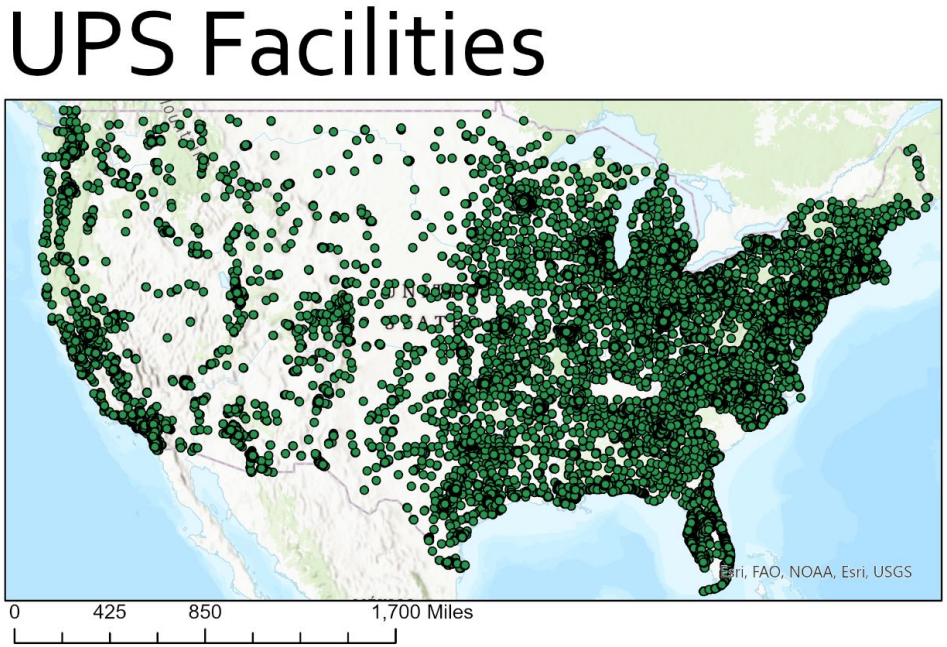
Parcels and Places:
UPS Distribution Over Space

By Matthew Gonzalez

What the UPS Does

- The UPS has origins dating back to 1907, and has since become a global leader in commercial transportation, boasting a 2020 revenue of $84.6 Billion.
- To understand how this operation is managed, this presentation will focus on the spatial considerations that impact how and where the UPS operates.

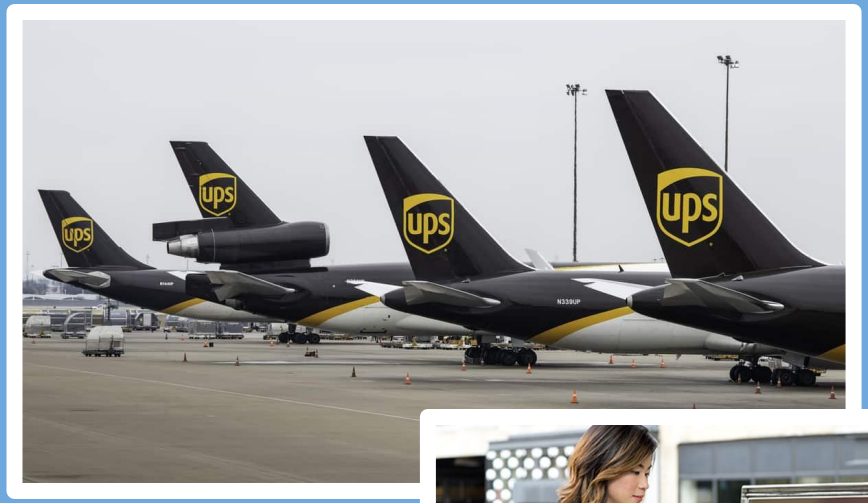
A Spatial Overview



- This map illustrates the distribution of various UPS facilities within the continental U.S.
- Facilities are visibly denser along the west coast and East half of the continental United States.
- A closer look at the edge cases may give some explanation to this distribution.

