

# Tel Aviv Model Results: Excerpts from “Recent applications and modelling developments in Dynameq”

presented by Michael Mahut  
at the Traffic Modeling Workshop, Graz

INRO would like to thank NTA and PGL for the permission to  
present this work and for providing presentation materials

# Tel Aviv Project

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# Tel Aviv Project - Network



area  $\approx 40 \text{ km}^2$

8.2 km

6.4 km

# Tel Aviv Project - Scope

- Network size
  - Size:  $\approx 40 \text{ km}^2$
  - Nodes: 1279
  - Links: 3603
  - Signalized intersections: 311
- Demand
  - Zones: 188
  - Vehicle classes for assignment
    - private cars
    - trucks
  - Public transit: 459 transit lines
  - Study period: AM peak (6 am – 9 am)

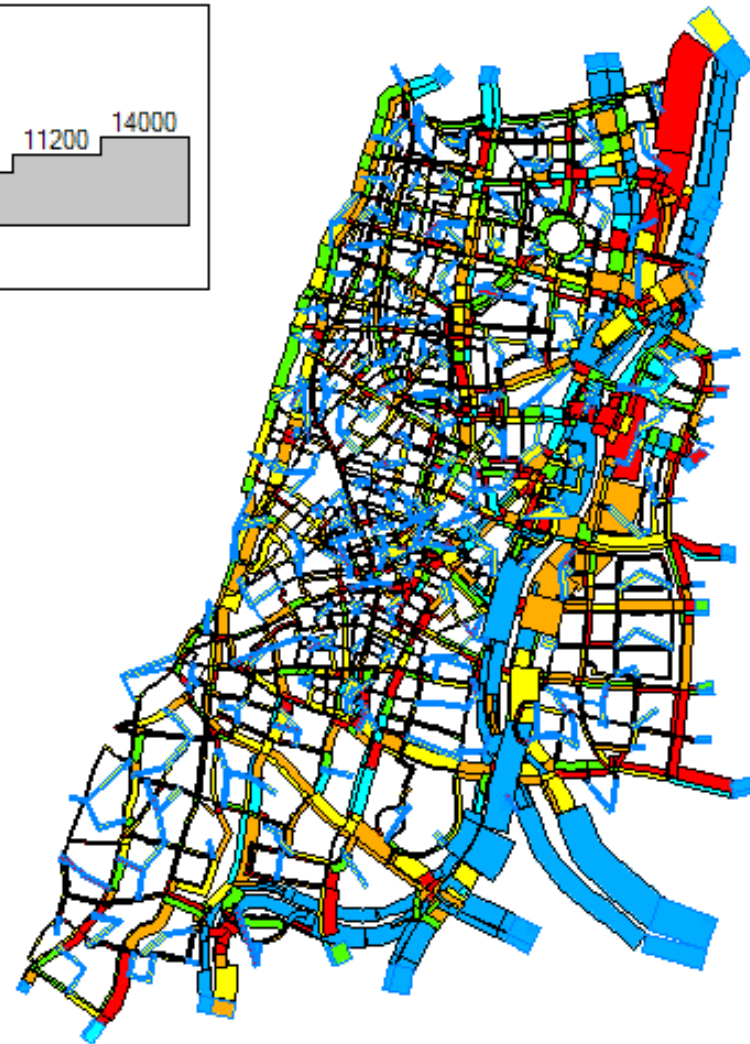
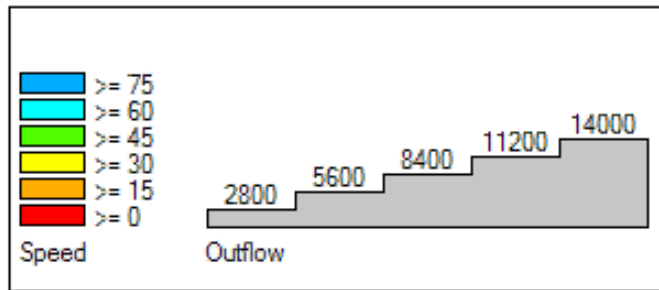
# Tel Aviv Project - Inputs

- **Network**
  - Imported as a sub-area from the regional travel forecasting model.
- **Demand**
  - Static sub-area traversal matrix was modified using Emme matrix adjustment algorithm with 15-minute counts.
  - Result: 12 x 15-minute demand intervals (peak am 3-hours)
- **Traffic control**
  - Average green splits determined for 6 time periods within the demand period.
  - Produced 6 fixed-time traffic control plans.

