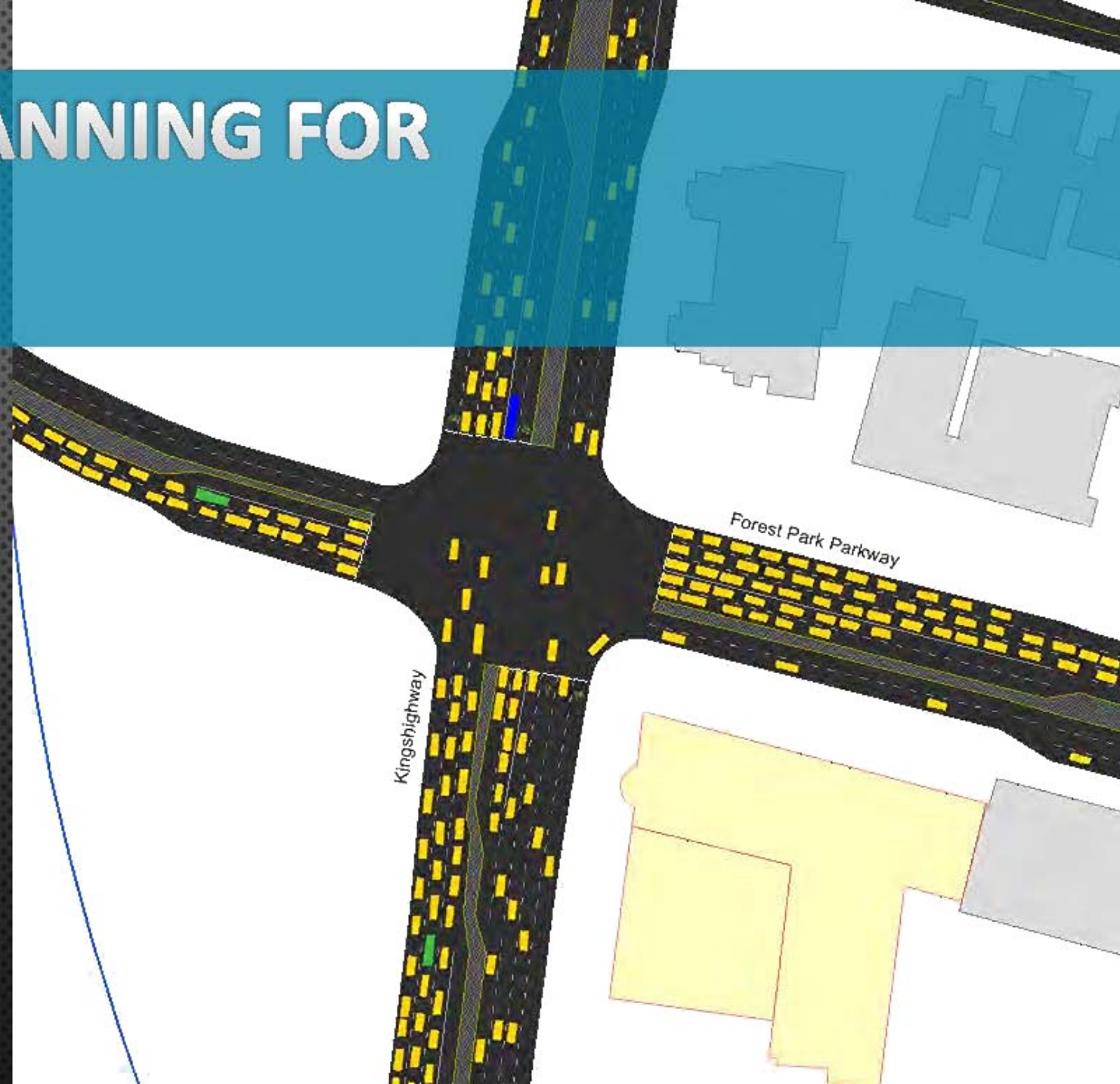
