

2007-08 Kansas City Regional External Station Survey

Conducted for

Mid-America Regional Council

By

ETC Institute

in association with
Alliance Transportation Group

September 2008



Agenda

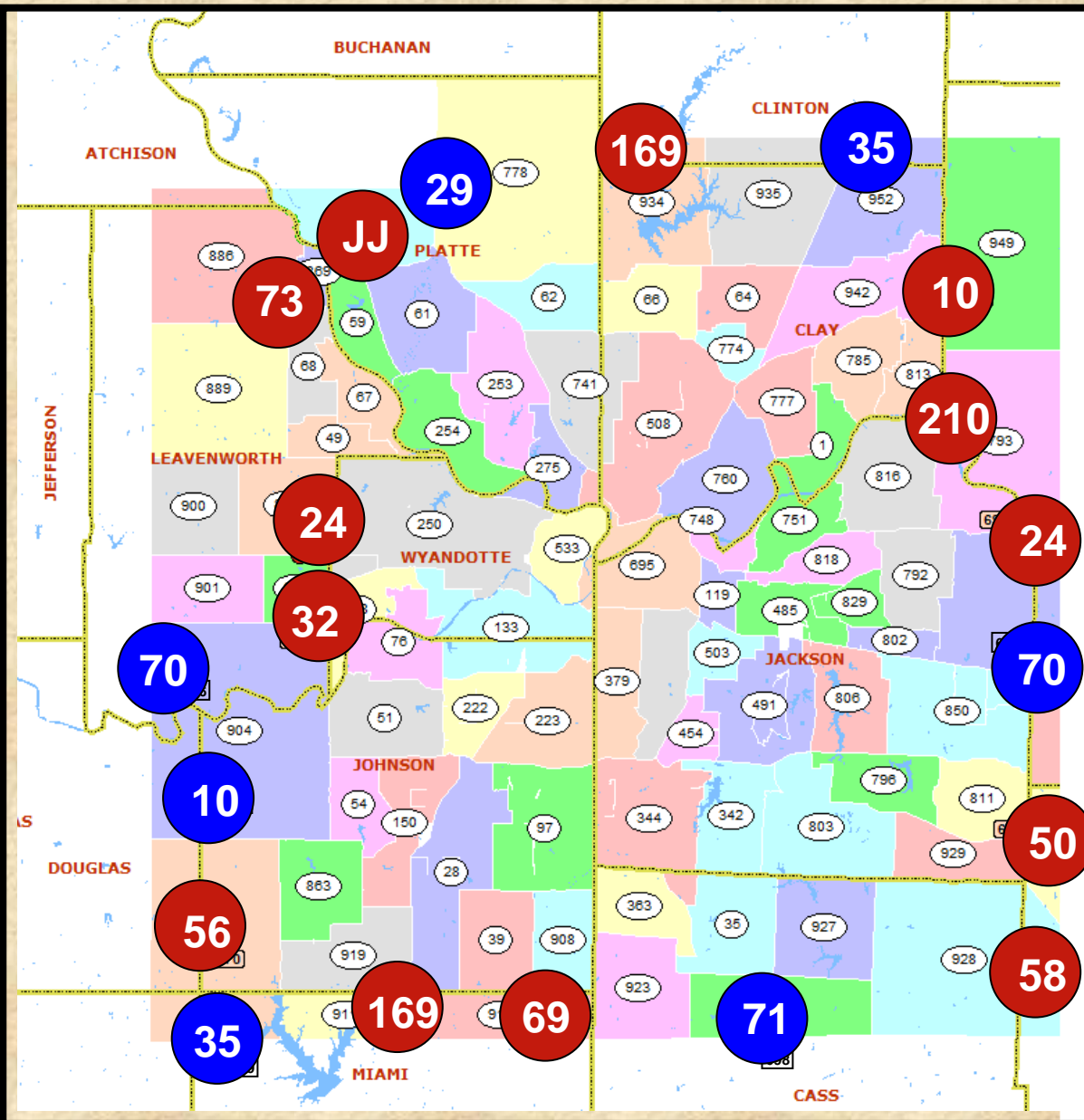
- Purpose
- Locations
- Methodology
 - Types of Data Collected
 - Supporting Organizations
 - Sampling and Data Expansion Procedures
- Major Findings – What Did We Learn?
- Limitations of the Data
- Summary
- Questions

Purpose

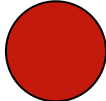
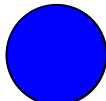
Why Was the Project Conducted?

- to gather travel data from vehicles entering and exiting the region on area highways to update the region's travel demand model
- to obtain data from persons who live outside MARC's planning area to understand their impact on the region's transportation needs

Locations



MARC Regional External Station Survey

-  Intercept Survey
-  Video Survey

Methodology

- **20-person team from ETC Institute and Alliance Transportation Group conducted the survey**
- **Two Basic Types of Stations**
 - **4-Lane and 2-Lane Intercept Surveys**
 - **Conducted during the fall of 2007**
 - **Video with mail/phone follow-up on Freeways**
 - **Conducted during the fall of 2007 and spring of 2008**
- **11-12 hours per site (630am-6:00pm)**
- **1-2 stations per day**
- **Administered Monday-Thursday**
 - **Excellent weather conditions**

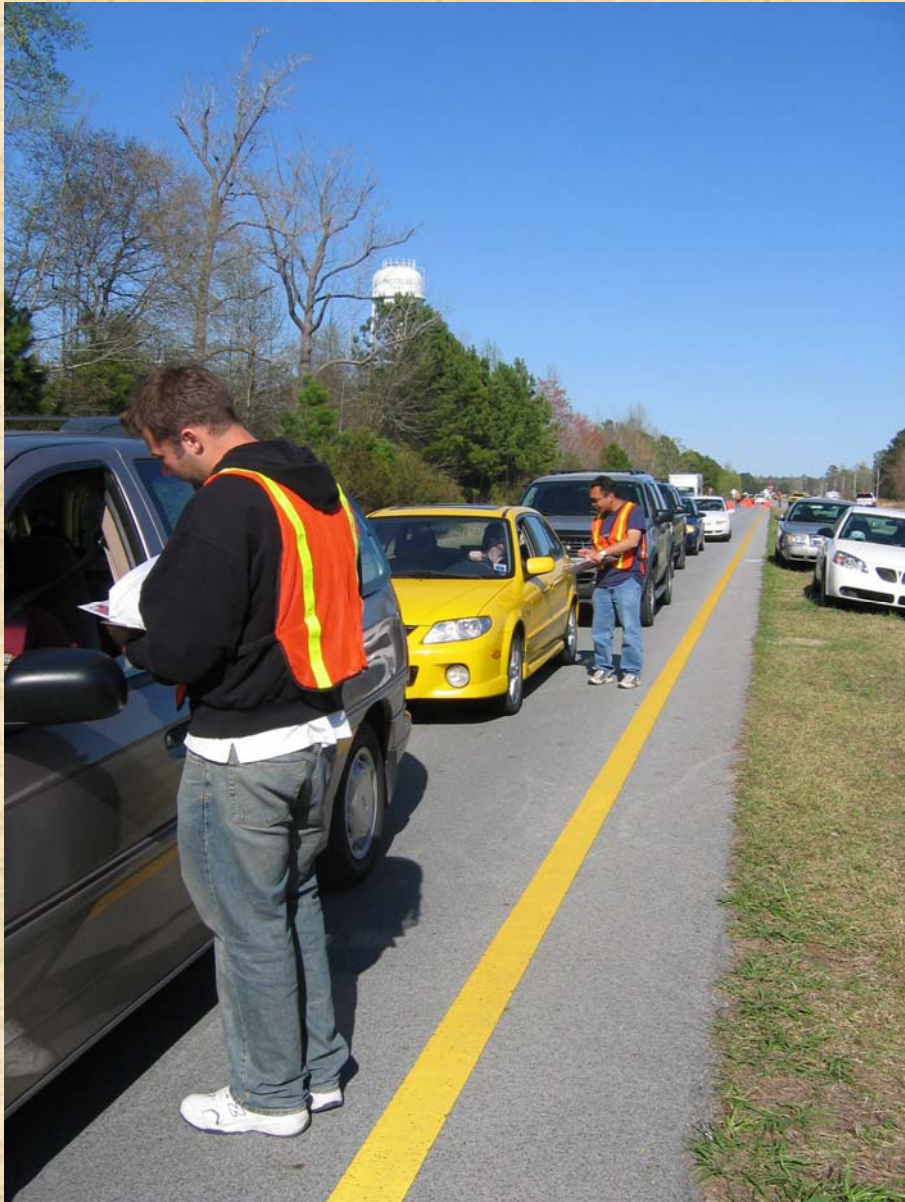


Set Up for 2-Lane Stations

Safety #1



Set Up for 4-Lane Stations



Safety #1

Types of Data Collected

- **time of travel**
- **vehicle type**
- **where vehicle is registered**
- **vehicle occupancy**
- **trip origin address**
- **trip destination address**
- **exit station for thru trips**
- **trip purpose**



Supporting Organizations

- **MARC**
 - Overall project administration
 - Survey design
 - Sampling plan
 - Site selection
- **KDOT and MoDOT**
 - 24-hour traffic counts
 - Traffic control
- **Other agencies**
 - Local County Sheriff's Offices

Sample Size

- Goal: To survey approximately 7,000 vehicles
- Actual: Nearly 11,000 vehicles participated in the survey

MARC Regional External Station Survey SAMPLING PLAN

THE DATA IS VERY ACCURATE!

Station #	State	Highway	Type	Method	Goal for completed surveys	Actual # Completed Surveys	Precision at the 95% Level of Confidence
667	Kansas	US-69	Non-Freeway	Intercept	357	717	+/- 3.5%
668	Kansas	US-169	Non-Freeway	Intercept	358	655	+/- 3.6%
669	Kansas	I-35	Freeway	Video with mail survey	400	404	+/- 4.8%
670	Kansas	US-56/K-33	Non-Freeway	Intercept	305	471	+/- 3.8%
672	Kansas	K-10	Freeway	Video with mail survey	400	456	+/- 4.5%
675	Kansas	K-32 / Linwood	Non-Freeway	Intercept	257	635	+/- 3.2%
676	Kansas	I-70	Freeway	Video with mail survey	400	435	+/- 4.6%
677	Kansas	US 24 / 40	Non-Freeway	Intercept	356	664	+/- 3.6%
682	Kansas	K-7/US-73	Non-Freeway	Intercept	338	520	+/- 3.8%
683	Missouri	Route JJ	Non-Freeway	Intercept	238	376	+/- 3.9%
685	Missouri	I-29	Freeway	Video with phone survey	400	494	+/- 4.3%
686	Missouri	US 169	Non-Freeway	Intercept	331	546	+/- 3.8%
687	Missouri	I-35	Freeway	Video with phone survey	400	482	+/- 4.4%
689	Missouri	Isley Blvd/M-10	Non-Freeway	Intercept	332	623	+/- 3.6%
690	Missouri	M-210	Non-Freeway	Intercept	334	575	+/- 3.7%
691	Missouri	US- 24	Non-Freeway	Intercept	258	586	+/- 3.4%
692	Missouri	I-70	Freeway	Video with phone survey	400	473	+/- 4.4%
693	Missouri	US-50	Non-Freeway	Intercept	359	671	+/- 3.7%
696	Missouri	M-58	Non-Freeway	Intercept	353	384	+/- 3.7%
698	Missouri	US-71	Freeway	Video with phone survey	400	456	+/- 4.5%
					6,976	10,623	+/- 1%

Data Processing and Expansion

- Surveys reviewed and corrected on-site
 - reviewed for logic and completeness
 - accuracy of trip origins/destinations emphasized
- Mail and phone surveys were used to capture travel data from the freeway locations
- Dual Data entry ensured nearly 100% accuracy
- Data Expansion:
 - based on ratio of the # actual vehicles to the # of vehicles that were surveyed
 - expanded by hour; off-peak data used to expand data for hours that stations were not operational
 - **Precision +/-1% at the 95% level of confidence**

Accuracy of Geocoding

ALL TRIPS

Geocoding Accuracy	% of Trips
Exact Address of Intersection	66%
Center of City	8%
Center of Map Zone	17%
Center of Zip Code	2%
Ended Outside Region	7%

INTERNAL TRIPS ONLY

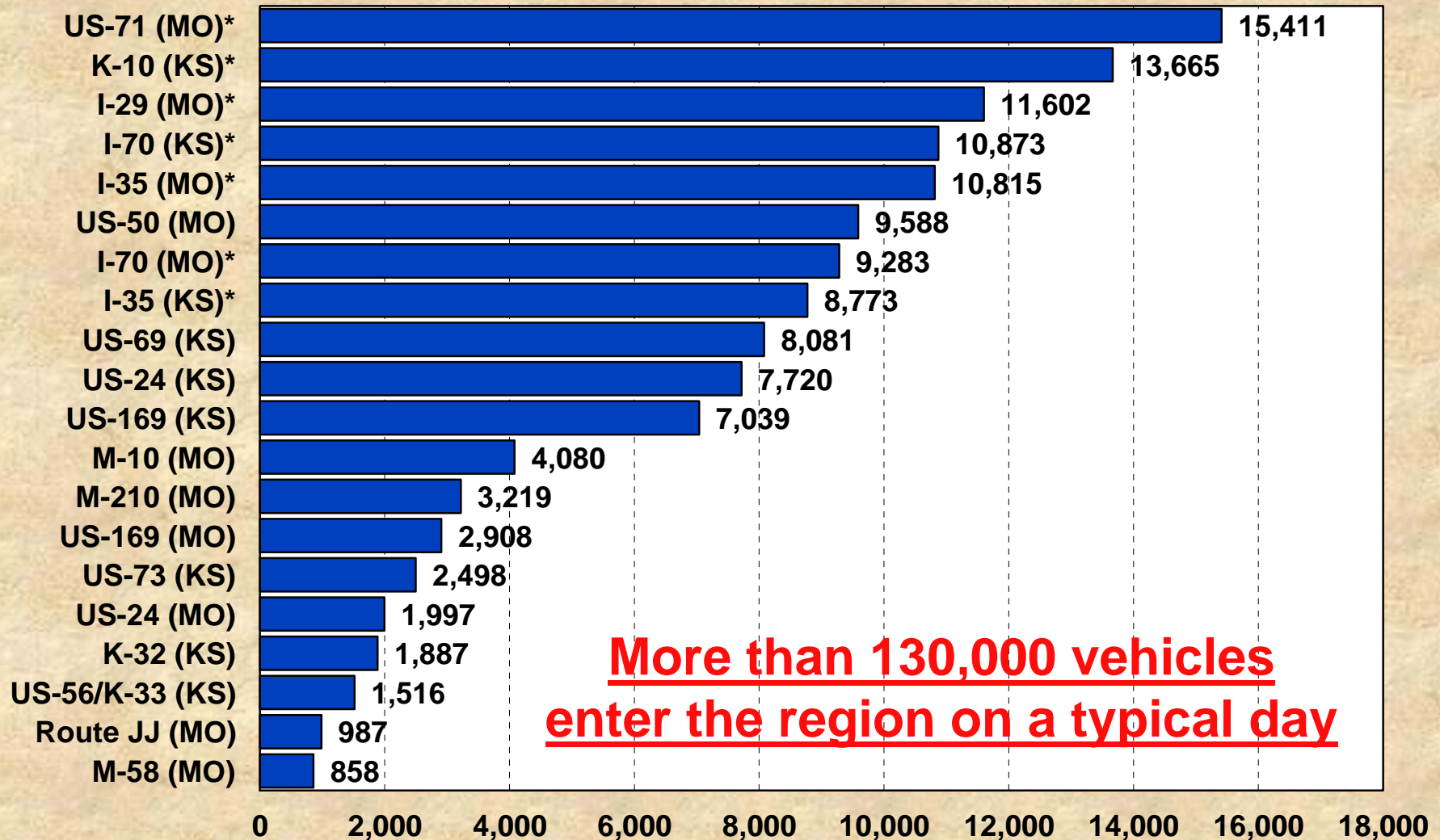
Geocoding Accuracy	% of Trips
Exact Address of Intersection	71%
Center of City	8%
Center of Map Zone	19%
Center of Zip Code	2%

