
Accuracy of Video Detection Systems for Traffic Counting

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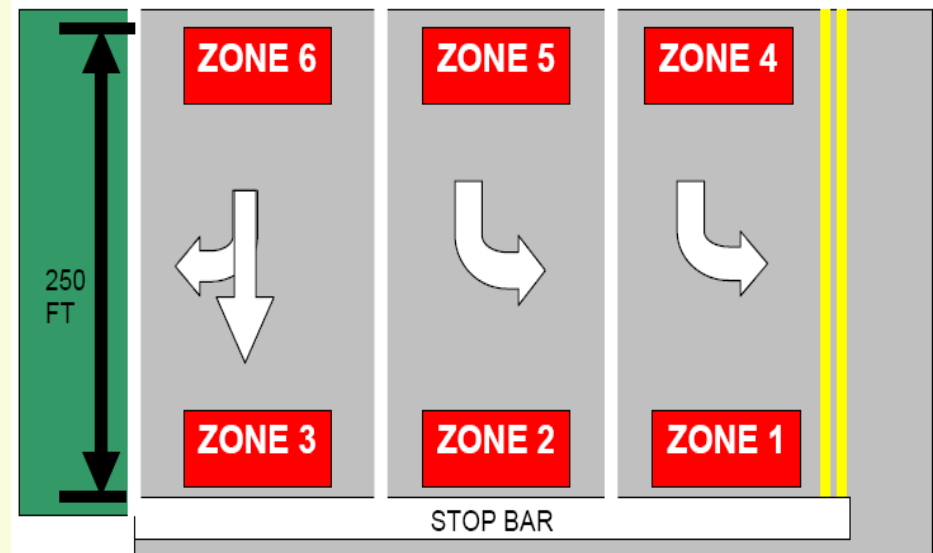
Introduction

- **Counts for**
 - Planning
 - Traffic signal timing
- **Benefits of using VD**
 - Don't need manual counts
 - Available 24/7
- **Issues with VD**
 - Performance affected by illumination, weather etc
 - Maintenance



Setup

- In Rantoul, IL
- VD systems configured by vendors
 - Iteris Edge 2 (1.08)
 - Autoscope SoloPro (8.13)
- Advance and stop bar counts