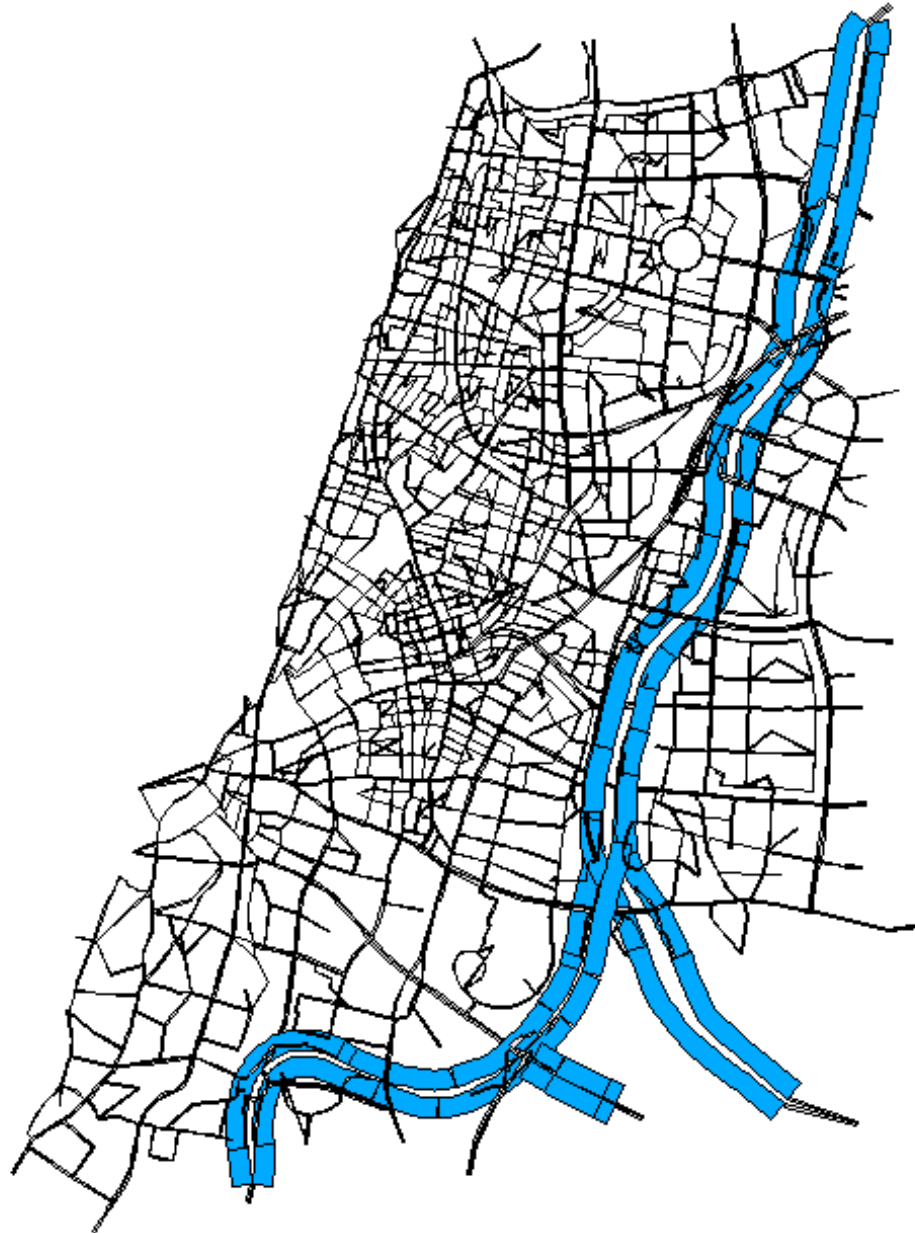
# Tel Aviv Project - Results

- **Simulation results**
  - Link flows, densities, speeds
  - Travel time runs
- **Traffic count comparisons (hourly)**
  - Ayalon freeway
  - Cordon counts
  - Link counts
- **Travel time comparisons**
  - Multiple survey routes
  - 2 departure times; 3 runs per route

