

RTA Analysis Report

Group E: Jermaine Coleman, Robert Payne, Segun Olorunfemi, Tana Zimmer, Leah Brady



The RTA is in trouble...

“Using RTA is much more of a hassle than it used to be - the buses run incredibly infrequent”

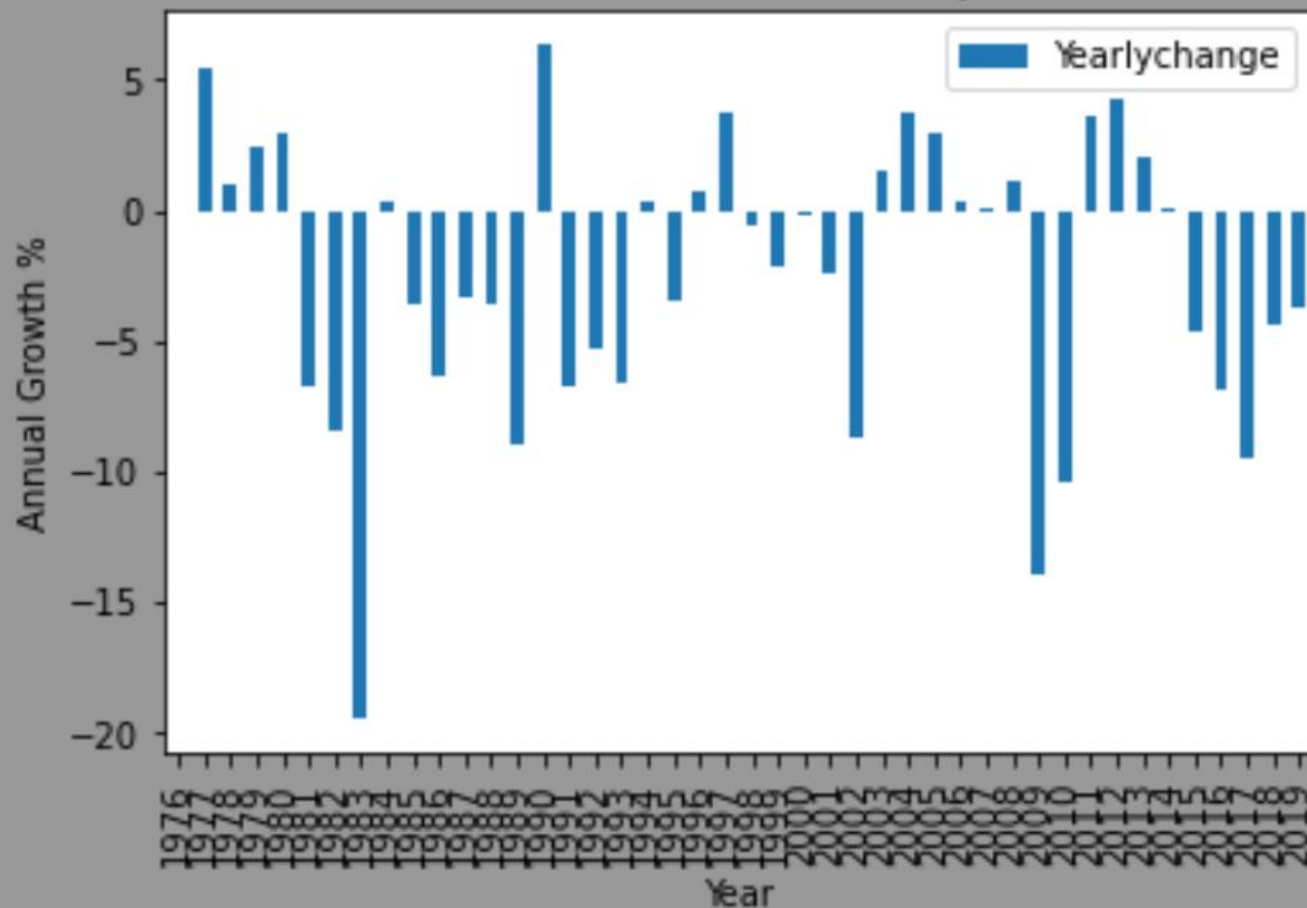
Since 1980 RTA ridership has been on the decline. The RTA has hired ‘Group E Super Data Analyst Squad’ to optimize RTA routes and get people back on the bus.

Group E is attempting to find solutions through heavy research on bus routes, population statistics, stop locations and density of surrounding hospitals and schools.