Data Collection

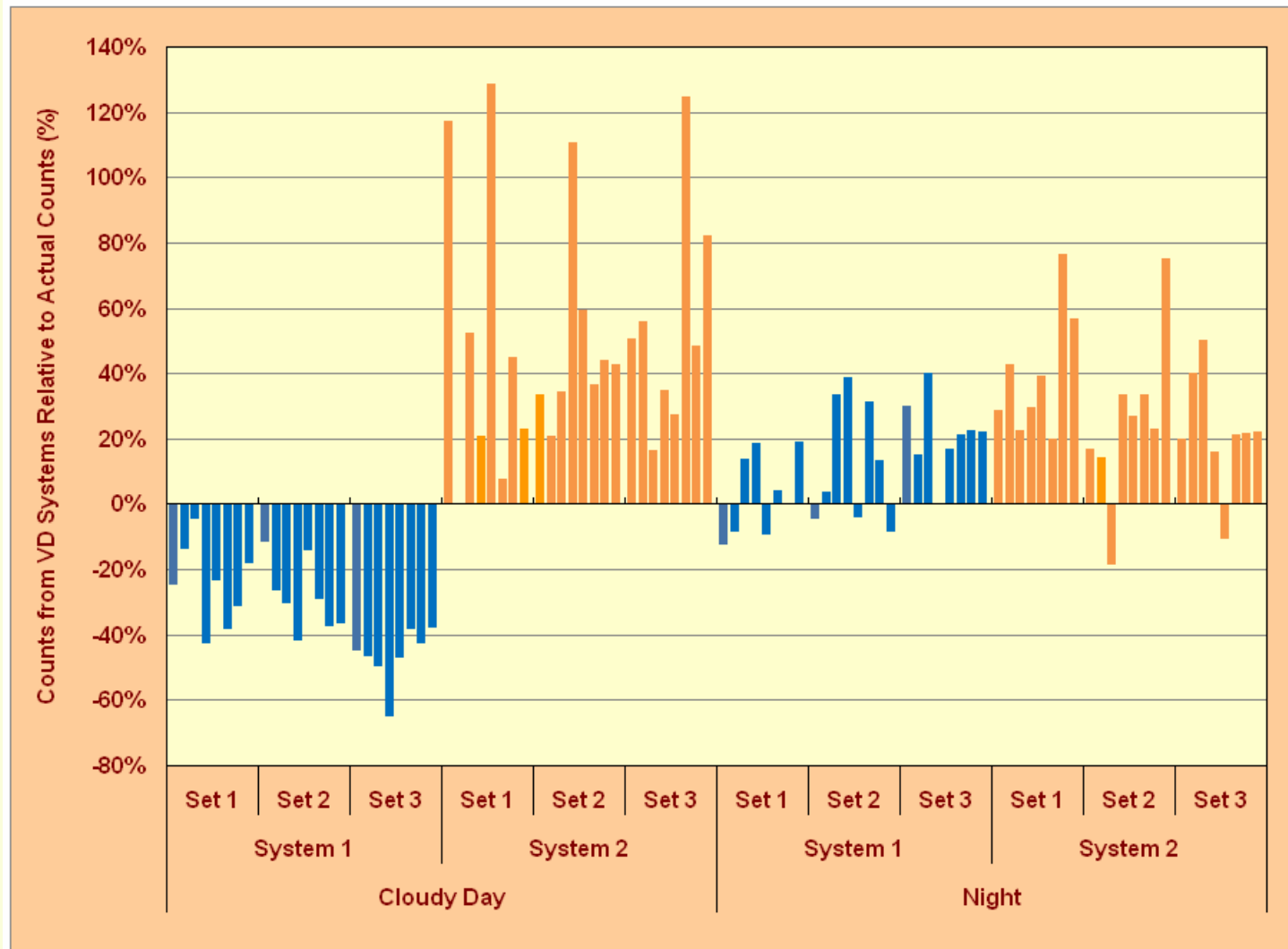
- Two conditions
 - Cloudy day
 - Night
- No wind/inclement weather
- For each condition
 - 6hrs from 3 days
- 15-min counts from VD systems
- Manual counts from video



How reliable are Stop bar counts?