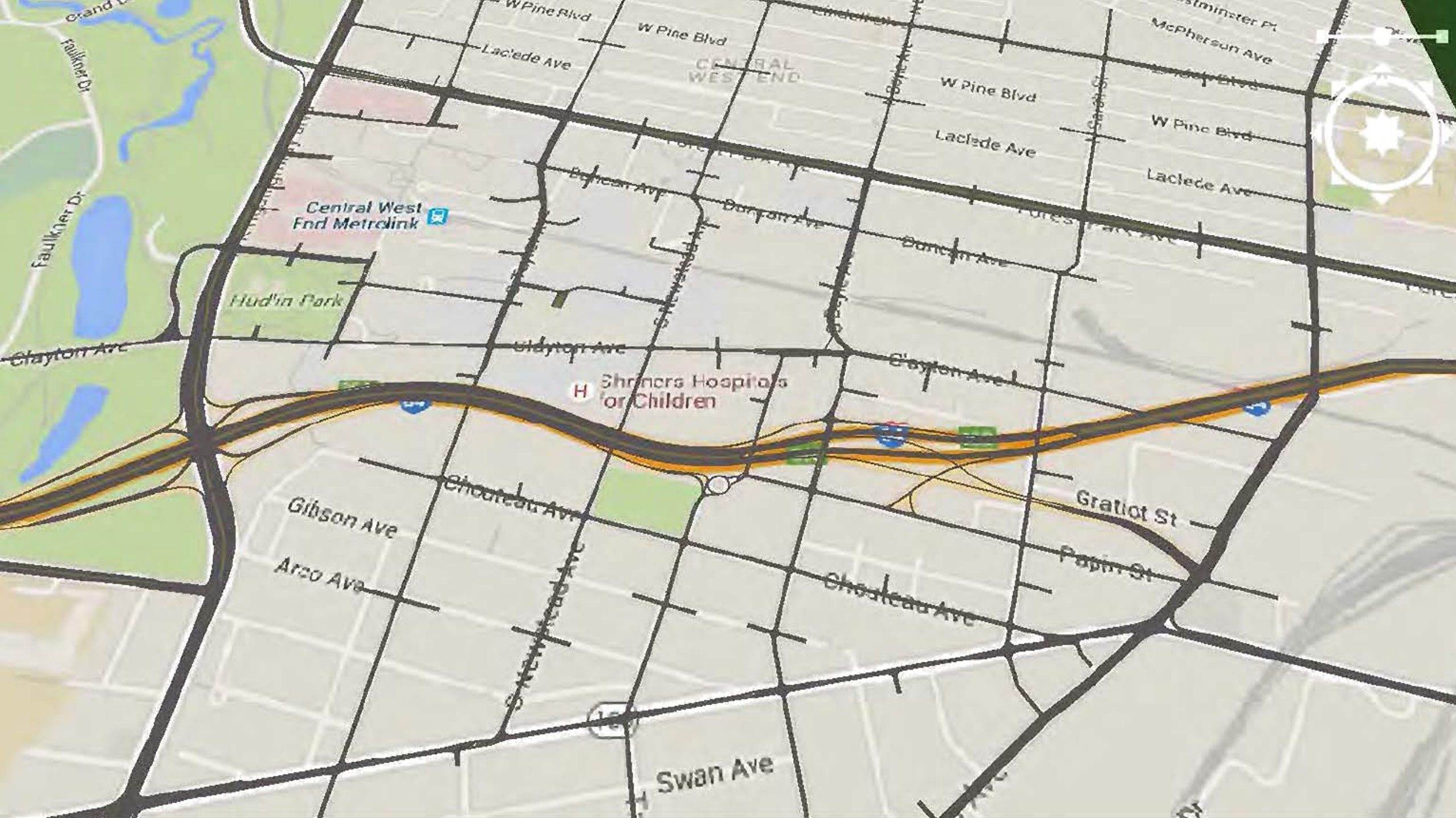