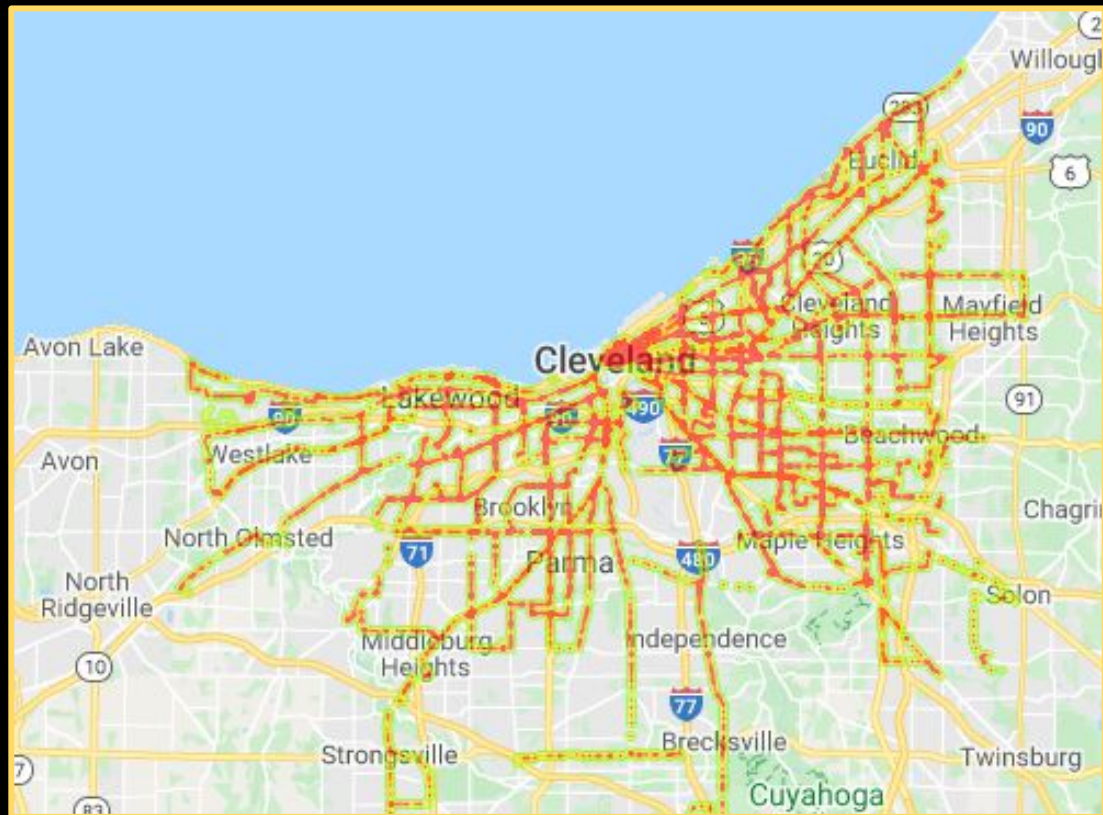
“Someone took a huge axe to the system! The bus I normally take doesn’t go downtown anymore”

“I was tired of choosing between getting to work 45 minutes early, or 15 minutes late.”

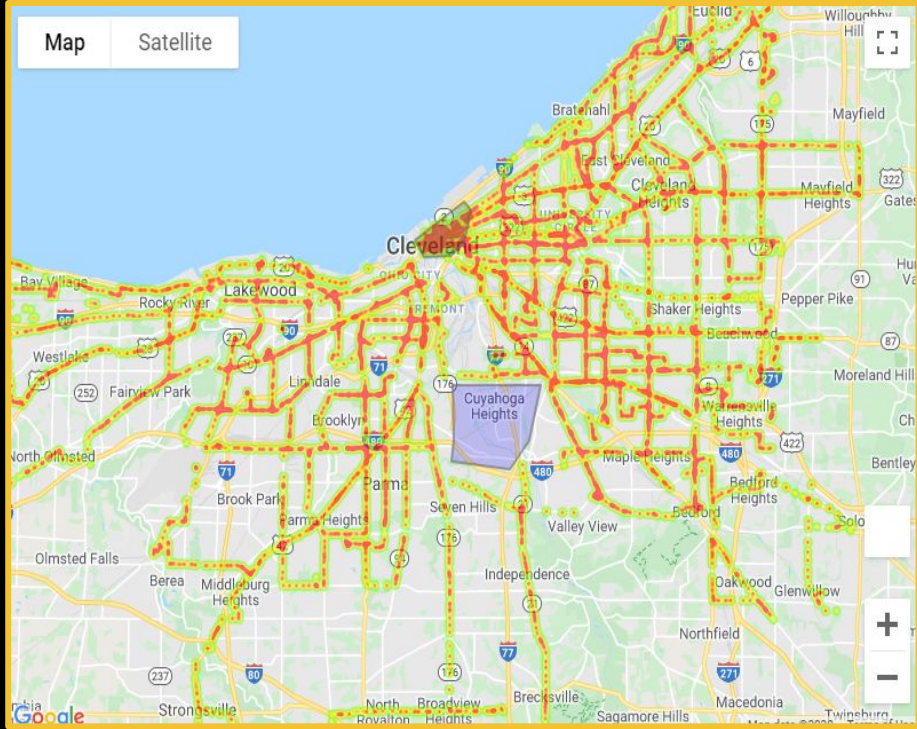
Annual Growth Rate % of Ridership 1976-2019



Current RTA Routes



Challenges



- What areas could be better served by the Cleveland RTA?
- Are there routes/stops that could be added or removed to improve efficiency?
- What is deterring the population from using the RTA?