Stop bar counts



15 min Counts

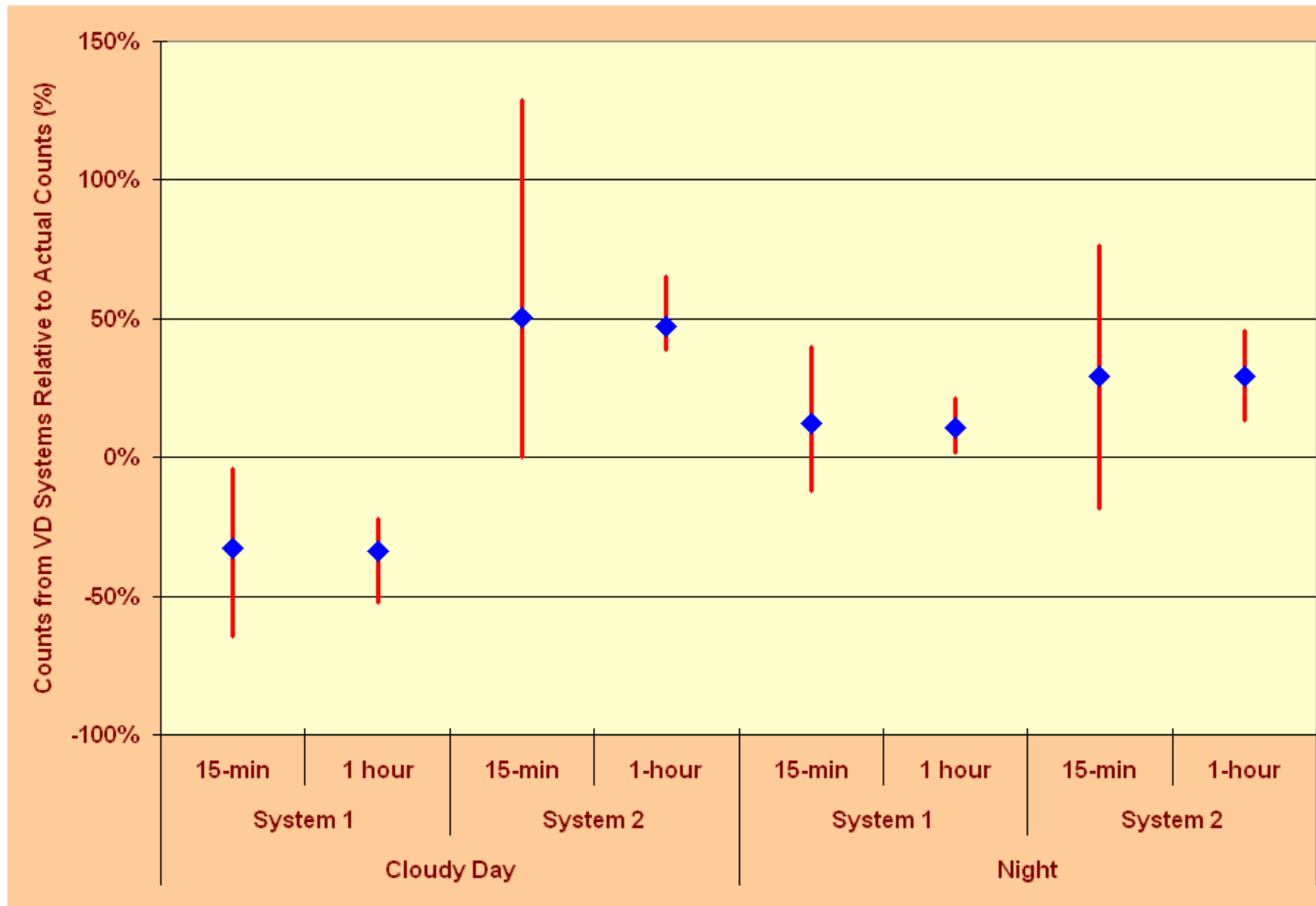
- **Cloudy day**
 - VD1: Long zones, counted multiple vehicles as one
 - VD2: False counts due to flickering/turning vehicles
- **Night**
 - Detection based on headlights
 - Vehicles headlights detected on multiple lanes
 - Closely following vehicles counted as one



Are hourly counts better than 15 min counts?



Stop bar counts: 15 min Vs Hourly



Significant decrease in the range of errors



Are Advance counts better than Stop bar counts?



