

A stylized illustration of a white and blue airplane with orange stripes flying from left to right against a yellow background. It leaves a white contrail.

# E@B x Odys Final Presentation



# Overview

## Methodology

Assignment Catchment Airports  
Filtration of P2P and CE flyers

## Revenue Analysis

Pacific Northwest  
SEA-Tac for Delta  
  
Midwest  
DTW & MSP for Delta  
ORD for American

Houston Triangle  
DFW for American  
IAH for United

## Visualizations

## Helpful Functions

Total Revenue  
Number of Drivers  
Drivers Organized by Income Groups  
Most Popular Tracts



# Executive Summary



**Objective:** Determine revenue increase for airlines incorporating Odys eVTOLs by analyzing travel data and flight data to and from airports.

- The high number of catchment airports in the Midwest makes the ideal area to deploy Odys vehicles for both Delta and American Airlines.
- Delta could increase its annual revenue by 2.4% if Odys eVTOLs were integrated at MSP and DTW.
- American could increase its annual revenue by 1.6% if Odys eVTOLs were integrated at ORD.

# Our Team



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# Methodology



# Catchment Airports by Hub

Primary Hub	Catchment Airports
SEA	BOI, GEG, PDX
ORD	CLE, CMH, CVG, DSM, DTW, GRR, IND, MCI, MDW, MSP, SDF, STL
DTW	BUF, CLE, CMH, CVG, GRR, MDW, ORD, IND, PIT, ROC, SDF
MSP	DSM, DTW, MCI, MDW, ORD
DFW	AMA, AUS, MAF, MEM, MSY, OKC, SAT, TUL
IAH	AMA, AUS, MAF, MEM, MSY, OKC, SAT, TUL

# Passenger Selection Methodology



## P2P

- Servicing drivers around the hub airport
- **Filter in:** Drive to airport exceeds 40 mins (20 min drive to airport + 20 min wait for aircraft) + flight time
  - To calculate flight time:  
$$y = 1.8612E-07x^2 + 2.5885E-03x + 2.6245E-01$$

## Catchment Expansion

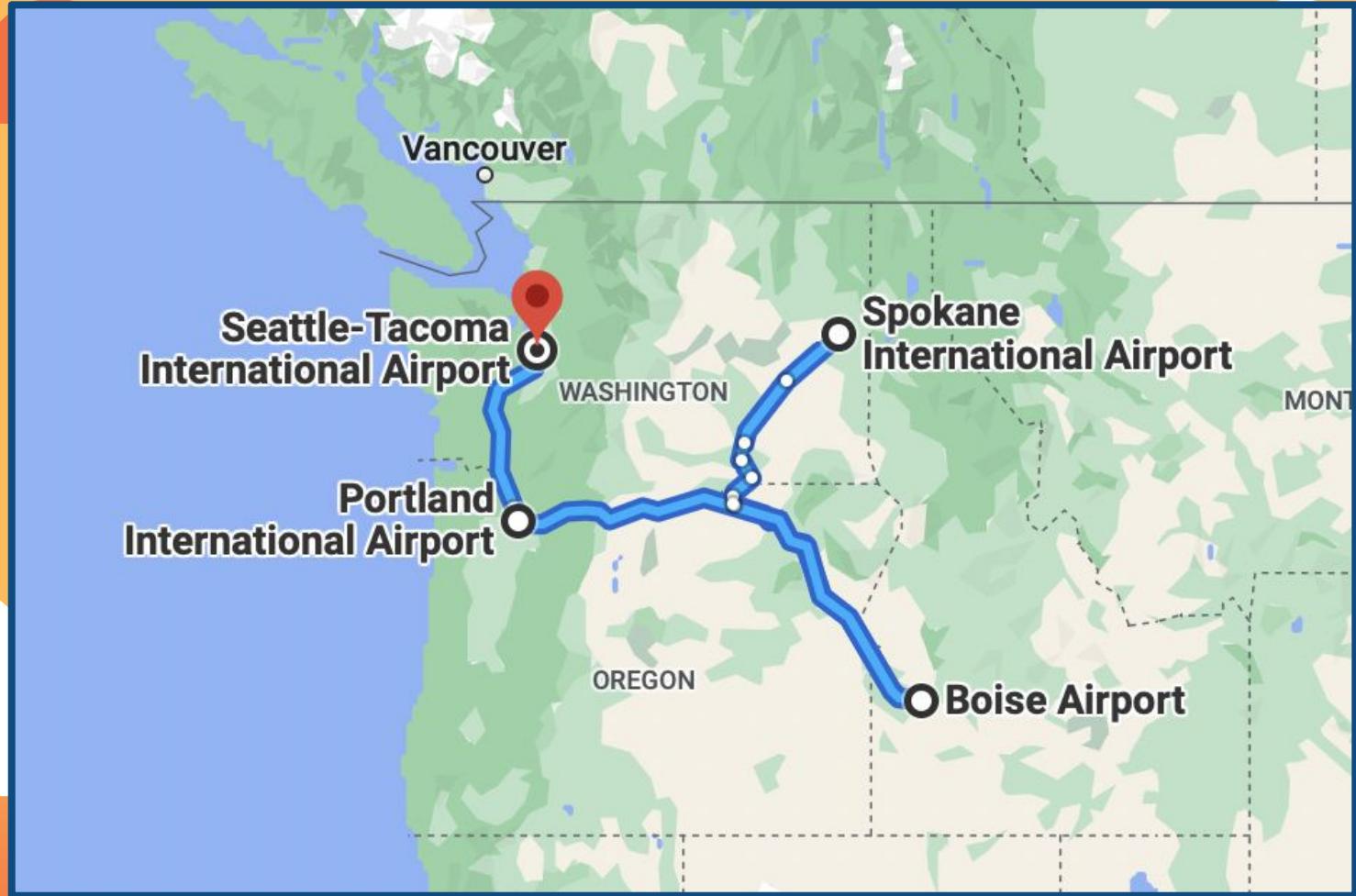
- Servicing drivers to smaller, local airports and redirecting their traffic to hub airport
- **Filter in:** Long haul flyers
- **Filter in:** Short haul flyers for whom it would be more convenient to fly to hub airport than drive to their local airport
  - For both domestic and international flights:
    - Flights < 2000 miles ⇒ short haul
    - Flights  $\geq$  2000 miles ⇒ long haul



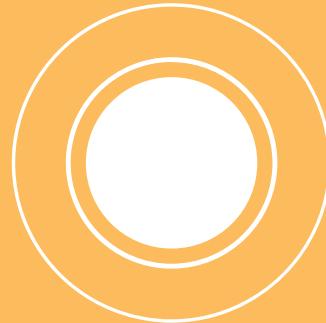


# Delta Airlines

at SEA



# **SEA: Total Available Market**



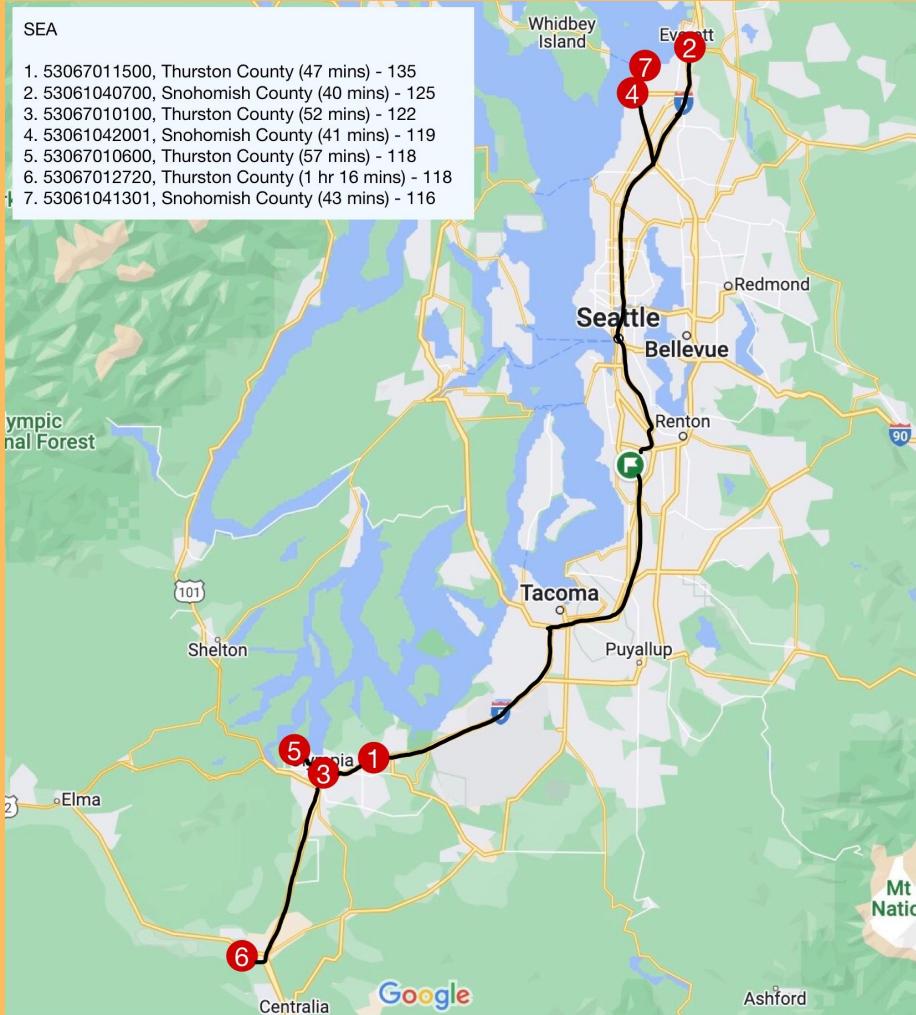
**P2P:** 60,902 drivers

from SEA area

**CE:** 48,679 drivers

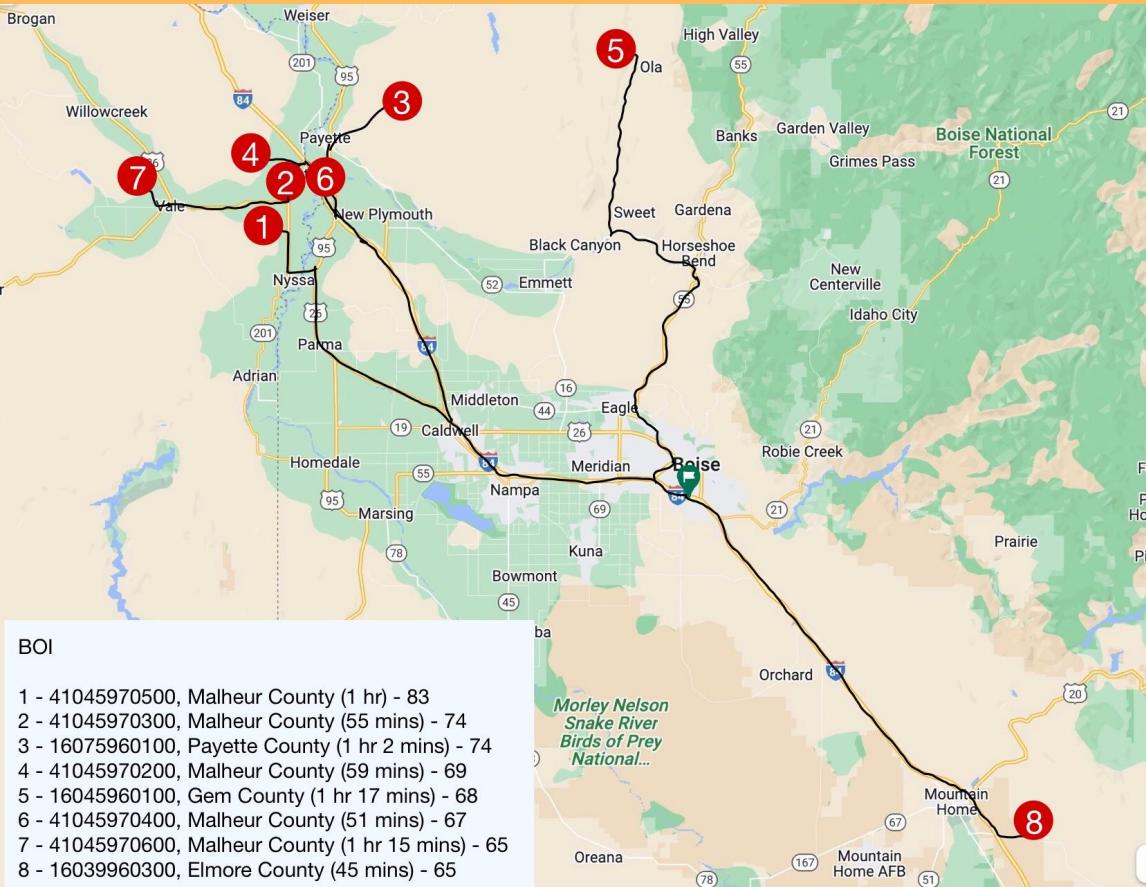
from BOI, GEG, PDX



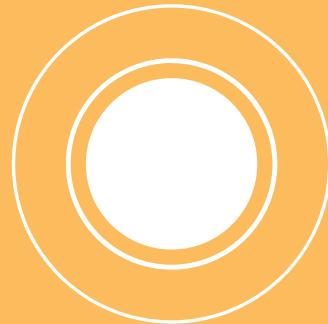




# BOI



# SEA: Revenue from P2P and CE



**P2P: \$7.13 M**

60,902 drivers \* \$117

**CE: \$ 73.0 M**

48,679 drivers \* \$1500

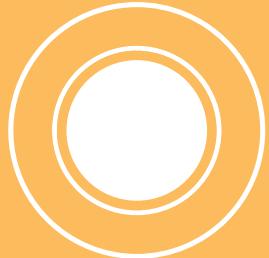
↳ 88.7% short haul  
11.3% long haul

**Total: \$7.13 M + \$73.0 M = \$80.1 M**



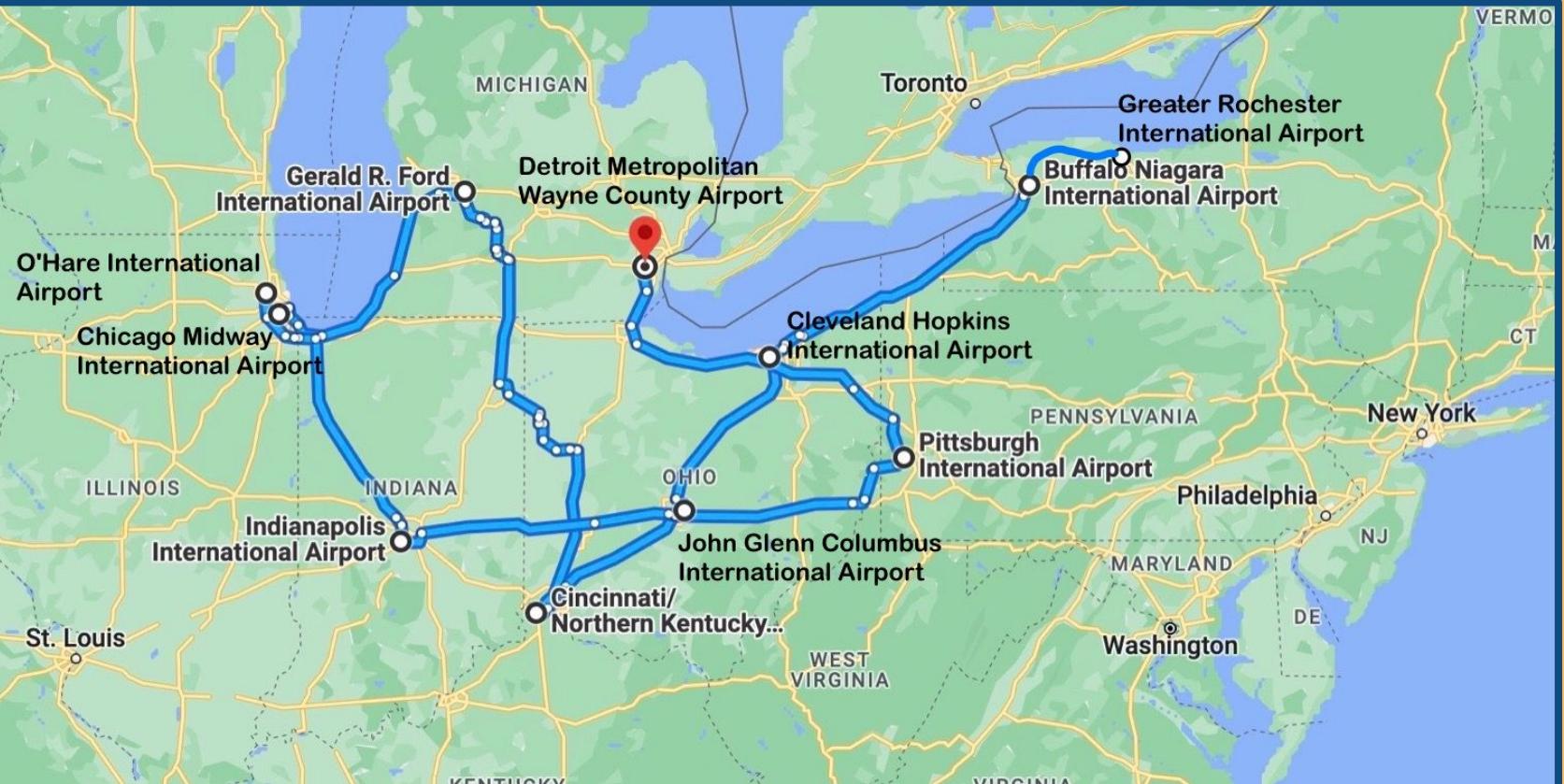
**Delta can increase annual  
revenue by 0.2%**  
**\$80.1 M / \$46.6 B<sup>‡</sup>**  
**by integrating Odys  
vehicles in SEA.**