What Did We Learn

- **How Many VEHICLES Are Entering the Region on a typical weekday?**

Total Traffic Volume Entering the Kansas City Area by Survey Station

*Note: freeway stations do not include commercial truck counts

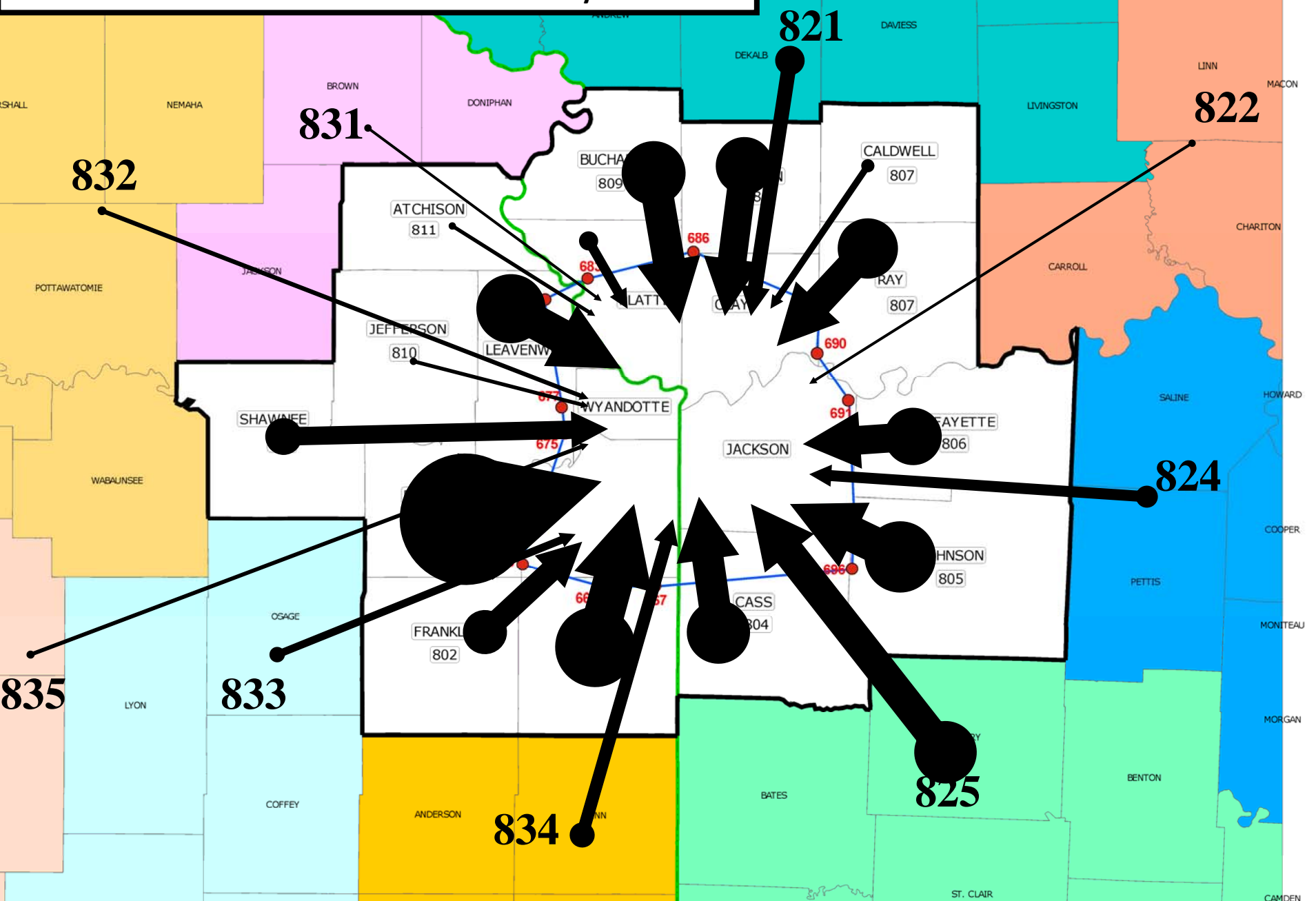


What Did We Learn

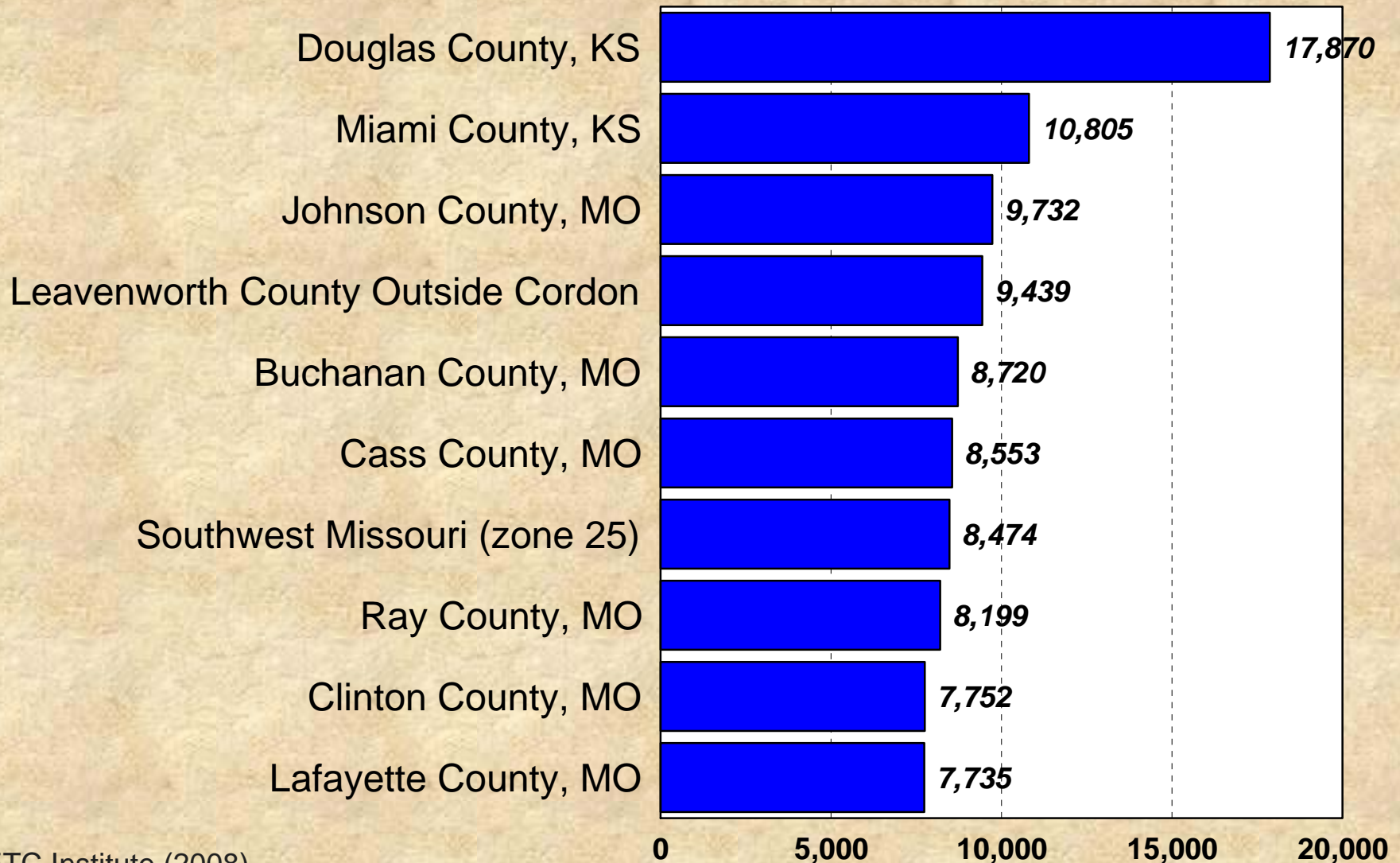
- **Where Are These Vehicles Coming From?**

Where Trips Entering the Region Began

2008 MARC External Station Survey



Top 10 External Zones Where Trips Entering the Kansas City Area Originated



What Did We Learn

- **How Many PEOPLE Are Entering the Region Per Day?**

Vehicle Occupancy for Vehicles Entering the Kansas City Area

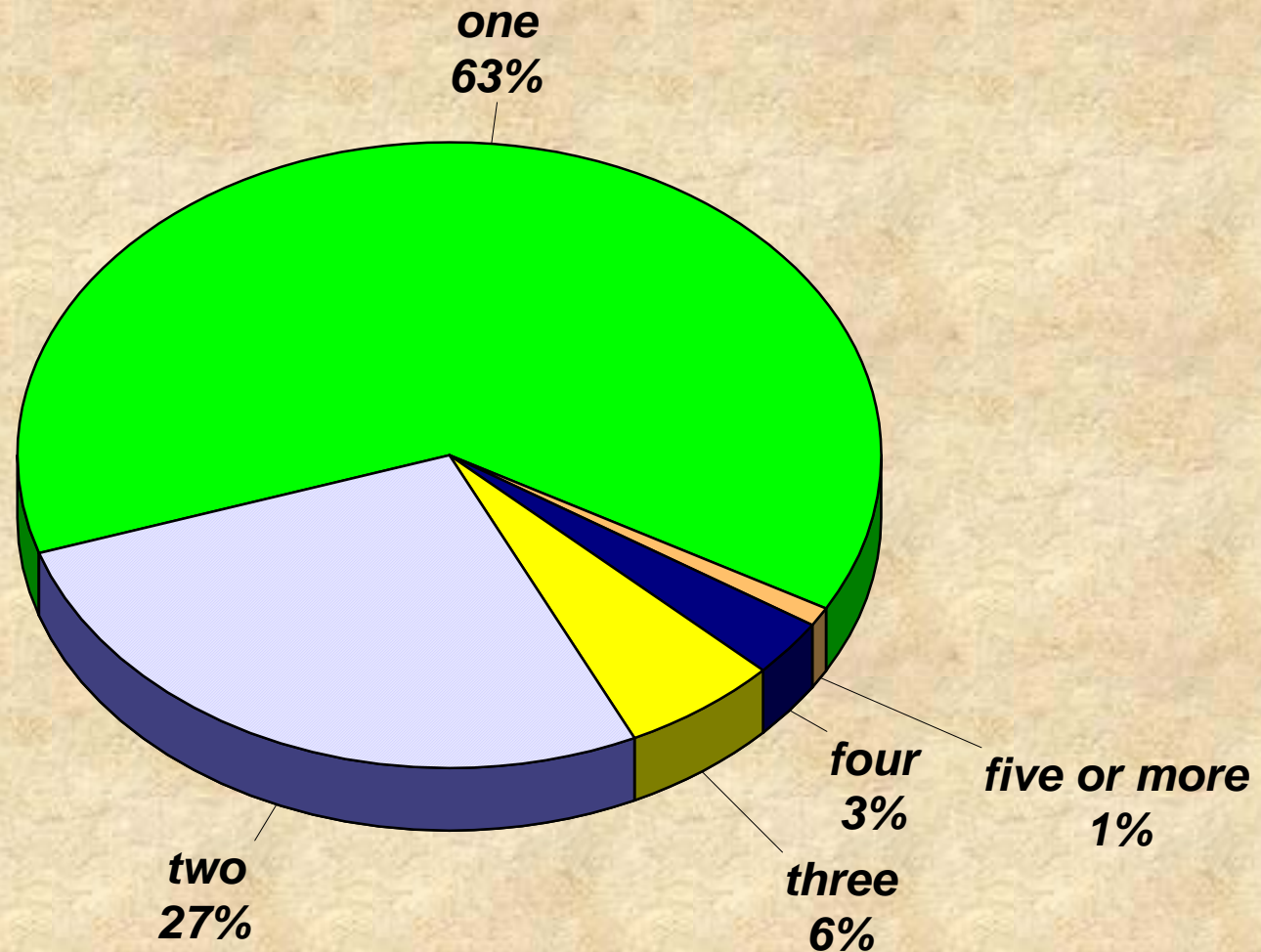
Mean Vehicle Occupancy

All Private Vehicles: 1.57

Work Trips: 1.17

Shopping Trips: 1.88

More than
200,000 people
enter the region
on these
highways in
private vehicles
on a typical
weekday



Percentage of Travelers Entering the Kansas City Area Who Are Residents of MARC's Regional Modeling Area