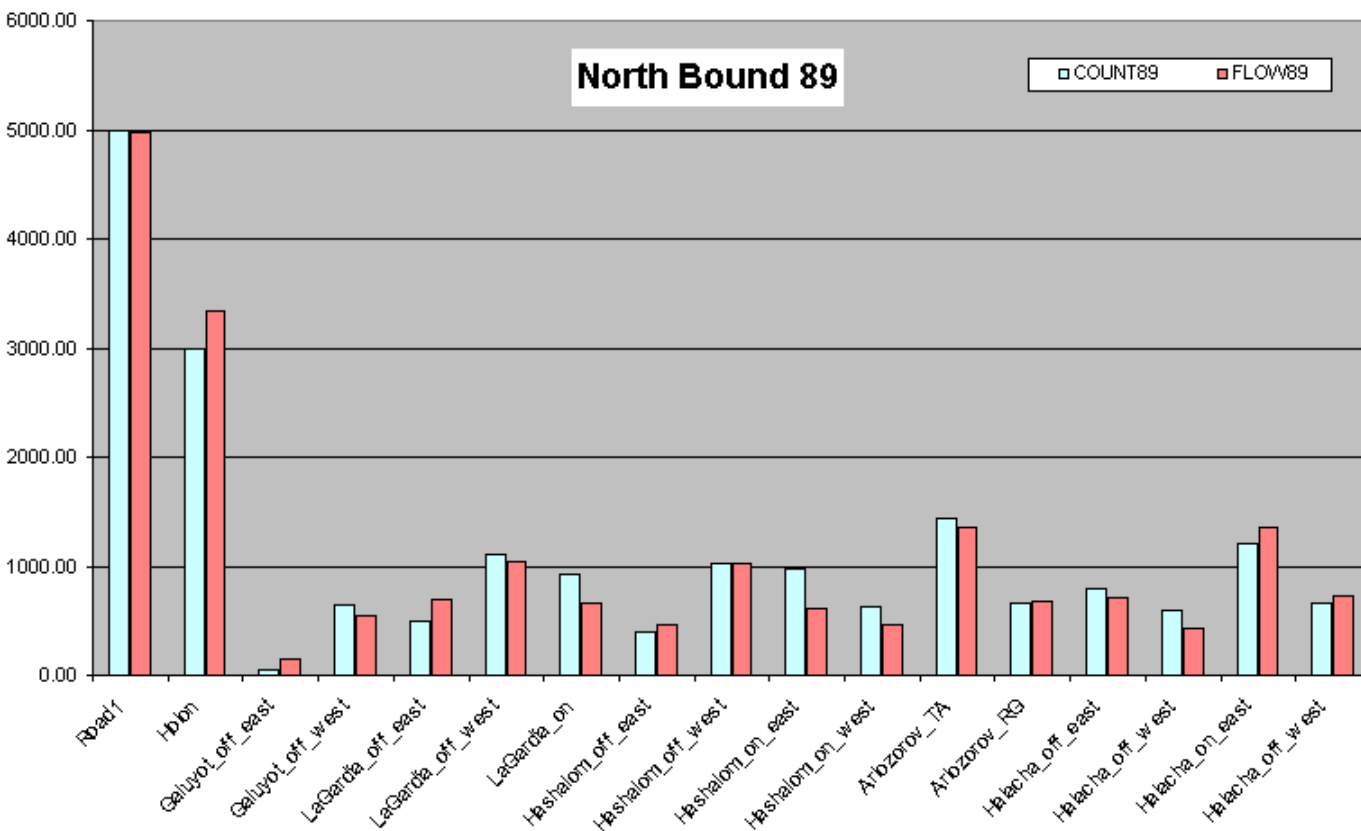
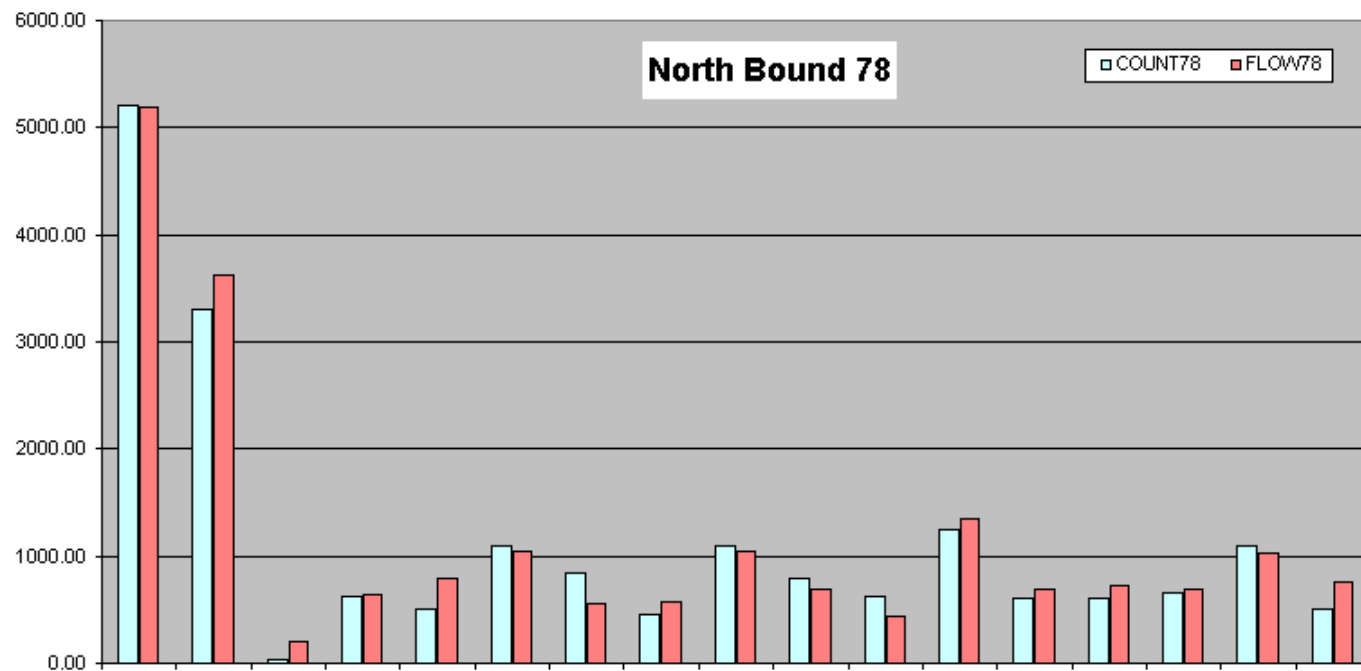
# Simulation results