<sup>‡</sup>Last 12 months revenue, as of 9/30/2022

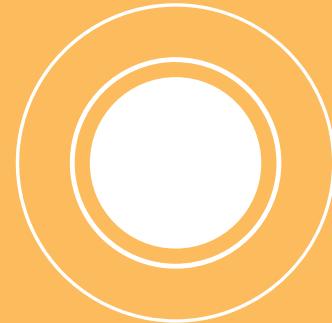


# Delta Airlines

at DTW and MSP



# DTW: Total Available Market



**P2P:** 96,576 drivers

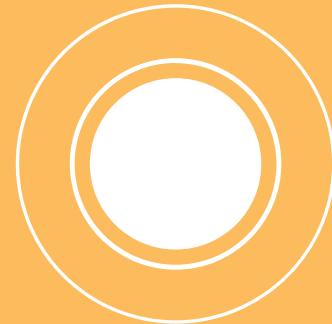
from DTW area

**CE:** 506,519 drivers

from BUF, CLE, CVG, GRR,  
IND, MDW, ORD, PIT, ROC,  
SDF



# DTW: Revenue from P2P and CE



**P2P: \$11.3 M**

96,576 drivers \* \$117

**CE: \$760 M**

506,519 drivers \* \$1500

↳ 94.8% short haul  
5.2% long haul

**Total: \$11.3 M + \$760 M = \$771 M**



**United States**

Kansas City  
International Airport

Des Moines  
International Airport

Minneapolis-Saint Paul  
International Airport

O'Hare International  
Airport

Detroit Metropolitan  
Wayne County Airport

Chicago Midway  
International Airport

Washington

# MSP: Total Available Market



**P2P:** 50,188 drivers

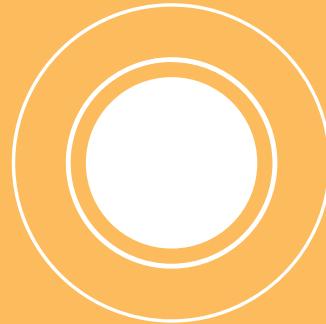
from MSP area

**CE:** 235,191 drivers

from DSM, DTW, MCI, MDW,  
ORD



# MSP: Revenue from P2P and CE



**P2P: \$5.87 M**

50,188 drivers \* \$117

**CE: \$353 M**

235,191 drivers \* \$1500

↳ 93.4% short haul  
6.6% long haul

**Total: \$5.87 M + \$353 M = \$359 M**



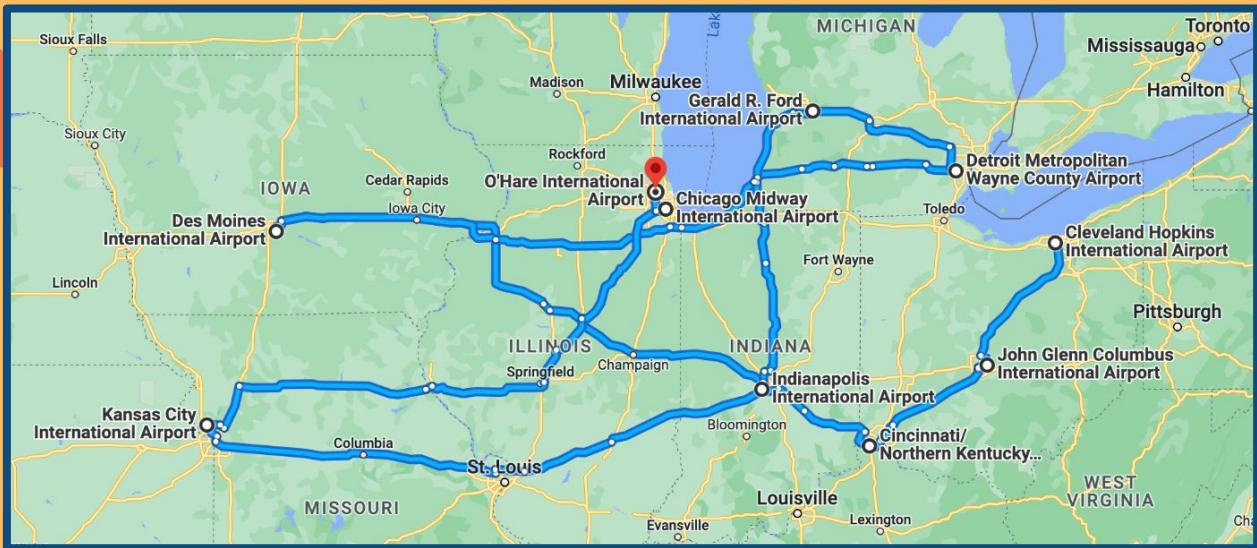
**Delta can increase annual  
revenue by 2.4%  
(\$771 M + \$359 M) / \$46.6 B<sup>‡</sup>  
by integrating Odys  
vehicles in DTW & MSP.**

<sup>‡</sup>Last 12 months revenue, as of 9/30/2022

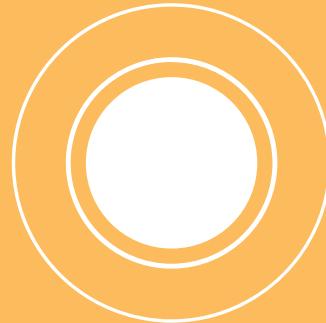


# American Airlines

at ORD



# ORD: Total Available Market



**P2P:** 163,508 drivers

from ORD area

**CE:** 473,555 drivers

from CLE, CMH, CVG, DSM,  
DTW, GRR, IND, MCI, MDW,  
MSP, SDF, STL



# ORD: Revenue from P2P and CE



**P2P: \$19.1 M**

163,508 drivers \* \$117

**CE: \$710 M**

473,555 drivers \* \$1500

↳ 96.2% short haul  
3.8% long haul

**Total: \$19.1 M + \$710 M = \$729 M**



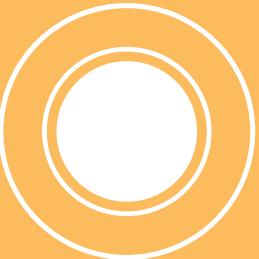
American Airlines can  
increase annual revenue by

**1.6%**

**\$729 M / \$45.2 B<sup>‡</sup>**

**by integrating Odys  
vehicles in ORD.**

<sup>‡</sup>Last 12 months revenue, as of 9/30/2022



# American Airlines

at DFW



# DFW: Total Available Market



**P2P:** 56,298 drivers

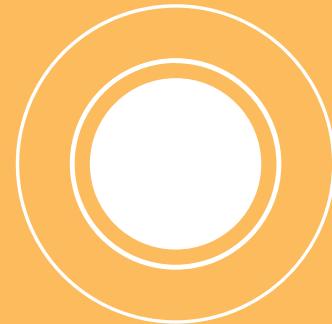
from DFW area

**CE:** 80,522 drivers

from AMA, AUS, MAF, MEM,  
MSY, OKC, SAT, TUL



# DFW: Revenue from P2P and CE



**P2P: \$6.59 M**

56,298 drivers \* \$117

**CE: \$120 M**

80,522 drivers \* \$1500

↳ 98.6% short haul  
1.4% long haul

**Total: \$6.59 M + \$120 M = \$127 M**



American Airlines can  
increase annual revenue by

.28%

\$127 M / \$45.2 B<sup>‡</sup>

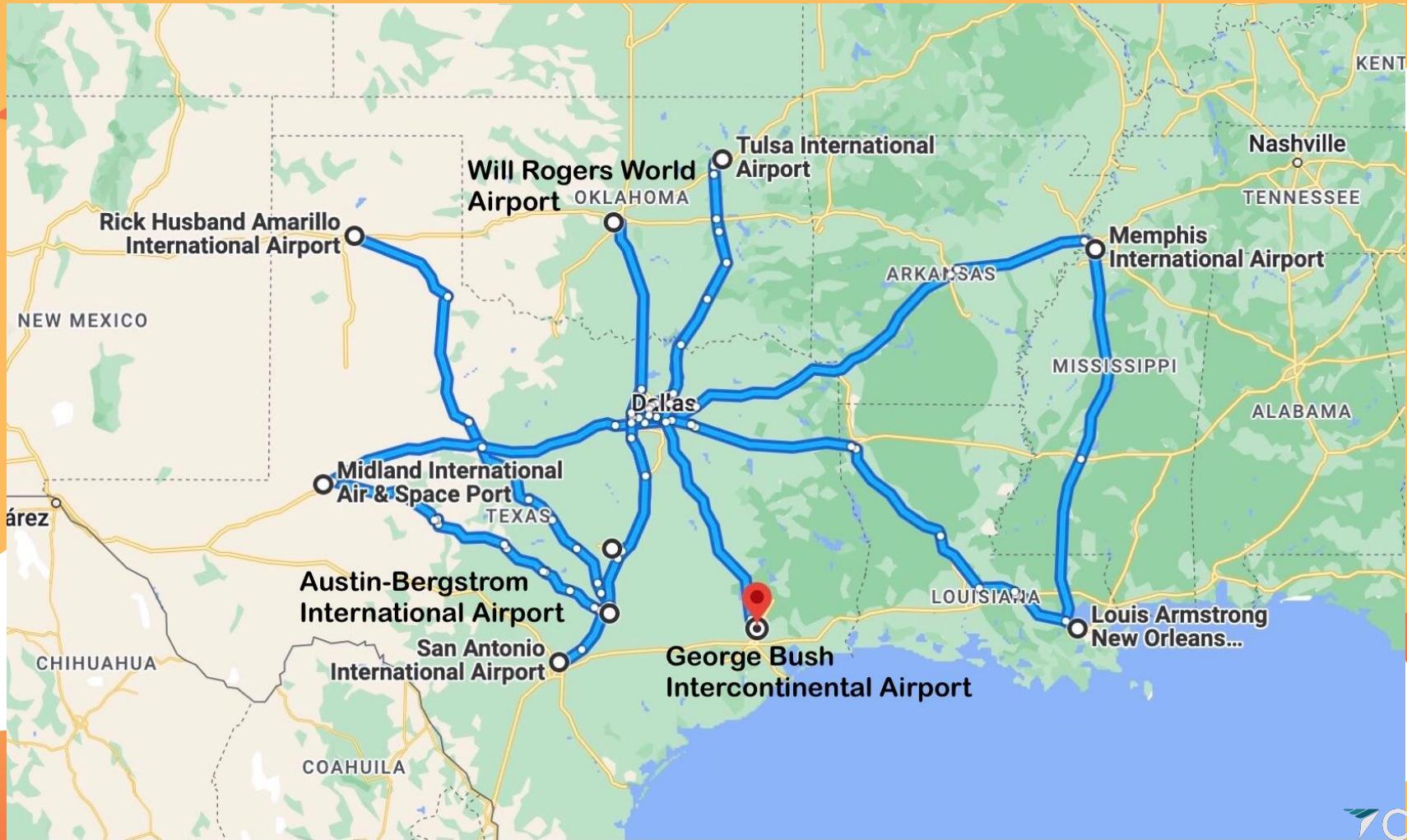
by integrating Odys  
vehicles in DFW.

<sup>‡</sup>Last 12 months revenue, as of 9/30/2022



# United Airlines

at IAH



# IAH: Total Available Market



**P2P:** 45,086 drivers

from IAH area

**CE:** 75,863 drivers

from AMA, AUS, MAF, MEM,  
MSY, OKC, SAT, TUL



# IAH: Revenue from P2P and CE



**P2P: \$5.3 M**

45,086 drivers \* \$117

**CE: \$114 M**

75,863 drivers \* \$1500

↳ 98.6% short haul  
1.4% long haul

**Total: \$5.3M + \$114 M = \$119 M**



**United Airlines can increase  
annual revenue by .29%**

**\$119 M / \$40.7 B<sup>‡</sup>**

**by integrating Odys  
vehicles in IAH.**

<sup>‡</sup>Last 12 months revenue, as of 9/30/2022

# Total Revenue Increases

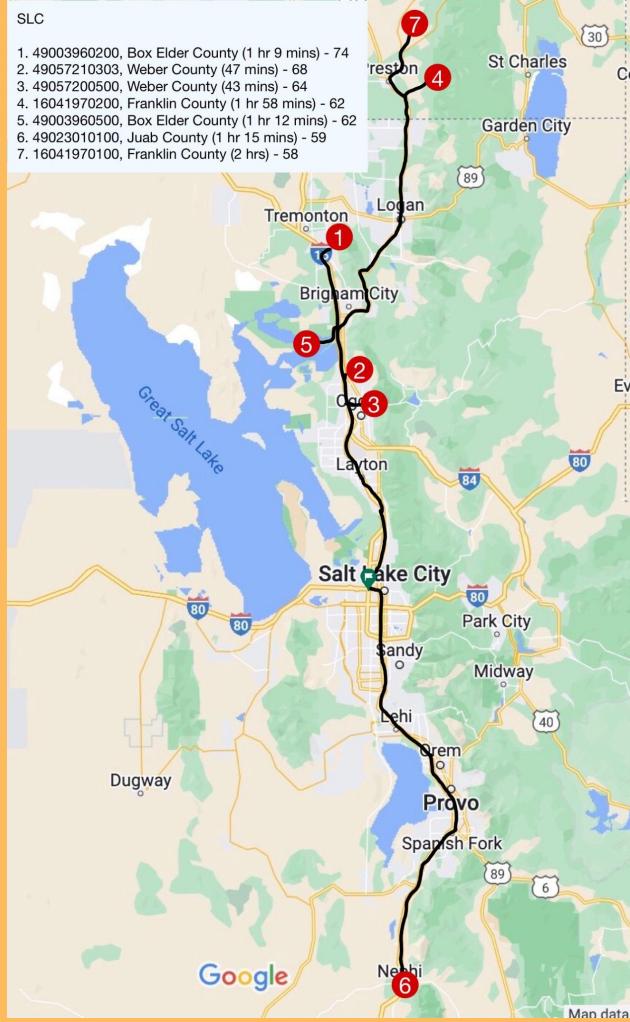


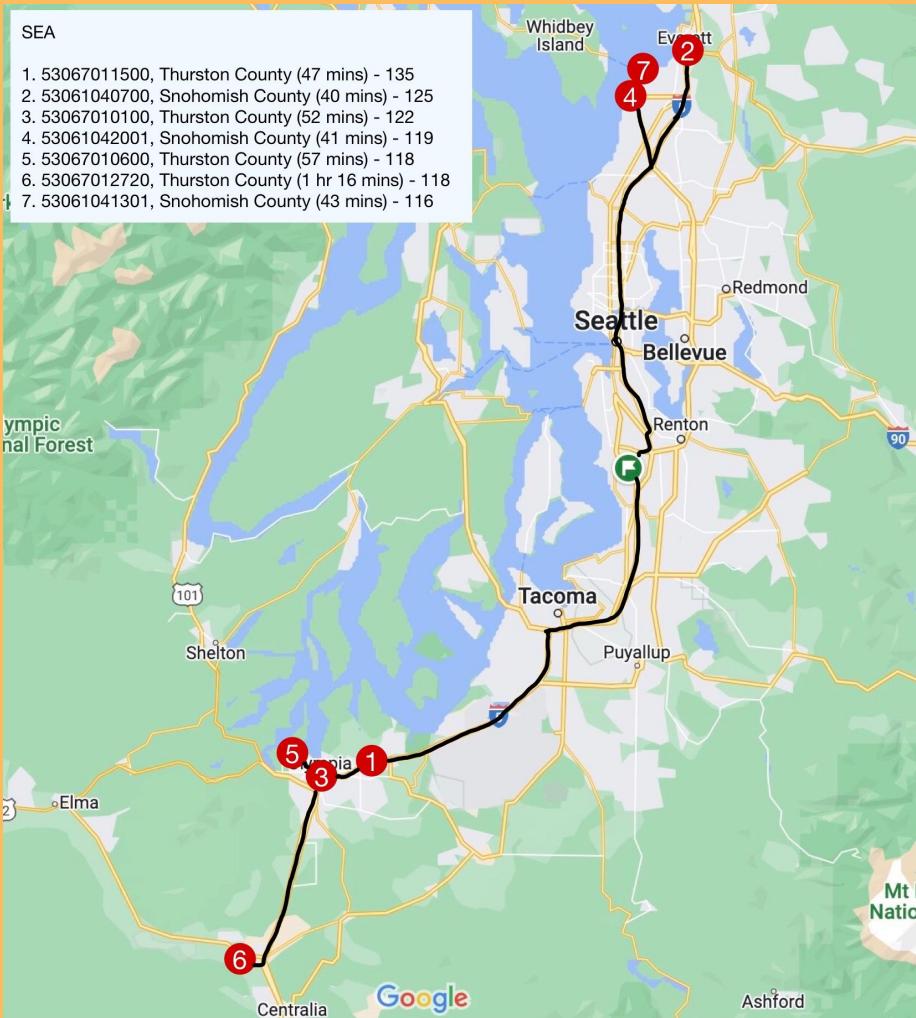
		Number of Flyers	Total Revenue (\$)	Revenue Increase (%)
Delta	SEA	109,581	80.1 M	.20
Delta	MSP	285,379	359 M	
Delta	DTW	603,095	771 M	
American	ORD	637,063	729 M	1.6
American	DFW	136,820	127 M	.28
United	IAH	120,949	119 M	.29