Data

- The most common type of facilities found in the dataset are drop boxes.
- Other facilities include Authorized Shipping Outlets, Mail Boxes, UPS Stores, UPS Alliance Centers, and Customer Centers.
- Maps will focus only on the continental United States and selected points of interest within.

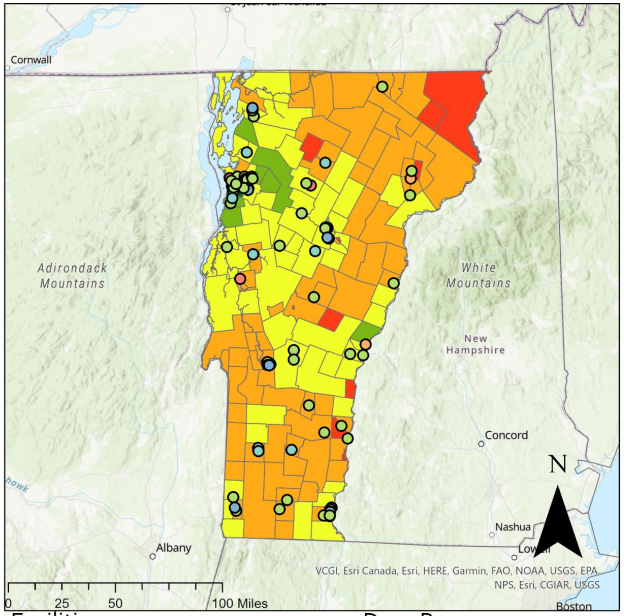


Methods

- The regions focused on are the highest and lowest in number of UPS facilities by population density.
- Each type of facility will be assigned an equal weight in this calculation.

- Types of facilities will overlay median household income provided by Census Tract data, symbolized with an above-and-below color scheme based on the national average of $67,521.
- Raster data of population estimates will be used to correlate with facility placement to determine if facilities match more densely populated regions.

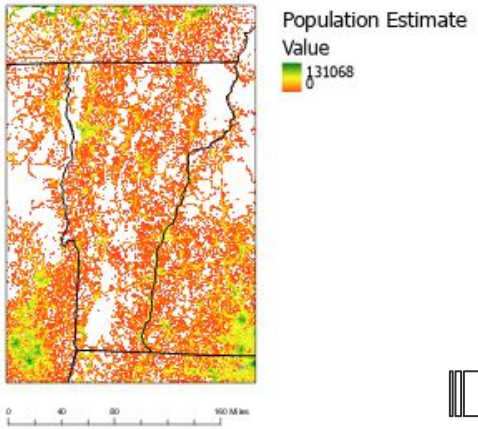
Vermont Facilities



Facilities
Type
- Authorized Shipping Outlet
- Jemini Packing and Shipping
- Mail Boxes
- UPS Store
- UPS Alliance
- Customer Center
- Drop Box

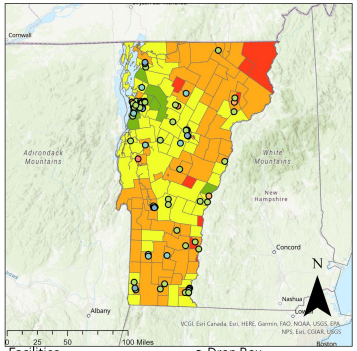
Census Records
Median household income
- $7,741.00 - $38,224.00
- $38,224.01 - $56,705.00
- $56,705.01 - $81,690.00
- $81,690.01 - $123,311.00
- $123,311.01 - $246,750.00

