Grand Rapids-Wyoming, MI
8. Spokane-Spokane Valley, WA*
9. Tucson, AZ*
10. Portland-Vancouver-Hillsboro, OR-WA**
10. Boise City, ID**
10. Lakeland-Winter Haven, FL**

** two-way tie*

*** three-way tie*

Highest (Worst) Circuity

1. New Orleans-Metairie, LA
2. Little Rock-North Little Rock-Conway, AR
3. Scranton–Wilkes-Barre–Hazleton, PA
4. Jackson, MS
5. Springfield, MA
6. Providence-Warwick, RI-MA
7. Birmingham-Hoover, AL
8. New Haven-Milford, CT
9. Bridgeport-Stamford-Norwalk, CT
10. Charleston-North Charleston, SC

Density

Population density, based on the most recent U.S. Census data, hasn't changed since our 2019 Index report. The best CBSAs have a high residential population, which means residents are less likely to need a car to reach essential services, shopping, and recreation. The worst reflect higher levels of sprawl. While density doesn't directly drive emissions, it is highly correlated with VMT, and a region with low density may need to work as the prime lever to reducing VMT and emissions.

As noted in our Methodology, we did not adjust density (or any other values) for areas that gained or lost population due to COVID-19 relocations and quarantine.

Highest (Best) Population Density

1. Los Angeles-Long Beach-Anaheim, CA
2. New York-Newark-Jersey City, NY-NJ-PA
3. San Francisco-Oakland-Hayward, CA
4. Philadelphia-Camden-Wilmington, PA-NJ-DE-MD
5. Bridgeport-Stamford-Norwalk, CT
6. Detroit-Warren-Dearborn, MI
7. Boston-Cambridge-Newton, MA-NH
8. New Haven-Milford, CT
9. Chicago-Naperville-Elgin, IL-IN-WI
10. Miami-Fort Lauderdale-West Palm Beach, FL

Worst (Lowest) Population Density

1. Boise City, ID
2. Ogden-Clearfield, UT
3. Spokane-Spokane Valley, WA
4. Provo-Orem, UT
5. Albuquerque, NM
6. Bakersfield, CA
7. Tucson, AZ
8. Jackson, MS
9. Wichita, KS
10. Salt Lake City, UT

Methodology

IV. Methodology

For StreetLight's *2020 U.S. Transportation Climate Impact Index*, we analyzed the nation's 100 largest metro areas (CBSAs as defined by the U.S. Census), ranking them on six individual factors for the 12-month period from September 2019 through August 2020.

Ranking Factors

Each factor was assigned a weight corresponding to how much it influences current transportation greenhouse gas emissions, and reflects the extent to which the area has maximized its potential for less greenhouse gas-intensive transportation.

Vehicle Miles Traveled (VMT) per Capita

We used StreetLight's VMT Monitor to calculate actual vehicle miles traveled in each CBSA during the 12 months studied (September 2019 through August 2020). We ranked them by values from 1 (least miles traveled per capita) to 100 (most miles traveled per capita). VMT was weighted as the most important factor in our Index (see below for more on weighting).

Bicycle and Pedestrian Travel per Capita

For bike and pedestrian travel, we used a Zone Activity analysis for bike and pedestrian travel in StreetLight InSight®. We looked at the daily average trip index and trip length to create a daily average index-miles-traveled for bike and pedestrian travel. We then divided those values by the population to get daily average bike and pedestrian miles traveled per capita. We ranked each CBSA from 1 (most daily average bike and pedestrian miles traveled per capita) to 100 (least daily average bike and pedestrian miles traveled per capita)

Transit

Transit data for the 12-month study period came from the *National Transit Database* of the Federal Transit Administration, specifically the October 2020 monthly module data adjusted release. Using data on Unlinked Passenger Trips (UPT), we calculated the total number of transit passenger trips per CBSA area, and divided by the population to get total transit trips per capita for each CBSA. We ranked each CBSA from 1 (most transit trips per capita) to 98 (least transit trips per capita). Provo and Ogden, Utah, were not included in the FTA's ranking (transit properties with 30 or fewer vehicles in peak service are eligible to opt out from reporting), so we assigned them both 0 for value and 99 for ranking.

Circuity

Circuity is measured by comparing a trip's actual route to the most direct, point-to-point route ("as the crow flies"). To calculate this, we used StreetLight InSight® to perform a Zone Activity analysis for All Vehicles. We analyzed the average circuity in the entire CBSA zone for the time period studied to get a daily average trip circuity per CBSA. We ranked each CBSA from 1 (least circuitous) to 100 (most circuitous) per capita.