# Appendix

# West Coast

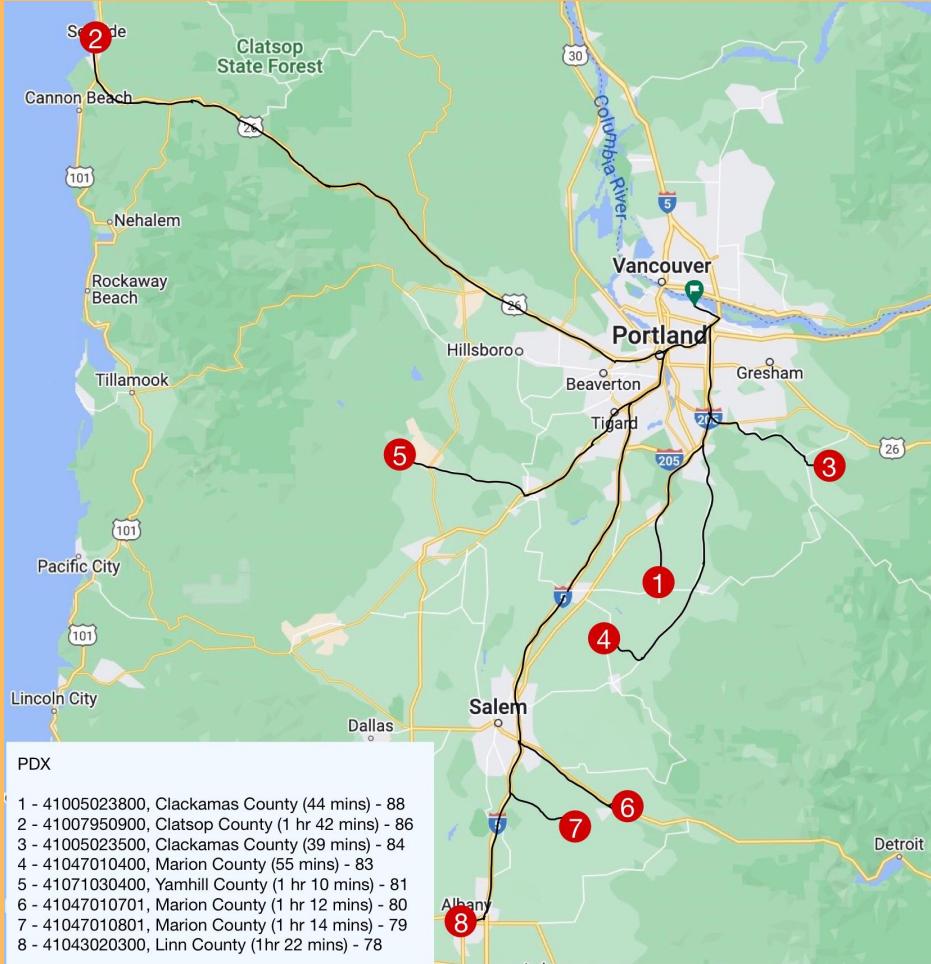






# BOI

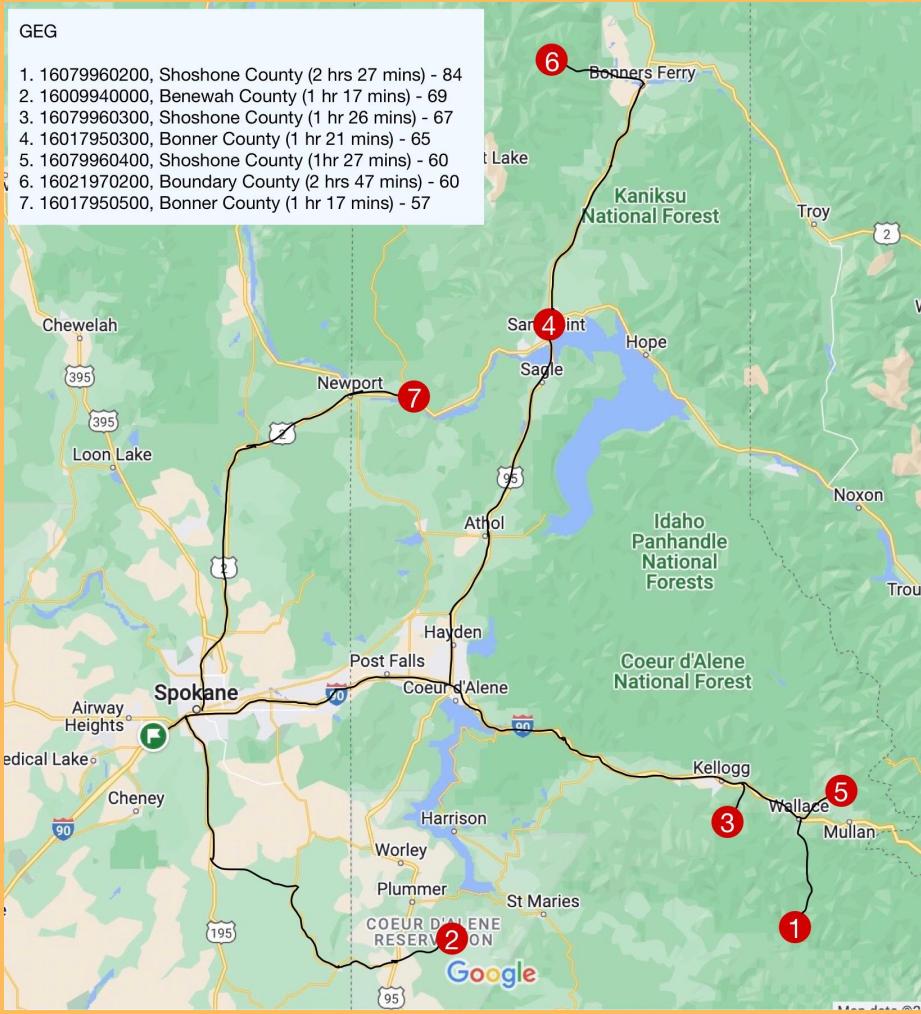




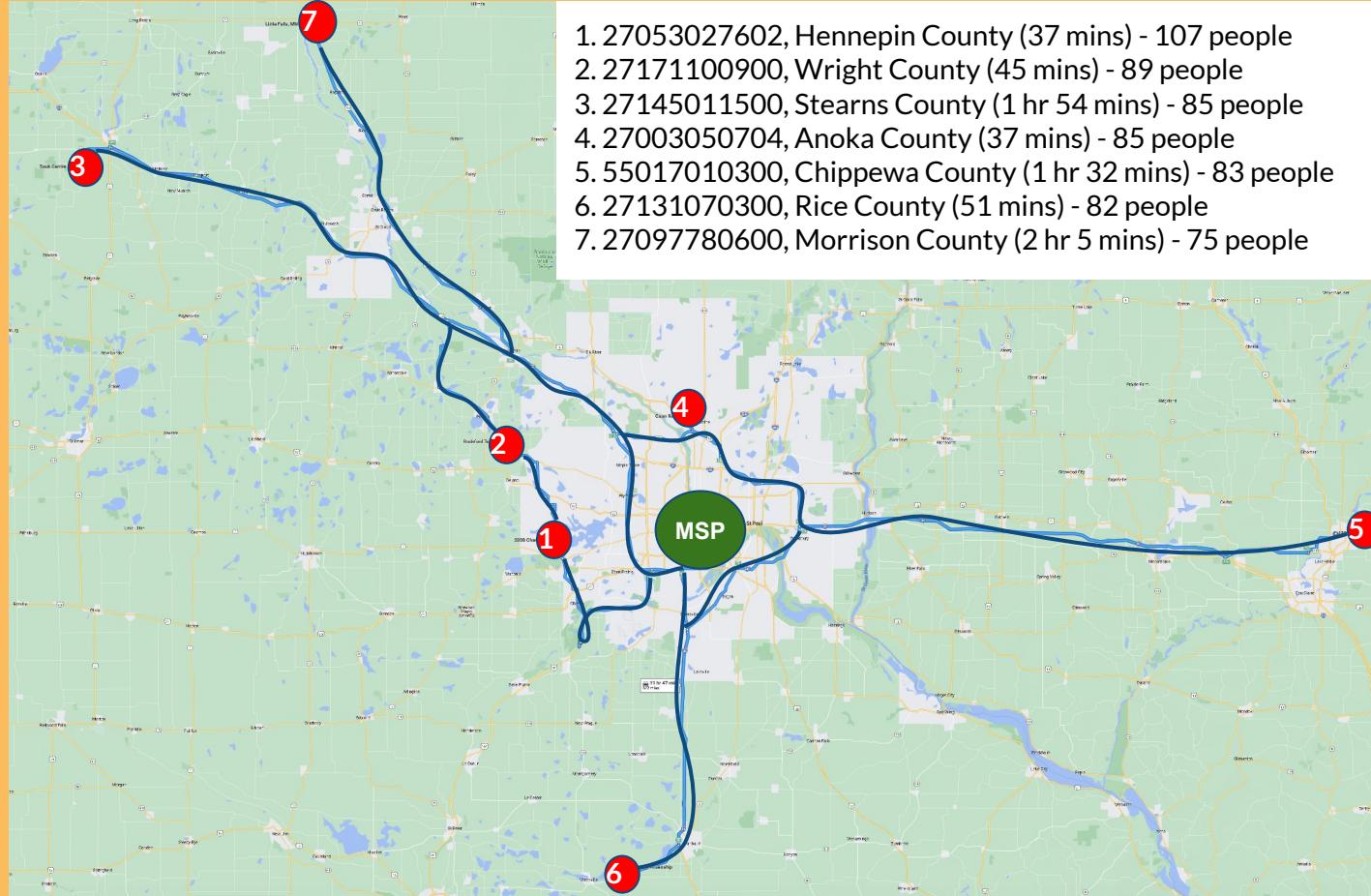


GEG

1. 16079960200, Shoshone County (2 hrs 27 mins) - 84
2. 16009940000, Benewah County (1 hr 17 mins) - 69
3. 16079960300, Shoshone County (1 hr 26 mins) - 67
4. 16017950300, Bonner County (1 hr 21 mins) - 65
5. 16079960400, Shoshone County (1hr 27 mins) - 60
6. 16021970200, Boundary County (2 hrs 47 mins) - 60
7. 16017950500, Bonner County (1 hr 17 mins) - 57

