Second-quarter newsletter for the Denver Regional Data Consortium.

No Images? Click here

The data consortium consists of Denver Regional Council of Governments members and regional partners with an interest in geospatial data and collaboration. The data consortium newsletter improves communication among local geographic information systems professionals and features updates from all levels of government as they relate to data and geospatial initiatives in our region. This newsletter is published quarterly.

Census aggregation tool to reduce margin of error

Article submitted by Seth Spielman, associate professor of geography at the University of Colorado Boulder. Seth can be reached at 303-492-4877 or seth.spielman@colorado.edu.

The American Community Survey is the largest survey of U.S. households and is the principal source for neighborhood-scale information about the U.S. population and economy. The ACS is used to allocate billions in federal spending and is a critical input to social scientific research in the U.S. However, estimates from the ACS can be highly unreliable. For example, in the 2007–2011 ACS, of the 56,204 tracts for which a poverty estimate for children under 5 was available, 40,941 (72.8%) had a margin of error greater than the estimate. These margins of error can be hard to wrap your head around: The ACS indicates that Census Tract 196 in Brooklyn, New York has 169 children under 5 in poverty plus or minus 174 children, suggesting that somewhere between 0 and 343 children in the area live in poverty. This is the case in over 72% of census tracts in the US. Most people ignore margin of error because including it makes it hard to use the data in policy-making, research and governance.

To solve this problem, the University of Colorado Boulder developed software and a website that can be used to reduce the margin of error in the ACS. The software and website use a computational technique called “regionalization.” CU Boulder encourages use of its software and code and is happy to work with communities and individuals who need to reduce the margins of error in the ACS.

Visit the website

View the software

Give feedback on tract renumbering proposal in Golden

Article submitted by Ashley Summers, GISP, PMP, information systems manager at DRCOG. Ashley can be reached at 303-480-6746 or asummers@drcog.org.

The U.S. Census Bureau is gearing up for 2020 by soliciting feedback through such programs as the Boundary and Annexation Survey, Local Update of Census Addresses, and the Participant Statistical Areas Program. The latter is an initiative to ensure that statistical geographies like tracts and block groups are delineated in a way that best supports future data analysis.

PSAP information guide

DRCOG is participating in PSAP on behalf of stakeholders in the Denver region by delineating new census geographies as needed or requested by data users. To ensure statistical validity of their products, the U.S. Census Bureau requires us to make changes to geographies that are outside their recommended thresholds for minimum or maximum households. Beyond that, DRCOG is invited to make additional changes that it deems necessary based on its knowledge of expected development patterns.

After coordination with interested stakeholders over the last six months, DRCOG came up with a plan that includes many tract splits. Staff are currently working on submitting tract splits to the U.S. Census Bureau. As part of the work, DRCOG became aware of the City of Golden's proposal. The City of Golden is proposing a census tract boundary adjustment that could affect future data analysis. To briefly summarize, the city is suggesting a change from these current tract boundaries to these new tract boundaries:

The reasoning, which is explained in this letter, explains that the change is expected to make future census data aggregations more useful. However, the proposed change would cause a tract renumbering that would make comparisons to past data no longer possible. Making this change is a regional decision.

Please join us May 6 from 2 to 3:30 p.m. at the DRCOG offices to learn more and provide feedback on this proposal:

> **Golden tract renumbering proposal meeting**
> Monday, May 6
> 2 to 3:30 p.m.

> Denver Regional Council of Governments
> Red Rocks conference room (seventh floor)
> 1001 17th St., Denver, CO 80202

Can't attend in person? No problem! Participate remotely using the details below:

GoToWebinar

> Webinar ID: 702-798-595
> United States: 914-614-3221
> Access Code: 604-641-247

Denver offers cooperative buying opportunity

Article submitted by Emily Silverman, Smart City program manager at the City and County of Denver. Emily can be reached at 720-913-5467 or emily.silverman@denvergov.org.

The City and County of Denver recently completed a professional services request for proposals — and is inviting other communities to explore potential cooperative purchasing agreements.

Over the past year, the Denver Smart City team executed an On-Call Agile Professional Services request for proposals that created a pathway for city agencies to partner with the business community. Sixty firms have been selected as eligible for contract. The resulting contracts span seven disciplines and over 70 professional competencies. Firm sizes ranged from 10-person startups to international consulting companies and businesses. Feedback indicated that the structure and innovativeness of the RFP were key elements that resulted in the high level of engagement and diversity of response from the business community.

See the RFP summary for the firms' contact information as well as two ways you might participate in cooperative agreements.