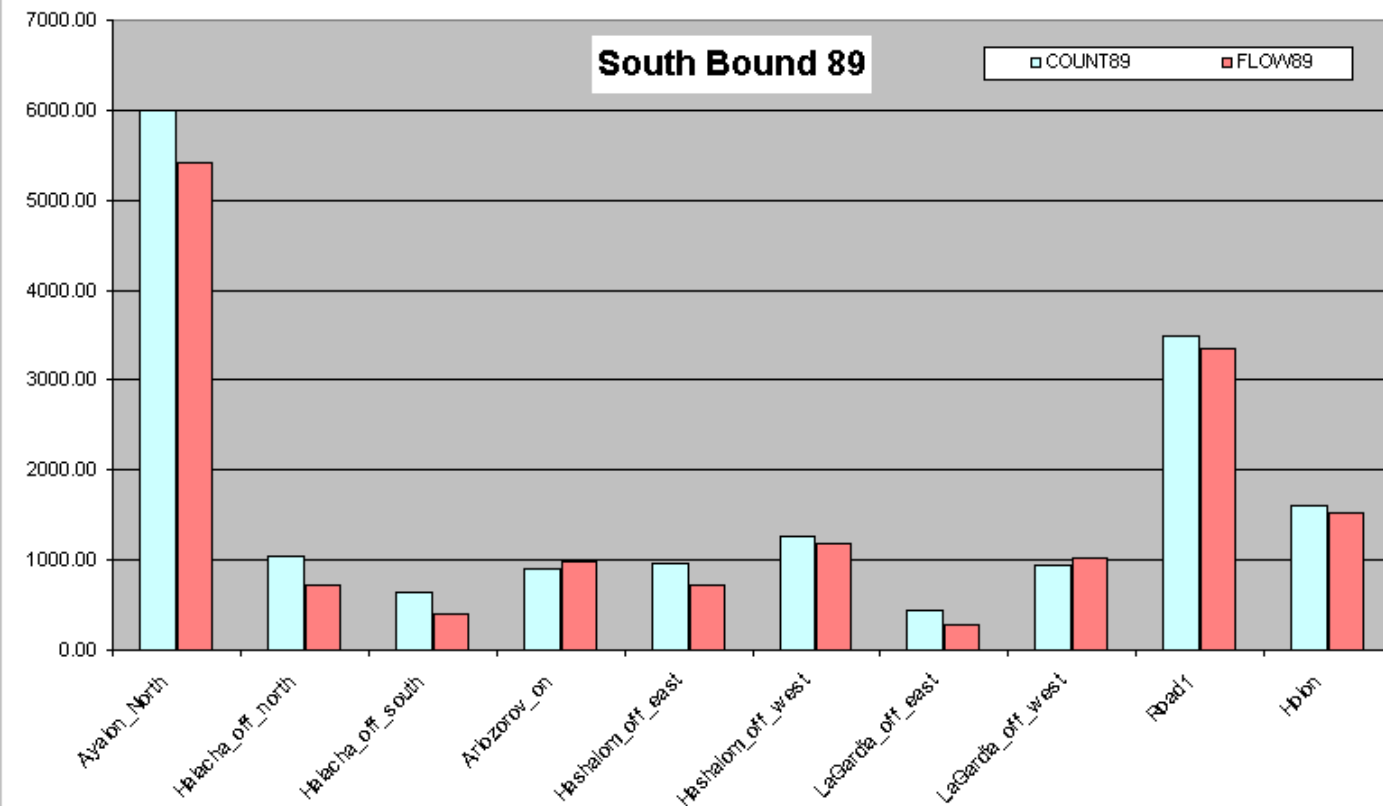
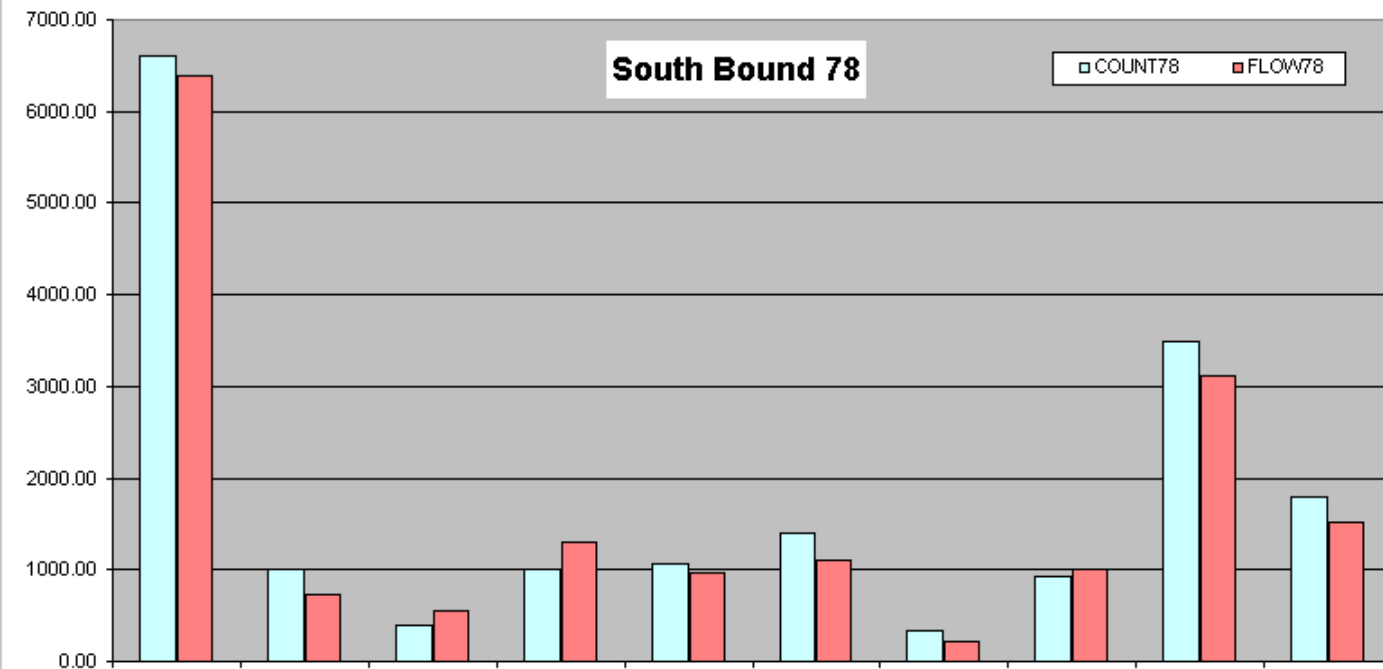
# Traffic counts: Ayalon Freeway