Population Data

United States
Census
Bureau

Search

ALL TABLES MAPS PAGES

1 Results Filter | Download

MEANS OF TRANSPORTATION TO WORK BY SELECTED CHARACTERISTICS FOR WORKPLACE GEOGRAPHY
Survey/Program: American Community Survey
Years: 2018,2017,2016,2015,2014,2013,2012,2011,2010
TableID: S0804

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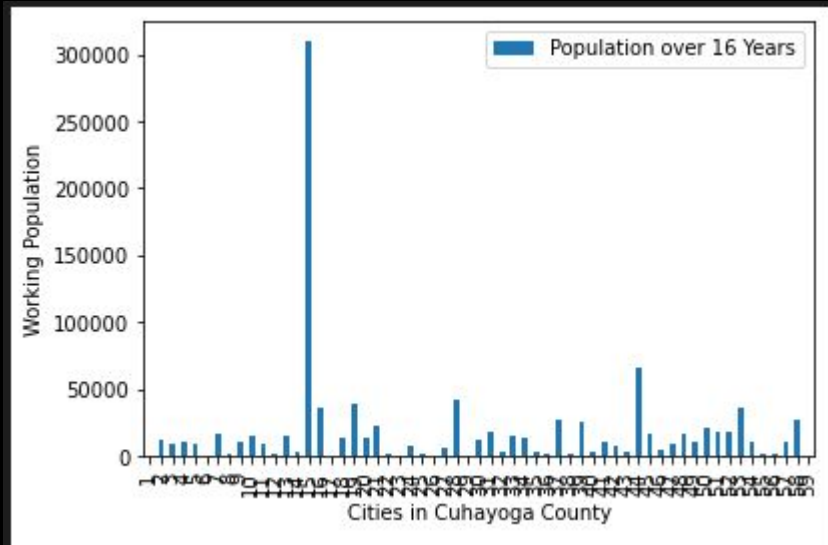
Product: 2018: ACS 1-Year Estimates Subject Tables

CUSTOMIZE TABLE

	Columbiana County, Ohio							
	Car, truck, or van -- drove alone		Car, truck, or van -- carpooled		Public transportation (excluding taxicab)			
Label	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	
Workers 16 years and over	719,187	±9,513	589,837	±9,056	54,855	±4,374	25,273	
AGE								
16 to 19 years	2.8%	±0.3	2.2%	±0.3	7.4%	±2.1	3.8%	
20 to 24 years	8.2%	±0.4	7.3%	±0.4	12.2%	±2.5	17.4%	
25 to 44 years	42.3%	±0.7	42.5%	±0.7	40.9%	±3.8	42.6%	
45 to 54 years	21.3%	±0.5	21.9%	±0.6	20.3%	±3.2	15.0%	
55 to 59 years	10.7%	±0.4	10.9%	±0.5	8.8%	±2	12.6%	
60 years and over	14.7%	±0.6	15.3%	±0.6	10.4%	±1.9	8.6%	
Median age (years)	43.2	±0.4	43.9	±0.5	38.4	±2.4	36.8	
SEX								
Male	50.7%	±0.6	51.2%	±0.7	47.4%	±3.2	47.9%	
Female	49.3%	±0.6	48.8%	±0.7	52.6%	±3.2	52.1%	

A total of 25,000 people commute to work from a total working population of over 700,000 working population in the county

Population Data



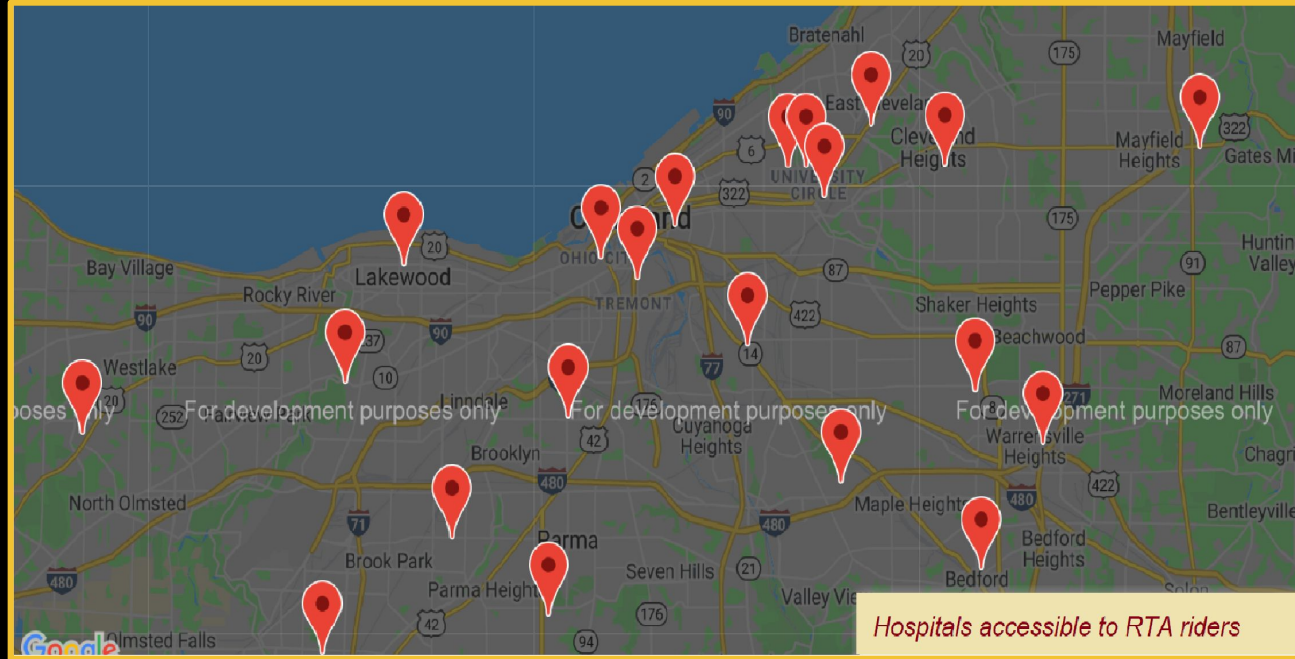
Population over 16 Years	
count	59.000000
mean	17302.050847
std	40752.538041
min	0.000000
25%	2310.000000
50%	10221.000000
75%	16663.500000
max	309862.000000