TRANSPORTATION PLANNING FOR CENTRAL CORRIDOR

TRANSMODELER APPLICATIONS

CHRIS BEARD, PE, PTOE

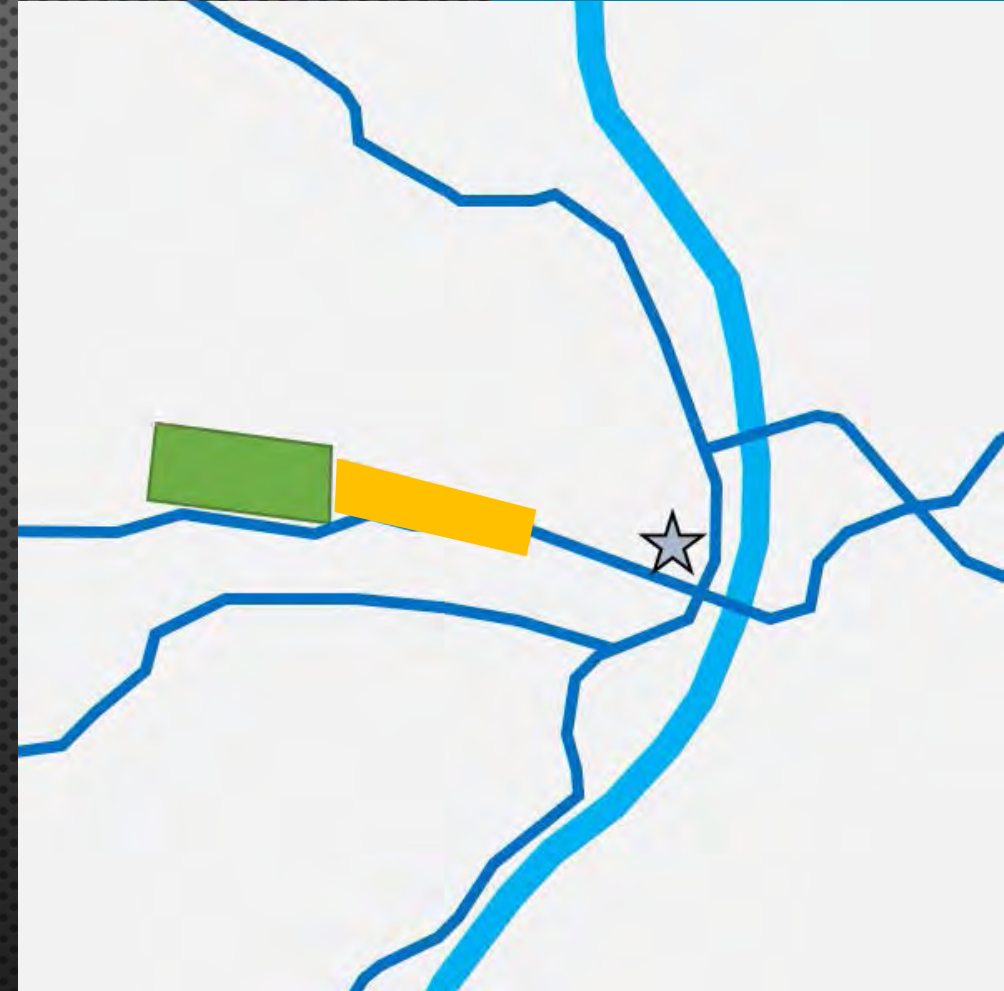




THE CENTRAL CORRIDOR

GROWING PART OF MIDTOWN ST. LOUIS

- BARNES-JEWISH HOSPITAL
- ST. LOUIS CHILDREN'S HOSPITAL
- WASHINGTON UNIVERSITY SCHOOL OF MEDICINE
- SHRINER'S HOSPITAL FOR CHILDREN
- ST. LOUIS COLLEGE OF PHARMACY
- CORTEX INNOVATION COMMUNITY
- ST. LOUIS UNIVERSITY
- IKEA ST. LOUIS