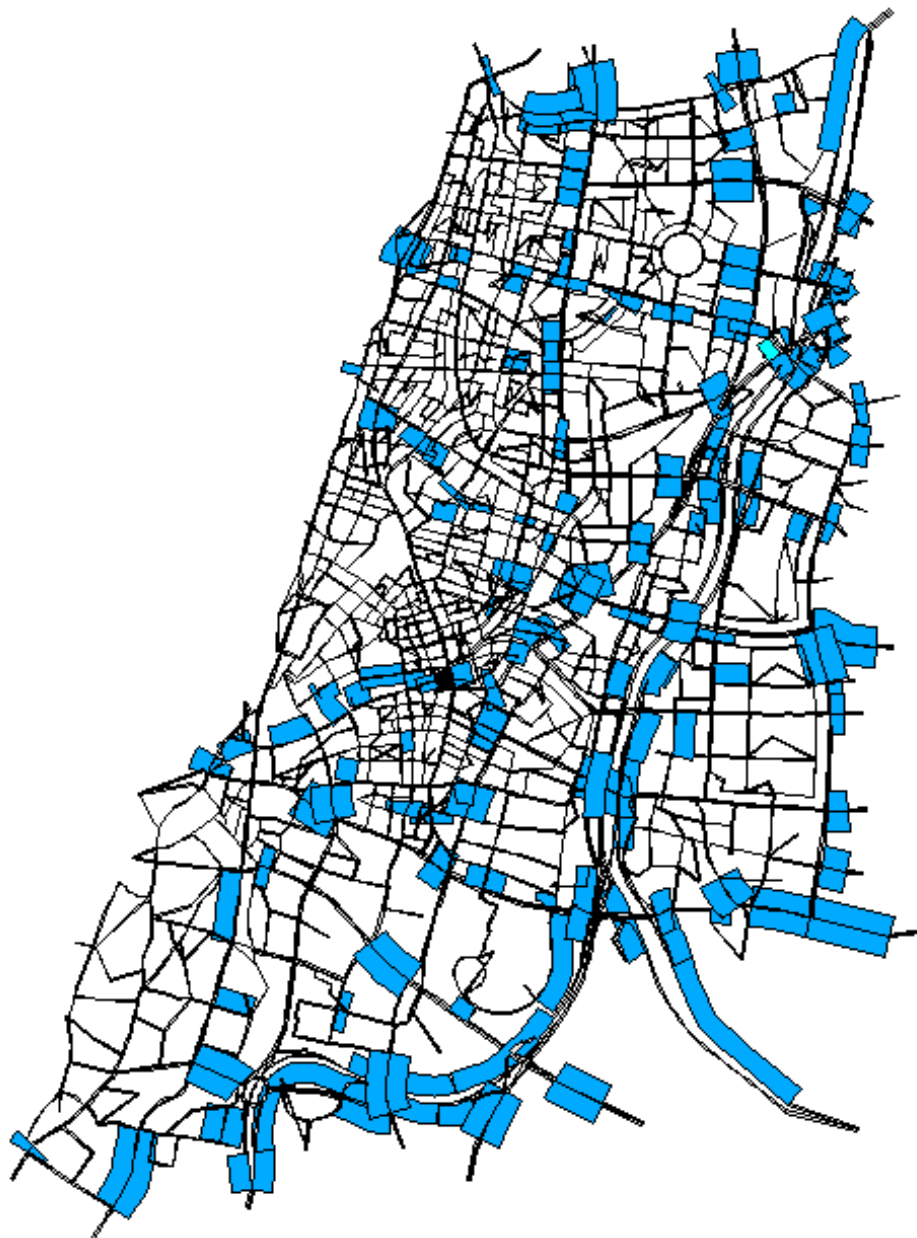
# Ayalon NB counts vs. model volumes (7-8,8-9)



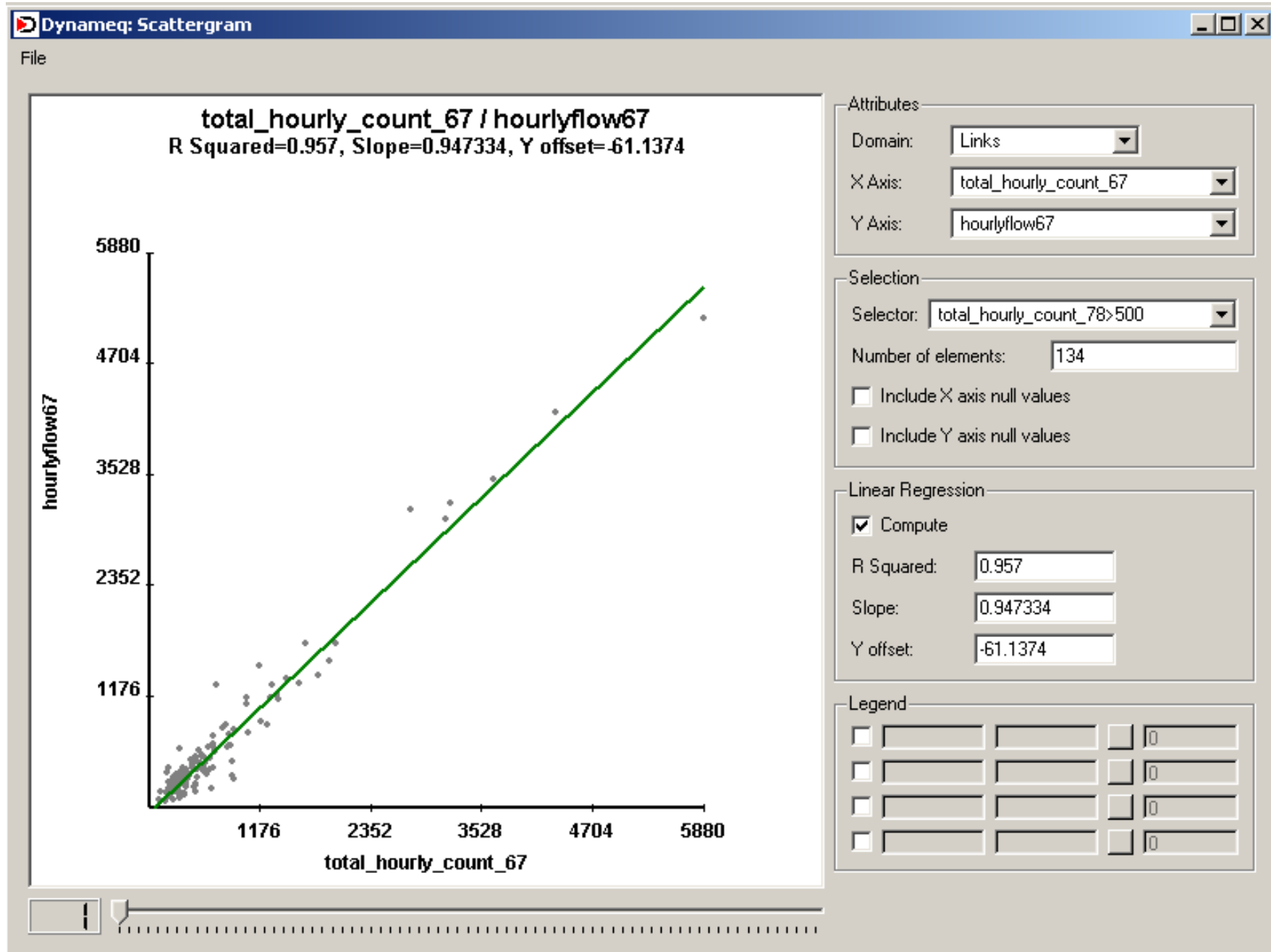
# Ayalon SB counts vs. model volumes (7-8,8-9)