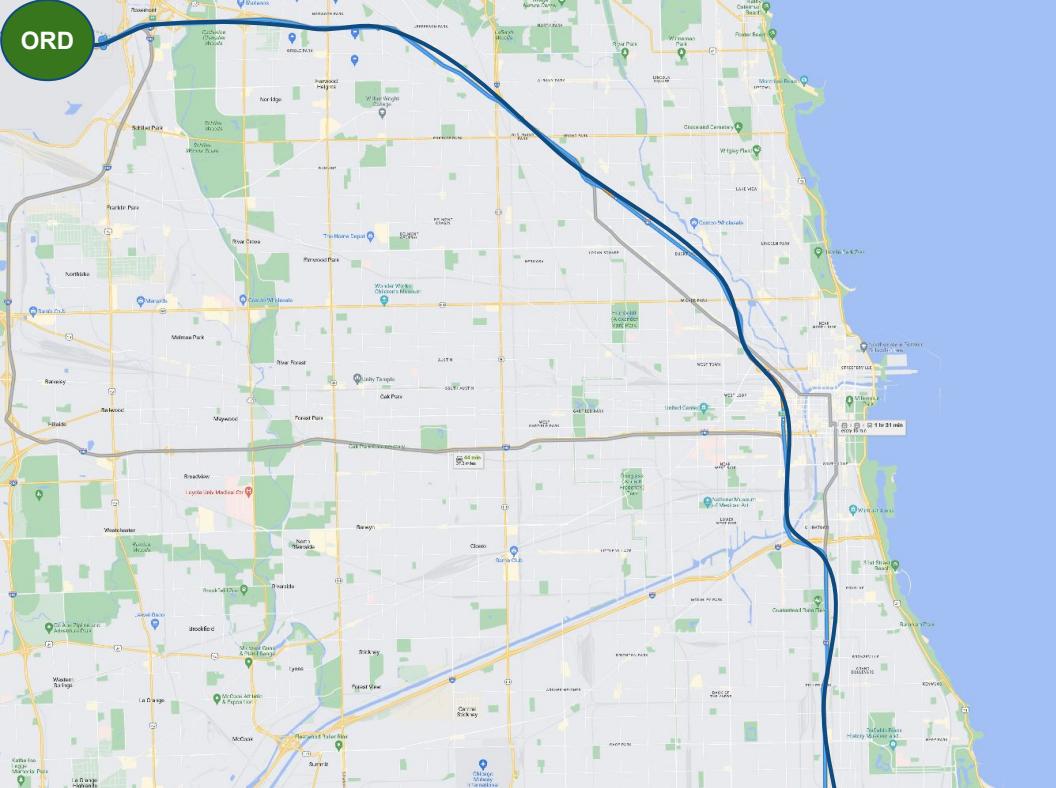


# Midwest

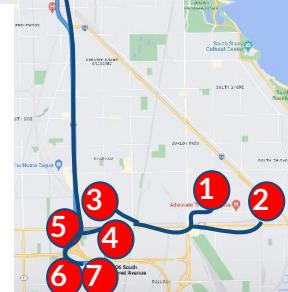


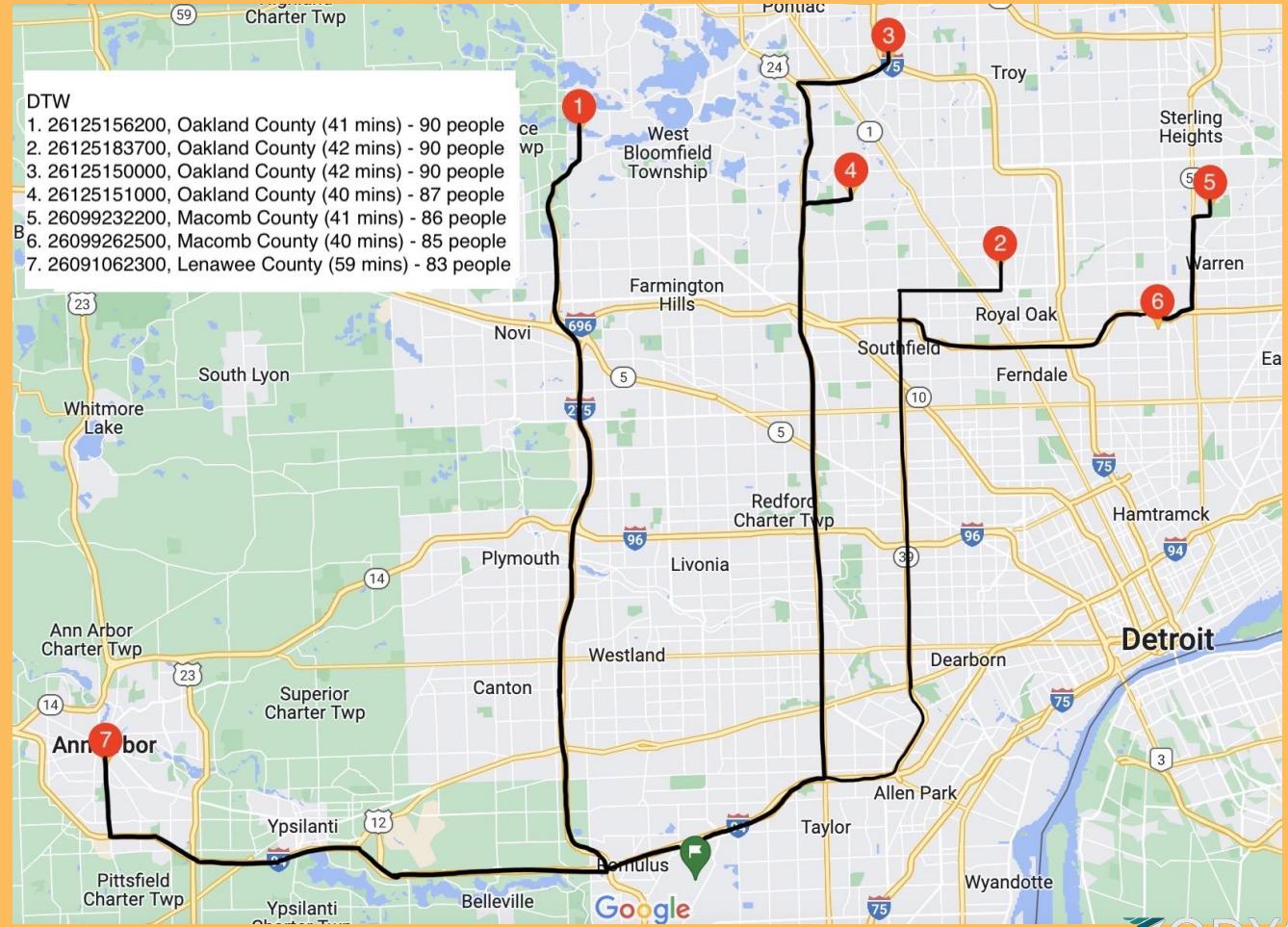


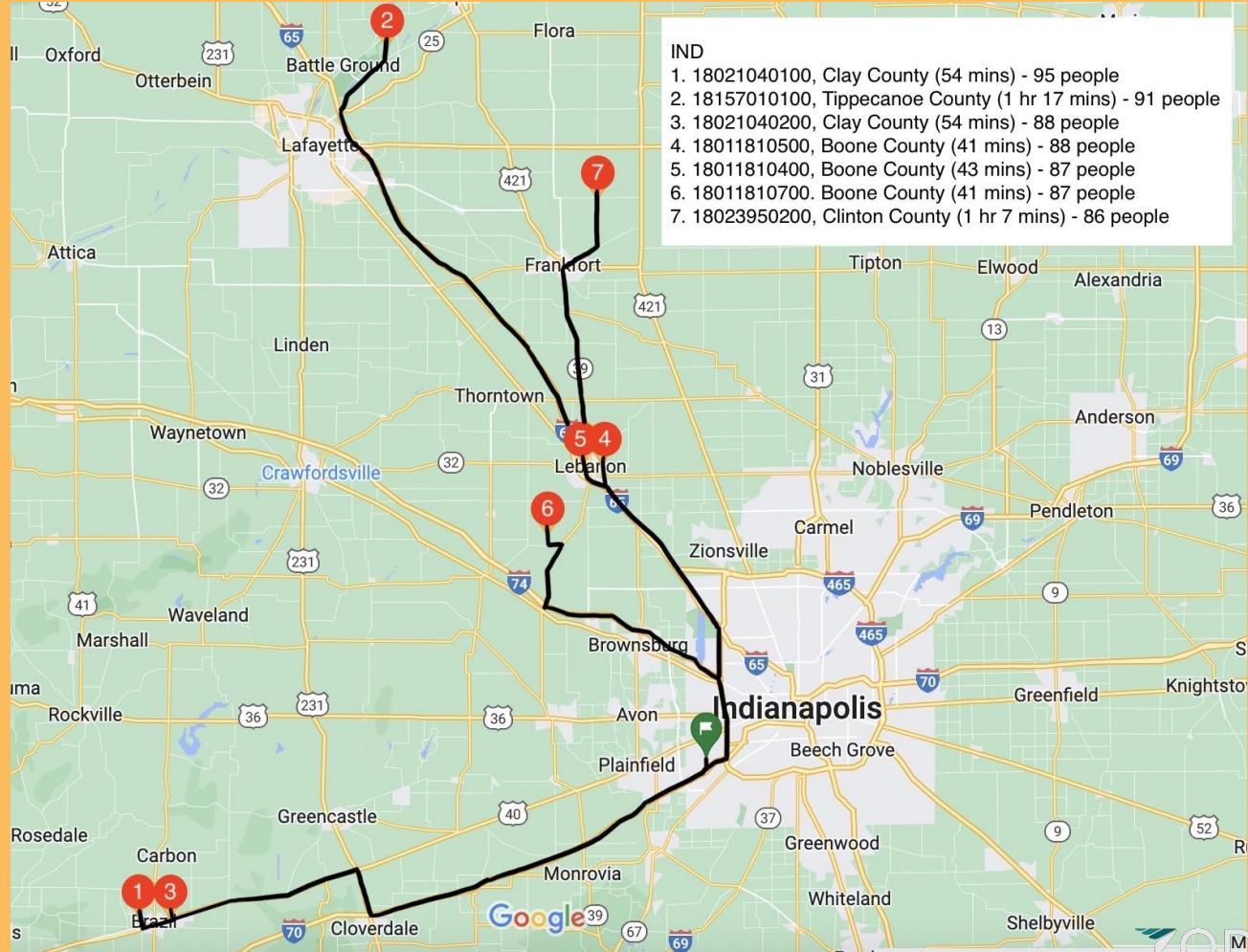
**ORD**



1. 170314804001, Cook County (53 mins) - 111 people
  2. 170314805001, Cook County (54 mins) - 109 people
  3. 17031490200, Cook County (49 mins) - 105 people
  4. 170314905001, Cook County (49 mins) - 103 people
  5. 170314906001, Cook County (46 mins) - 101 people
  6. 170314907001, Cook County (47 mins) - 101 people
  7. 170314908001, Cook County (51 mins) - 98 people

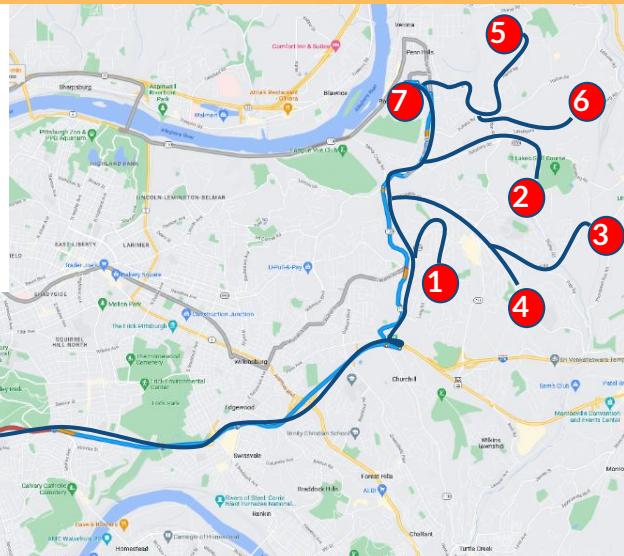
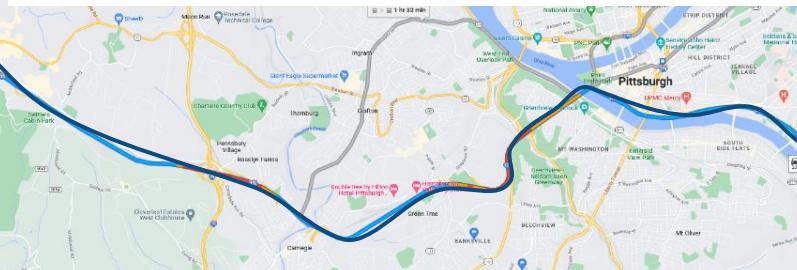
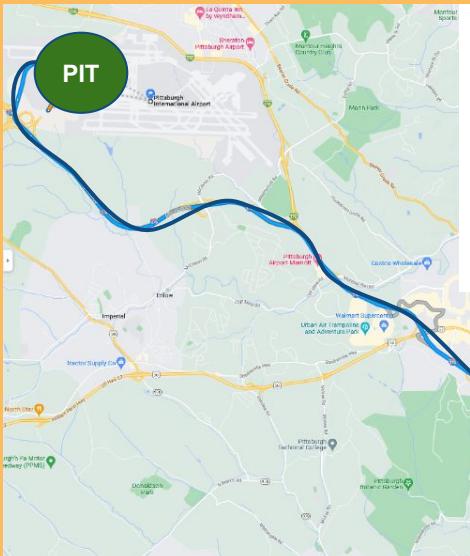






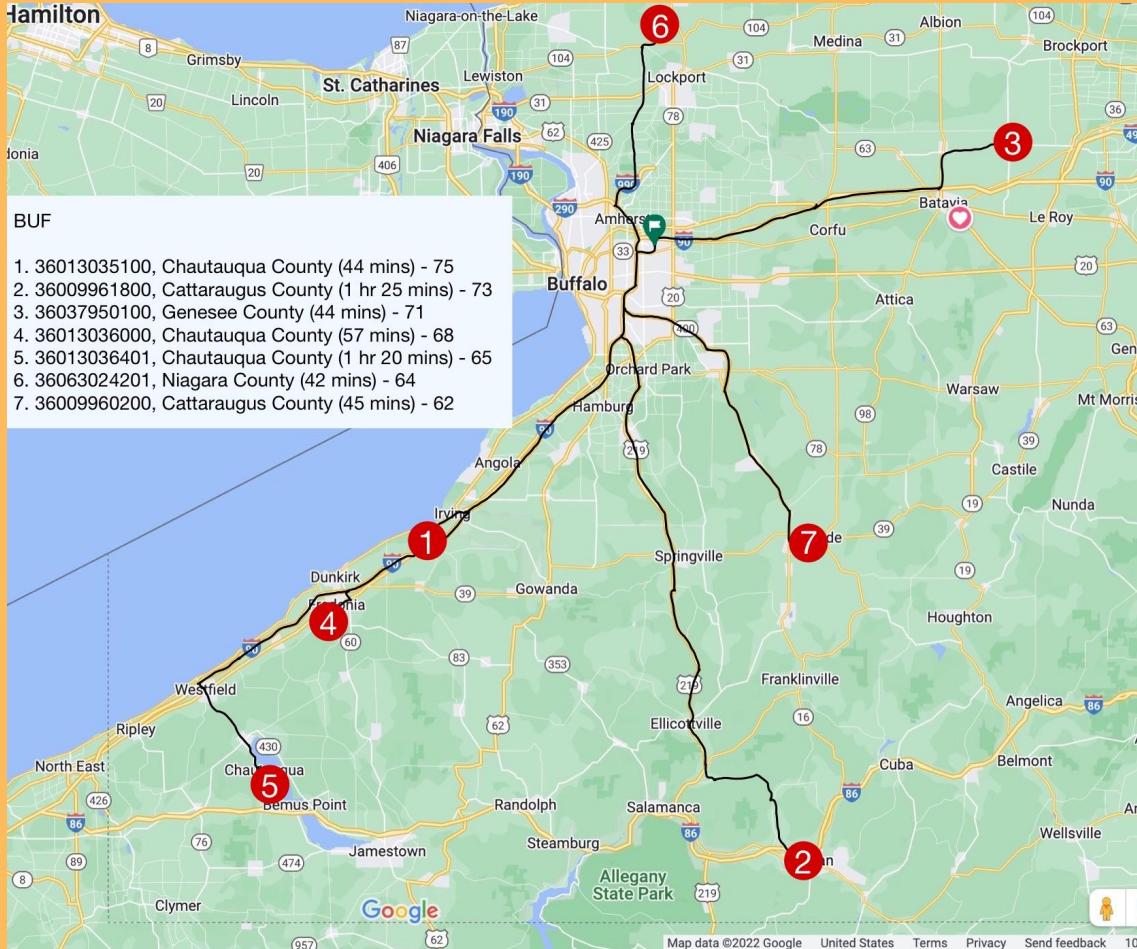


1. 420035234001, Allegheny County (35 mins) - 103 people
2. 420035235011, Allegheny County (39 mins) - 103 people
3. 420035235021, Allegheny County (38 mins) - 91 people
4. 420035236001, Allegheny County (37 mins) - 90 people
5. 420035237011, Allegheny County (44 mins) - 90 people
6. 420035237021, Allegheny County (43 mins) - 89 people
7. 420035238001, Allegheny County (42 mins) - 87 people