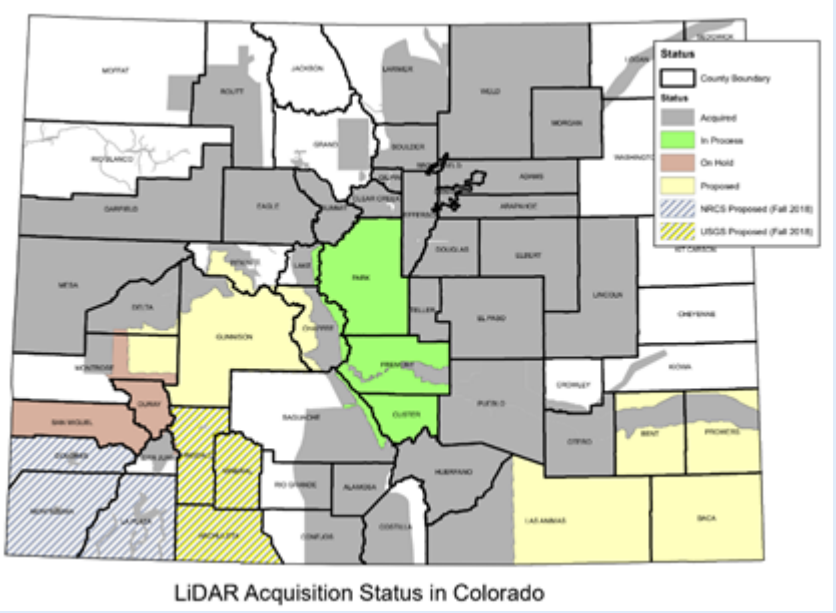
Status of elevation data for Colorado

Article submitted by Rick Corsi, state and local outreach coordinator at the Colorado Governor's Office of Information Technology. Rick can be reached at 303-764-7801 or rick.corsi@state.co.us.

The State of Colorado Governor's Office of Information Technology, Geographic Information Systems Coordination and Development Program makes lidar data

discoverable and available for distribution to public agencies and private industry.

The State of Colorado currently has, or is in the process of collecting, approximately 70% or approximately 73,000 square miles of the state covered by lidar or in progress at Quality Level 2 or higher (see map below). The state's goal is to have 100% coverage within the next five years. The state seeks partnerships with federal and local agencies when planning lidar projects on the collection of data.



LiDAR Acquisition Status in Colorado

Elevation data is collected and used by the Colorado Water Conservation Board, Colorado Geological Survey, Department of Natural Resources and the Colorado Department of Transportation, among many other state agencies. Many private contractors and local agencies also use the elevation data. The data is most commonly used for planning, risk management, hazard evaluation and post-incident recovery efforts. Specific project uses include mapping of floodplains, debris flows, landslides, potentially active faults, abandoned mine land features and wildfire risk analysis.

QL2 data is collected and suffices for most projects; however, on special projects such as mapping active landslide areas, QL1 data provides the higher resolution required when performing change detection and delineating active versus inactive zones. When planning within high-risk areas such as near major airports, QL1 data is desired. CDOT also has a pilot project along highways where ultra-high-density lidar is required and used for inventory and roadway surface evaluation. Over time, the state would encourage the collection of higher level lidar in urbanized, high risk and special needs projects like transportation corridors.

Currently, the Geographic Information Systems Coordination and Development Program is providing lidar data by request through a lidar request form. Requests are normally delivered through FTP, Google Drive or on hard drives within a few days, but can take longer depending on the size of the area requested.

The state's goal over the next five years is to complete the collection of lidar data for the entire state as well as keeping the data current in rapidly changing areas. The Geographic Information Systems Coordination and Development Program is currently in the process

of standing up an automated delivery portal. The new system will provide viewing and downloading of lidar data through a clip-zip-and-ship process. At the system's launch it will be limited to lidar data, but the plan is to provide all state-housed data through the portal. The portal will provide an easier, quicker and more interactive way of delivering data. Program staff look forward to expanding the efficiencies of the new portal and fostering an environment of open data sharing.

New roadway congestion shapefiles on the Regional Data Catalog

Article submitted by Robert Spotts, senior transportation planner at DRCOG. Robert can be reached at 303-480-5626 or rspotts@drcog.org.

DRCOG recently added three shapefiles to the Regional Data Catalog derived from the Congestion Management Process:

- Congested Corridors 2017
- Congested Corridors 2040
- Bottlenecks 2017

The Congested Corridors shapefiles represent the most severely congested roadway segments on DRCOG's regional roadway system. The bottleneck point shapefile identifies locations with the most severe delay in the Denver region at freeway bottleneck points, arterial-arterial intersections, and arterial-freeway ramp intersections.

Every year, DRCOG staff updates the congestion database, integrating travel speeds from INRIX, hundreds of new traffic counts, crash data and updated roadway attributes to estimate congestion on the regional roadway system. The diverse types of roadways on the 2,400-mile designated regional roadway system have daily traffic counts ranging from over 250,000 vehicles (350,000 people) on segments of freeways such as Interstate 25 to fewer than 3,000 vehicles per day (4,200 people) on rural connecting highways such as State Highway 79 north of Bennett and the Peak to Peak Highway (State Highway 119).