EUCLID SHOPPING

Lindell Blvd

CENTRAL
WEST END

LINDELL SARAH

GRAND CENTER

FOREST PARK

Kingshighway Blvd

Forest Park Ave

CENTRAL WEST END STATION



WASHINGTON UNIVERSITY MEDICAL CENTER

PROPOSED CORTEX STATION



CORTEX INNOVATION COMMUNITY

SAINT LOUIS UNIVERSITY CAMPUS

Grand Blvd

GREENWAY

GRAND STATION



FOREST PARK SE

Manchester Ave

Vandeventer Ave

SAINT LOUIS UNIVERSITY MEDICAL CAMPUS









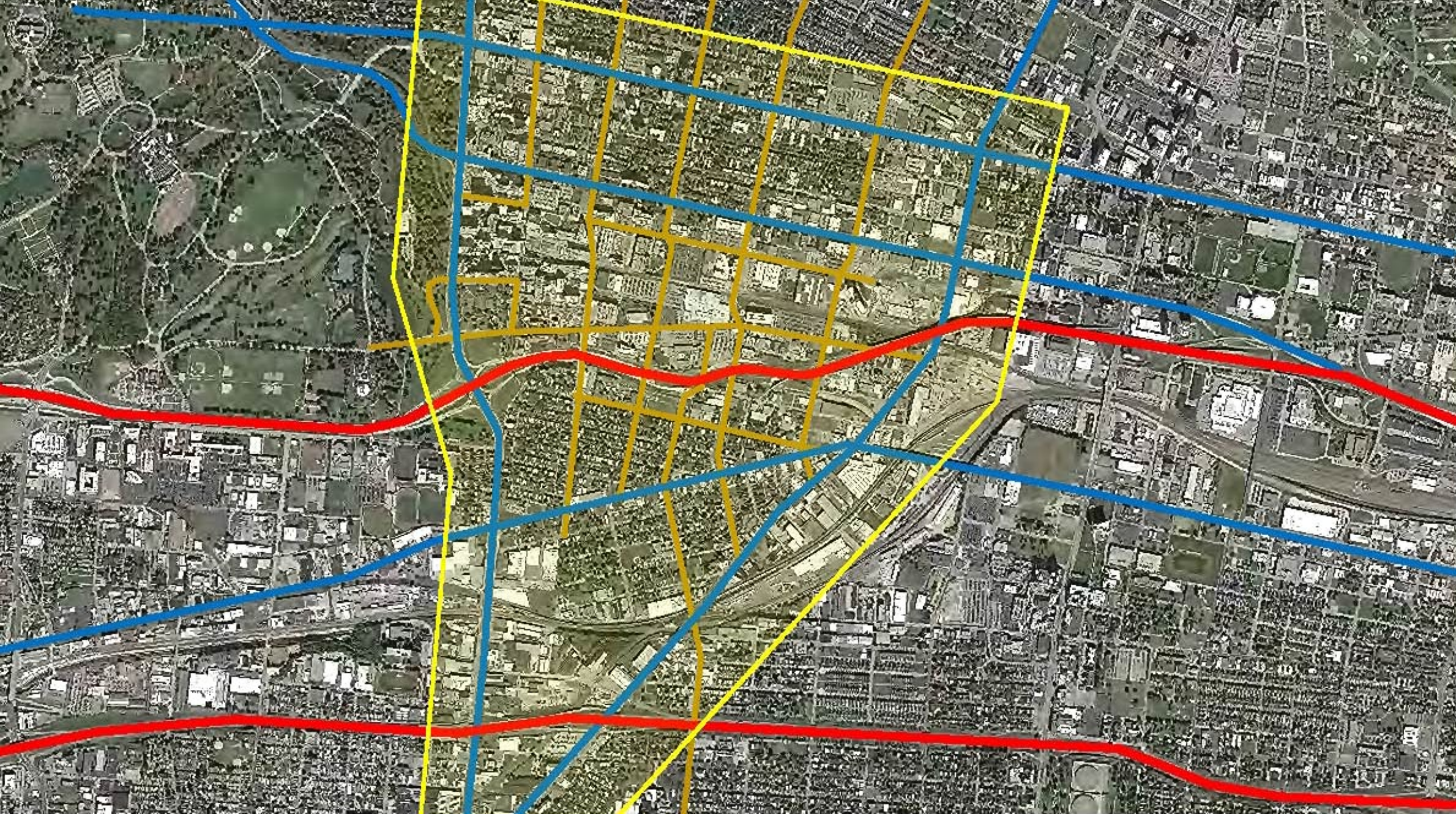




TECHNICAL APPROACH

MULTI-RESOLUTION MODEL USING TRANSModeler

- COMBINES ELEMENTS OF TRAVEL DEMAND AND TRAFFIC MODELING
- CAPITALIZES ON STRENGTHS OF VARIOUS SCALES OF ANALYSIS
- UTILIZES ORIGIN-DESTINATION MATRICES TO MANAGE TRIPS
- UTILIZES SIMULATION TO REPLICATE TRAFFIC FLOW
- BENEFICIAL WHEN:
 1. NETWORK TOO LARGE FOR MANUAL TRAFFIC ASSIGNMENTS
 2. PRECISION REQUIRED TO ADDRESS INTERSECTION-LEVEL OPERATIONS



TECHNICAL APPROACH

STEP 1: DATA COLLECTION

- 50+ INTERSECTION TURNING MOVEMENT COUNTS
- MAJOR PARKING FACILITY ENTER/EXIT COUNTS
- BASE ORIGIN-DESTINATION MATRIX EXTRACTED FROM REGIONAL TRAVEL DEMAND MODEL
- INTERSTATE SENSOR TRAFFIC DATA
- ROBUST UNDERSTANDING OF STUDY AREA CONDITIONS