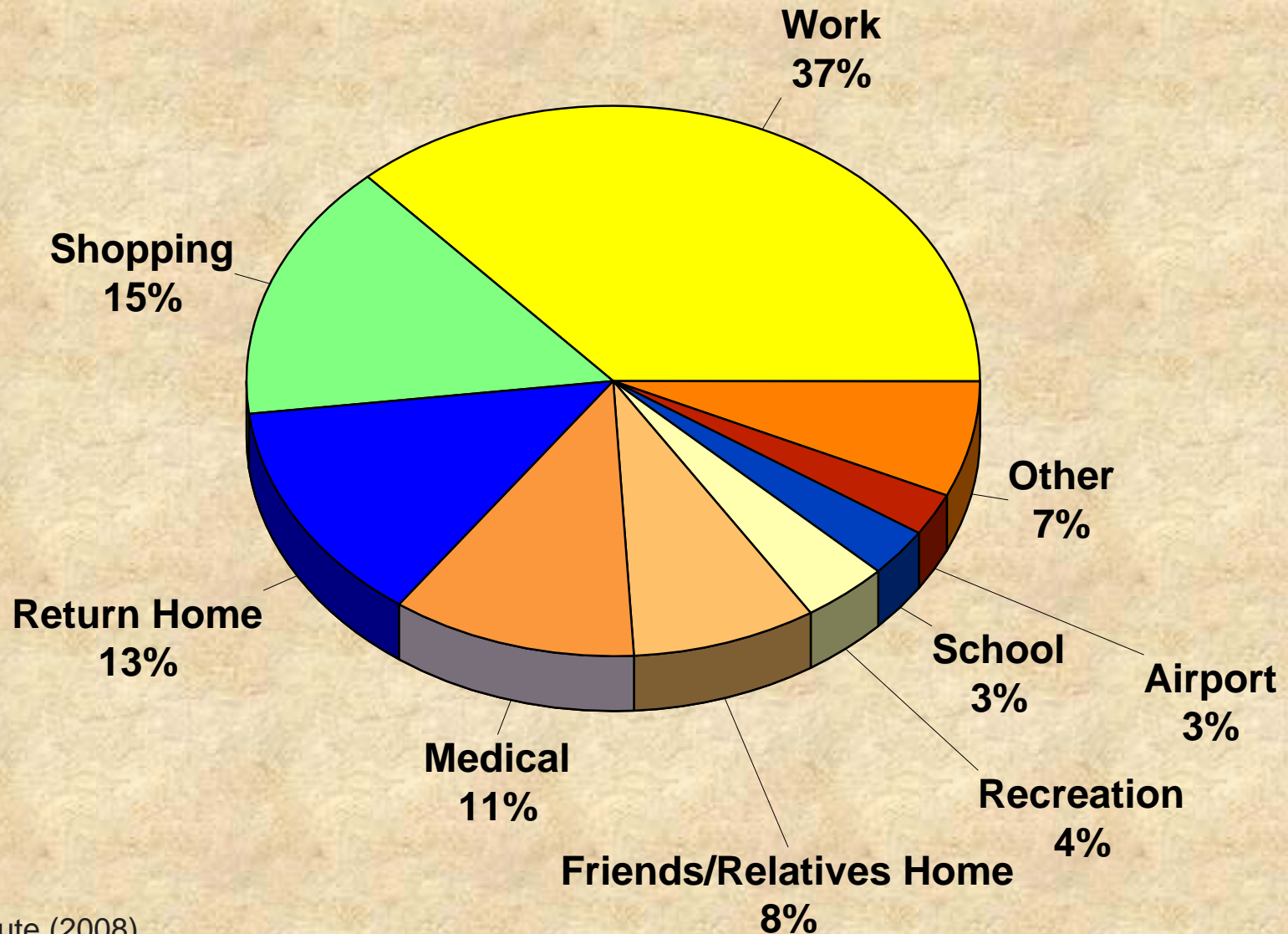
Most people who are entering the region on these highways are NOT residents of MARC's planning area



What Did We Learn

- **Why Are People Coming to the Kansas City Area?**

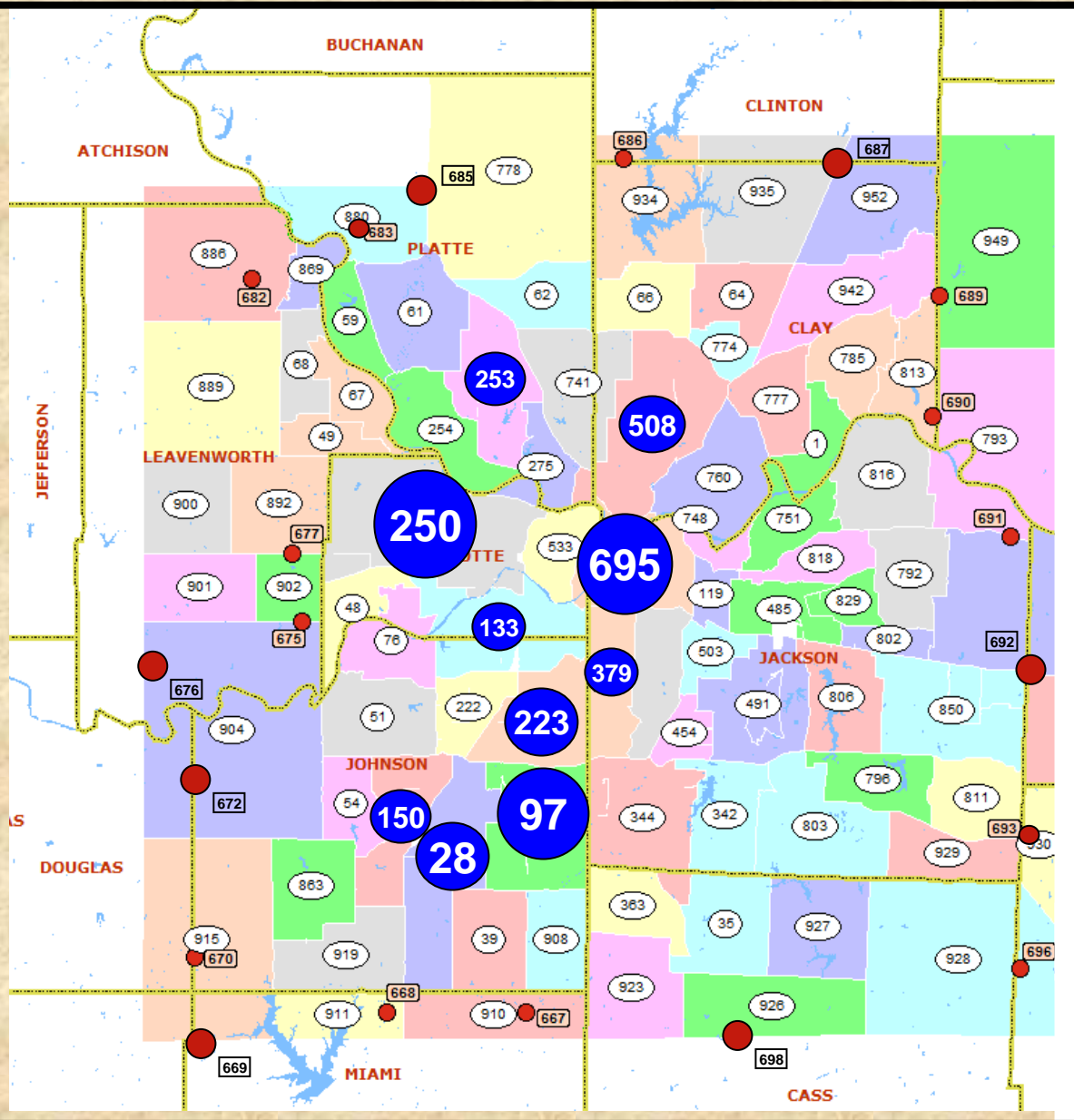
Reasons People Traveled to the Kansas City Area by Trip Purpose



What Did We Learn

- **Where Are They Going?**

TOP 10 Destinations

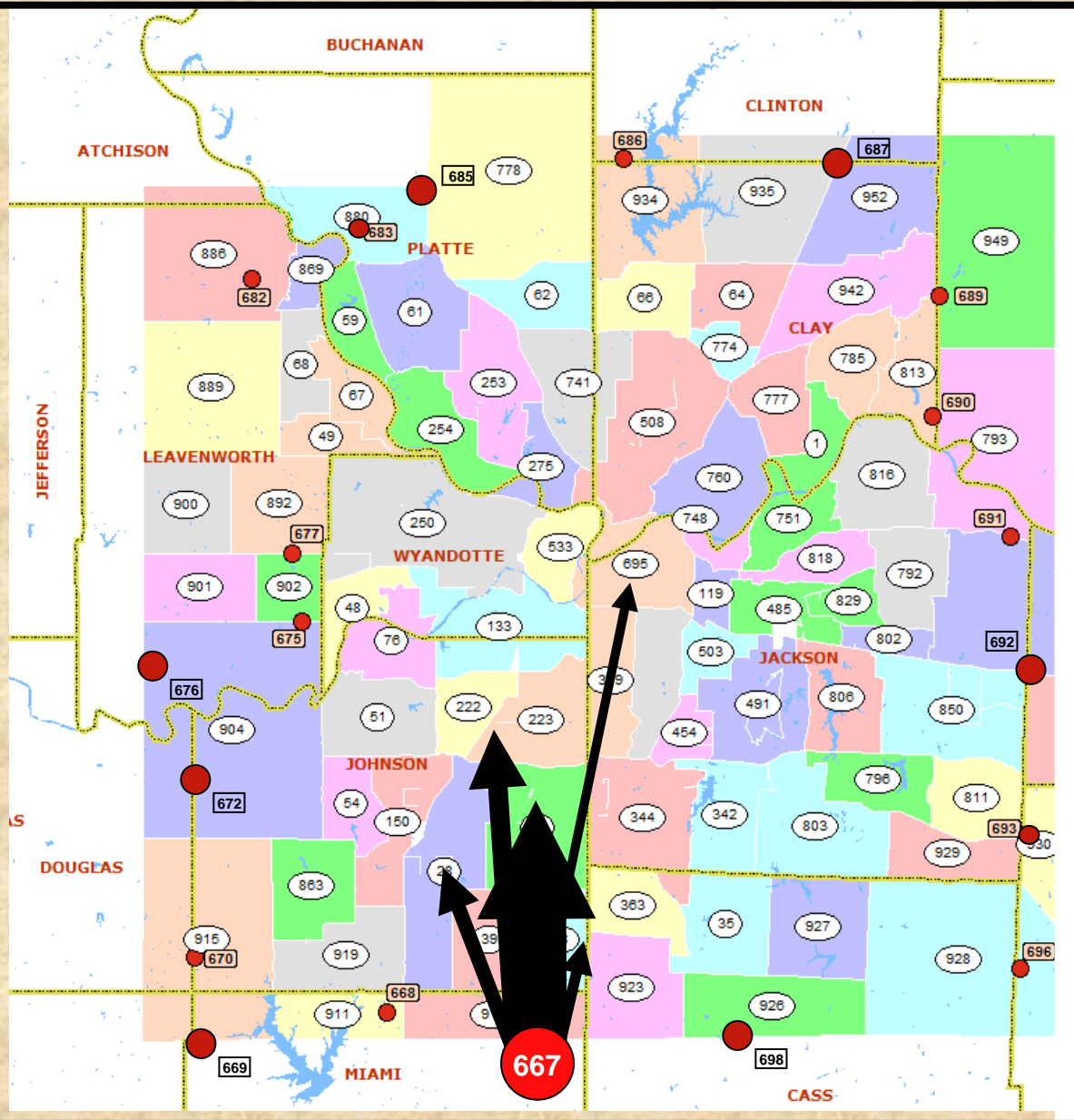


The Top Ten Destinations For All Vehicles Entering the Region

- Zone 250 (10,415 trips)
- Zone 695 (9,677 trips)
- Zone 97 (9,302 trips)
- Zone 28 (6,398 trips)
- Zone 223 (5,741 trips)
- Zone 508 (5,710 trips)
- Zone 150 (5,079 trips)
- Zone 253 (4,617 trips)
- Zone 133 (4,524 trips)
- Zone 379 (3,724 trips)