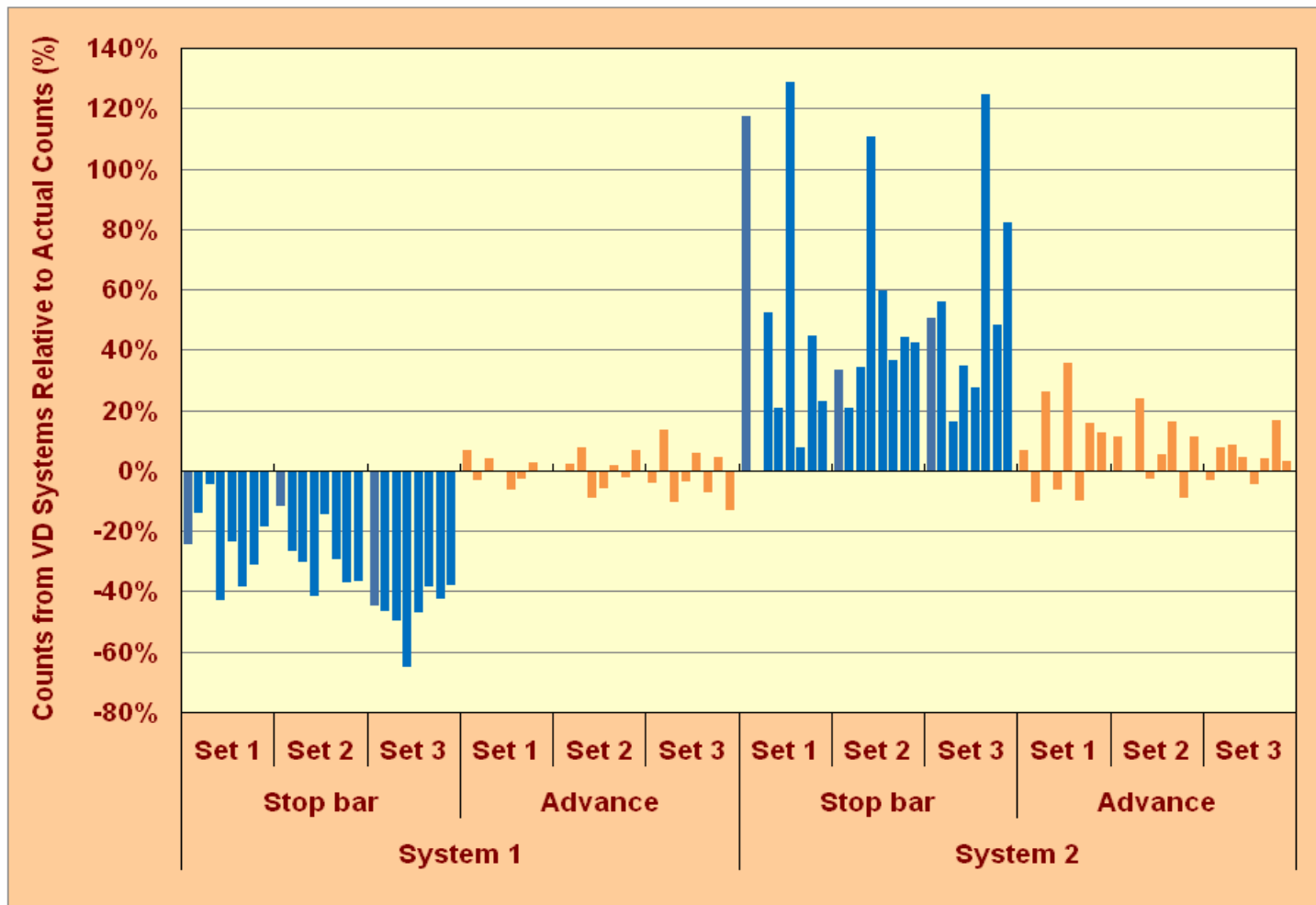
August 7, 2007

Counting Performance of VD Systems
2007 ITE Annual Meeting, Pittsburgh