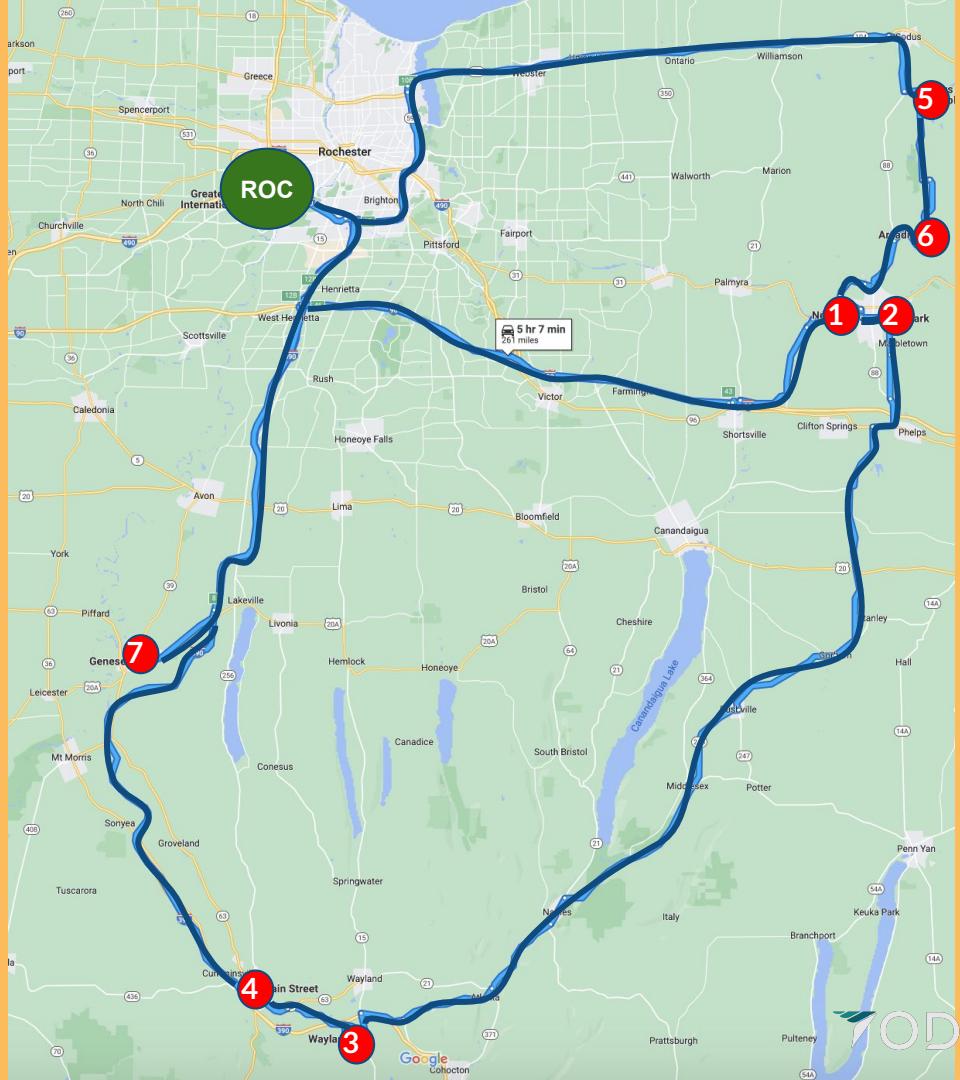


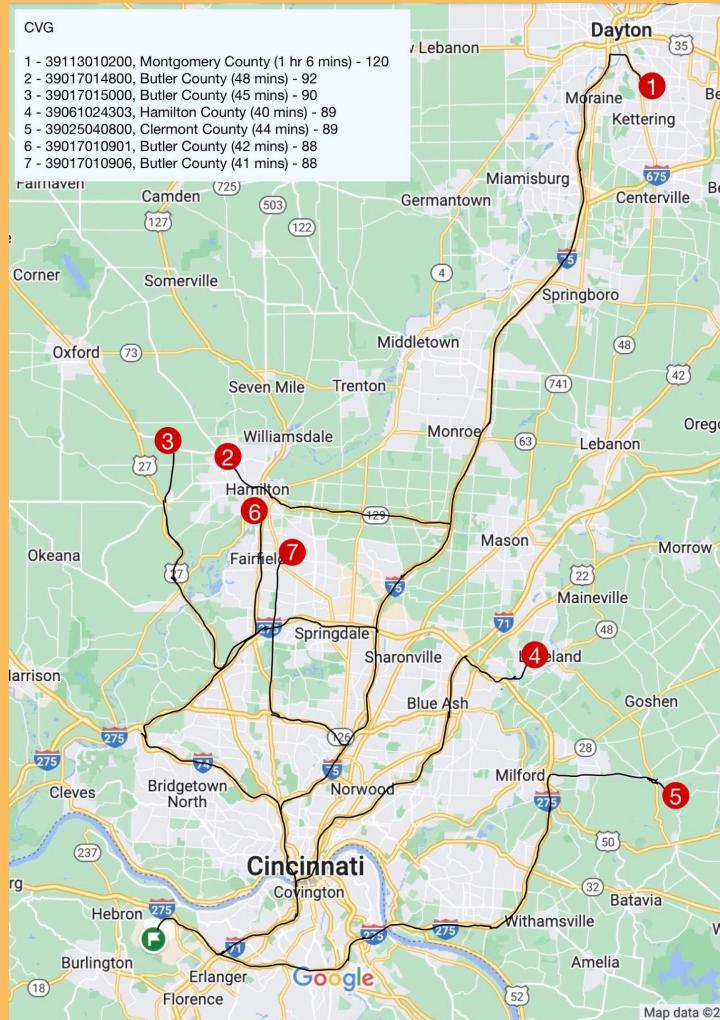
# BUF





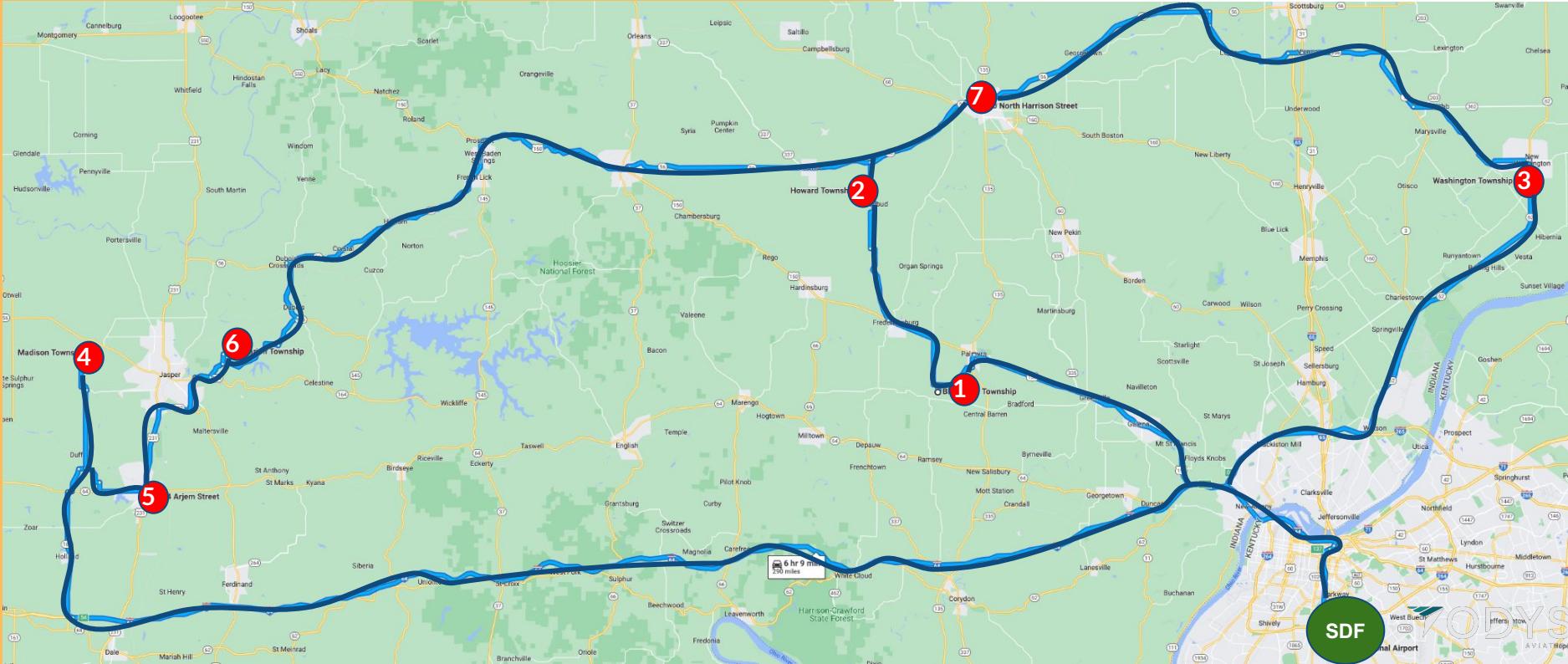
1. 36117021100, Wayne County (47 mins) - 65 people
2. 36117021200, Wayne County (50 mins) - 61 people
3. 36101960400, Steuben County (1 hr) - 58 people
4. 36051031400, Livingston County (53 mins) - 55 people
5. 36117020900, Wayne County (48 mins) - 54 people
6. 36117021000, Wayne County (53 mins) - 54 people
7. 36051030400, Livingston County (36 mins) - 53 people

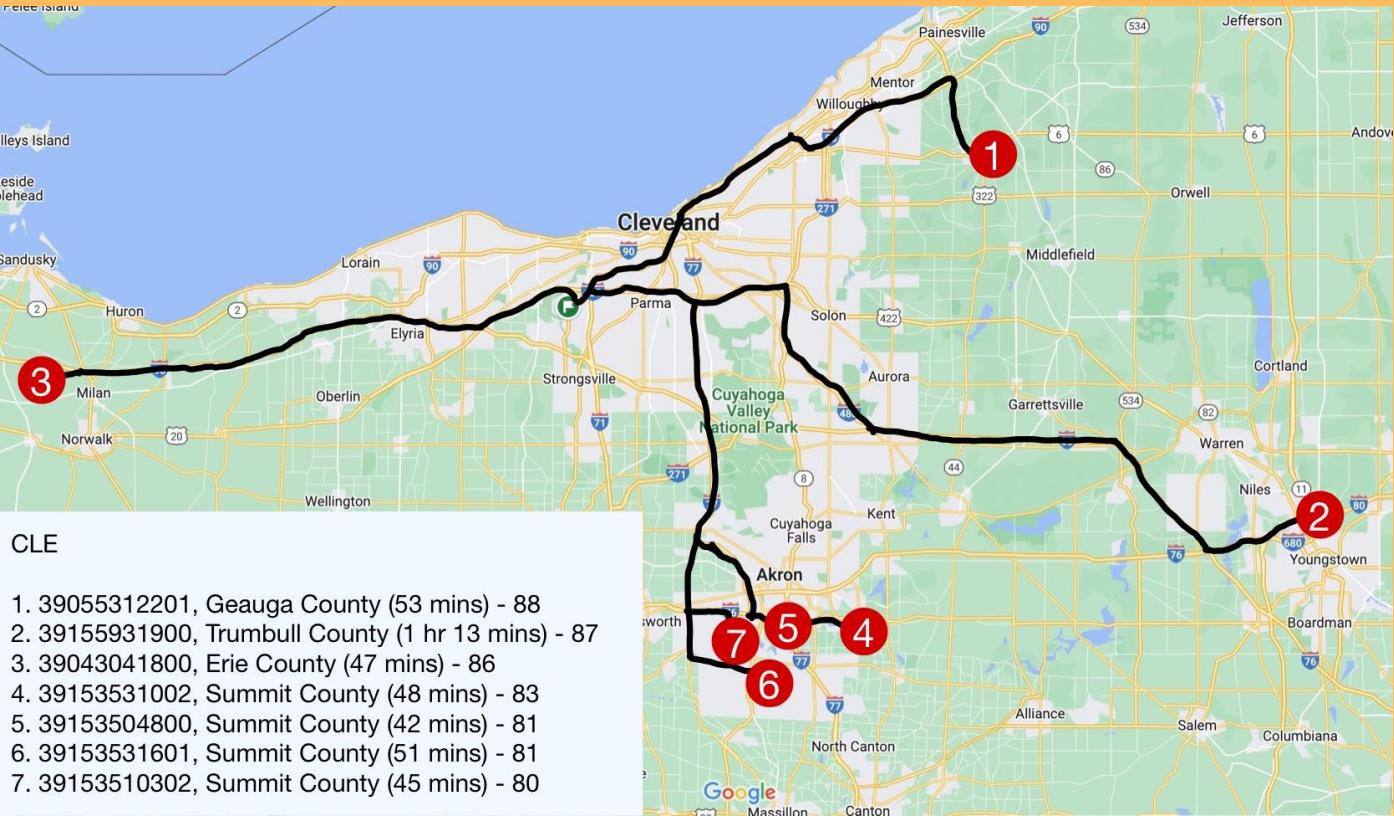


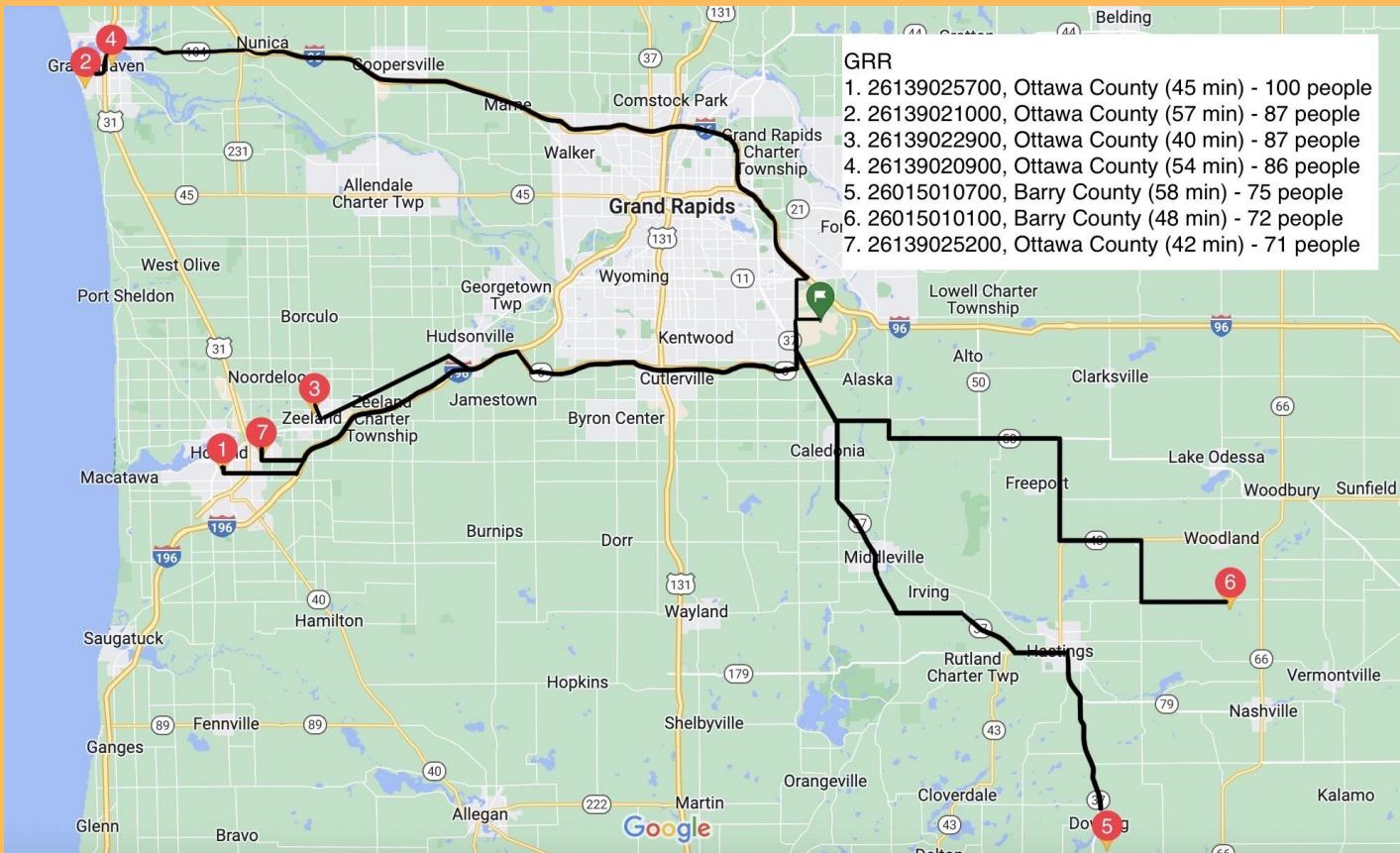


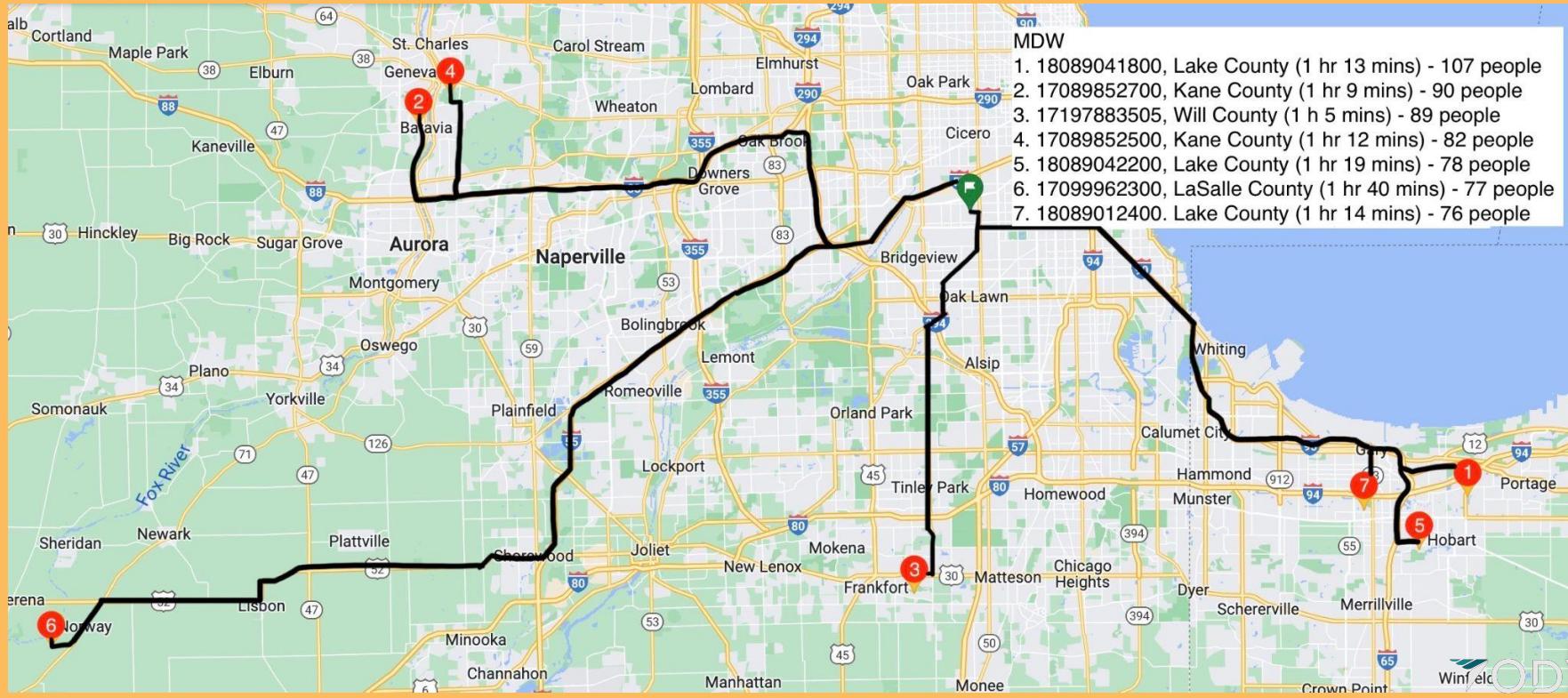


1. 18061060100, Harrison County (45 mins) - 68 people
2. 18175967400, Washington County (57 mins) - 65 people
3. 18019051000, Clark County (42 mins) - 64 people
4. 18037953200, Dubois County (1 hr 33 mins) - 64 people
5. 18037953800, Dubois County (1 hr 20 mins) - 62 people
6. 18037953500, Dubois County (1 hr 28 mins) - 62 people
7. 18175967500, Washington County (53 mins) - 60 people