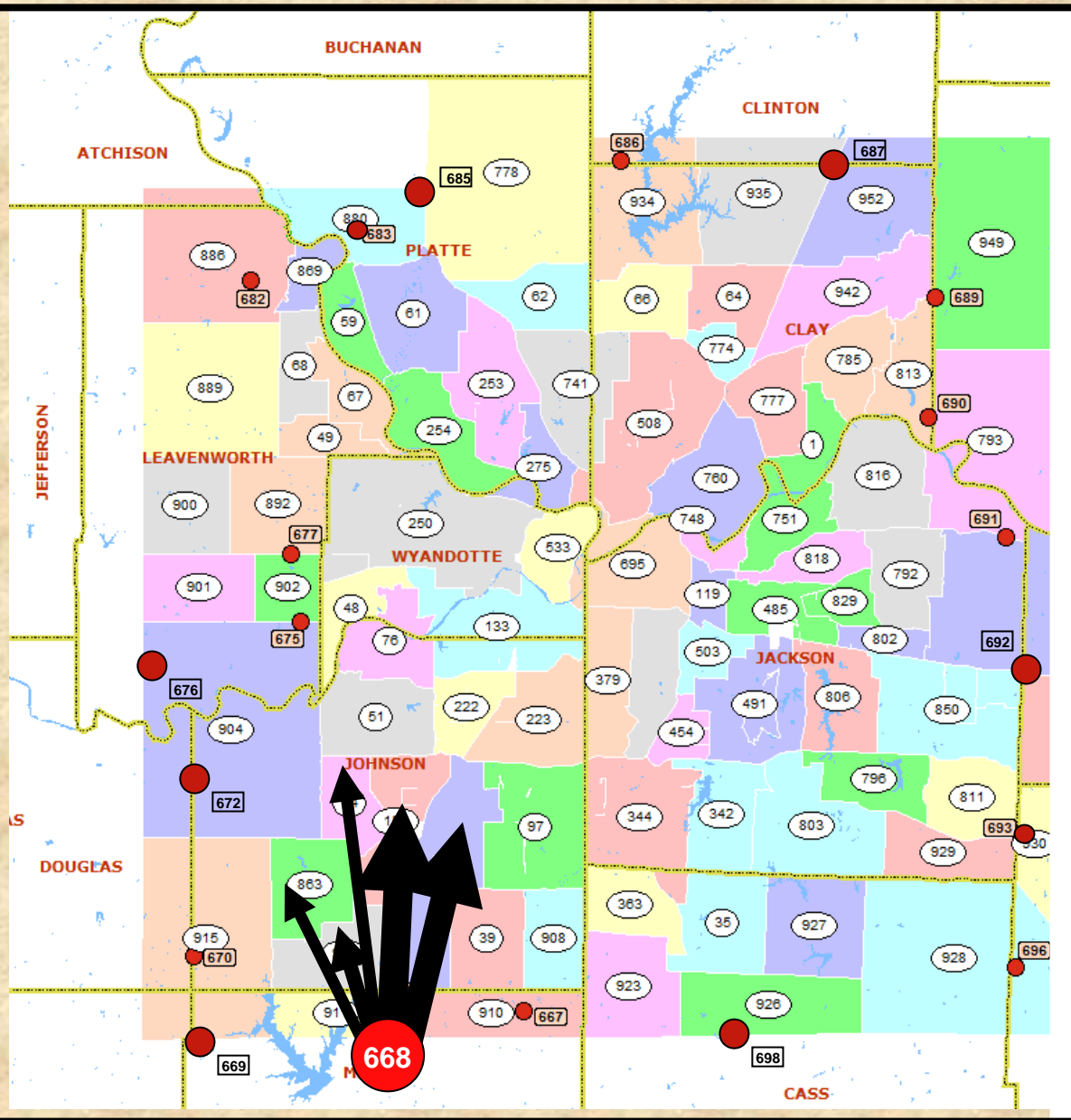
 Top Destinations

WHERE TRIPS END



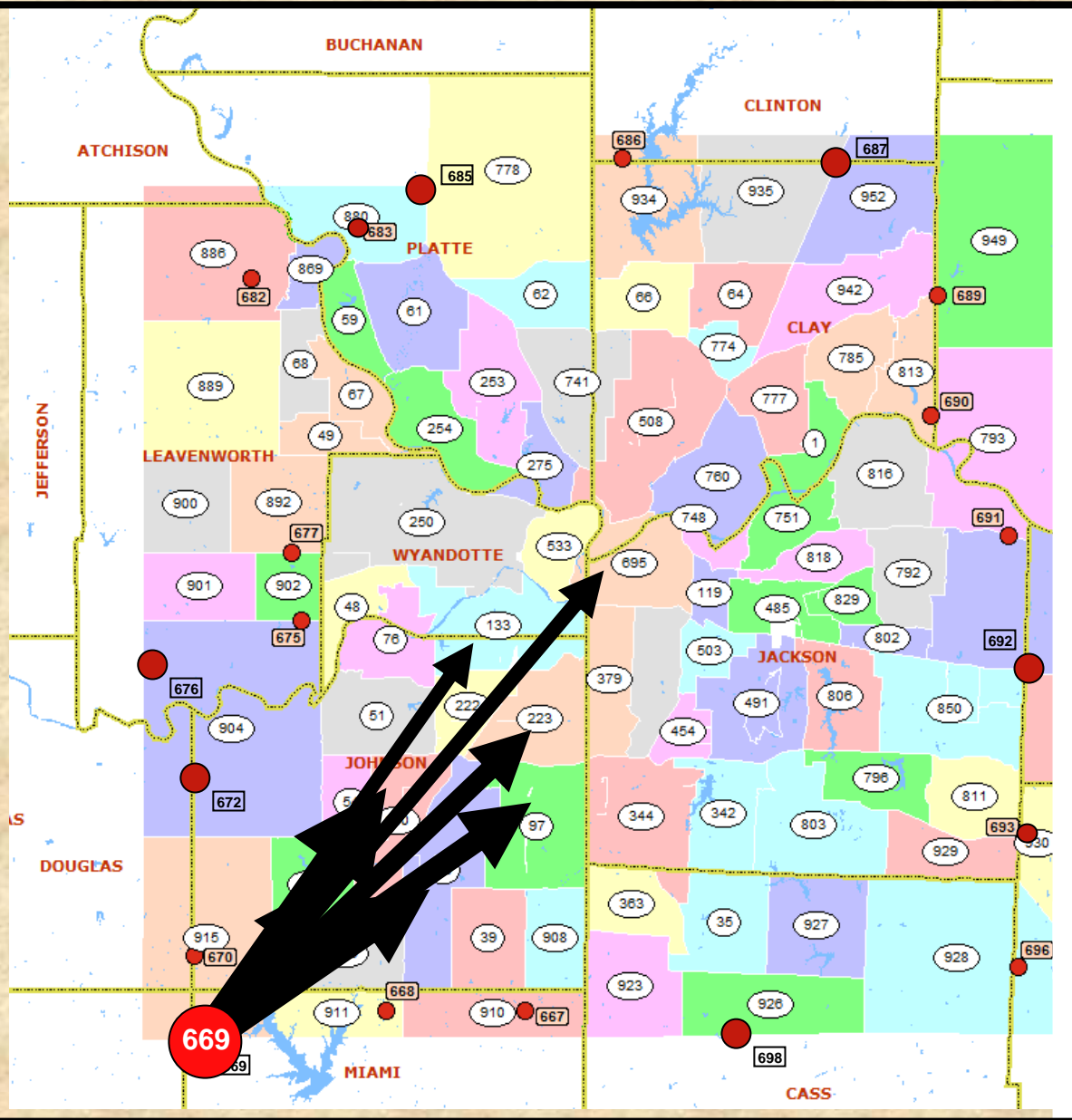
Top Destinations
For All Vehicles Entering
the Region on
US-69 Kansas:
NORTHBOUND
(Station 667)

WHERE TRIPS END



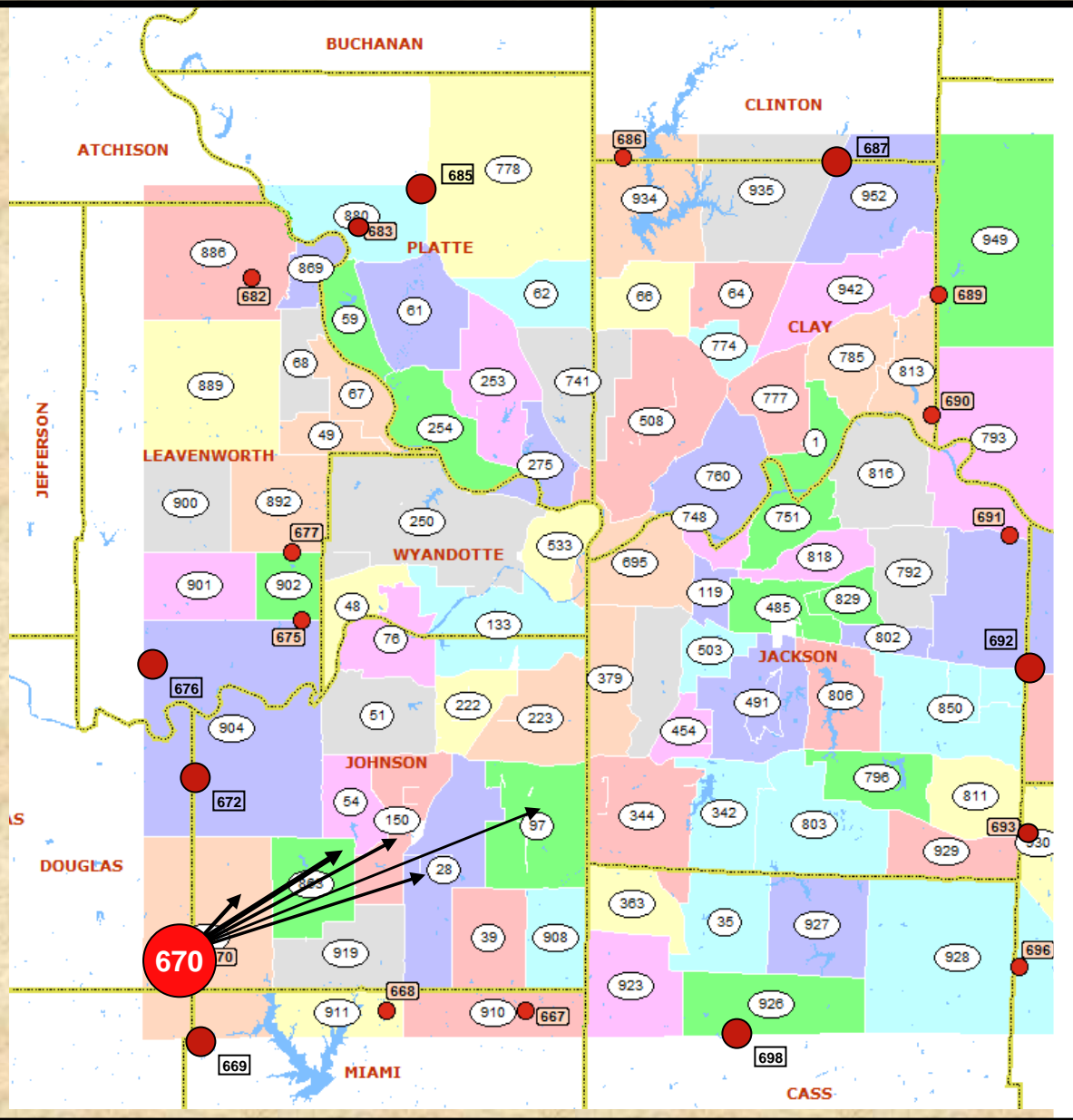
**Top Destinations
For All Vehicles Entering
the Region on
US-169 Kansas:
NORTHBOUND
(Station 668)**

WHERE TRIPS END



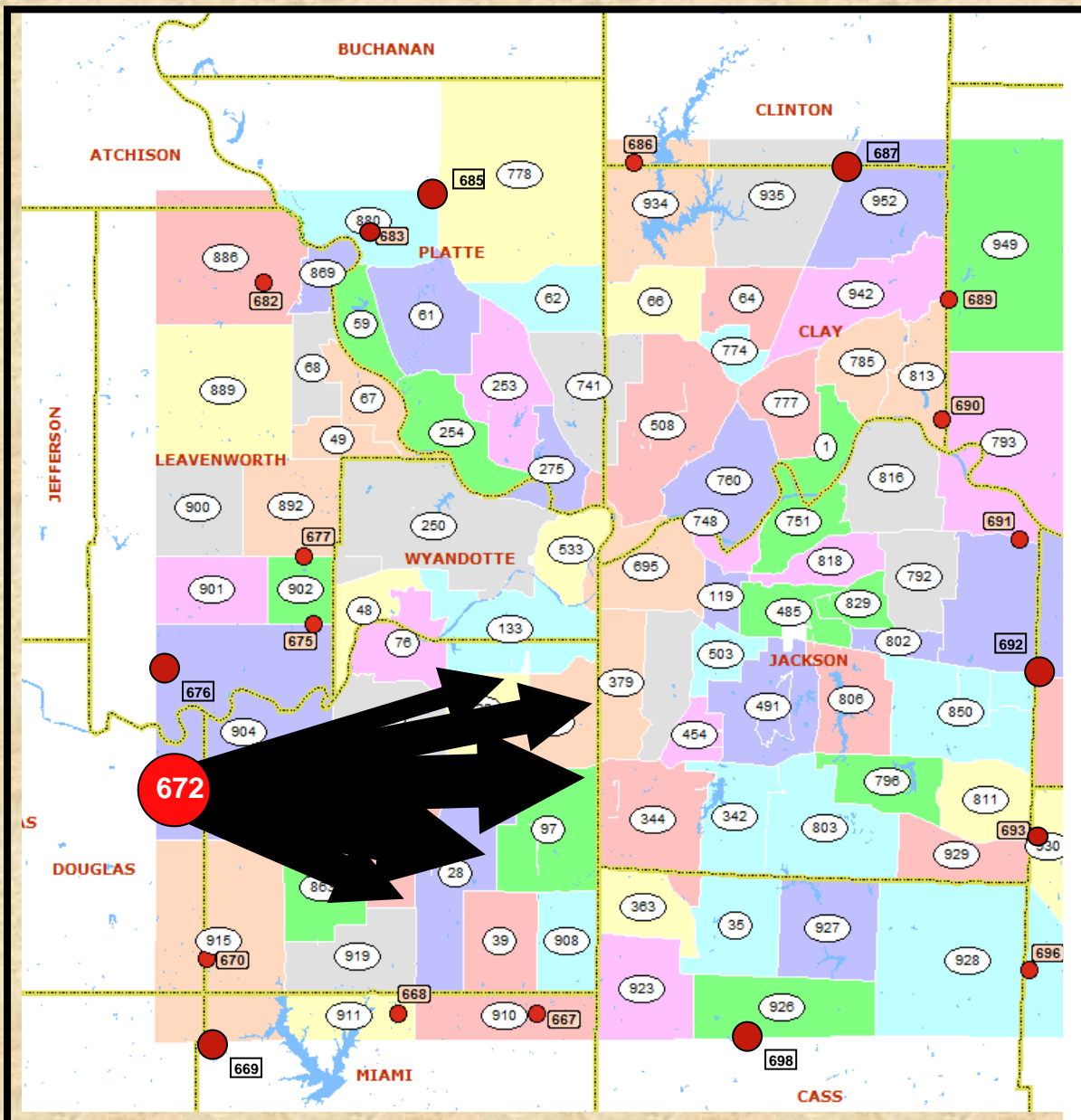
Top Destinations
For Non-Commercial
Vehicles Entering
the Region on
I-35 Kansas:
NORTHBOUND
(Station 669)

WHERE TRIPS END



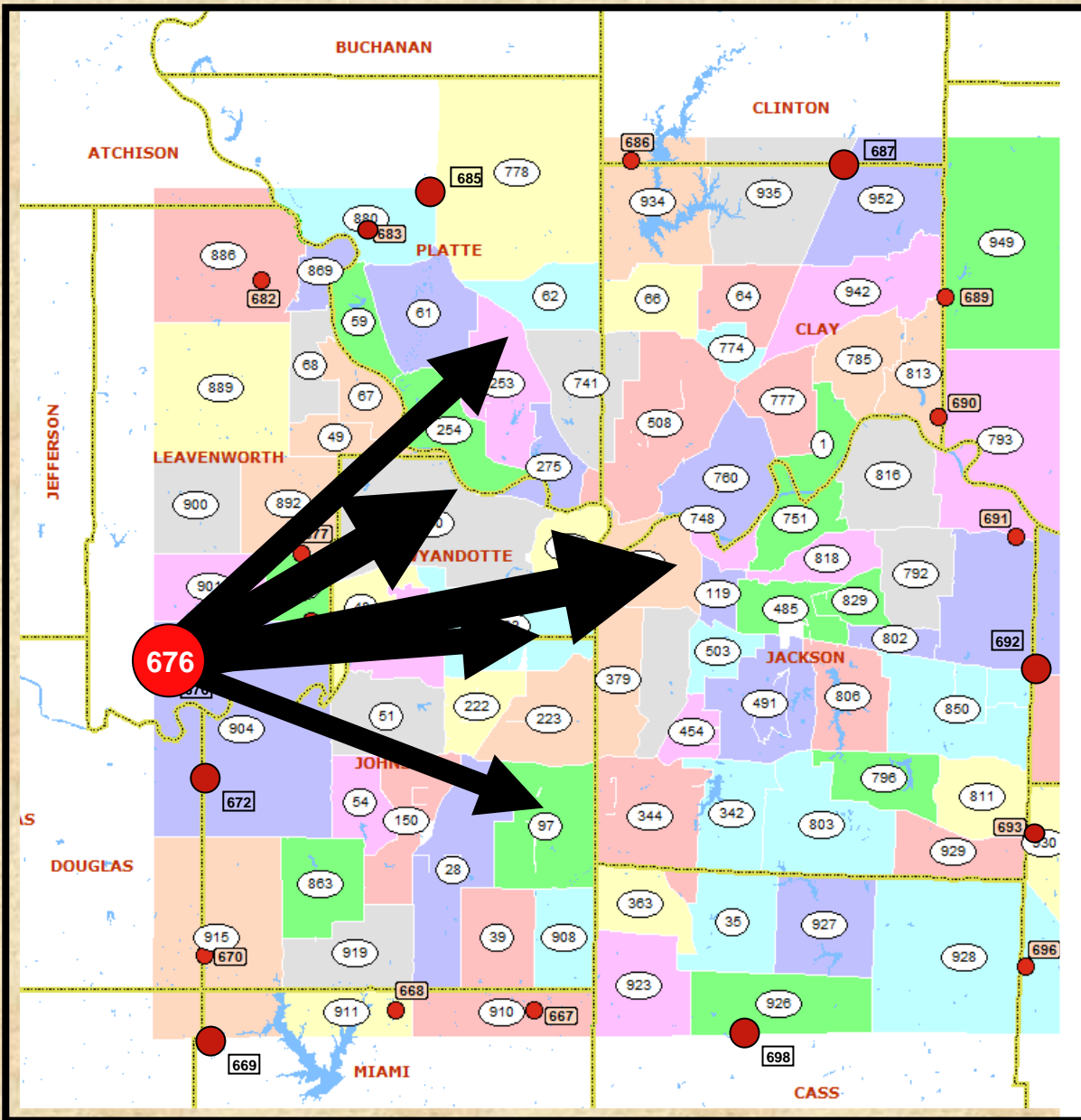
Top Destinations
For All Vehicles Entering
the Region on
US-56/K-33 Kansas:
NORTHBOUND
(Station 670)