TECHNICAL APPROACH

STEP 2: CREATE SEED MATRIX

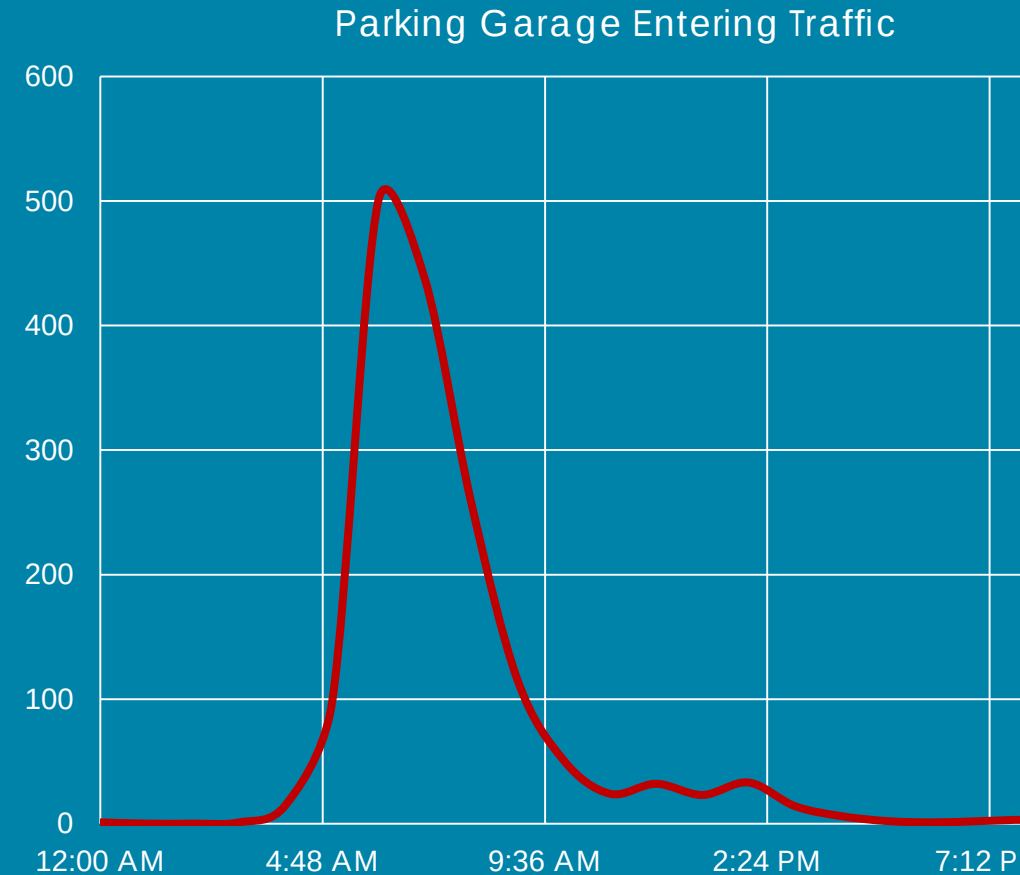
- RESOLUTION OF REGIONAL TRAVEL DEMAND MODEL INADEQUATE FOR THIS APPLICATION
- MATRIX DISAGGREGATION NEEDED
- UTILIZED PARKING, EMPLOYMENT, & CENSUS DATA AT THE BLOCK LEVEL
 - EMPLOYMENT AND PARKING FOR ATTRACTIONS
 - POPULATION FOR PRODUCTIONS



TECHNICAL APPROACH

STEP 3: MATRIX ESTIMATION

- DEVELOP EXISTING AM & PM PEAK HOUR TRAFFIC O-D MATRICES REFLECTING HIGH-RESOLUTION ZONAL STRUCTURE
- PERFORM AN ODME PROCESS USING SEED MATRIX & COUNTS AS INPUTS



TECHNICAL APPROACH

STEP 4: DYNAMIC ASSIGNMENT

- SIMULATION-BASED REPLICATION OF TRAFFIC FLOW
- UTILIZES SIMULATED TRAVEL TIMES FROM PREVIOUS ITERATION TO INFORM ASSIGNMENT IN CURRENT ITERATION
- UPDATES PATHS AND TRAVEL TIMES AFTER EACH ITERATION
- APPROXIMATELY 50 ITERATIONS TYPICALLY NEEDED FOR CONVERGENCE



TECHNICAL APPROACH

STEP 5: SIMULATION

- PERFORM SEVERAL SIMULATION ITERATIONS WITH VARYING RANDOM SEEDS
- CALIBRATION!
- CALCULATE PERFORMANCE MEASURES AS AN AVERAGE OF THE ITERATIONS
 - INTERSECTION DELAYS
 - INTERSECTION QUEUING
 - TRAVEL TIMES
 - TURNING MOVEMENT VOLUMES