Density

Population density was calculated as population per square mile for each CBSA, using figures reported by the U.S. Census. We did not adjust density to account for population shifts during COVID-19 (see below). We ranked each CBSA from 1 (most dense) to 100 (least dense).

Overall Ranking Calculation

Overall rankings were calculated by scoring each CBSA's value for a given factor and summing the score for each of the six factors.

As mentioned before, the only factor that drives significant actual greenhouse gas emissions is VMT per capita. Transit also causes direct emissions, but at a much lower rate. Bicycling, walking, circuity, and population density impact emissions only via their impact on VMT. We chose to include them because they reflect the area's potential to change in the future, and their progress year to year. In addition, transit, density, bicycling, and walking have other deep social benefits for health, equity, economic well-being, and more. However, they are weighted much more lightly than VMT, as shown in the weighting table.

Factor	Weighting
VMT per Capita	9
Bicycle Travel per Capita	4
Pedestrian Travel per Capita	3
Transit	2
Circuity	1
Density	1

COVID-19 Adjustments

Given COVID-19, we made additional methodology changes and have some caveats about our results. We use the U.S. Census as the source of the resident counts, but we know that during COVID-19 many people spent a significant part of 2020 away from their usual residences. We considered trying to adjust for these shifts but decided against it because that would introduce more variables and make our findings more opaque.

Therefore, areas that lost residents will show up on our lists with worse per capita bicycle, pedestrian, and transit scores, but better VMT and density scores than they may deserve. Regions that absorbed an extra population will have better per capita bicycle, pedestrian, and transit scores on our lists than reality reflects, and worse VMT and density scores. We do not know the full extent of this impact.

In addition, last year's Index incorporated only bicycle and pedestrian weekday commuting trips, assuming that those displace car miles and related emissions. However, because commutes were less important during COVID-19, this year's report includes all cycling and pedestrian activity on all days.

Top 100 List

V. Top 100 List

Every year, StreetLight ranks the country's largest metro areas from 1 (best) to 100 (worst) on six individual factors: per-capita VMT, per-capita bike travel, per-capita pedestrian travel, transit ridership, geographic density, and circuity.

Our top-ranking metro areas have the "greenest" transportation in terms of climate impact. Compared to their fellow metro areas they have low VMT, high bike and pedestrian travel, high transit use, high population density, and low circuity.

- BIKE RANK
- DENSITY RANK
- PED RANK
- CIRCUITY RANK
- TRANSIT RANK
- VMT RANK

TOP 100 RANKINGS

View rankings numerically and alphabetically.

Top 100 at a Glance

#1	New York-Newark-Jersey City, NY-NJ-PA
#2	North Port-Sarasota-Bradenton, FL
#3	Portland-Vancouver-Hillsboro, OR-WA
#4	Cape Coral-Fort Myers, FL
#5	San Francisco-Oakland-Hayward, CA
#6	Miami-Fort Lauderdale-West Palm Beach, FL
#7	Colorado Springs, CO
#8	San Diego-Carlsbad, CA
#9	Minneapolis-St. Paul-Bloomington, MN-WI
#10	Seattle-Tacoma-Bellevue, WA
#11	Deltona-Daytona Beach-Ormond Beach, FL
#12	Los Angeles-Long Beach-Anaheim, CA
#13	Denver-Aurora-Lakewood, CO
#14	San Jose-Sunnyvale-Santa Clara, CA
#15	Grand Rapids-Wyoming, MI
#16	Spokane-Spokane Valley, WA
#17	Fresno, CA
#18	Boise City, ID
#19	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD
#20	Provo-Orem, UT
#21	Sacramento--Roseville--Arden-Arcade, CA
#22	Phoenix-Mesa-Scottsdale, AZ
#23	Salt Lake City, UT
#24	Ogden-Clearfield, UT
#25	Tampa-St. Petersburg-Clearwater, FL