WHERE TRIPS END



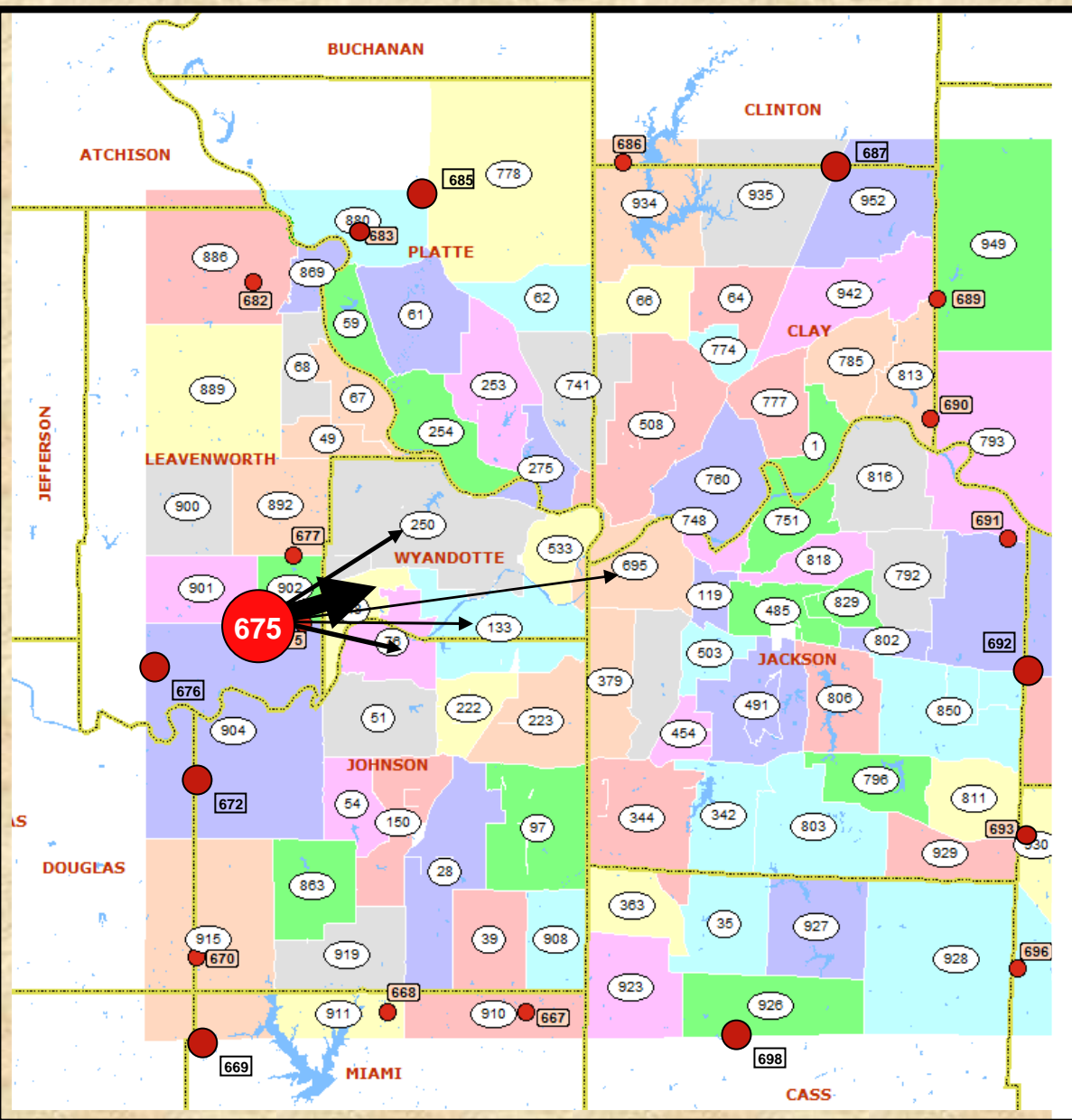
**Top Destinations
For Non-Commercial
Vehicles Entering
the Region on
K-10 Kansas:
EASTBOUND
(Station 672)**

WHERE TRIPS END



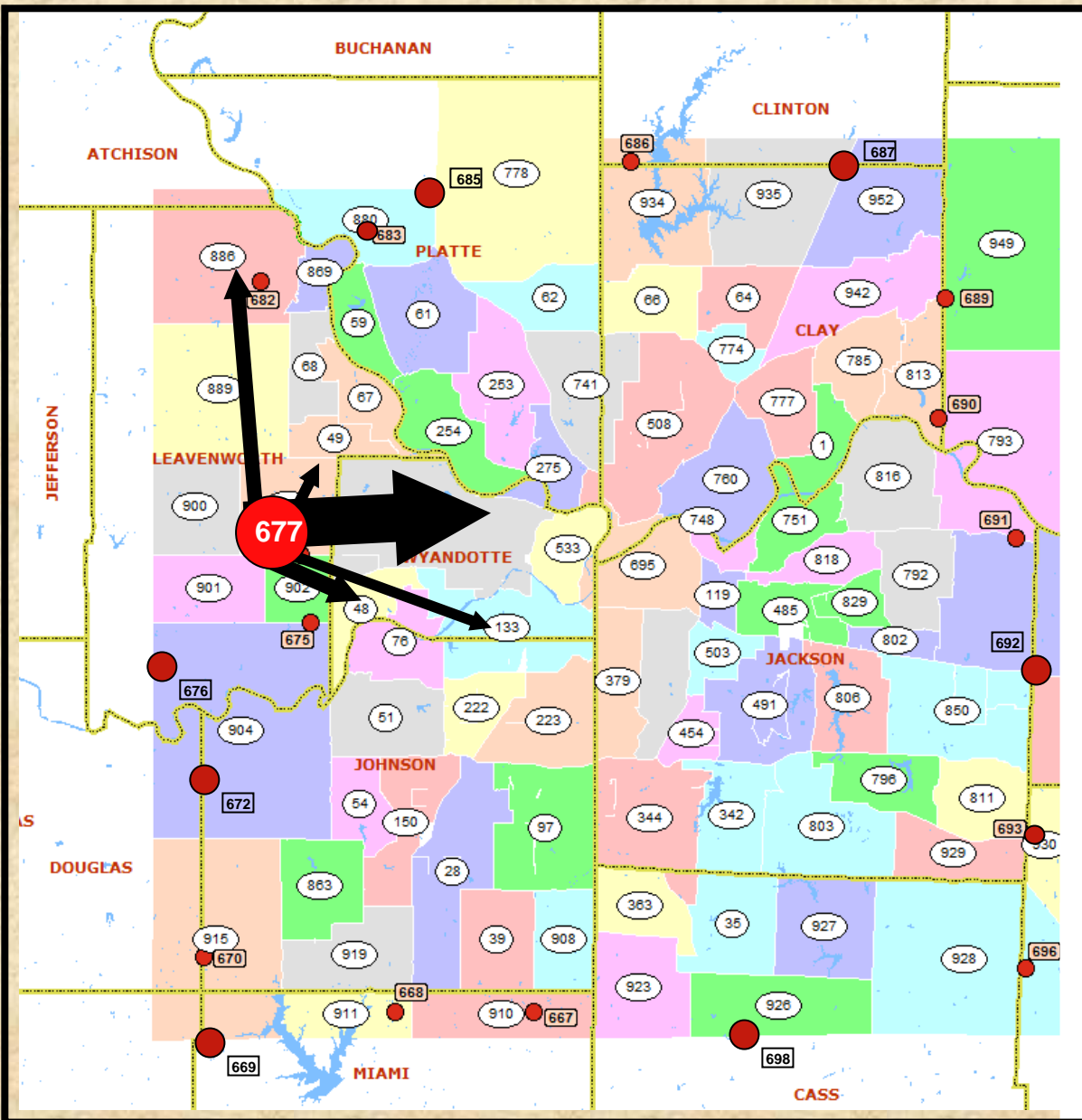
Top Destinations
For Non-Commercial
Vehicles Entering
the Region on
I-70 Kansas:
EASTBOUND
(Station 676)

WHERE TRIPS END



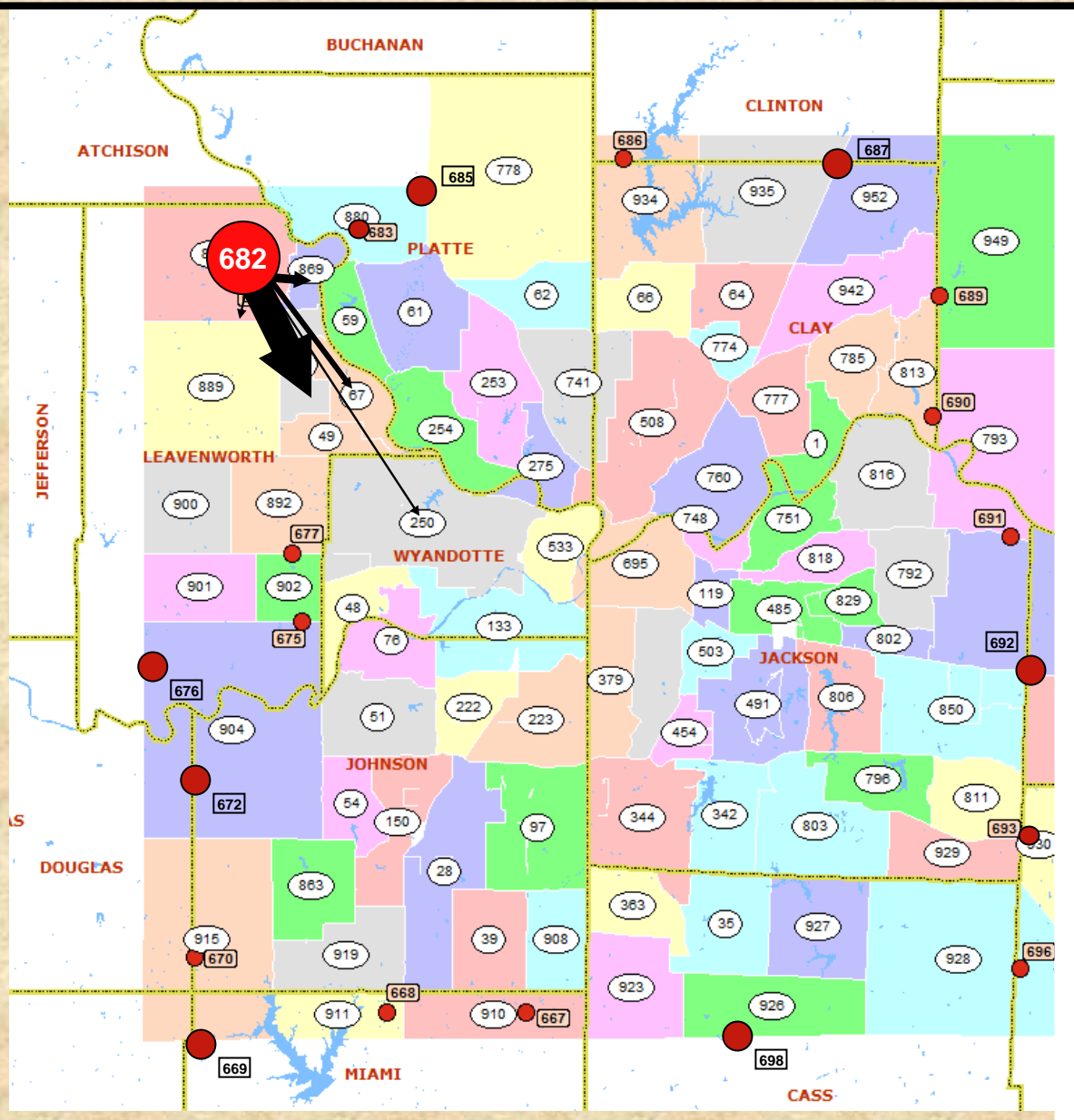
Top Destinations
For All Vehicles Entering
the Region on
K-32 Kansas:
EASTBOUND
(Station 675)