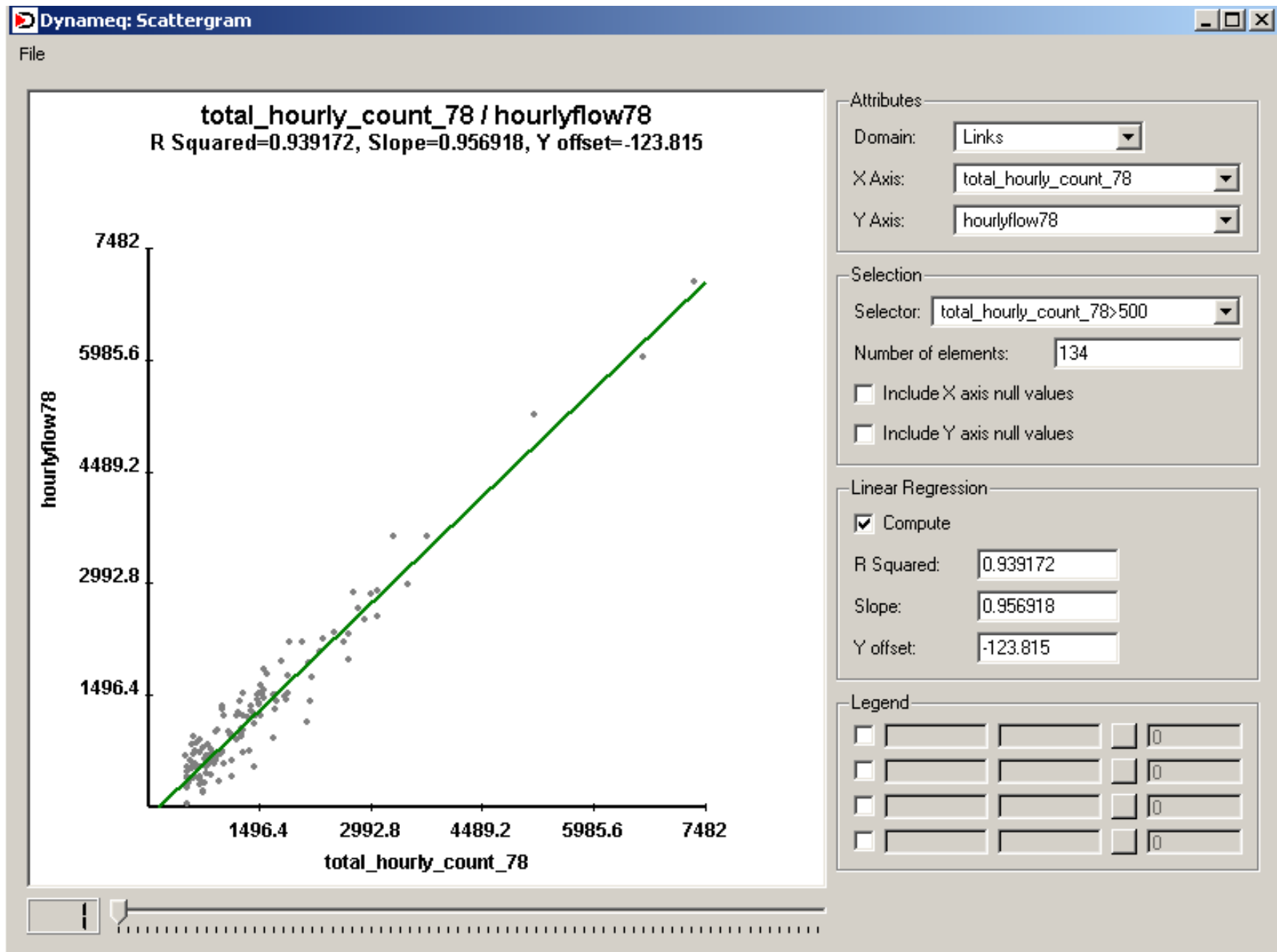
# Link Counts



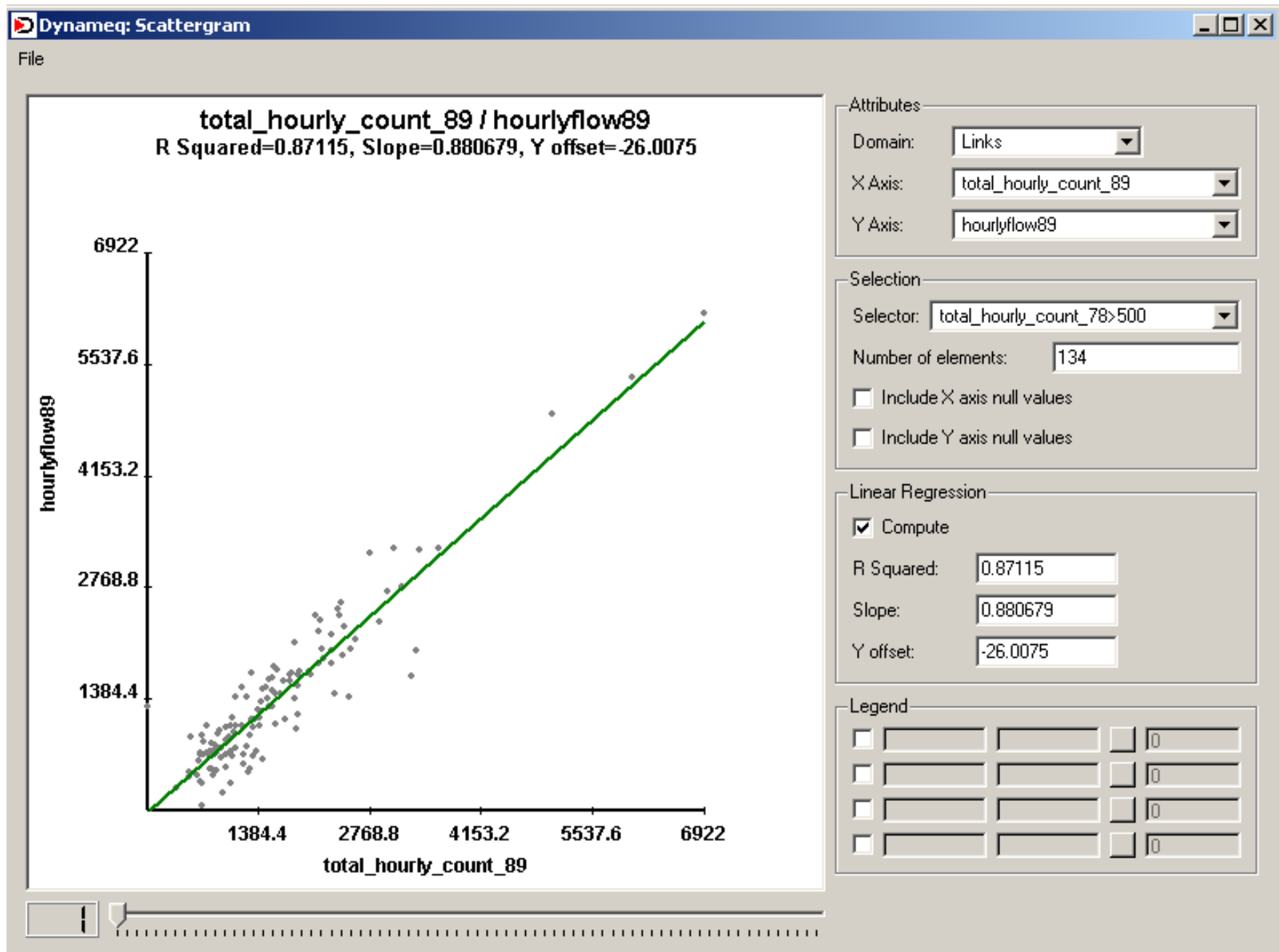
# Major Traffic Counts: 6-7



# Major Traffic Counts: 7-8

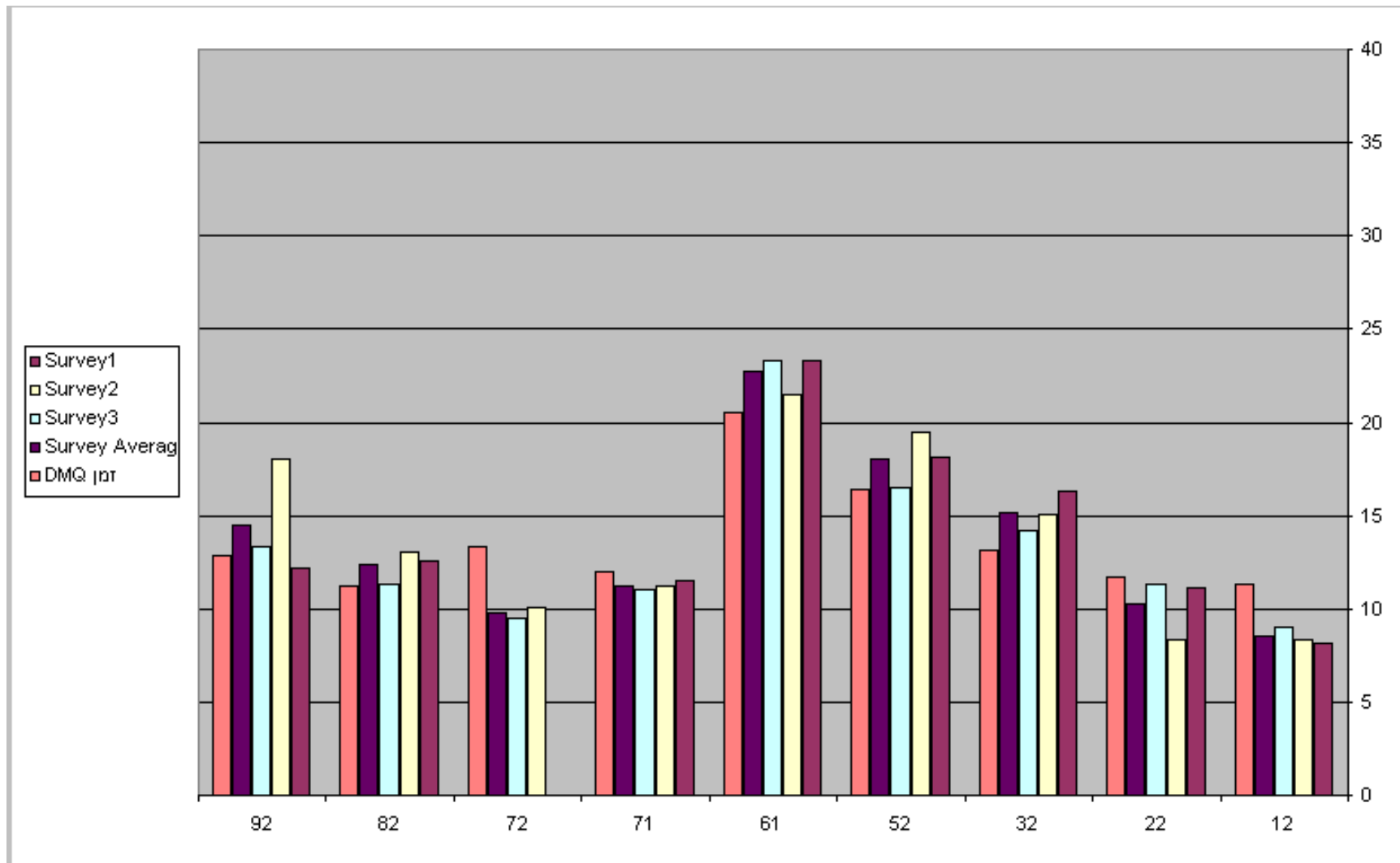


# Major Traffic Counts: 8-9

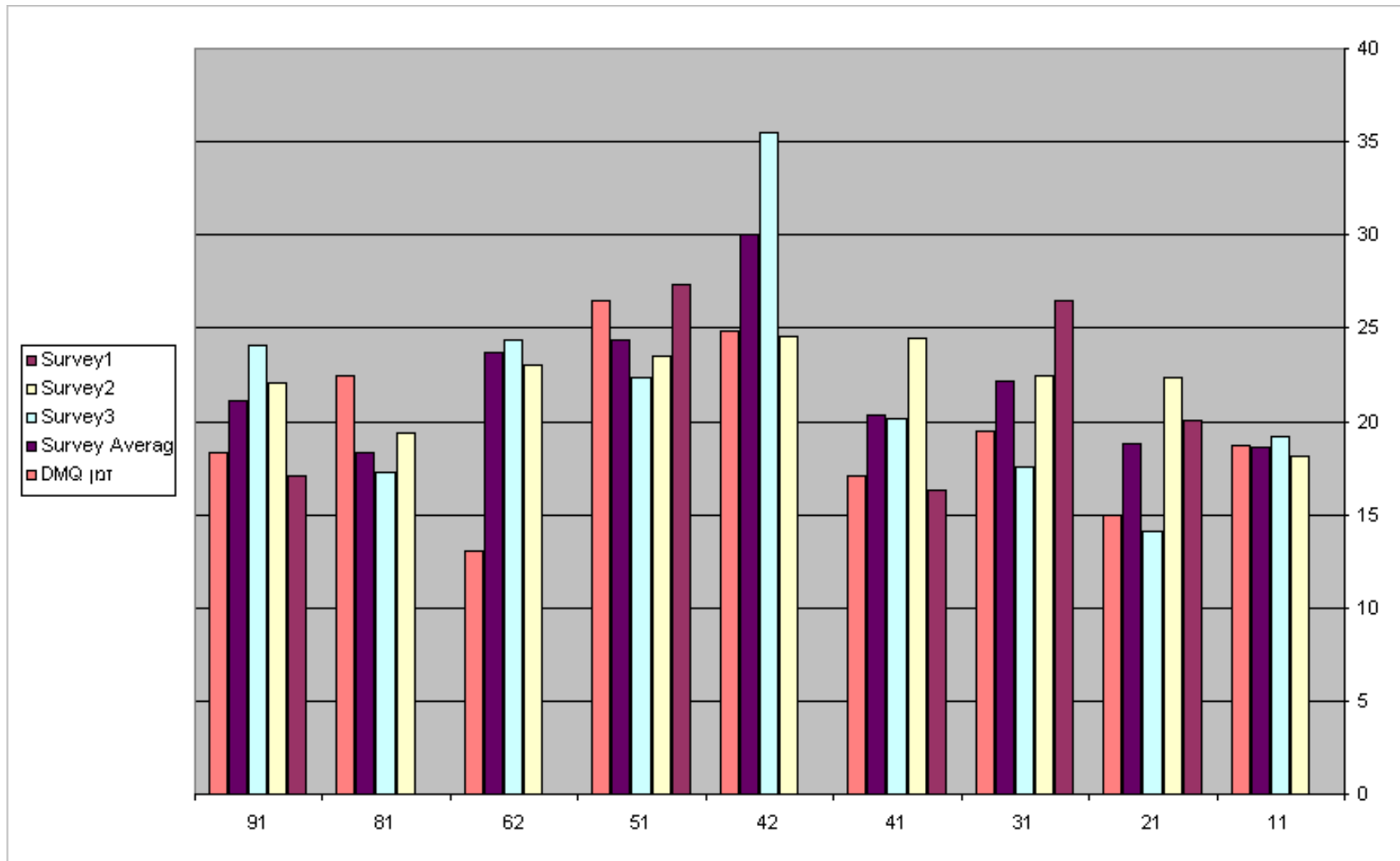




# Travel Times: departing 7:30



# Travel Times: departing 8:20



# Conclusions (1) - Calibration

- **Demand**
  - DTA models more sensitive to demand than static models
  - Must use best possible methods of demand adjustment
- **Calibration data**
  - Traffic counts: good coverage of network was important, especially where there was congestion.
  - Travel time runs: extensive network coverage, good quality data (multiple runs, different departure times).
  - Variability in travel time measurements not insignificant.