#26	Rochester, NY
#27	Buffalo-Cheektowaga-Niagara Falls, NY
#28	Milwaukee-Waukesha-West Allis, WI
#29	Wichita, KS
#30	Boston-Cambridge-Newton, MA-NH
#31	Chicago-Naperville-Elgin, IL-IN-WI
#32	Austin-Round Rock, TX
#33	Washington-Arlington-Alexandria, DC-VA-MD-WV
#34	Virginia Beach-Norfolk-Newport News, VA-NC
#35	Palm Bay-Melbourne-Titusville, FL
#36	McAllen-Edinburg-Mission, TX
#37	Omaha-Council Bluffs, NE-IA
#38	Tucson, AZ
#39	Detroit-Warren-Dearborn, MI
#40	Orlando-Kissimmee-Sanford, FL
#41	Albuquerque, NM
#42	New Orleans-Metairie, LA
#43	Las Vegas-Henderson-Paradise, NV
#44	El Paso, TX
#45	Des Moines-West Des Moines, IA
#46	Providence-Warwick, RI-MA
#47	Lakeland-Winter Haven, FL
#48	Lancaster, PA
#49	Baltimore-Columbia-Towson, MD
#50	Allentown-Bethlehem-Easton, PA-NJ

#51	Springfield, MA
#52	Augusta-Richmond County, GA-SC
#53	Pittsburgh, PA
#54	Cleveland-Elyria, OH
#55	St. Louis, MO-IL
#56	Chattanooga, TN-GA
#57	Bridgeport-Stamford-Norwalk, CT
#58	Kansas City, MO-KS
#59	Louisville/Jefferson County, KY-IN
#60	Charleston-North Charleston, SC
#61	Cincinnati, OH-KY-IN
#62	Greenville-Anderson-Mauldin, SC
#63	Youngstown-Warren-Boardman, OH-PA
#64	Akron, OH
#65	New Haven-Milford, CT
#66	Scranton--Wilkes-Barre--Hazleton, PA
#67	Hartford-West Hartford-East Hartford, CT
#68	Madison, WI
#69	Worcester, MA-CT
#70	Syracuse, NY
#71	Houston-The Woodlands-Sugar Land, TX
#72	Bakersfield, CA
#73	Albany-Schenectady-Troy, NY
#74	Oxnard-Thousand Oaks-Ventura, CA
#75	Indianapolis-Carmel-Anderson, IN

#76	Oklahoma City, OK
#77	Atlanta-Sandy Springs-Roswell, GA
#78	Memphis, TN-MS-AR
#79	Toledo, OH
#80	Jacksonville, FL
#81	Columbia, SC
#82	San Antonio-New Braunfels, TX
#83	Tulsa, OK
#84	Harrisburg-Carlisle, PA
#85	Winston-Salem, NC
#86	Dayton, OH
#87	Knoxville, TN
#88	Riverside-San Bernardino-Ontario, CA
#89	Little Rock-North Little Rock-Conway, AR
#90	Dallas-Fort Worth-Arlington, TX
#91	Stockton-Lodi, CA
#92	Richmond, VA
#93	Columbus, OH
#94	Baton Rouge, LA
#95	Jackson, MS
#96	Greensboro-High Point, NC
#97	Charlotte-Concord-Gastonia, NC-SC
#98	Nashville-Davidson--Murfreesboro--Franklin, TN
#99	Raleigh, NC
#100	Birmingham-Hoover, AL

Full Rankings Alphabetically

	VMT	BIKE	PED	TRANSIT	DENSITY	CIRCUITY	OVERALL RANK
Akron, OH	66	50	58	52	14	25	#64
Albany-Schenectady-Troy, NY	48	93	96	25	59	79	#73
Albuquerque, NM	43	35	41	42	96	44	#41
Allentown-Bethlehem-Easton, PA-NJ	30	53	82	66	23	30	#50
Atlanta-Sandy Springs-Roswell, GA	72	78	62	17	22	27	#77
Augusta-Richmond County, GA-SC	50	56	36	96	85	90	#52
Austin-Round Rock, TX	60	22	10	24	44	66	#32
Bakersfield, CA	52	86	84	59	95	76	#72
Baltimore-Columbia-Towson, MD	22	83	87	13	11	74	#49
Baton Rouge, LA	83	84	74	73	82	87	#94
Birmingham-Hoover, AL	98	76	68	92	77	94	#100
Boise City, ID	44	15	12	90	100	10	#18
Boston-Cambridge-Newton, MA-NH	29	37	90	3	7	59	#30
Bridgeport-Stamford-Norwalk, CT	18	96	100	44	5	92	#57
Buffalo-Cheektowaga-Niagara Falls, NY	8	73	88	18	33	80	#27
Cape Coral-Fort Myers, FL	42	2	2	70	30	35	#4
Charleston-North Charleston, SC	67	33	19	76	76	91	#60
Charlotte-Concord-Gastonia, NC-SC	97	81	39	46	40	64	#97
Chattanooga, TN-GA	55	39	65	75	70	89	#56