WHERE TRIPS END



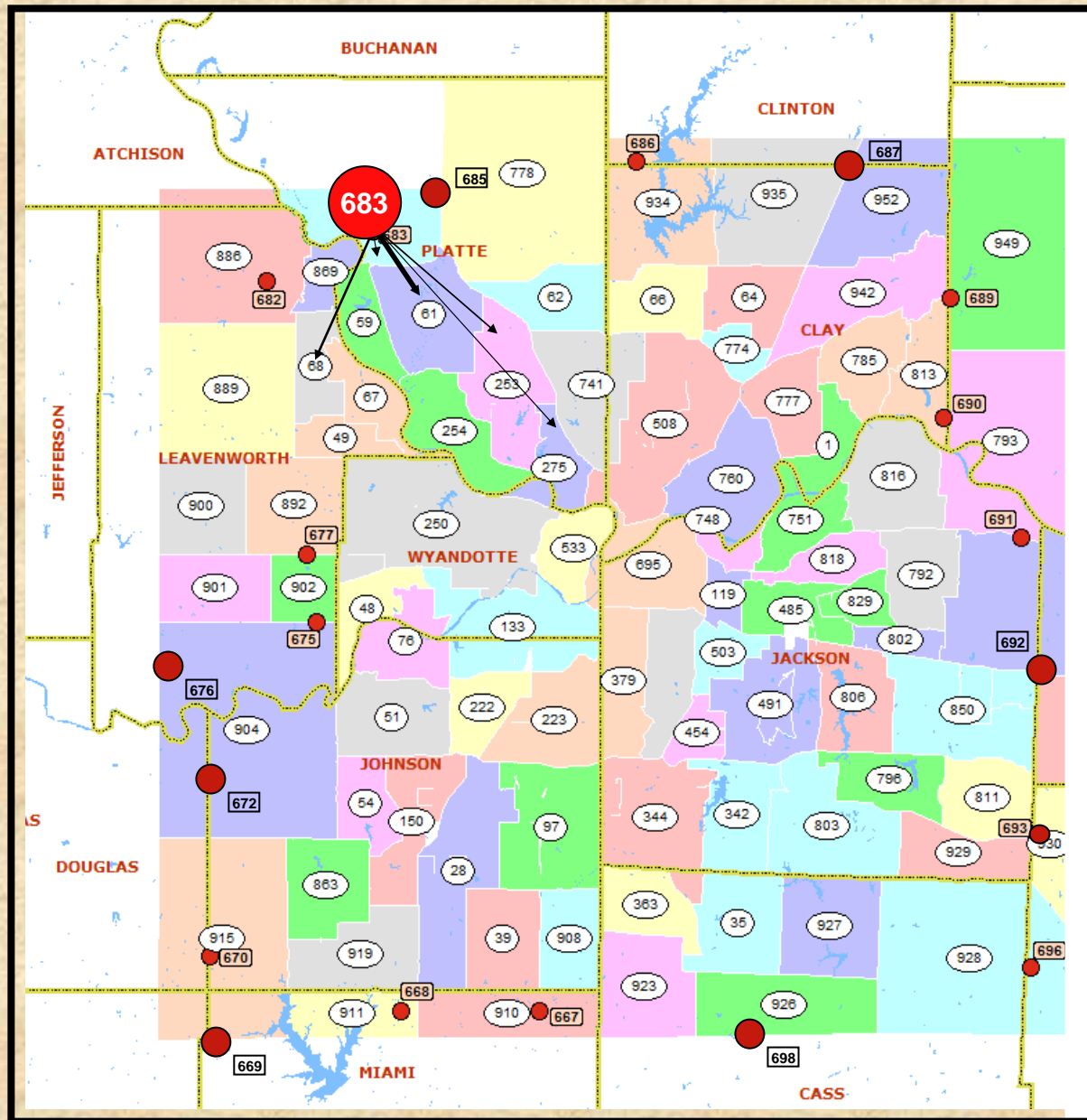
Top Destinations
For All Vehicles Entering
the Region on
US-24 Kansas:
EASTBOUND
(Station 677)

WHERE TRIPS END



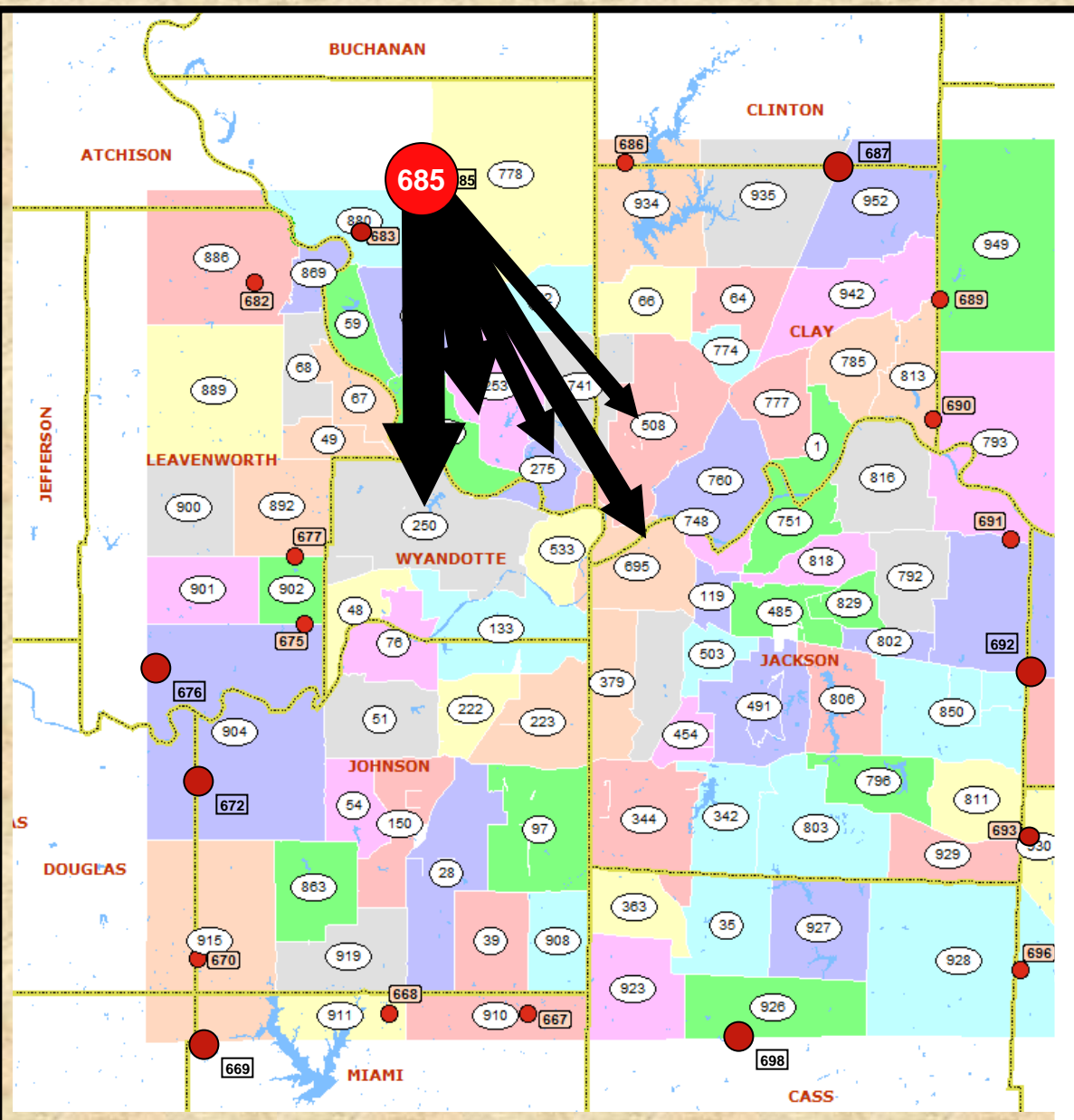
Top Destinations
For All Vehicles Entering
the Region on
US-73 Kansas:
SOUTHBOUND
(Station 682)

WHERE TRIPS END



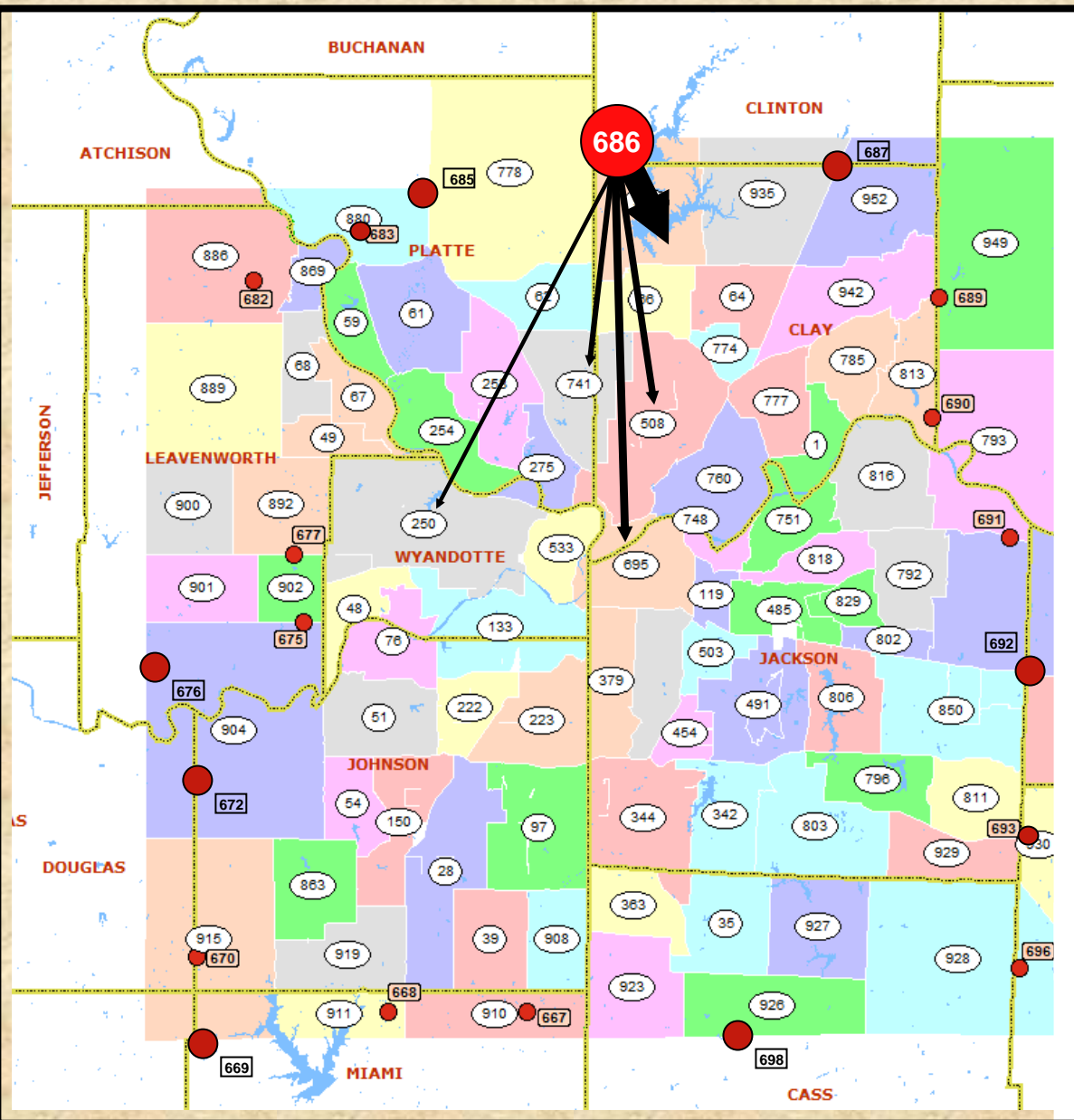
Top Destinations
For All Vehicles Entering
the Region on
Route JJ Missouri:
SOUTHBOUND
(Station 683)

WHERE TRIPS END



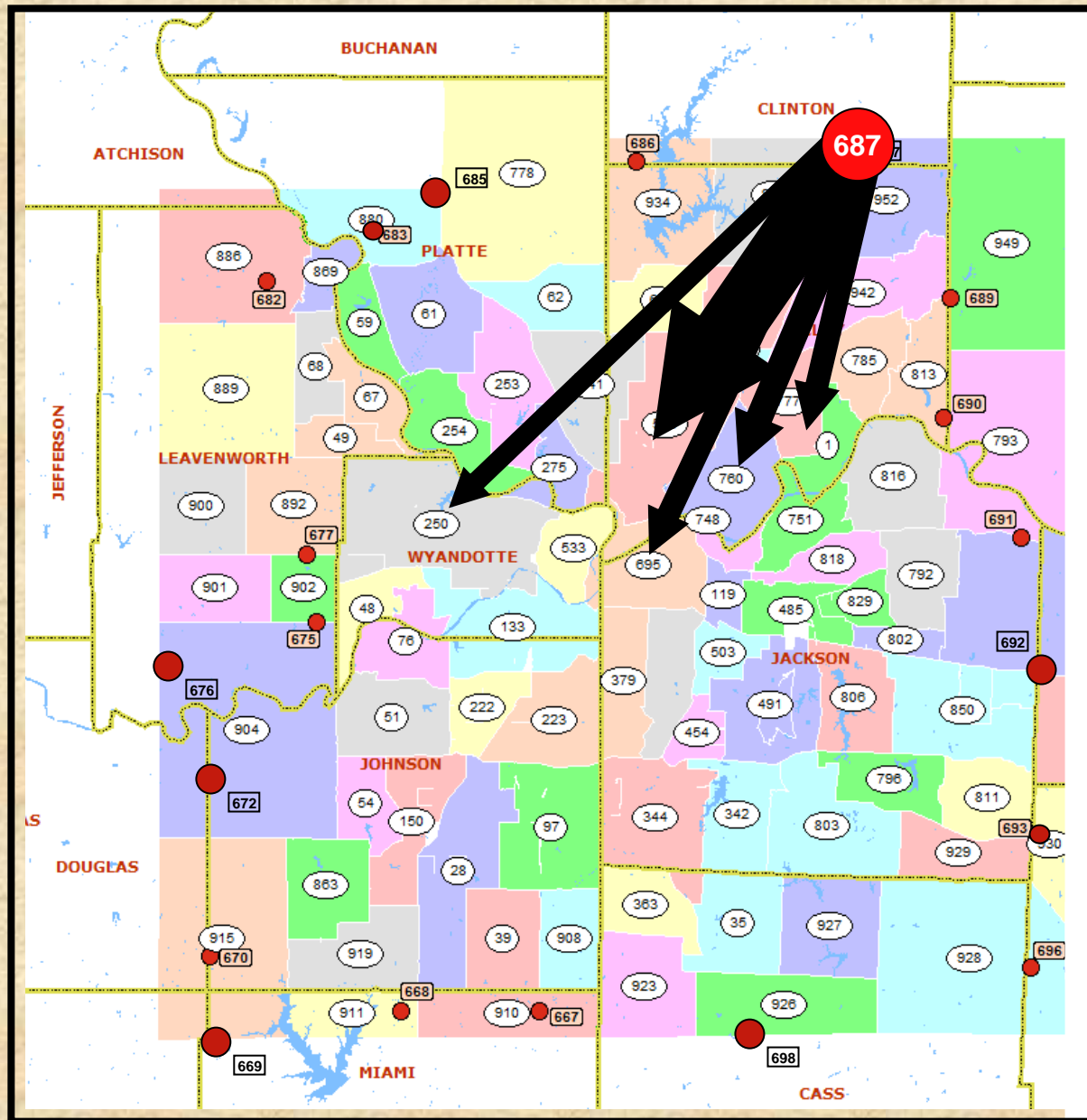
**Top Destinations
For Non-Commercial
Vehicles Entering
the Region on
I-29 Missouri:
SOUTHBOUND
(Station 685)**