Aside of Cleveland City with a population of over 300,000, the working population of the Cuyahoga County is evenly distributed

Population Data



Map shows the working population in Cuyahoga county is spread

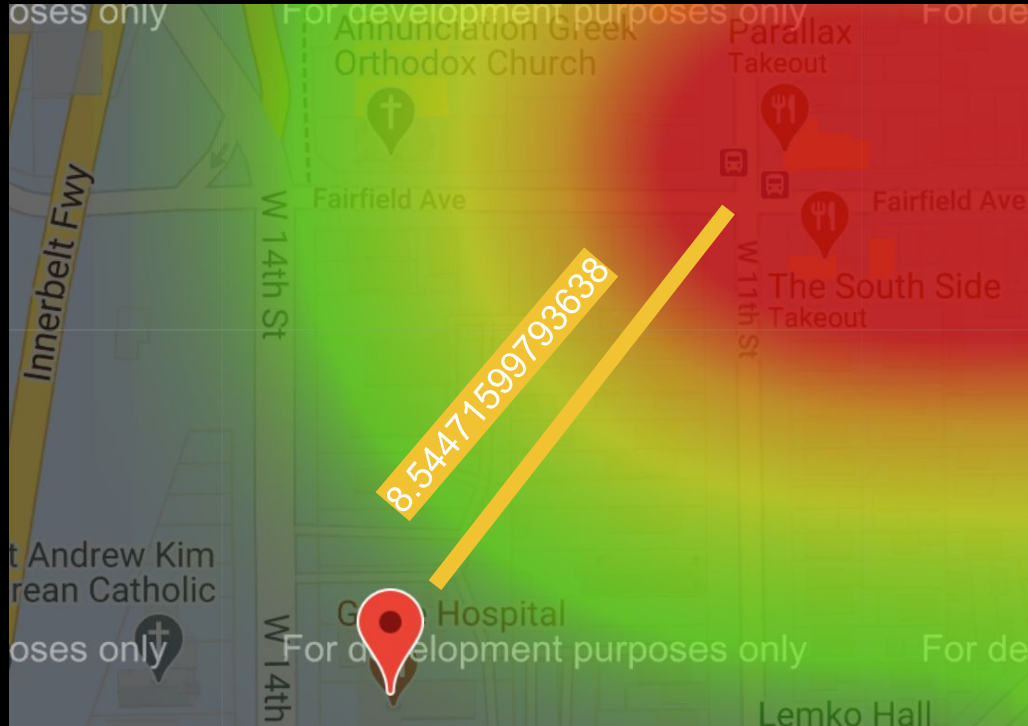


RTA Bus Route: Health Services



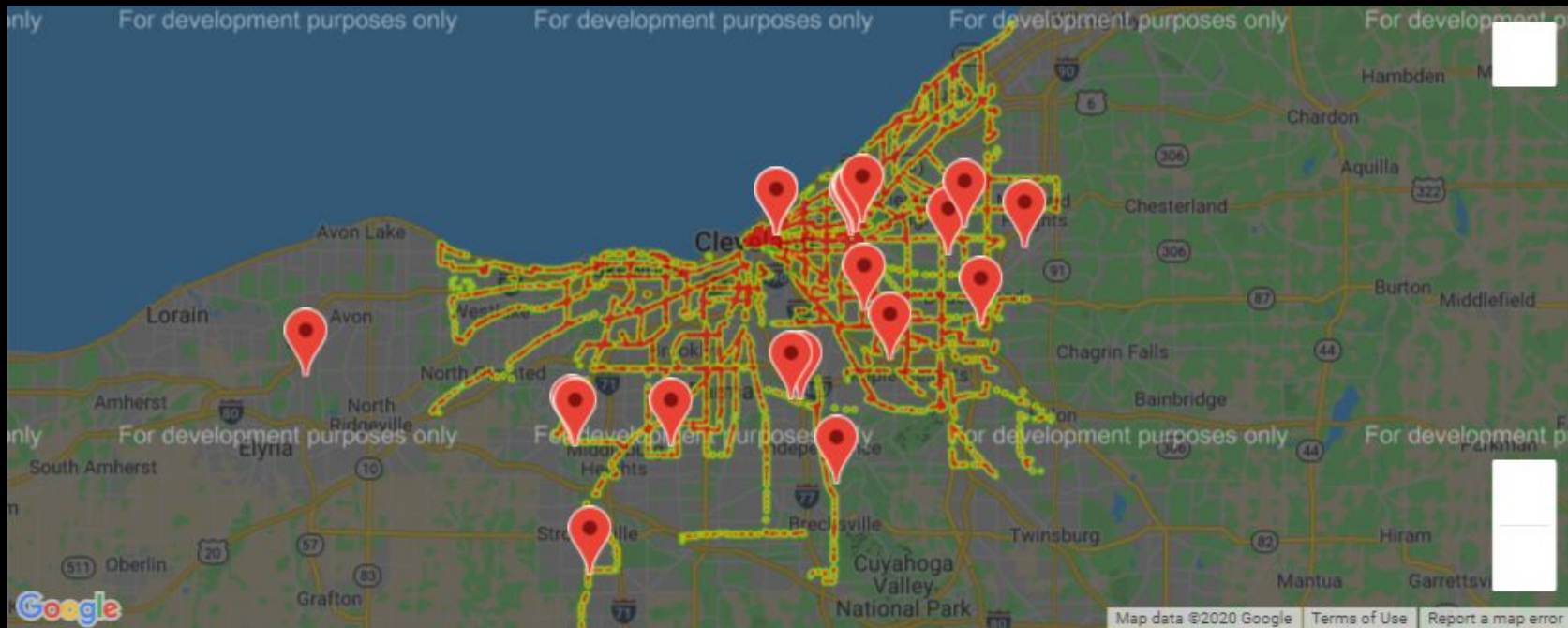
Of the 23 hospitals nearly each one is adequately covered by bus stops.