A Closer Look: Vermont



A Closer Look: Vermont Population

Vermont Facilities



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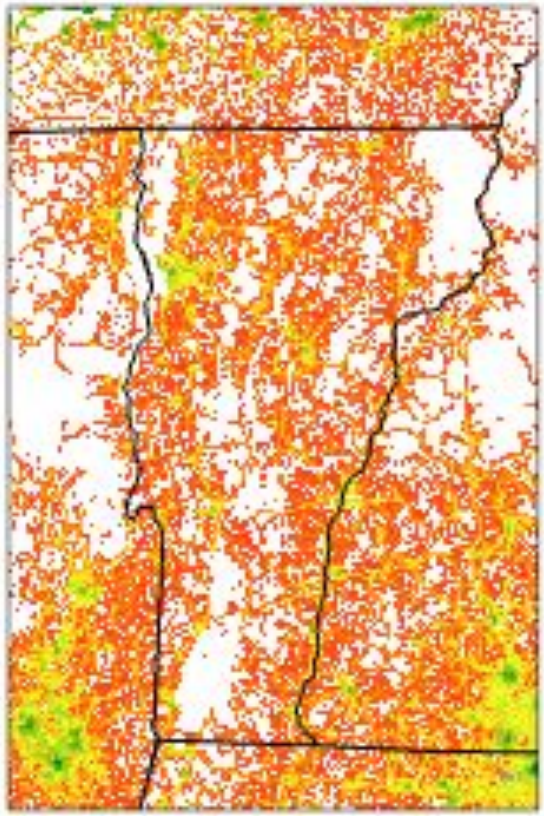
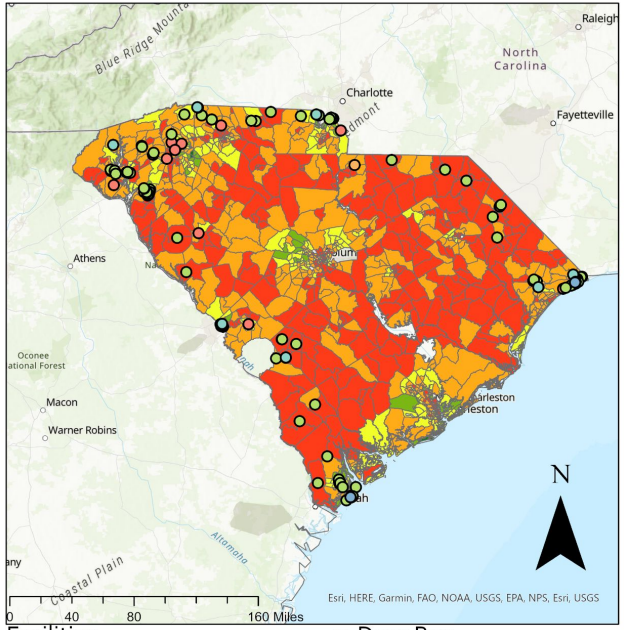


South Carolina Facilities



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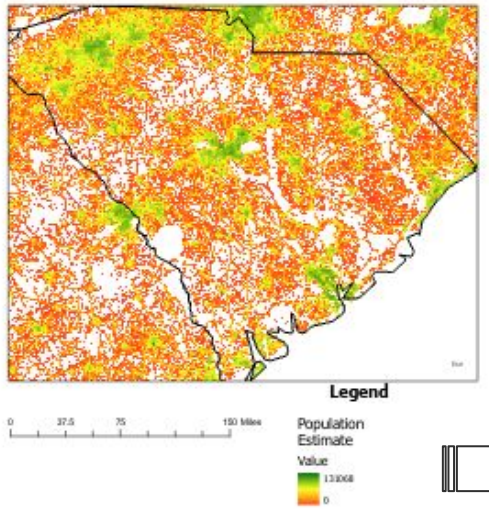
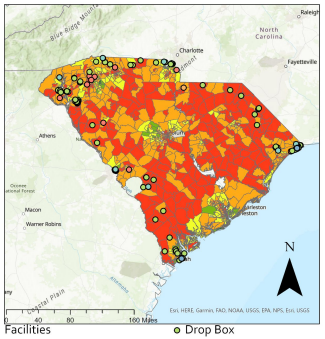
A Closer Look: South Carolina