FUTURE SCENARIOS

APPLY BACKGROUND GROWTH FACTORS

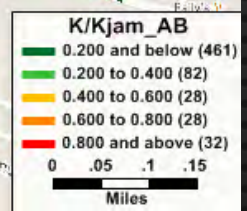
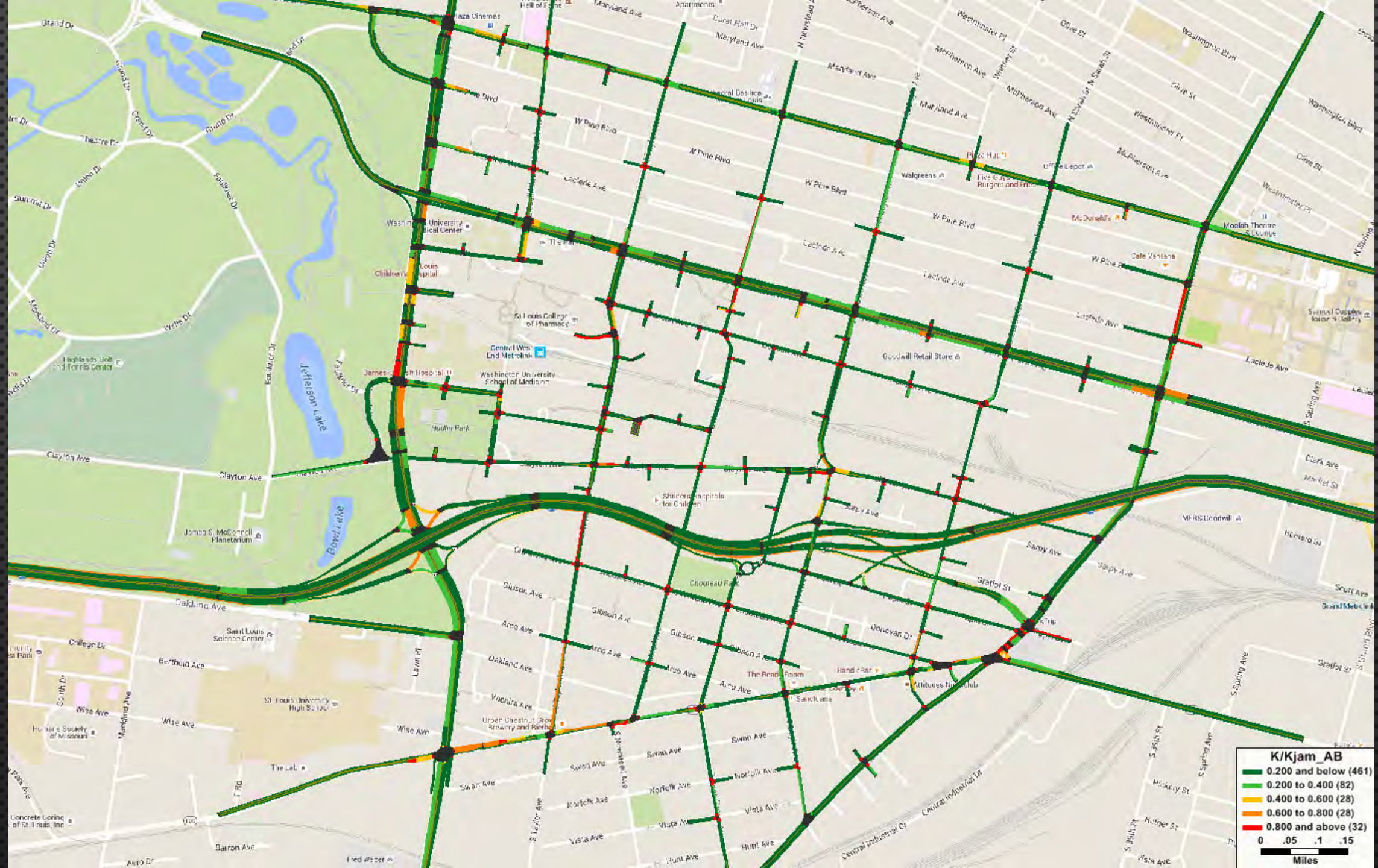
FUTURE DEVELOPMENT

- FORECAST TRIP GENERATION BASED ON LAND USE
- ESTIMATE EXTERNAL DIRECTIONAL DISTRIBUTIONS
- ESTIMATE INTERNAL DISTRIBUTIONS

AGGREGATE WITH EXISTING TRIP MATRICES

RERUN DYNAMIC ASSIGNMENT AND SIMULATION





QUESTIONS

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