RTA Bus Route: Health Services



Outlier: Grace Hospital falls outside of bus route (though the RTA site lists it as a stop)

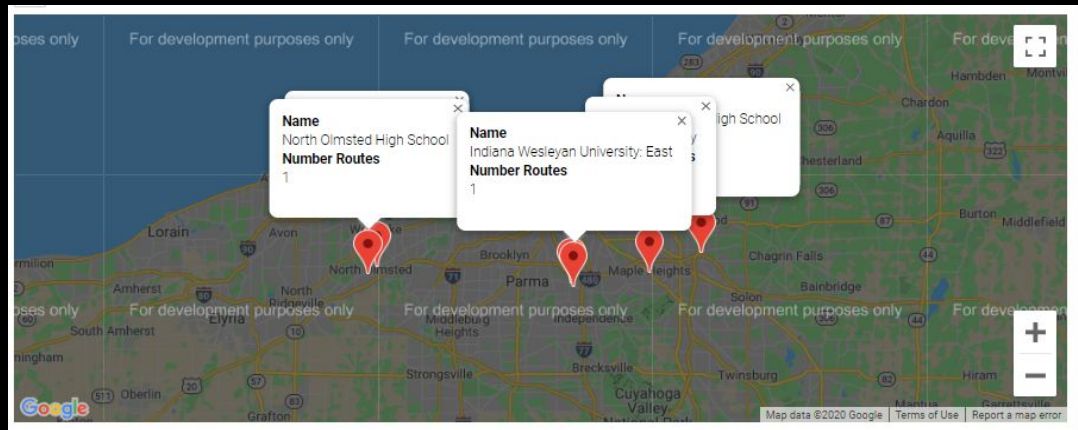
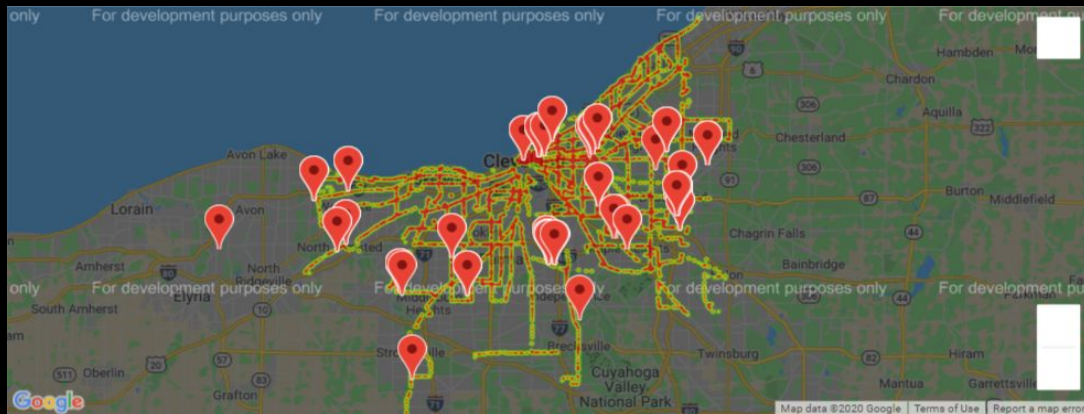
RTA Bus Routes and Education



Education Review #1: Google Search

- With long-term decline in ridership and census figures that confirm those employed do not prefer to take public transportation, we believe RTA should pivot towards servicing the greater Education market (Universities, Technical Schools, High Schools).
- This map uses a Google geo-maps search for all “Universities” within a 40km radius. This confirms the RTA bus routes provide adequate coverage to Universities, with the exception of Ursuline College and Lorain Community College (technically within 40km radius).