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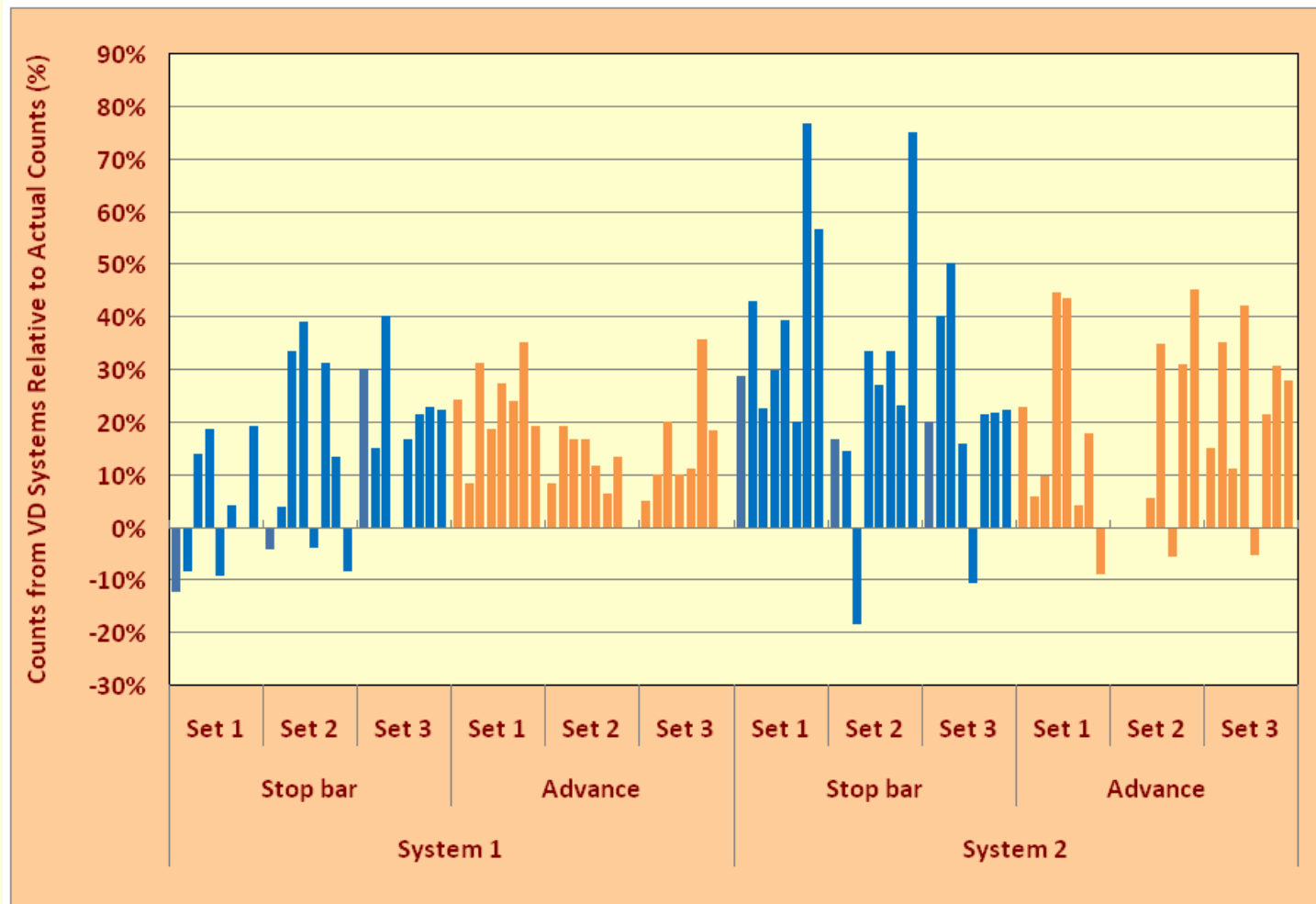
Cloudy Day: Stop bar Vs Advance