WHERE TRIPS END



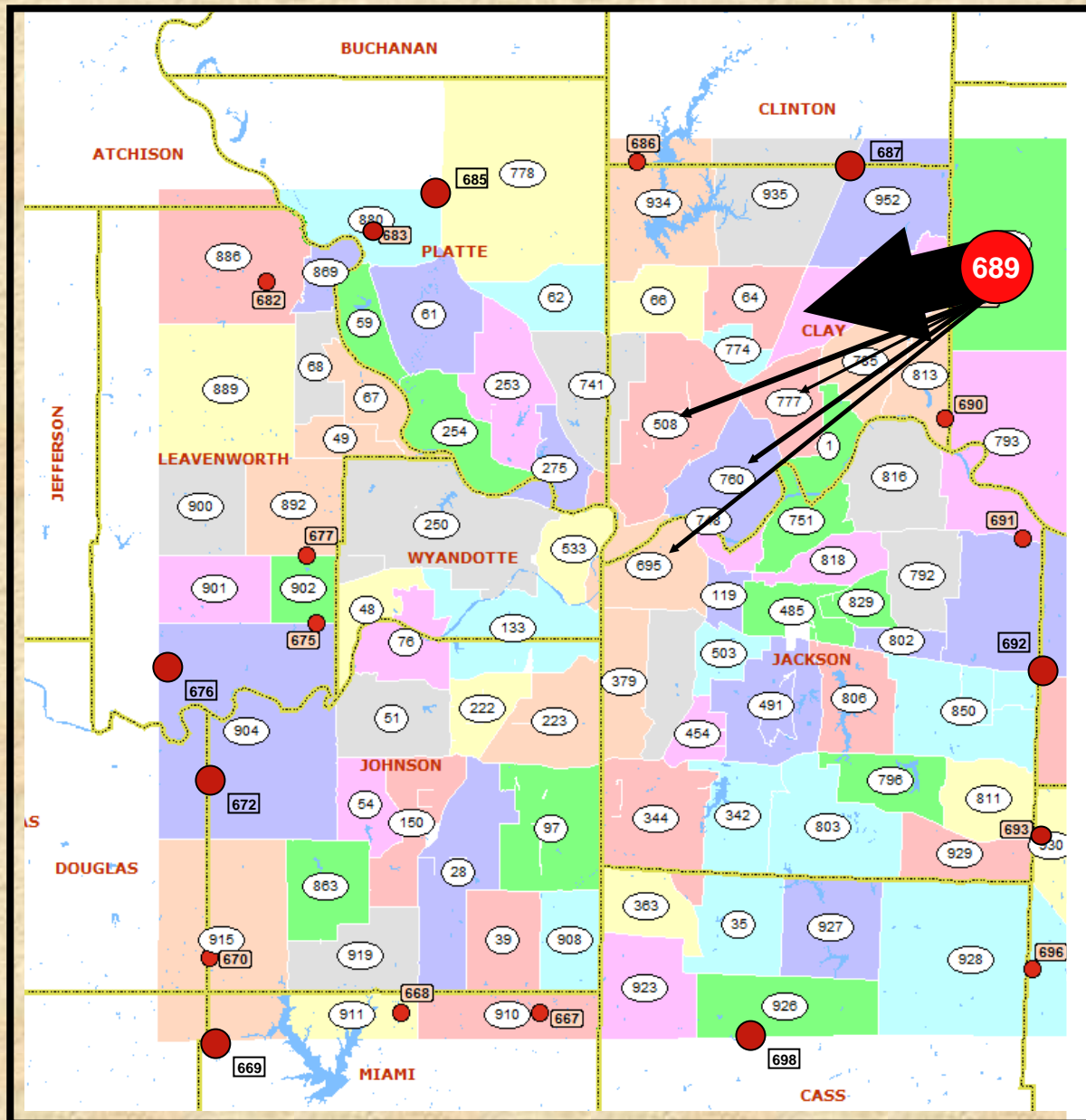
Top Destinations
For All Vehicles Entering
the Region on
US-169 Missouri:
SOUTHBOUND
(Station 686)

WHERE TRIPS END



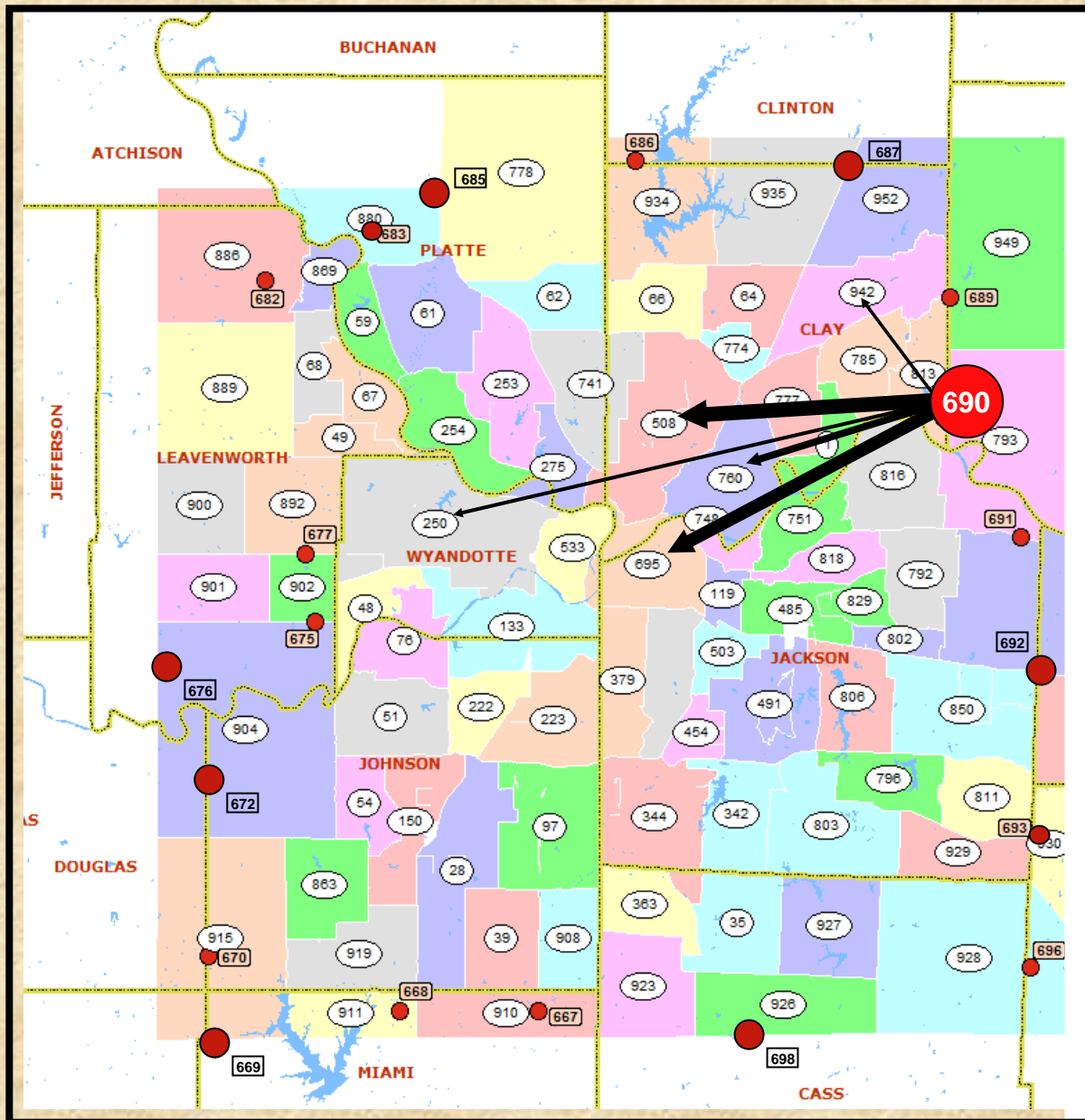
Top Destinations
For Non-Commercial
Vehicles Entering
the Region on
I-35 Missouri:
SOUTHBOUND
(Station 687)

WHERE TRIPS END



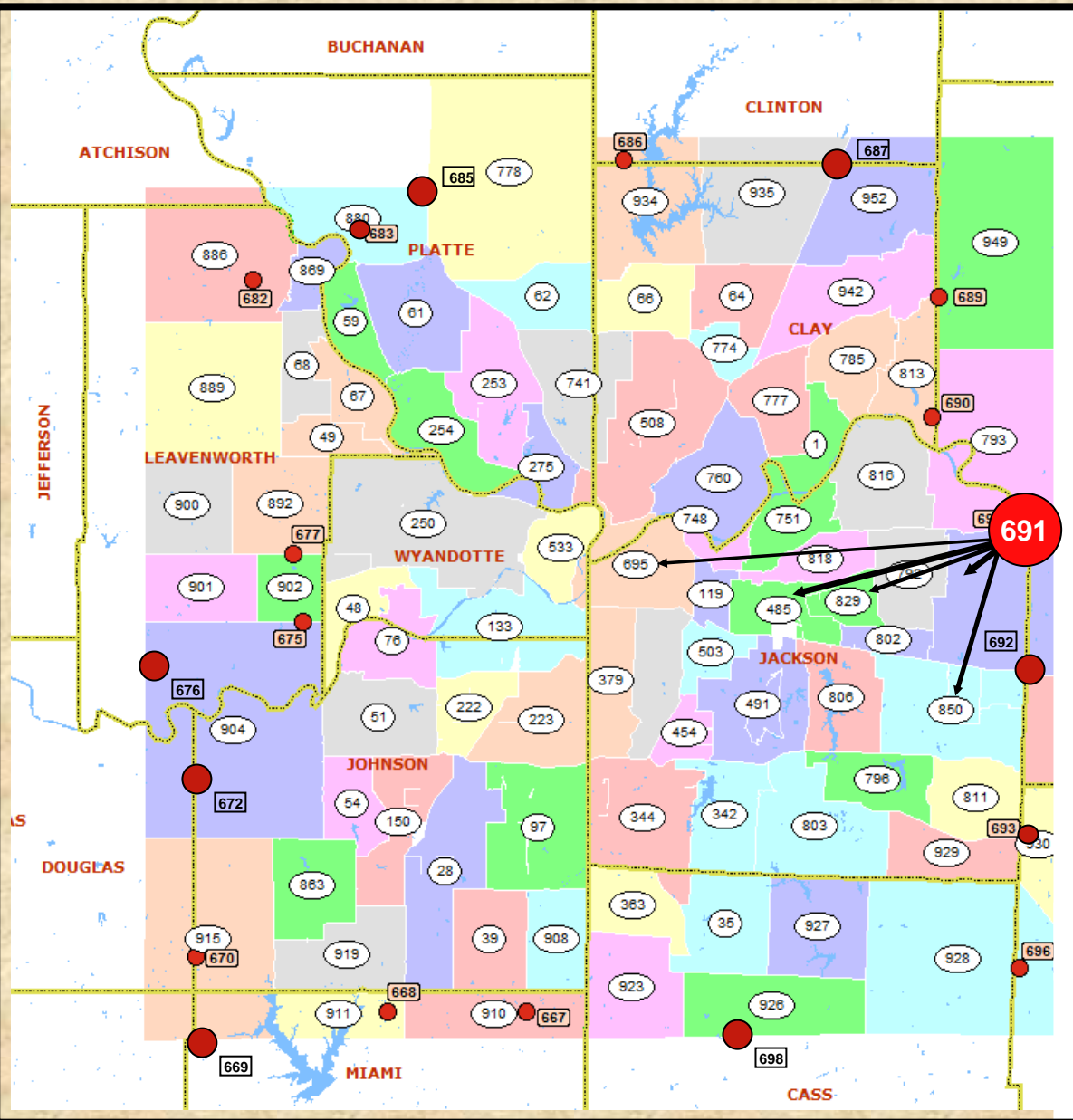
Top Destinations
All Vehicles Entering
the Region on
M-10 Missouri:
WESTBOUND
(Station 689)

WHERE TRIPS END



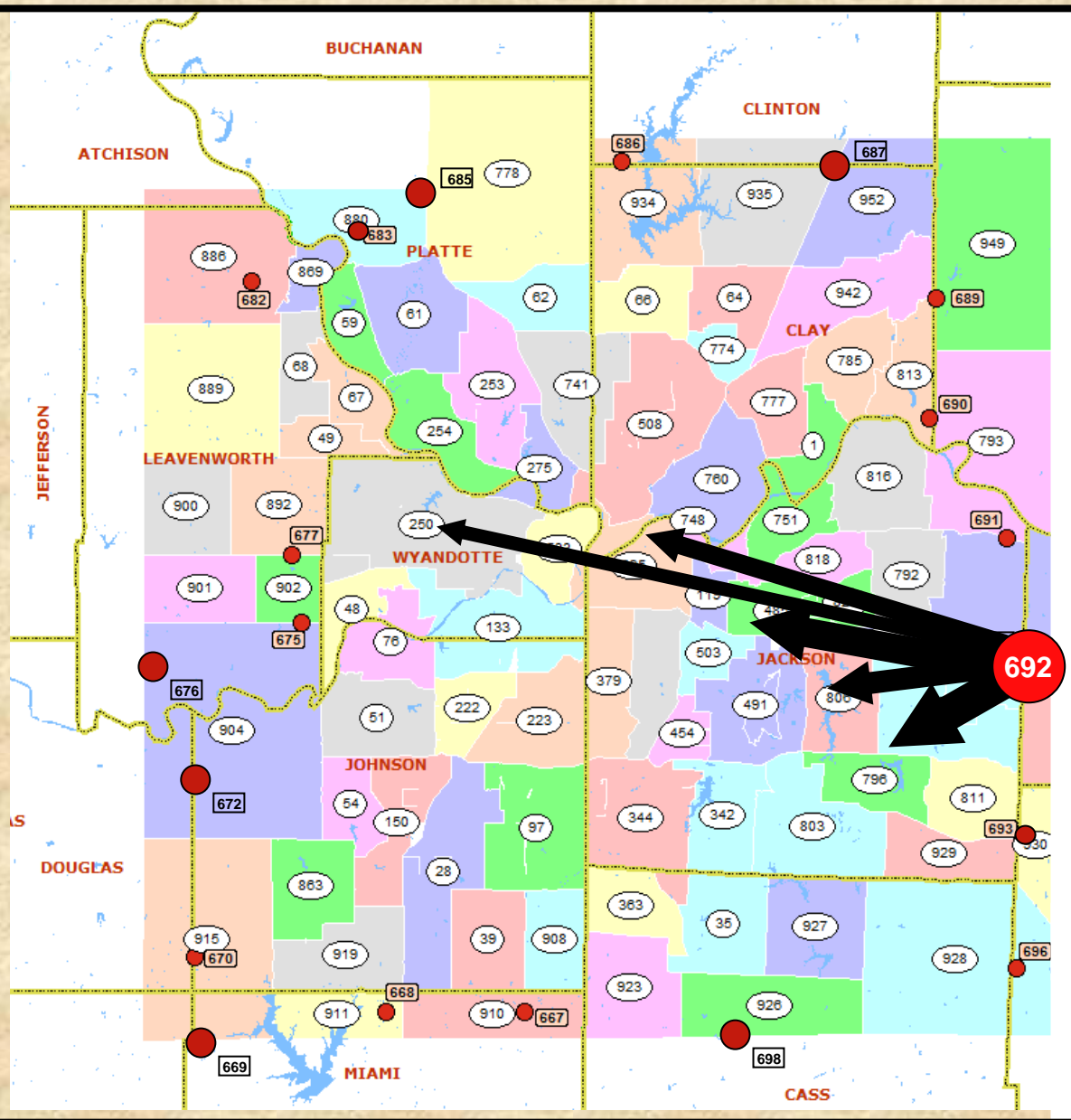
**Top Destinations
For All Vehicles Entering
the Region on
M-210 Missouri:
(Station 690)**