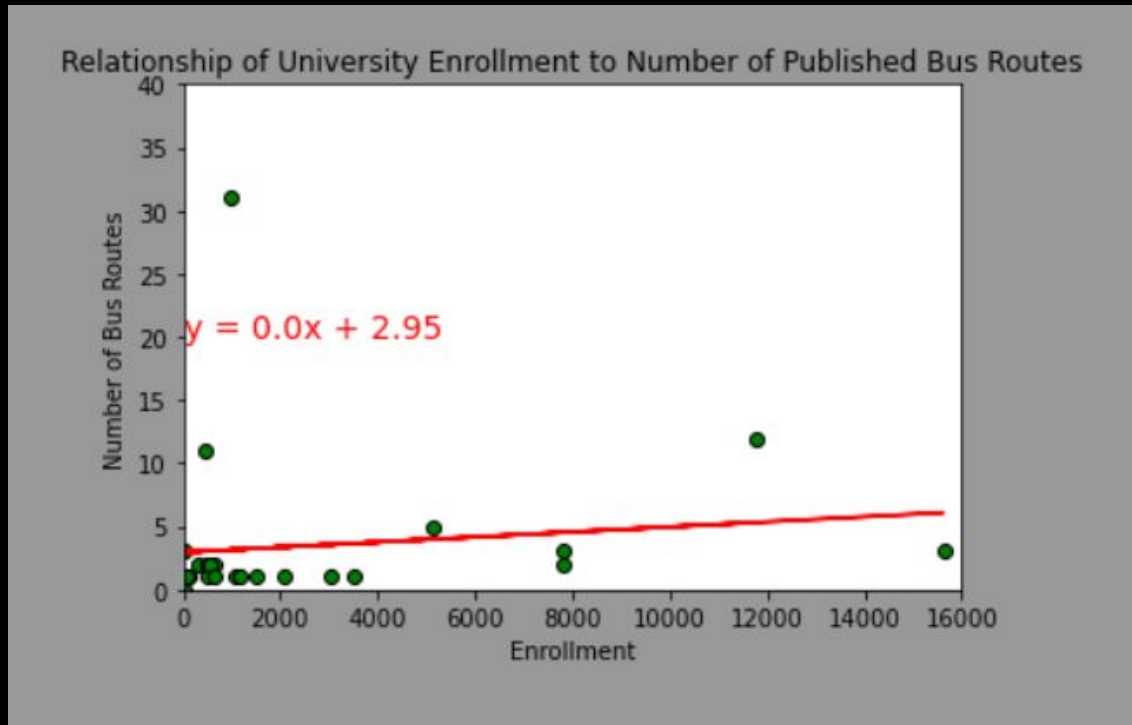
RTA Bus Routes and Education



Education Review #2: RTA Published Schools

- Posted on the RTA website is a list of Schools (Universities, Technical Schools) that have dedicated bus routes.
- Similar to the Google-Searched Review, the the 27 listed schools with dedicated routes/stops have adequate coverage. Exceptions include: Ursuline College and Lorain Community College. Enrollment is 63,623.
- However, upon reviewing the actual enrollment and activity of these listed schools, (4) schools no longer exist: Chancellor University, Indiana Wesleyan Univ: East, Remington College: West, and South University.
- Among the (27) listed schools, (2) were high schools: Maple Heights High School & North Olmsted High School.

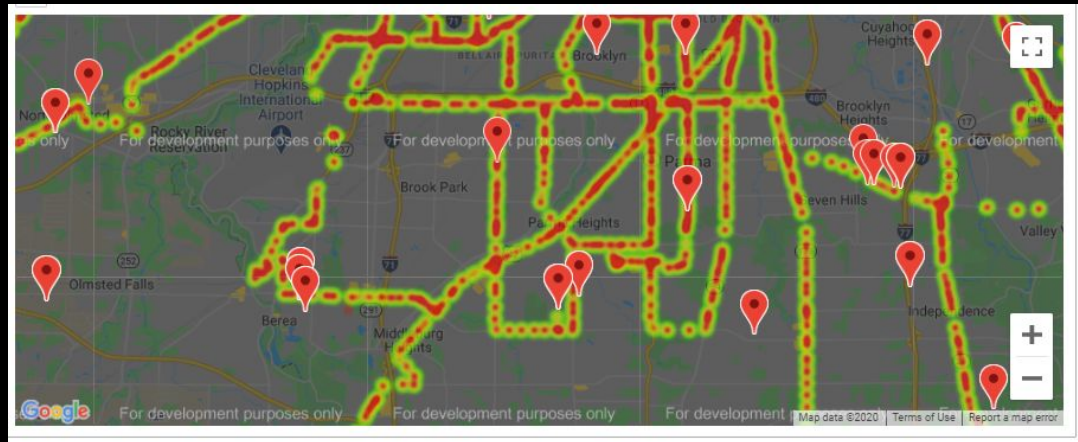
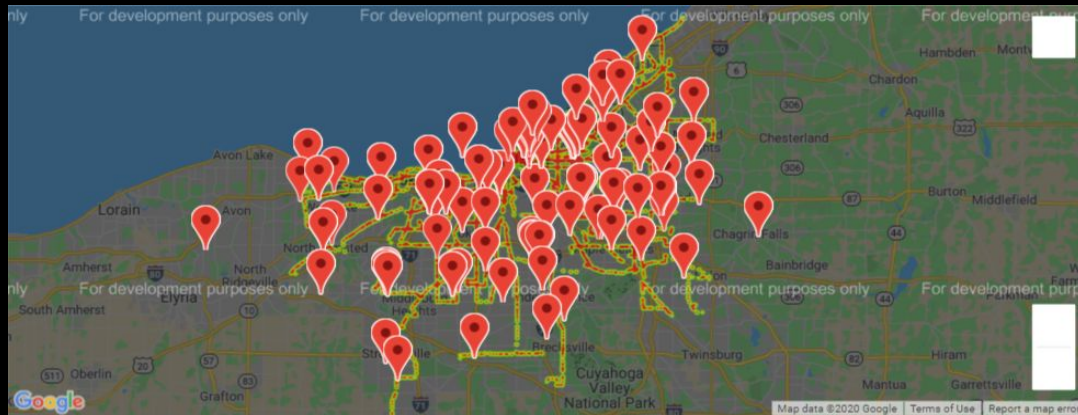
RTA Bus Routes and Education