2040 estimates are based on forecasts from the DRCOG regional travel demand model. The model assumes that an additional 1 million people will live in the Denver region by 2040, a 32% increase from 2017. The model incorporates the future demographic makeup of the population and future transportation facilities, transit lines and employment concentrations. However, it does not include speculative factors related to emerging technologies related to vehicles, travel ways, and mobility services at this time.

DRCOG staff use a congestion mobility score for each segment in 2017 and 2040 to determine which corridors were most congested. The score includes four metrics:

- **severity:** How bad does congestion get on the roadway during rush hour?
- **duration:** How many hours per day is the roadway congested?
- **magnitude:** How many people (traffic volume) are affected by congestion on the

roadway?
- **reliability:** How often do crashes or incidents occur on the roadway?

Scores from the four categories are totaled. Roads with a total congestion mobility score of 11 or higher in 2017 or 2040 are classified as "severely congested" and are included in the shapefiles.

For additional information, visit DRCOG's congestion management process page or check out the 2017 Annual Report on Roadway Traffic Congestion in the Denver Region.

DRCOG 2018 data acquisition project updates

Article submitted by Ashley Summers, GISP, PMP, information systems manager at DRCOG. Ashley can be reached at 303-480-6746 or asummers@drcog.org.

Denver Regional Aerial Photography Project 2018

DRCOG and its partners recently finished another high-resolution aerial imagery project covering 6,000 square miles of the region. The imagery is proprietary until superseded by newer data; it can currently be purchased from DRCOG's resellers, Harris MapMart and Sanborn. To learn more about the project in general or see a recap of 2018 project specifics, please visit the webpage.

Regional Planimetric Data Project 2018

Since 2014, DRCOG has facilitated a planimetric data capture immediately following the completion of an imagery project. The 2018 iteration began in February and the first set of deliverables are expected by late April. Deliveries will continue through the year, with project completion expected in early 2020. Project deliverables – except for some premium attribution reserved for funding partners – will be free for public download on DRCOG's Regional Data Catalog. To learn more, view the project kick-off presentation, read about 2018 project specifics and visit the webpage.

Land Use Land Cover Pilot Project 2018

DRCOG, in partnership with the Babbitt Center for Land and Water Policy, the Conservation Innovation Center and several local experts, is currently working on a pilot project to generate land use land cover data for a portion of the region. Volunteers from Aurora, Commerce City, Denver, Five Points Geoplanning, Littleton, the Governor's Office of Information Technology and the U.S. Forest Service have just completed quality control on the initial classification results. Final results are expected in June 2019. Read more about the project and visit the webpage.

DRCOG 2020 data acquisition project updates

Article submitted by Ashley Summers, GISP, PMP, information systems manager at DRCOG. Ashley can be reached at 303-480-6746 or asummers@drcog.org.

Planning for data acquisitions in 2020/2021 has begun. DRCOG is offering a larger package of products and services than ever before. In addition to the traditional custom-flown imagery product, partners may also partner with DRCOG to purchase streaming imagery services, oblique services, lidar, land cover classification data, and planimetric data (if minimum funding requirements are met by enough interested partners).

DRCOG distributed cost estimates in early April to enable interested parties to budget for participation in these projects. If your organization did not receive a quote and would like one, please reach out to Ashley Summers at asummers@drcog.org.

Please join us May 23 from 10 to 11:30 a.m. at the DRCOG offices to learn more about the upcoming projects:

> **DRCOG 2020 data acquisition project updates meeting**
> Thursday, May 23
> 10 to 11:30 a.m.
> Denver Regional Council of Governments
> Red Rocks conference room (seventh floor)
> 1001 17th St., Denver, CO 80202

Can't attend in person? No problem! Participate remotely using the details below:

GoToWebinar

> Webinar ID: 539-323-931
> United States: 562-247-8422
> Access Code: 635-170-423

Things you might have missed

- Metro Vision Idea Exchange: One Year to Census Day
- Association of Metropolitan Planning Organizations GIS Webinar: DRCOG Active Transportation - Bicycle Facility Inventory and Micromobility

Upcoming events

- The spring Data to Policy Project Symposium will occur on April 26 on the Auraria campus.
- Winners for Go Code Colorado 2019 will be announced on May 30 at a final awards event. Read more on the website.
- Rocky Mountain Urban and Regional Information Systems Association is offering a QGIS for the Complete Beginner workshop on April 19. Register online.

Engage with us

- Please provide feedback on the Regional Data Catalog in this brief survey.
- This quarterly newsletter reaches more than 300 people, has a higher-than-average open rate, and is written by professionals like you. It's the perfect place to show off your projects, highlight your great work and contribute ideas to the GIS community in the Denver region. Newsletter release dates are the 15th of January, April, July and October (or the next business day afterward). Please contact Ashley Summers at 303-480-6746 or asummers@drcog.org to contribute.
- Did you miss a newsletter or a meeting? Visit our website for past newsletter issues and DRDC meeting materials.

We make life better!
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