- **Calibration method**
  - Demand adjustment based on DTA results is often a necessary component of the process: requires good judgment and understanding of results.

# Conclusions (2) - Results

- Traffic counts
  - Ayalon freeway counts (27 locations x 2 time intervals):
    - Most locations within 10%, including all major counts
  - Cordon counts: excellent fit
    - $R^2$  between 0.96 and 0.99
  - Link counts: very good fit for this size of network and level of congestion
    - $R^2$  values between 0.87 and 0.95
- Travel Times
  - Model results fall easily within reasonable error bounds of observations for 7/9 routes (both departure times);
  - Accurately captured the increasing trend in travel time with departure time (for any given route);

# Conclusions (3) - Summary

- Very good results for a high-fidelity DTA model application of this size.
- Time-varying trends in observed data (counts and travel times) accurately captured by model.
- Clearly illustrates advantages of time-varying analysis and higher fidelity modeling.

# Acknowledgement

- The Tel Aviv Dynameq project was carried out by the staff of PGL under contract to NTA.
- INRO staff provided some assistance to PGL during the calibration process of the Tel Aviv network. Certain adjustments were required primarily due to over flexibility of the model in the freeway ramp merging and diverging zones.
- INRO would like to thank NTA and PGL for the permission to present this work and for providing presentation materials.