A Closer Look: South Carolina Population

South Carolina Facilities



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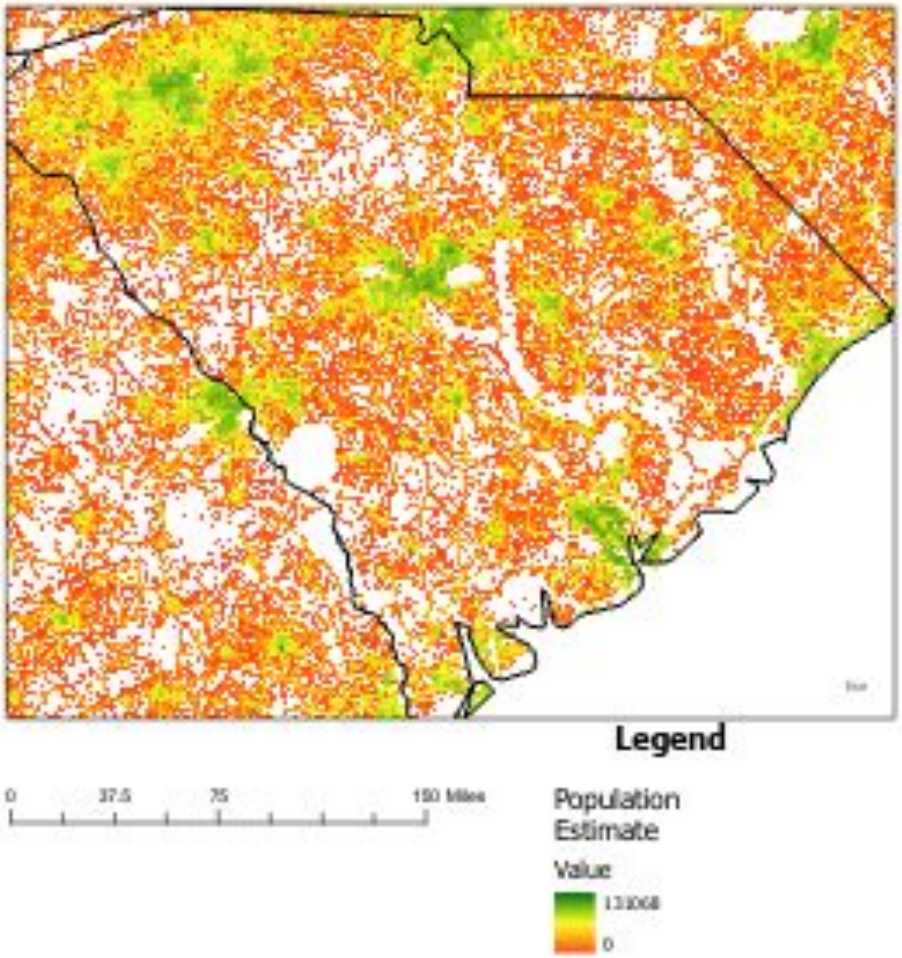

Results

- The highest density is Vermont, with 95 facilities total.
- The lowest density is South Carolina, with 123 facilities total.
- Facility placement generally coincides with average to above average income areas in both states.
- Placement has no obvious coincidence with population, however.

Discussion

- Vermont is likely the most dense because of its small surface area, with a relatively small population of ~600,000.
- This may complicate the phrasing as “most dense” because states are not spatially even in size or shape.

- South Carolina displays an interesting pattern, where facilities are heavily skewed to the margins of the state.
- With a population of over 5 million, the results in South Carolina are unexpected.
- A potential explanation is interstate commerce contrasting low intrastate commerce.

- It is difficult to quantify facilities relatively because counting the number per state or calculating the density per state will yield vastly different, yet equally true results.

Conclusion

- Further research might confirm or deny the significant correlation between areas, facility count, socioeconomics, and population.
- Visually, Vermont and South Carolina display vastly differing organization in their facility distribution.
- To return to the initial quandary of how the UPS operates, it depends on where...

- Despite a majority of facilities overall being located on the Eastern U.S., State-by-State variations lead to differing, even converse results.
- Dense population and affluence are the most likely cause of increased facilities.
- However, boundaries and overlap are another factor for placement decisions.

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