## CMH

1. 39117965300, Morrow County (47 mins) - 86

2. 39089754700, Licking County (44 mins) - 85

3. 39079957500, Jackson County (1 hr 26 mins) - 81

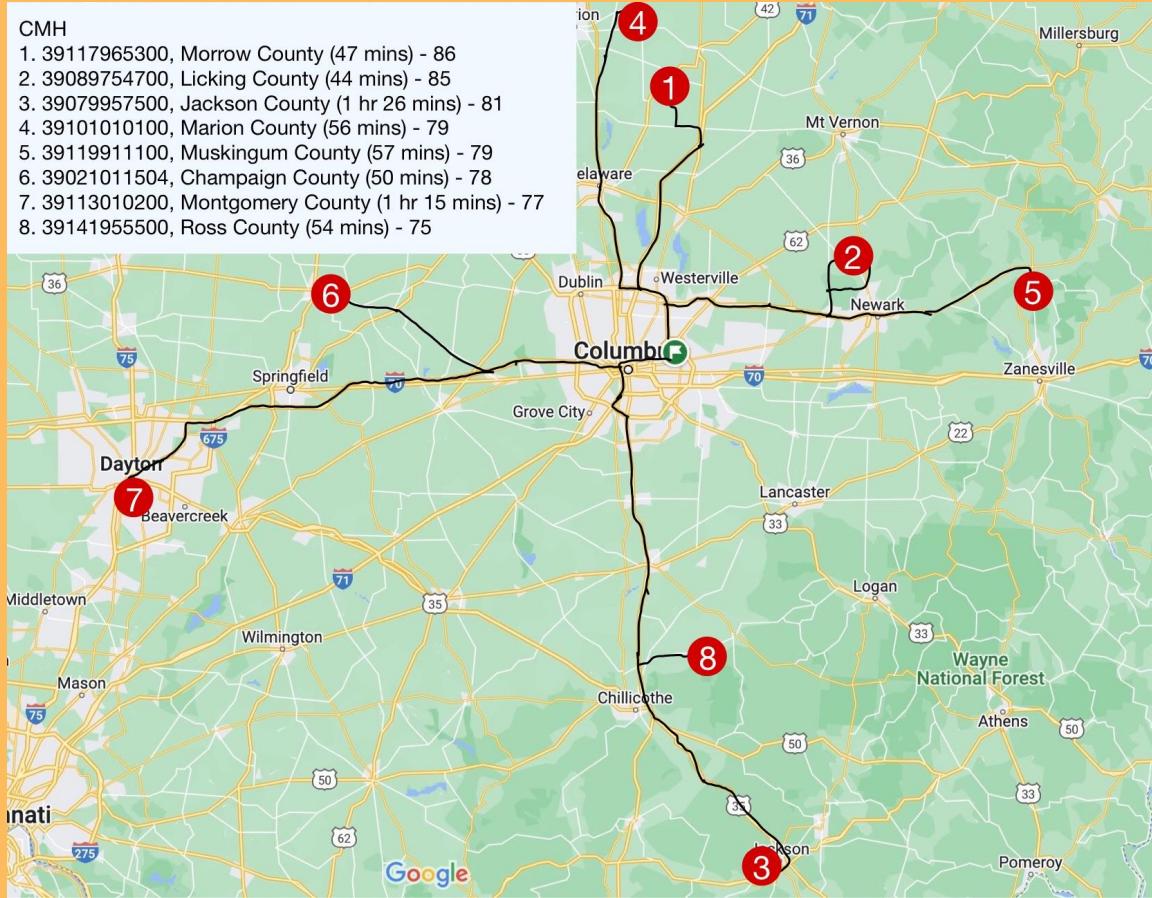
4. 39101010100, Marion County (56 mins) - 79

5. 39119911100, Muskingum County (57 mins) - 79

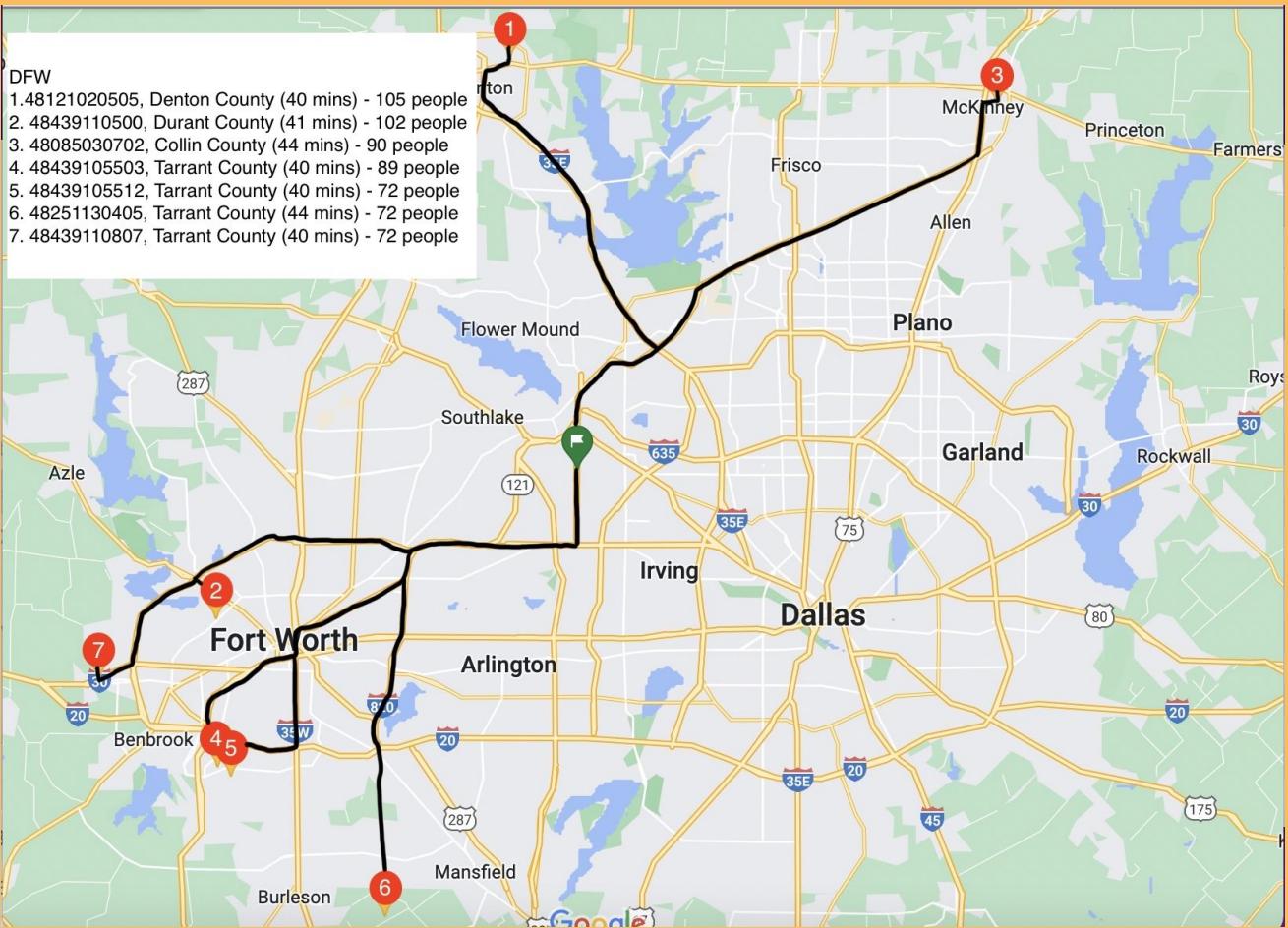
6. 39021011504, Champaign County (50 mins) - 78

7. 39113010200, Montgomery County (1 hr 15 mins) - 77

8. 39141955500, Ross County (54 mins) - 75



# Texas Triangle

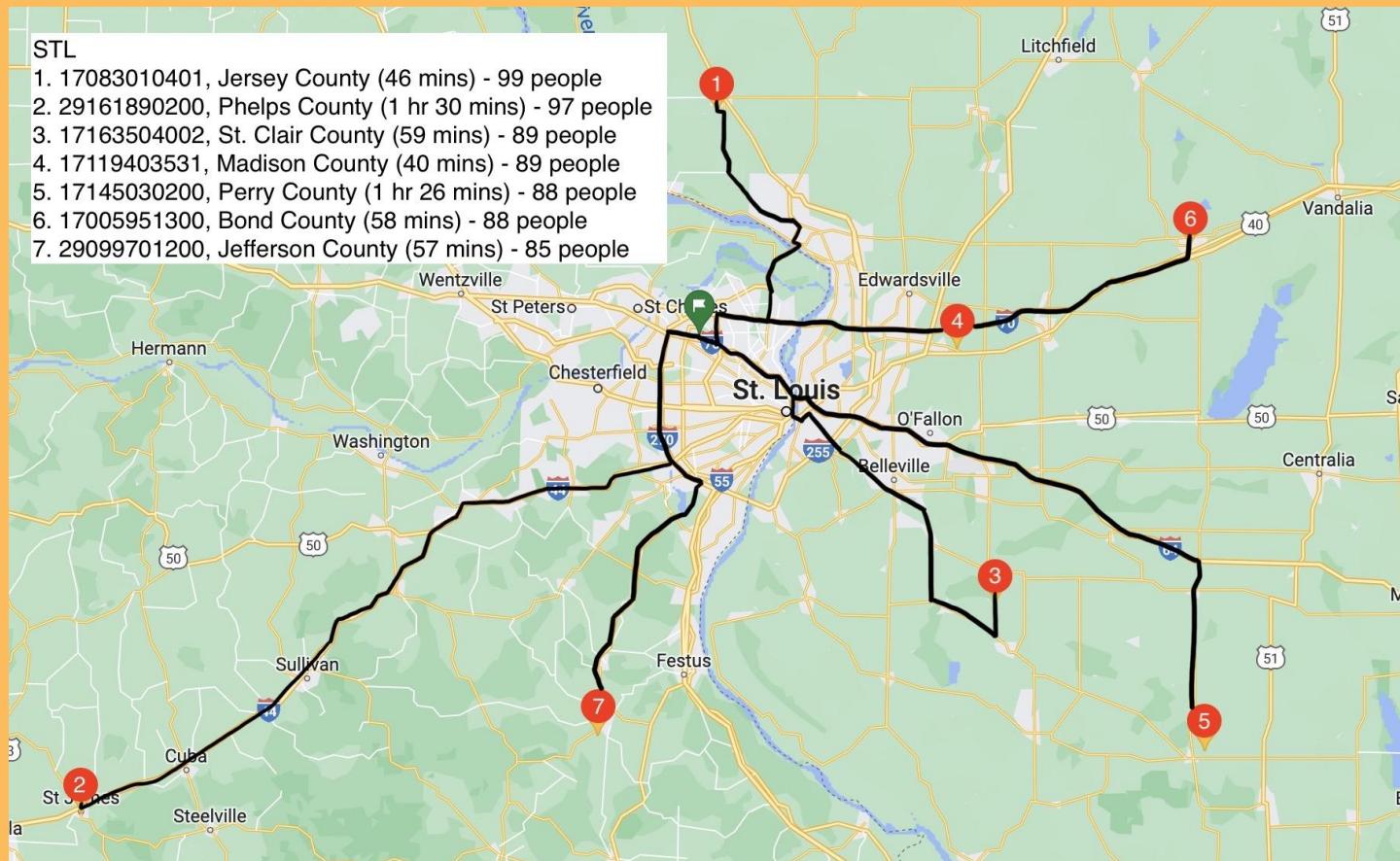


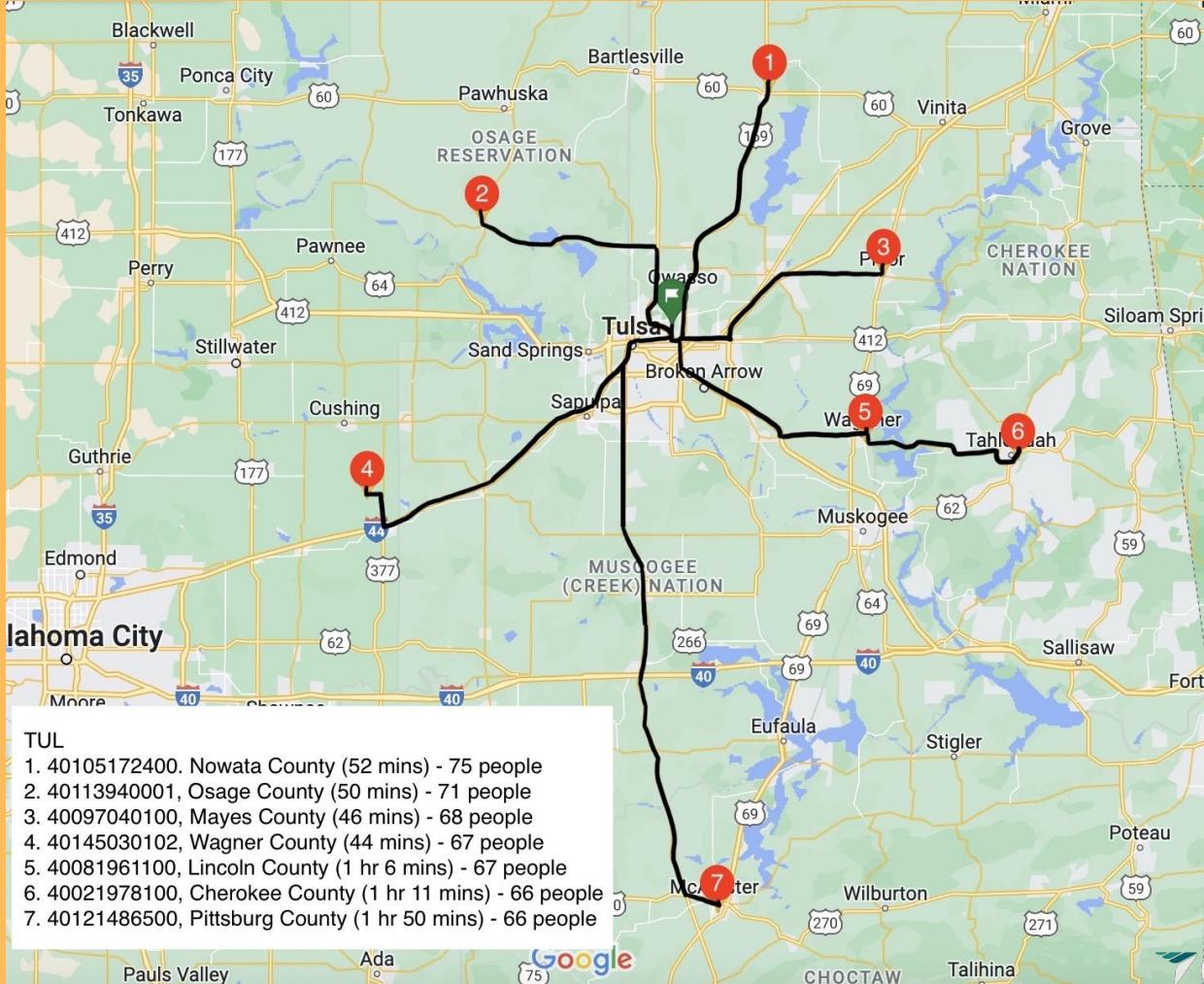


STL

STL

1. 17083010401, Jersey County (46 mins) - 99 people
2. 29161890200, Phelps County (1 hr 30 mins) - 97 people
3. 17163504002, St. Clair County (59 mins) - 89 people
4. 17119403531, Madison County (40 mins) - 89 people
5. 17145030200, Perry County (1 hr 26 mins) - 88 people
6. 17005951300, Bond County (58 mins) - 88 people
7. 29099701200, Jefferson County (57 mins) - 85 people