Advance counts significantly better than stop bar counts



Night: Stop bar Vs Advance

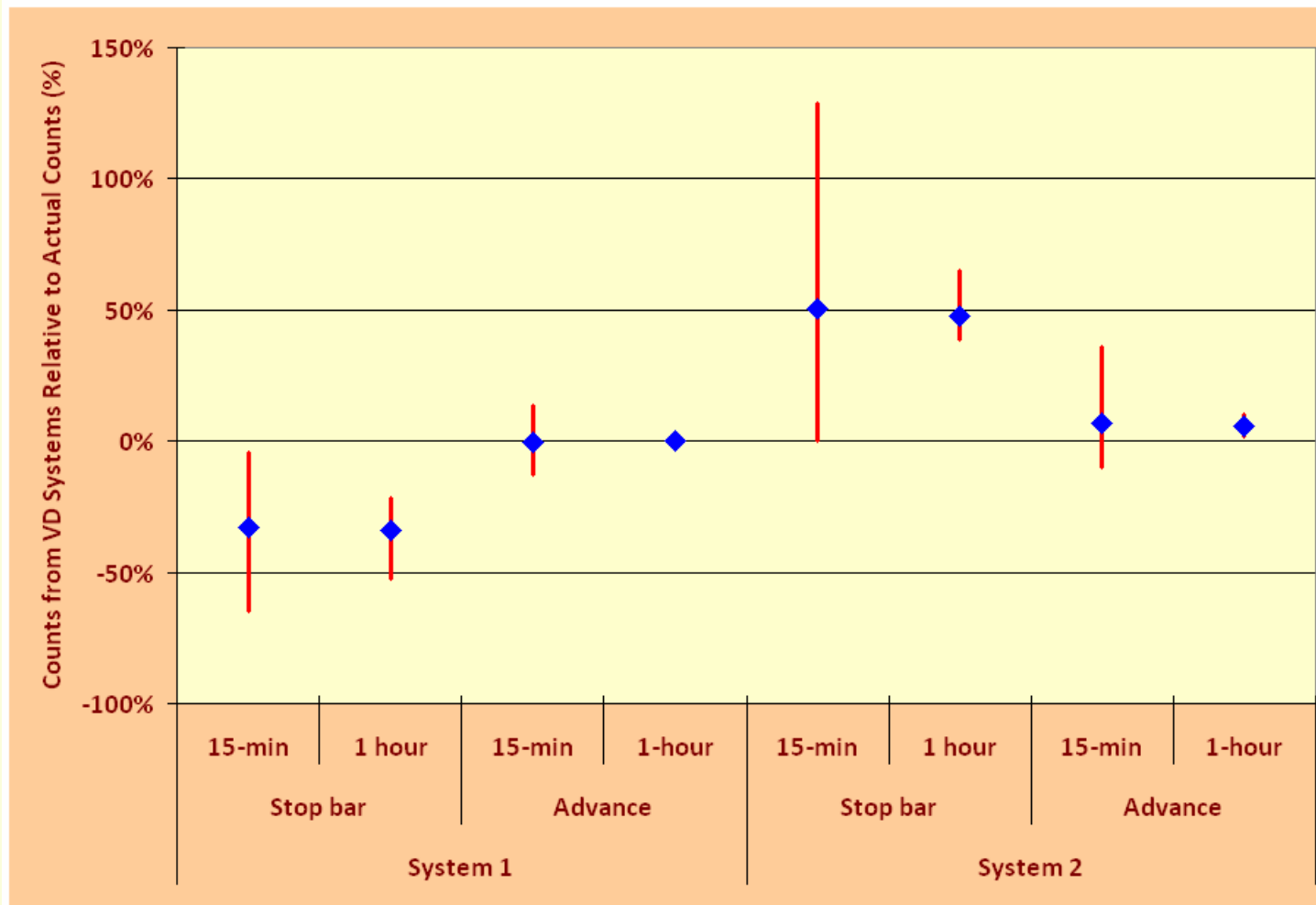


Advance counts slightly better than stop bar counts



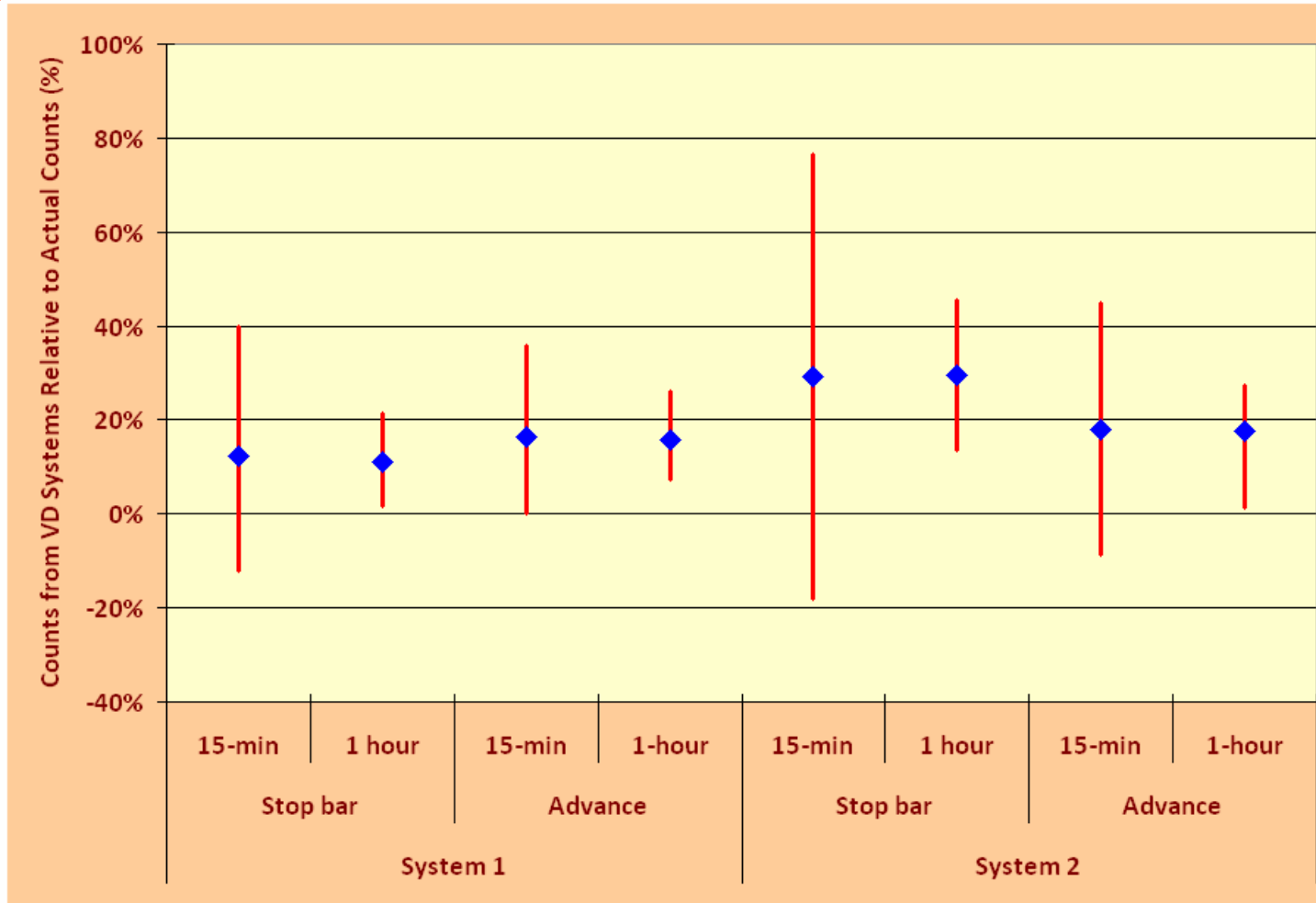
Cloudy Day Counts

Hourly counts at advance location can be within 10% of actual counts



Night Counts

Hourly counts at advance location can be within 20% of actual counts



Conclusions

- VD counts compared to manual counts
- Stop bar counts less reliable than Advance counts
- Hourly counts better than 15-min counts
- Error in hourly counts
 - Cloudy day: can be within 10%
 - Night: can be within 20%



Ongoing Work

- Compare VD with Loop
- VD performance affected by shadows
 - Compare under sunny conditions