WHERE TRIPS END



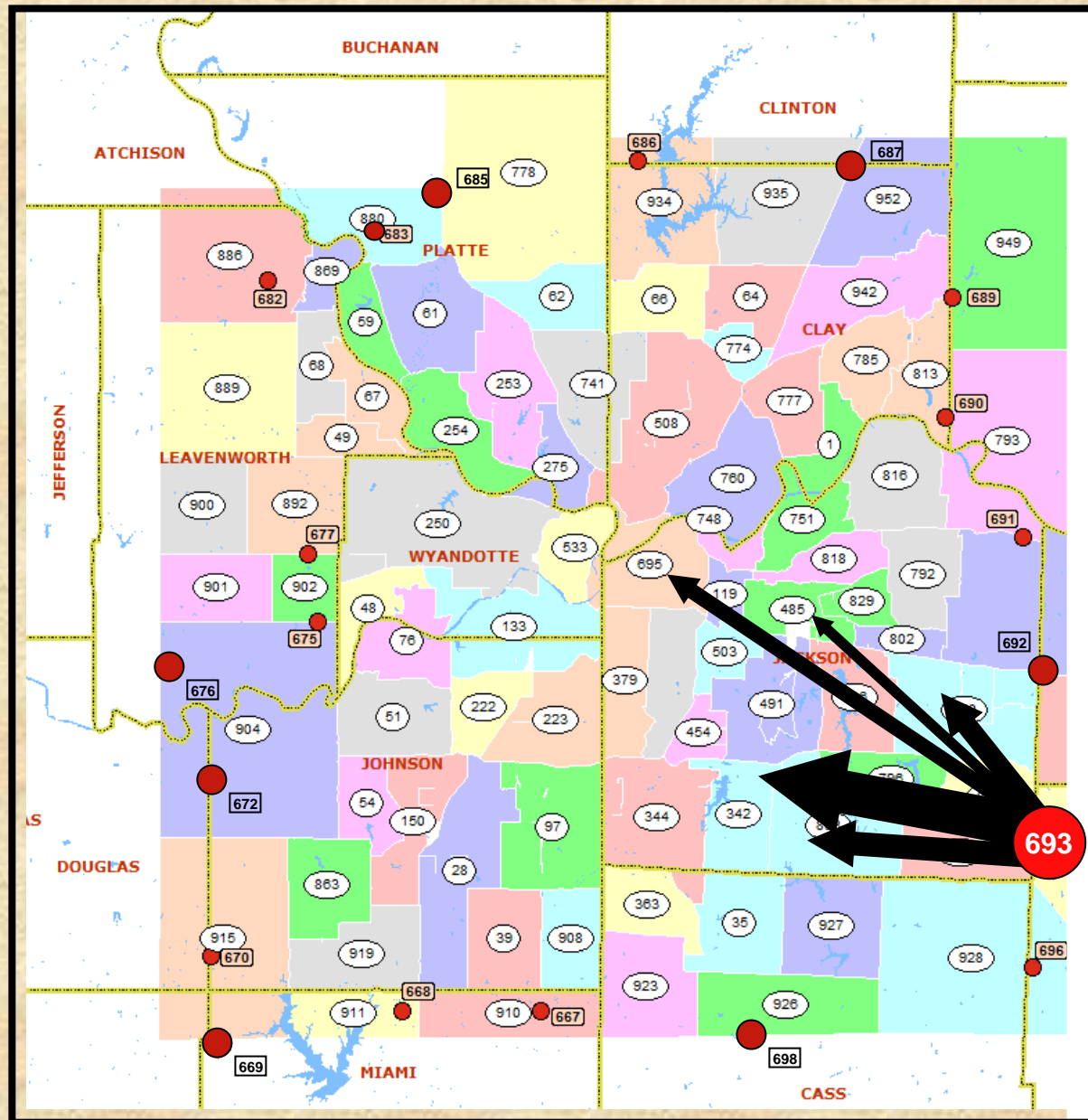
**Top Destinations
For All Vehicles Entering
the Region on
US-24 Missouri:
WESTBOUND
(Station 691)**

WHERE TRIPS END



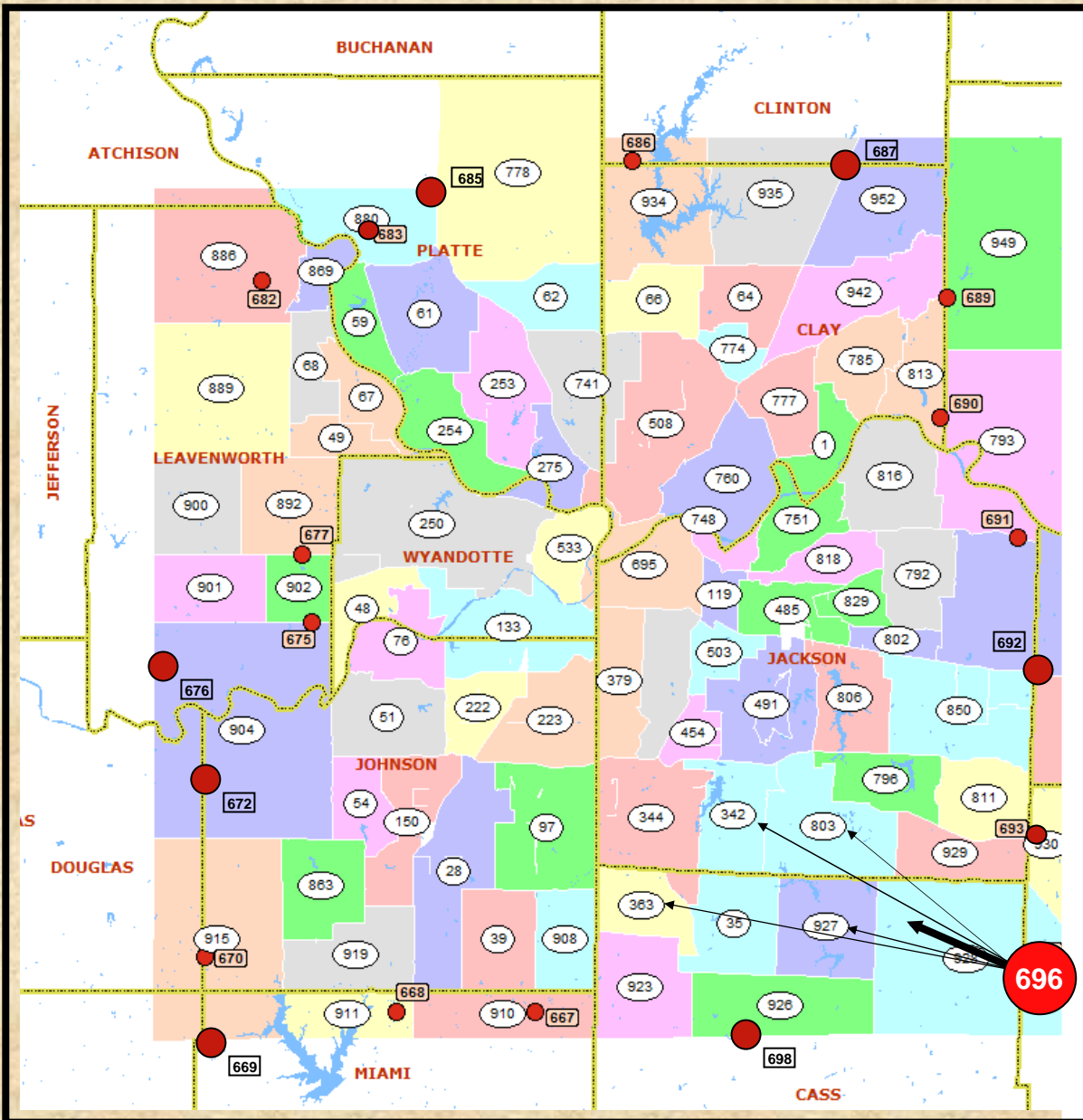
Top Destinations
For Non-Commercial
Vehicles Entering
the Region on
I-70 Missouri:
WESTBOUND
(Station 692)

WHERE TRIPS END



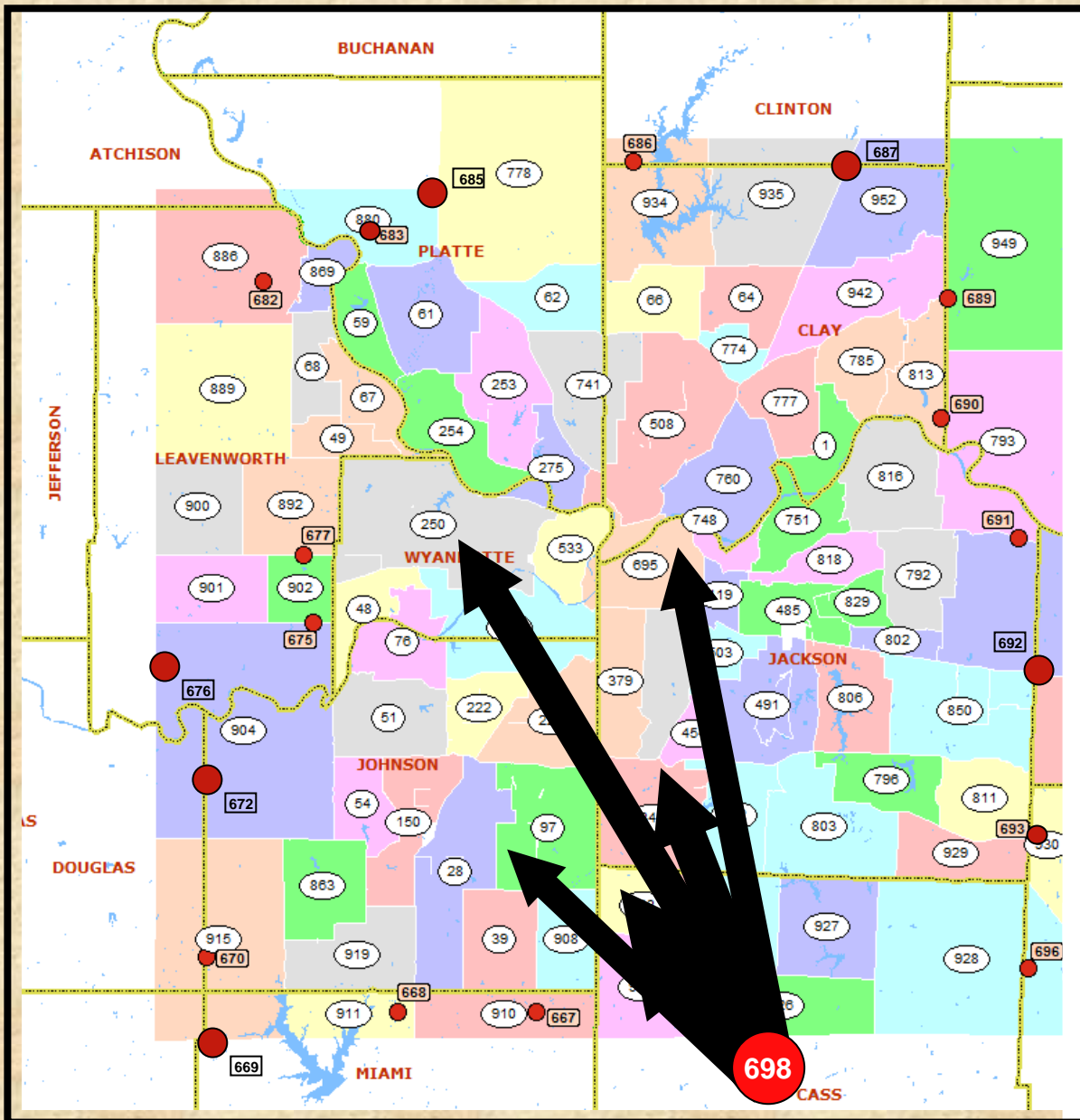
Top Destinations
For All Vehicles Entering
the Region on
US-50 Missouri:
WESTBOUND
(Station 693)

WHERE TRIPS END



Top Destinations
For All Vehicles Entering
the Region on
M-58 Missouri:
WESTBOUND
(Station 696)

WHERE TRIPS END



**Top Destinations
For Non-Commercial
Vehicles Entering
the Region on
US-71 Missouri:
NORTHBOUND
(Station 698)**

Limitations of the Data

- **The number of “Thru Trips” for freeway locations is under-represented**
 - study does not include trip data from commercial vehicles entering the region on freeways
 - Commercial vehicle data was collected in a separate survey
 - matching of license plates for private vehicles entering/exiting the region was not completed
 - Video data collected, but not processed
- **The number of return trips on freeways by people who are not residents of the Kansas City area is under-represented**
 - Mail/phone follow-ups were only conducted with people who lived outside the study area

Summary

- Data from more than 10,000 vehicles
- Extremely Accurate
 - $\pm 1\%$ at the 95% level of confidence
- Wide Variety of Uses for the Data
 - Update Regional Transportation Models
 - Economic Impact Projections
 - Assist with the Identification of Future Transportation Improvements in the region

Questions ???

THANK YOU