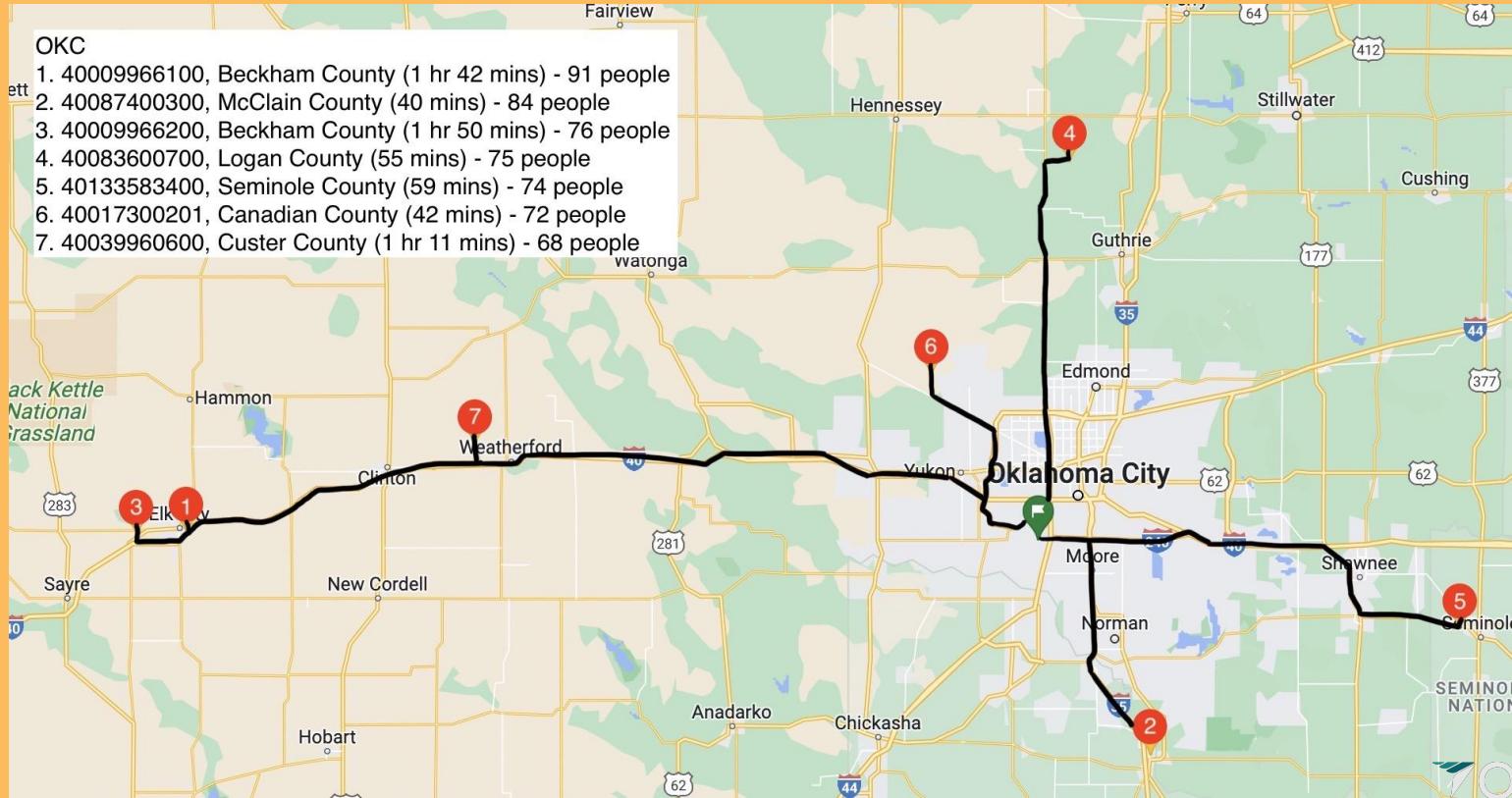


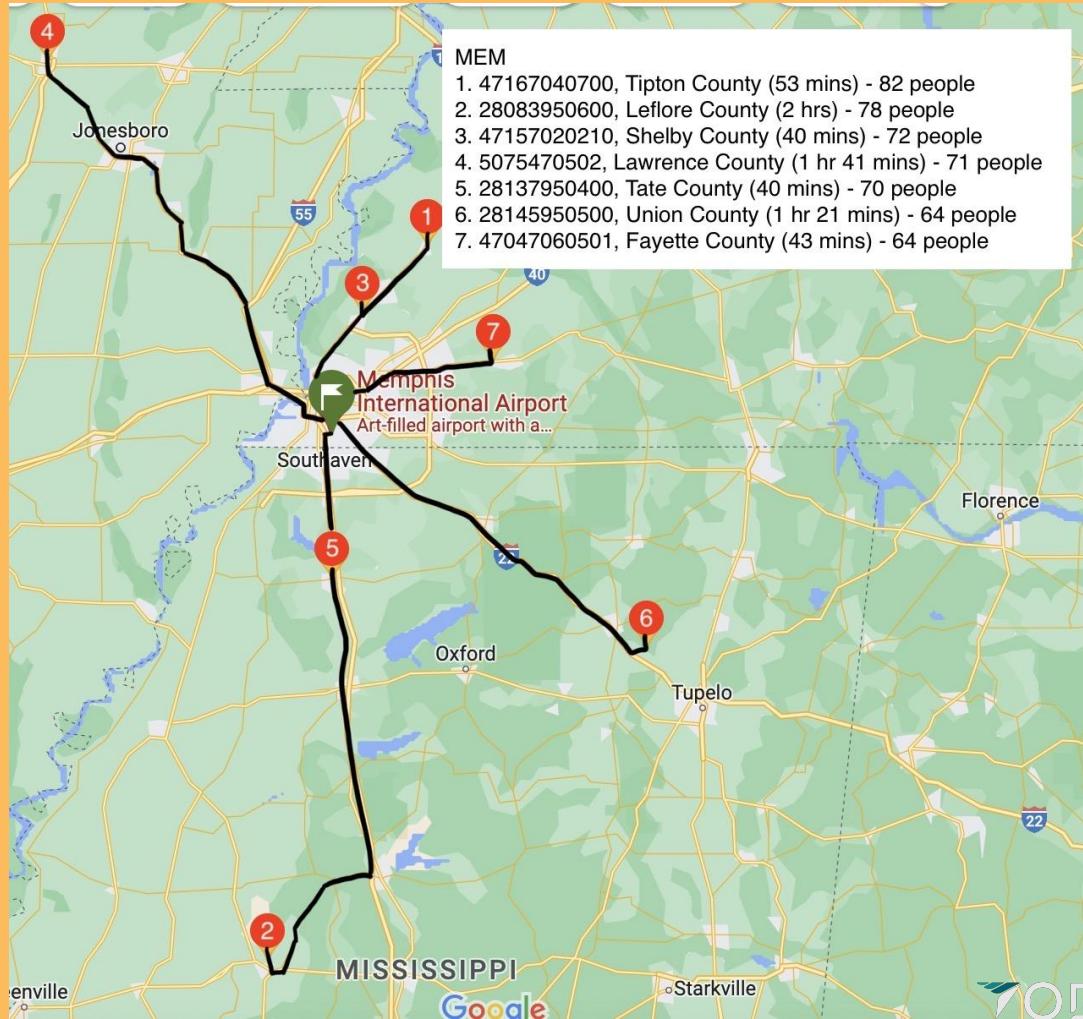


# OKC

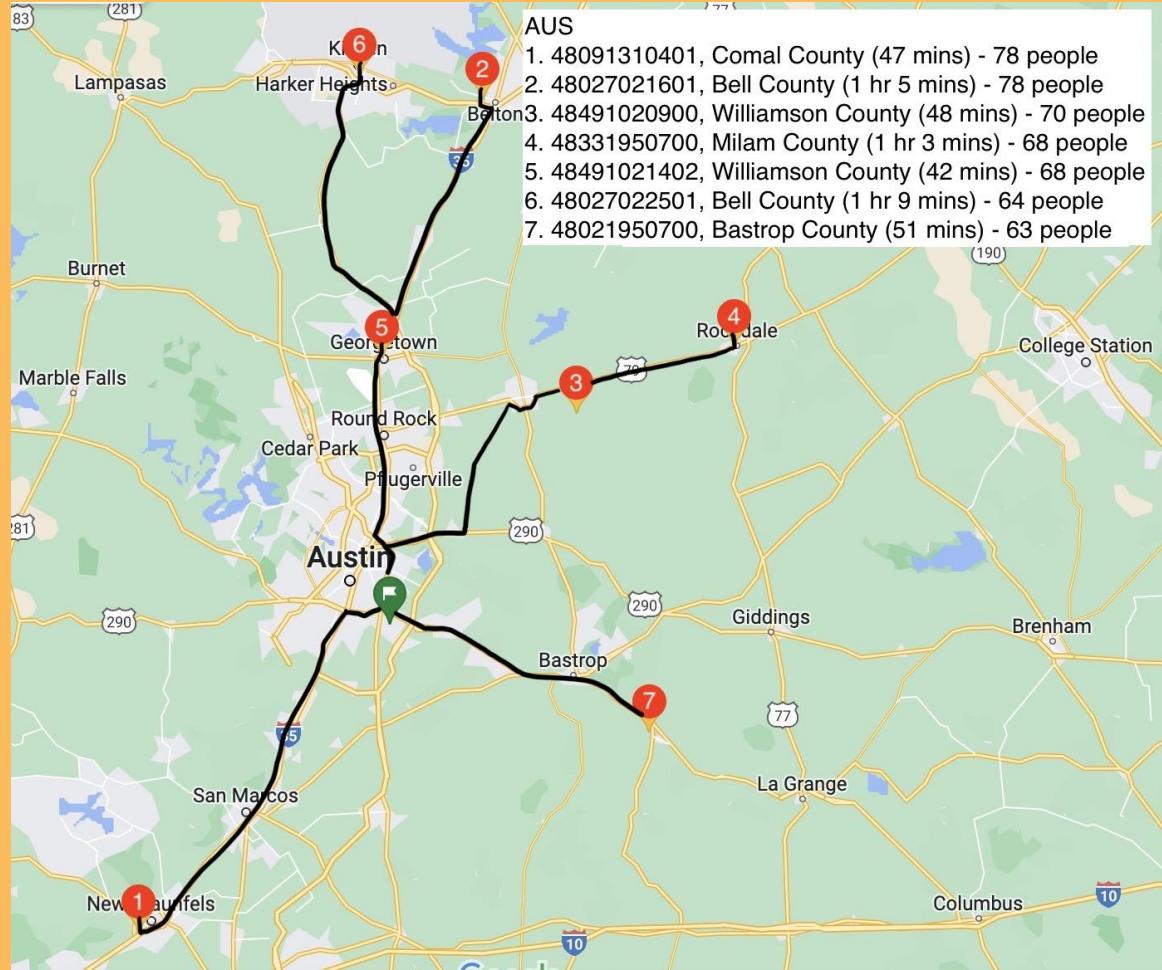
## OKC

1. 40009966100, Beckham County (1 hr 42 mins) - 91 people
2. 40087400300, McClain County (40 mins) - 84 people
3. 40009966200, Beckham County (1 hr 50 mins) - 76 people
4. 40083600700, Logan County (55 mins) - 75 people
5. 40133583400, Seminole County (59 mins) - 74 people
6. 40017300201, Canadian County (42 mins) - 72 people
7. 40039960600, Custer County (1 hr 11 mins) - 68 people



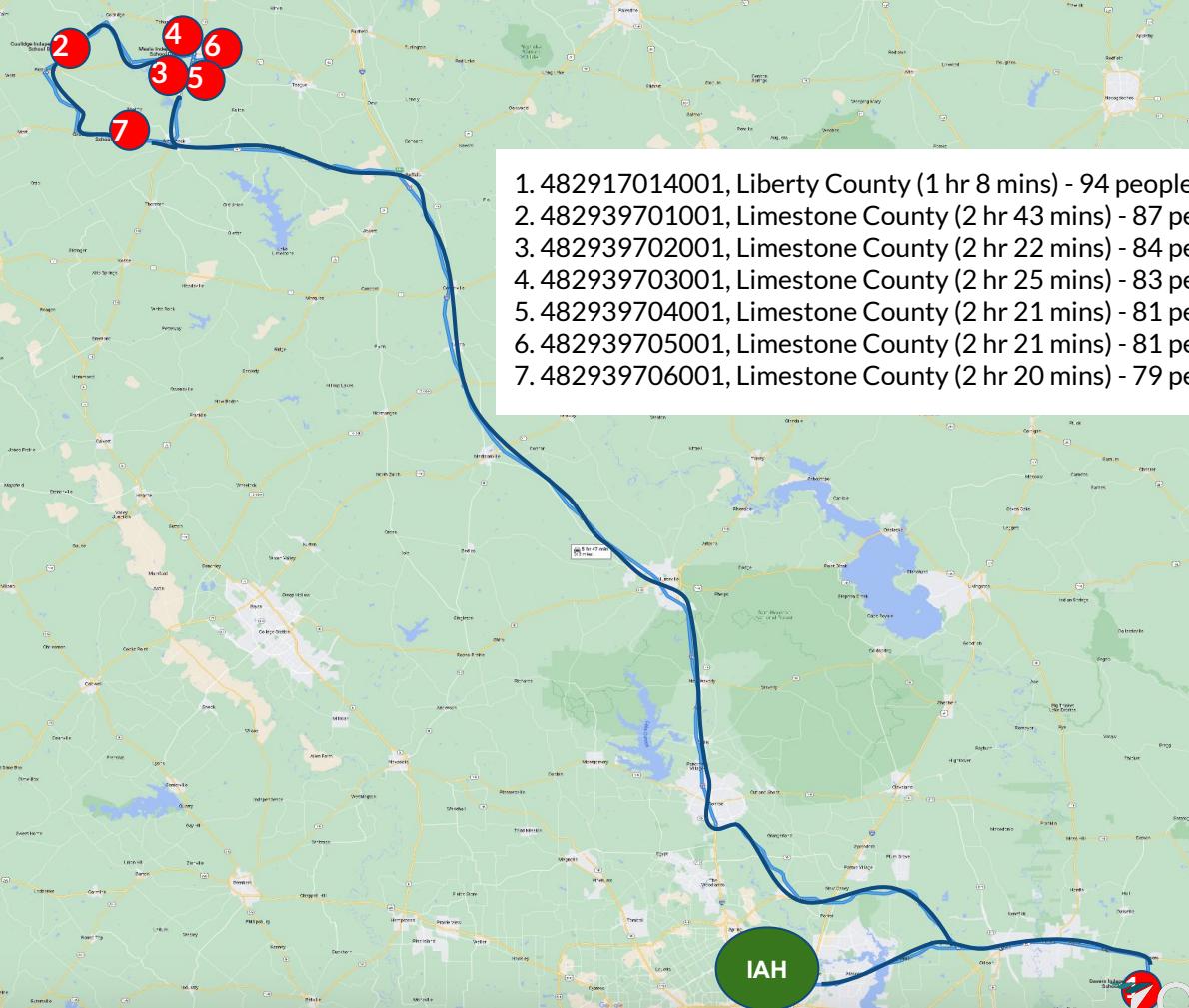


 AUS



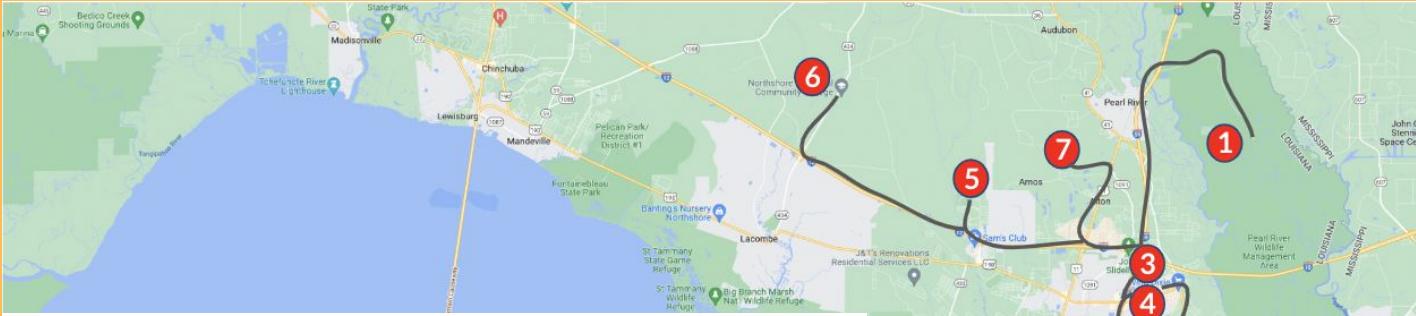


IAH

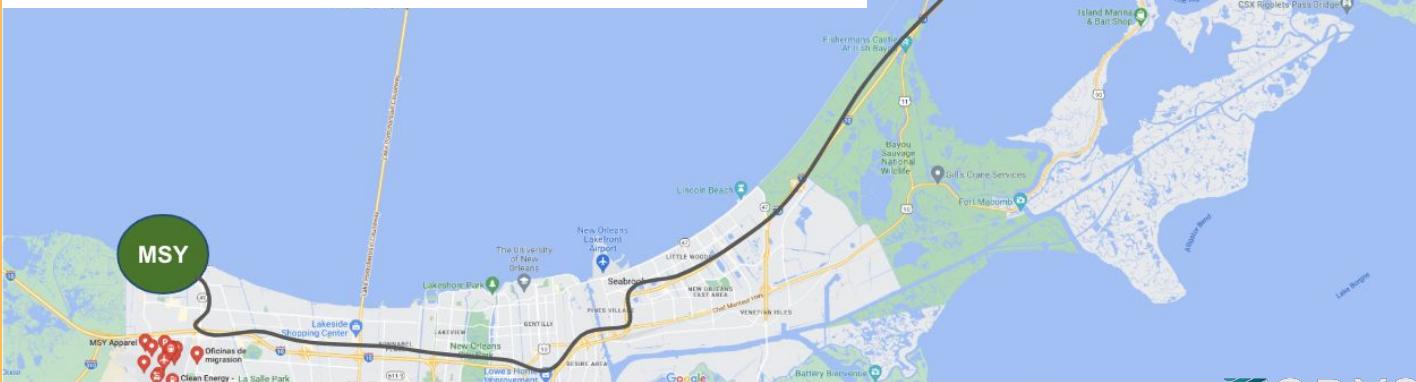


IAH

ODYS  
AVIATION

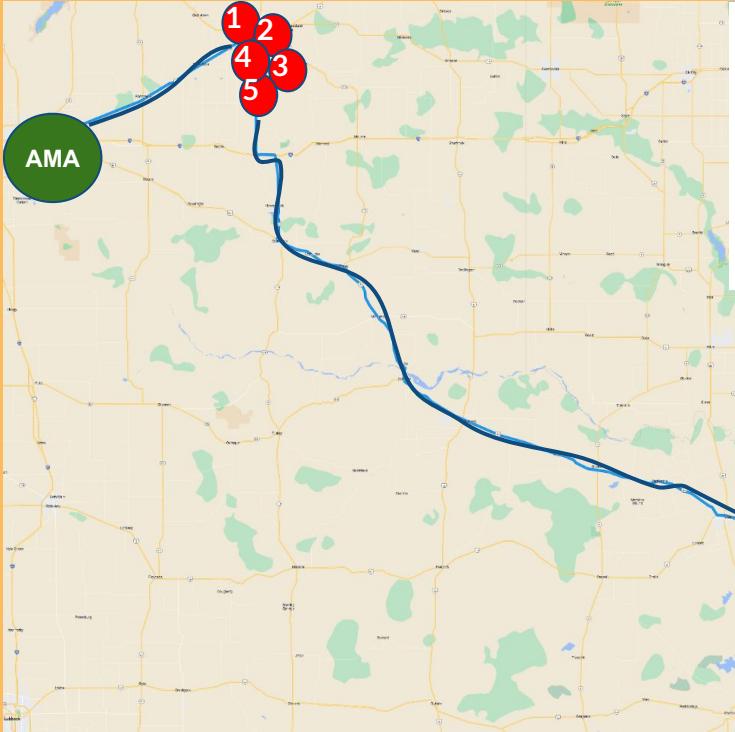


1. 221030407061, St. Tammany Parish County (1 hr 5 mins) - 71 people
2. 221030407081, St. Tammany Parish County (54 mins) - 62 people
3. 221030407091, St. Tammany Parish County (48 mins) - 62 people
4. 221030407101, St. Tammany Parish County (48 mins) - 53 people
5. 22103040711, St. Tammany Parish County (1 hr 4 mins) - 49 people
6. 22103040712, St. Tammany Parish County (1 hr 2 mins) - 48 people
7. 22103040713, St. Tammany Parish County (55 mins) - 48 people