Education Review #2: Published Schools

- We wanted to see if there was a relationship between school enrollment and the # of published bus routes as provided by RTA.
- Overall, very little relationship between Enrollment and # of Published Bus Routes (corr 0.1279, R-squared 0.0163).
- Skewing the results are those smaller (Technical Schools) located near hubs (ex. CCC Hospitality Management), with enrollment of approx 1,000 and 31 listed routes).
- We believe RTA can possibly increase ridership by aligning the # of bus routes with enrollment and ridership demand (ex. CCC Metro).

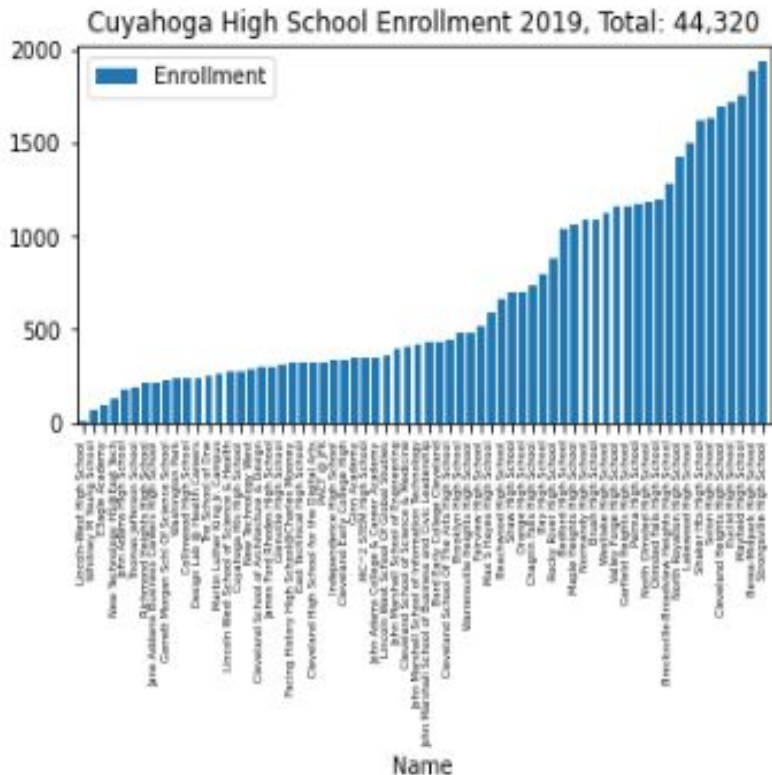
RTA Bus Routes and Education



Education Review #3: Survey of High Schools

- 2019 Ohio Board of Education data confirms there are (66) Public Schools in Cuyahoga County, representing total enrollment of 44,320.
- When reviewing the school list to current RTA bus routes, again most schools (particularly within Cleveland city lines) have access.
- However, there are gaps in bus route coverage, specifically when moving outside Cleveland city lines.
- The bottom heat map highlights the Southern section of Cuyahoga County. The average enrollment is 672 students. Gaps include some of the largest schools:
 - Olmsted Falls High School (1200)
 - Normandy High School (1080)
 - Other smaller schools include: Independence (328), Cuyahoga Heights (278), Brooklyn (477).

RTA Bus Routes and Education

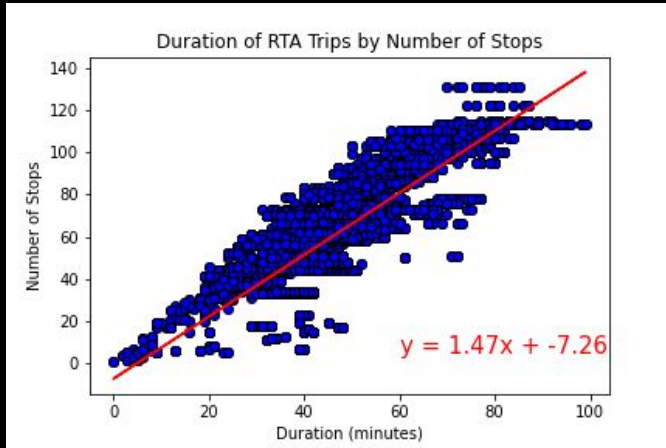


66 high schools in Cuyahoga County, many with small enrollment. We have identified some larger schools with no bus route access.