	VMT	BIKE	PED	TRANSIT	DENSITY	CIRCUITY	OVERALL RANK
Chicago-Naperville-Elgin, IL-IN-WI	65	20	48	6	9	22	#31
Cincinnati, OH-KY-IN	61	59	40	57	31	67	#61
Cleveland-Elyria, OH	51	64	69	32	29	36	#54
Colorado Springs, CO	38	3	9	71	72	78	#7
Columbia, SC	75	62	50	82	79	48	#81
Columbus, OH	96	31	33	51	45	49	#93
Dallas-Fort Worth-Arlington, TX	93	68	30	40	19	38	#90
Dayton, OH	87	65	47	39	21	50	#86
Deltona-Daytona Beach-Ormond Beach, FL	56	5	6	65	62	52	#11
Denver-Aurora-Lakewood, CO	40	7	13	11	58	43	#13
Des Moines-West Des Moines, IA	78	6	15	60	81	44	#45
Detroit-Warren-Dearborn, MI	33	58	55	58	6	30	#39
El Paso, TX	4	99	80	35	90	69	#44
Fresno, CA	1	72	91	41	86	17	#17
Grand Rapids-Wyoming, MI	23	18	31	50	67	7	#15
Greensboro-High Point, NC	92	95	66	68	49	47	#96
Greenville-Anderson-Mauldin, SC	62	57	53	95	61	17	#62
Harrisburg-Carlisle, PA	82	74	54	81	53	15	#84
Hartford-West Hartford-East Hartford, CT	45	94	94	29	15	70	#67
Houston-The Woodlands-Sugar Land, TX	81	45	37	30	20	57	#71
Indianapolis-Carmel-Anderson, IN	86	43	35	69	39	40	#75

	VMT	BIKE	PED	TRANSIT	DENSITY	CIRCUITY	OVERALL RANK
Jackson, MS	58	100	99	97	93	97	#95
Jacksonville, FL	95	23	11	56	48	63	#80
Kansas City, MO-KS	59	52	44	63	65	60	#58
Knoxville, TN	80	47	76	83	74	67	#87
Lakeland-Winter Haven, FL	70	29	8	94	60	10	#47
Lancaster, PA	32	67	83	49	26	1	#48
Las Vegas-Henderson-Paradise, NV	54	75	7	12	71	75	#43
Little Rock-North Little Rock-Conway, AR	74	77	45	84	84	99	#89
Los Angeles-Long Beach-Anaheim, CA	5	61	67	10	1	3	#12
Louisville/Jefferson County, KY-IN	64	44	28	55	52	72	#59
Madison, WI	94	12	24	23	83	6	#68
McAllen-Edinburg-Mission, TX	16	80	56	98	32	82	#36
Memphis, TN-MS-AR	63	87	61	80	68	76	#78
Miami-Fort Lauderdale-West Palm Beach, FL	3	24	23	19	10	44	#6
Milwaukee-Waukesha-West Allis, WI	35	36	59	22	35	5	#28
Minneapolis-St. Paul-Bloomington, MN-WI	19	11	22	16	42	28	#9
Nashville-Davidson-Murfreeboro-Franklin, TN	99	69	26	67	66	56	#98
New Haven-Milford, CT	34	92	97	47	8	93	#65
New Orleans-Metairie, LA	57	14	29	37	88	100	#42
New York-Newark-Jersey City, NY-NJ-PA	7	16	77	1	2	58	#1
North Port-Sarasota-Bradenton, FL	26	1	4	64	38	16	#2

	VMT	BIKE	PED	TRANSIT	DENSITY	CIRCUITY	OVERALL RANK
Ogden-Clearfield, UT	25	38	16	99	99	23	#24
Oklahoma City, OK	84	54	25	87	75	54	#76
Omaha-Council Bluffs, NE-IA	37	34	46	85	80	82	#37
Orlando-Kissimmee-Sanford, FL	91	13	1	38	25	50	#40
Oxnard-Thousand Oaks-Ventura, CA	71	41	85	72	47	24	#74
Palm Bay-Melbourne-Titusville, FL	85	9	3	78	50	32	#35
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	24	26	72	7	4	14	#19
Phoenix-Mesa-Scottsdale, AZ	47	30	14	31	64	20	#22
Pittsburgh, PA	46	60	81	15	36	72	#53
Portland-Vancouver-Hillsboro, OR-WA	15	4	32	8	54	10	#3
Providence-Warwick, RI-MA	12	82	93	45	16	95	#46
Provo-Orem, UT	21	27	21	99	97	13	#20
Raleigh, NC	100	49	18	54	27	21	#99
Richmond, VA	76	89	73	53	69	60	#92
Riverside-San Bernardino-Ontario, CA	88	48	71	77	87	2	#88
Rochester, NY	10	71	70	33	78	65	#26
Sacramento-Roseville-Arden-Arcade, CA	39	17	57	43	43	26	#21
Salt Lake City, UT	36	25	49	9	91	38	#23
San Antonio-New Braunfels, TX	90	46	17	20	63	85	#82
San Diego-Carlsbad, CA	2	40	43	14	18	37	#8
San Francisco-Oakland-Hayward, CA	9	19	79	2	3	32	#5