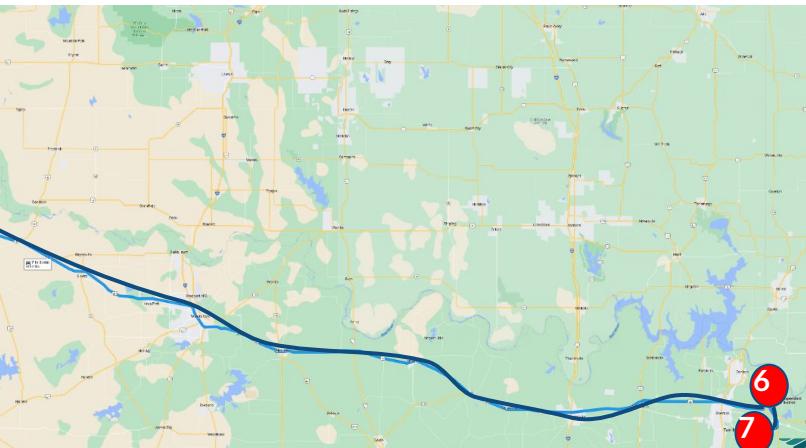




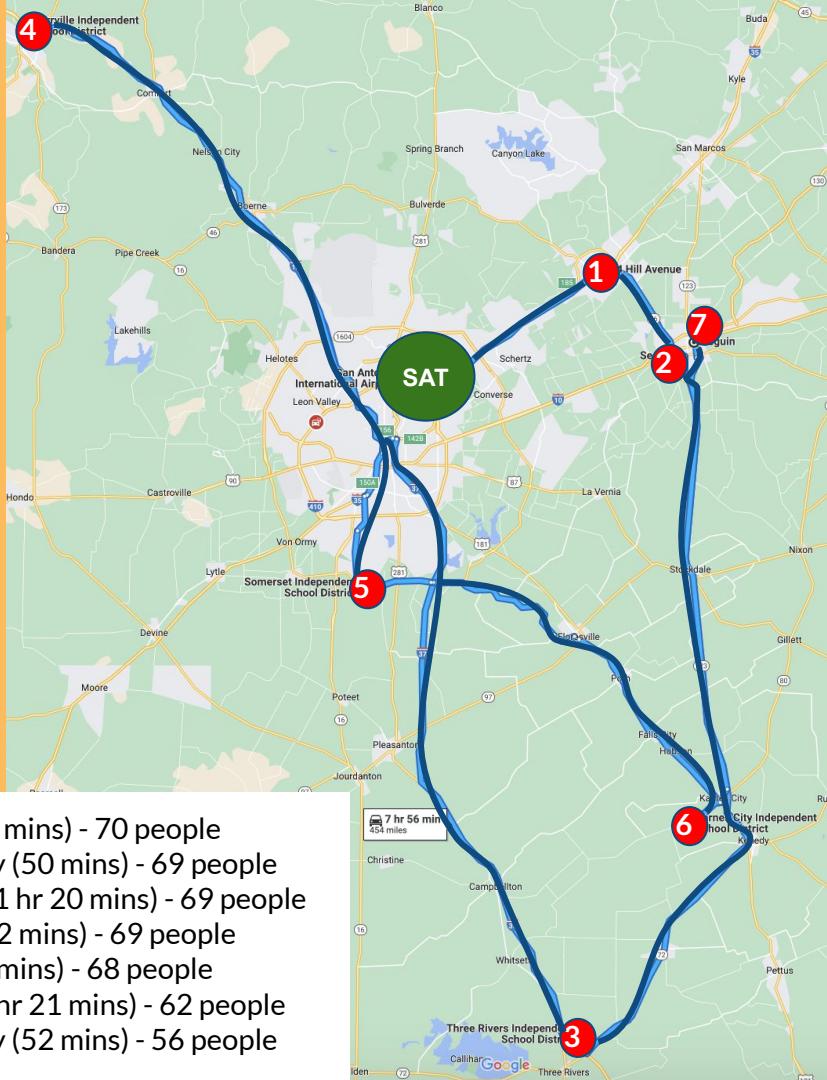
# AMA

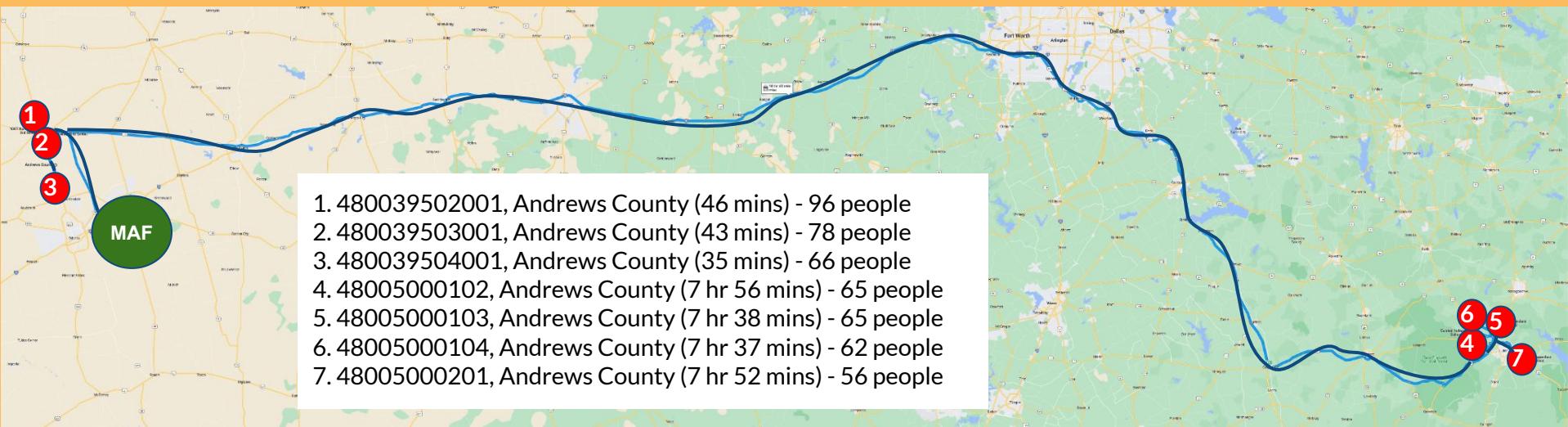


1. 481799504001, Gray County (54 mins) - 93 people
2. 481799505001 Gray County (55 mins) - 80 people
3. 481799506001, Gray County (53 mins) - 79 people
4. 481799507001, Gray County (50 mins) - 74 people
5. 481799508001, Gray County (51 mins) - 67 people
6. 48181000101, Gray County (5 hr 31 mins) - 66 people
7. 48181000102, Gray County (5 hr 33 mins) - 64 people

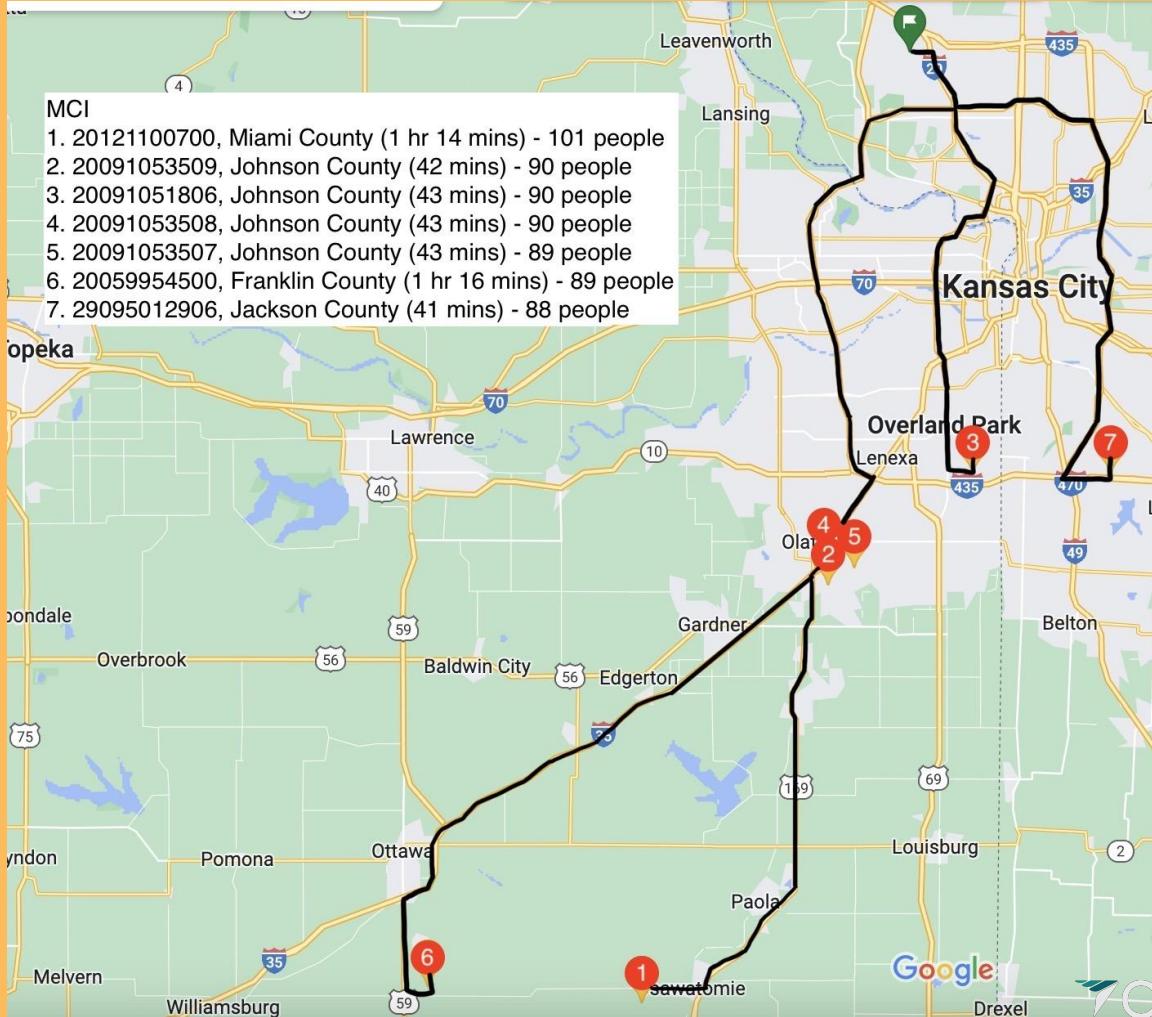


# SAT



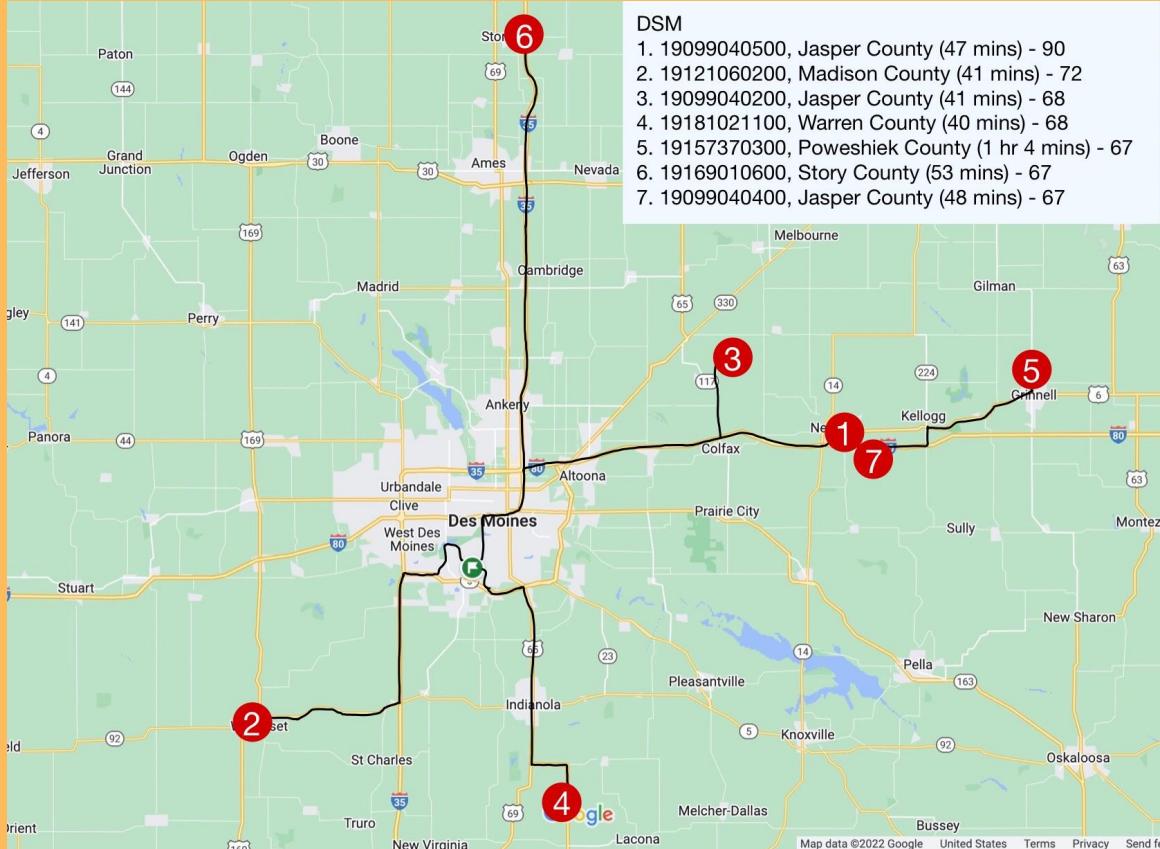


1. 480039502001, Andrews County (46 mins) - 96 people
2. 480039503001, Andrews County (43 mins) - 78 people
3. 480039504001, Andrews County (35 mins) - 66 people
4. 48005000102, Andrews County (7 hr 56 mins) - 65 people
5. 48005000103, Andrews County (7 hr 38 mins) - 65 people
6. 48005000104, Andrews County (7 hr 37 mins) - 62 people
7. 48005000201, Andrews County (7 hr 52 mins) - 56 people





# DSM



# Relevant Functions

## def topTracts

**Input:** a specific airport location

**Return:** a table with the most popular origin tracts and the number of drivers from each top tract

## def topServicableTracts

**Input:** a specific airport location

**Return:** a table with the most popular origin tracts and the number of drivers from each top tract a given distance away from the airport of interest

## def incomeDataSorting

**Input:** a specific airport location

**Return:** a table with the percentage of drivers that fall into the following income buckets: 0-50K, 50-100K, 100-150K, 150K+

# Relevant Functions

## def totalRevenue

**Input:** a hub airport, a list of appropriate local airports

**Prints:**

Number of flyers captured from P2P

Number of flyers captured from CE  
P2P revenue

CE revenue

Total number of flyers

Total Revenue

**Return:** the total possible annual revenue from adding Odys eVTOLs

## def p2p

**Input:** a hub airport

**Return:** the number of available drivers for P2P capture

## def catchmentExpansion

**Input:** a catchment airport

**Return:** the number of available drivers for CE capture based on the number of long haul flyers out of the catchment airport + drivers whose drive time to the catchment airport is longer than the Odys flight time to the hub airport

# Questions?

# Sources

Past 12 month revenue values for each airline in 2022: [macrotrends.net](https://www.macrotrends.net)

<https://www.macrotrends.net/stocks/charts/DAL/delta-air-lines/revenue>

<https://www.macrotrends.net/stocks/charts/AAL/american-airlines-group/revenue>

<https://www.macrotrends.net/stocks/charts/UAL/united-airlines-holdings-inc/revenue>