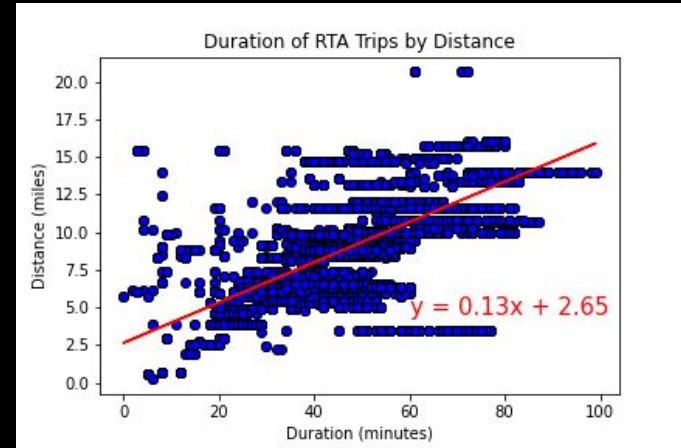
Education Summary

- The long-term trend of RTA bus ridership has been declining for decades. Preliminary ridership numbers during the COVID epidemic have even further accelerated the decline.
- Relying on currently-employed riders is problematic given Census data (25,000 population usage) and work from home trends.
- The combined market (enrolled) in Cuyahoga County for Universities, Trade Schools, and High Schools is (over 107,000).
- The RTA should pivot to better manage access to a younger market who desire a safe, reliable, and convenient transportation to and from schools/work/home.
- The RTA should better manage their bus routes, online route marketing, and partnerships with these schools in an effort to increase ridership.

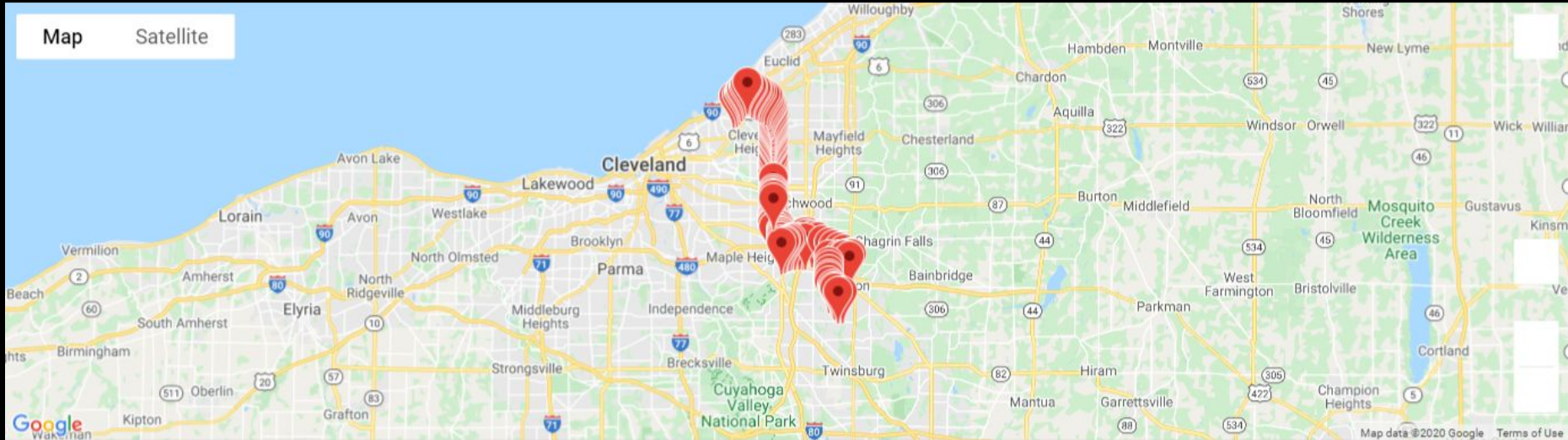
Commute Data



The r-squared value is
0.590140476264753.



The r-squared value is
0.3232831729144682.



Total time: 1 hour 39 minutes

Number of Stops: 113

RTA Data Report Results



<i>What areas could be better served by Cleveland RTA?</i>	Gap in school coverage - more research needed to determine if this is covered by school bus routes.	Gather data to determine if targeting open enrollment students where school buses are not covered would increase ridership.	Cuyahoga Valley routes for commutes to metro parks.
<i>What routes/stops are essential? Which are unnecessary?</i>	Currently, bus stops to healthcare systems are essential for both patients and employees, but this may change as telehealth and WFH options increase.	There are several schools that the RTA lists as stops that are now closed.	Density around Cleveland explained by not only businesses but population density.
<i>What is deterring citizens from using RTA?</i>	<u>Circumstances out of data analysts' control:</u> -Bad reviews: Reviewers have complained of the RTA's lateness, cleanliness, and safety issues. -Competition: Uber means more personal, comfy ride, even if more \$\$\$.	-Covid-19: Not only are more people working from home, but in a span of 6 weeks outpatient visits to the Cleveland Clinic increased from 2% remote to 75% remote, and it is expected that telehealth visits will become more mainstream as a result - eliminating the need for these patients to seek public transportation.	Commute and arrival times not convenient or accommodating to shifts.

Citations

Long-Run Ridership:

<https://www.cleveland.com/datacentral/2019/04/rta-ridership-hits-record-low-a-fourth-of-what-it-once-was.html>

RTA: <http://www.riderta.com/schools> , <http://www.riderta.com/hospitals>

Ohio Dept of Education: <http://education.ohio.gov/Topics/Data/Frequently-Requested-Data/Enrollment-Data>

Bus Routes: <http://www.riderta.com/developers>

Telehealth:

<https://my.clevelandclinic.org/-/scassets/files/org/landing/preparing-for-coronavirus/covid-response-digital-health-playbook.ashx?la=en>

Census: <https://data.census.gov/cedsci/table?g=05000000US39035&tid=ACST1Y2018.S0804&hidePreview=false>