	VMT	BIKE	PED	TRANSIT	DENSITY	CIRCUITY	OVERALL RANK
San Jose-Sunnyvale-Santa Clara, CA	6	28	78	26	17	4	#14
Scranton-Wilkes-Barre-Hazleton, PA	31	85	95	79	57	98	#66
Seattle-Tacoma-Bellevue, WA	14	21	34	5	24	17	#10
Spokane-Spokane Valley, WA	13	32	52	21	98	8	#16
Springfield, MA	11	98	89	28	28	96	#51
St. Louis, MO-IL	49	55	60	36	51	86	#55
Stockton-Lodi, CA	73	90	86	61	34	32	#91
Syracuse, NY	41	88	92	34	73	88	#70
Tampa-St. Petersburg-Clearwater, FL	79	10	5	48	13	29	#25
Toledo, OH	89	42	20	88	46	54	#79
Tucson, AZ	69	8	42	27	94	8	#38
Tulsa, OK	77	66	38	89	89	80	#83
Virginia Beach-Norfolk-Newport News, VA-NC	20	70	27	62	41	84	#34
Washington-Arlington-Alexandria, DC-VA-MD-WV	28	51	75	4	12	40	#33
Wichita, KS	17	63	51	93	92	52	#19
Winston-Salem, NC	68	91	64	74	56	42	#85
Worcester, MA-CT	27	97	98	86	37	71	#69
Youngstown-Warren-Boardman, OH-PA	53	79	63	91	55	60	#63

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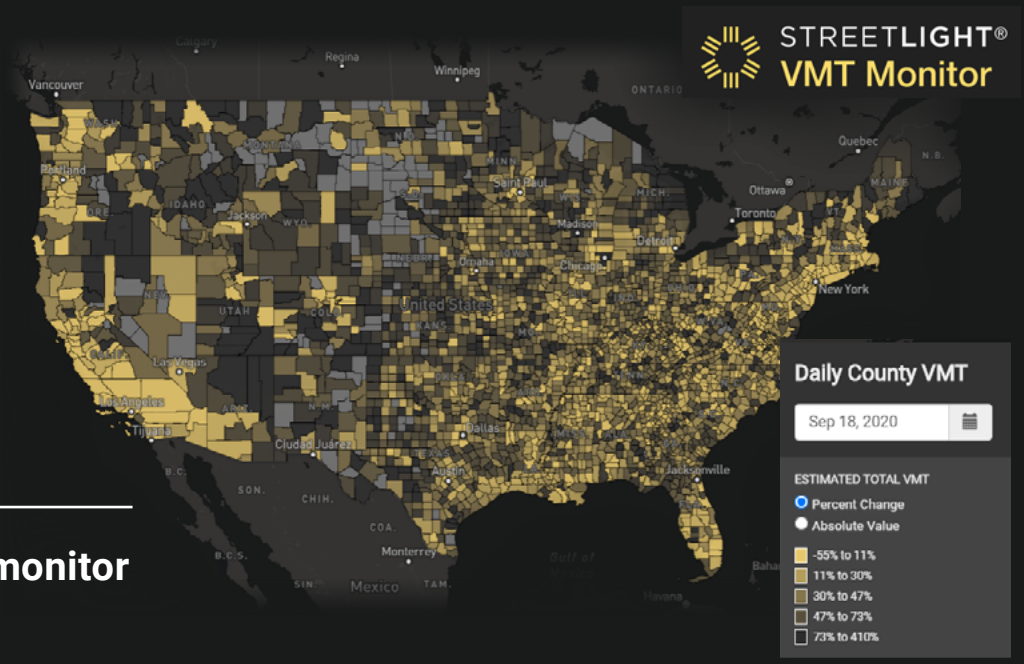

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