



Toward the Systematic Diagnosis of Freeway Bottleneck Activation

（高速公路瓶颈的系统性诊断）



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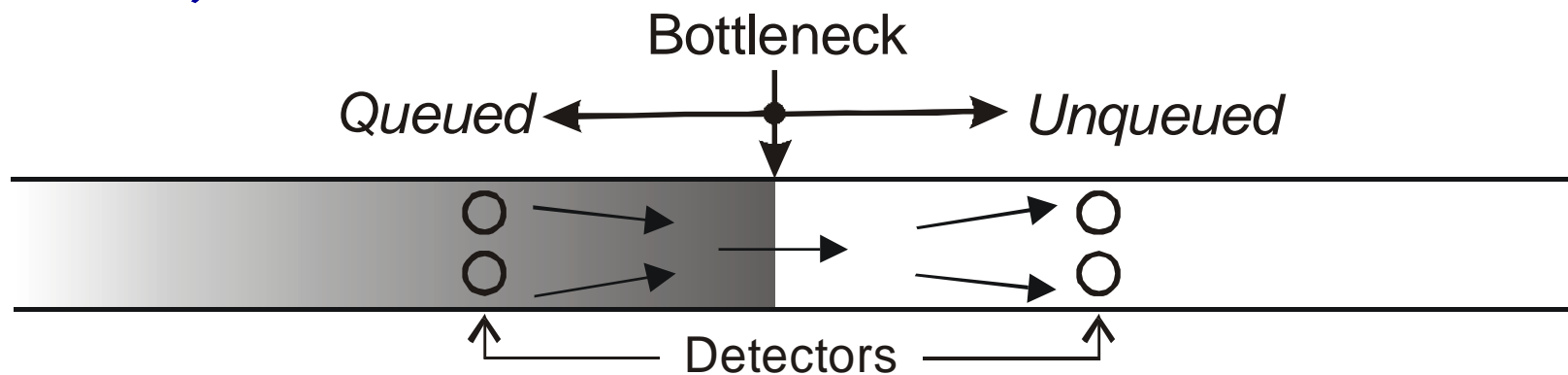
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Objectives (目标)

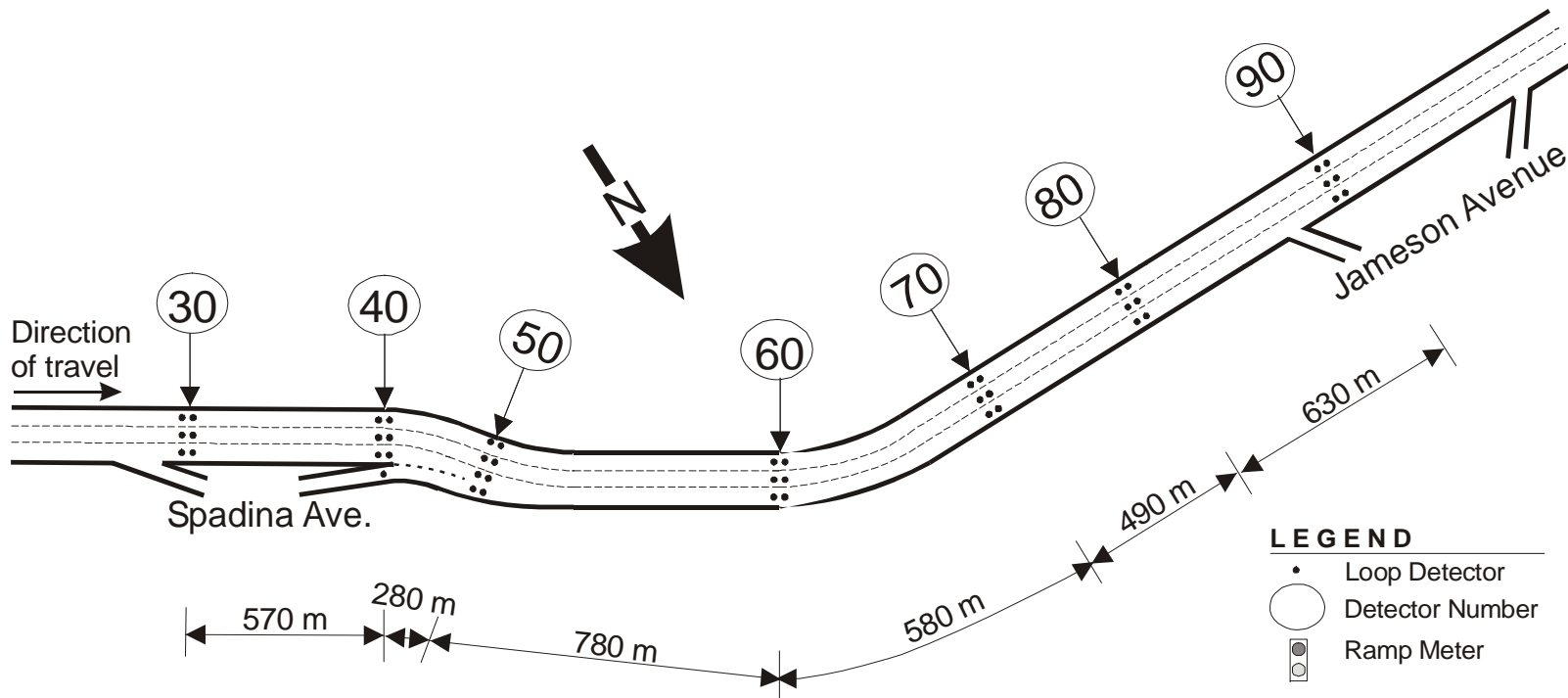
- Define bottleneck (定义)
- Definitively identify bottleneck activation (决定瓶颈开始地点)
- Measure queue discharge features (车队长特性)
- Examine potential bottleneck signals (瓶颈形成征兆)
- Conclusions (结论)

Bottleneck Definition(定义)

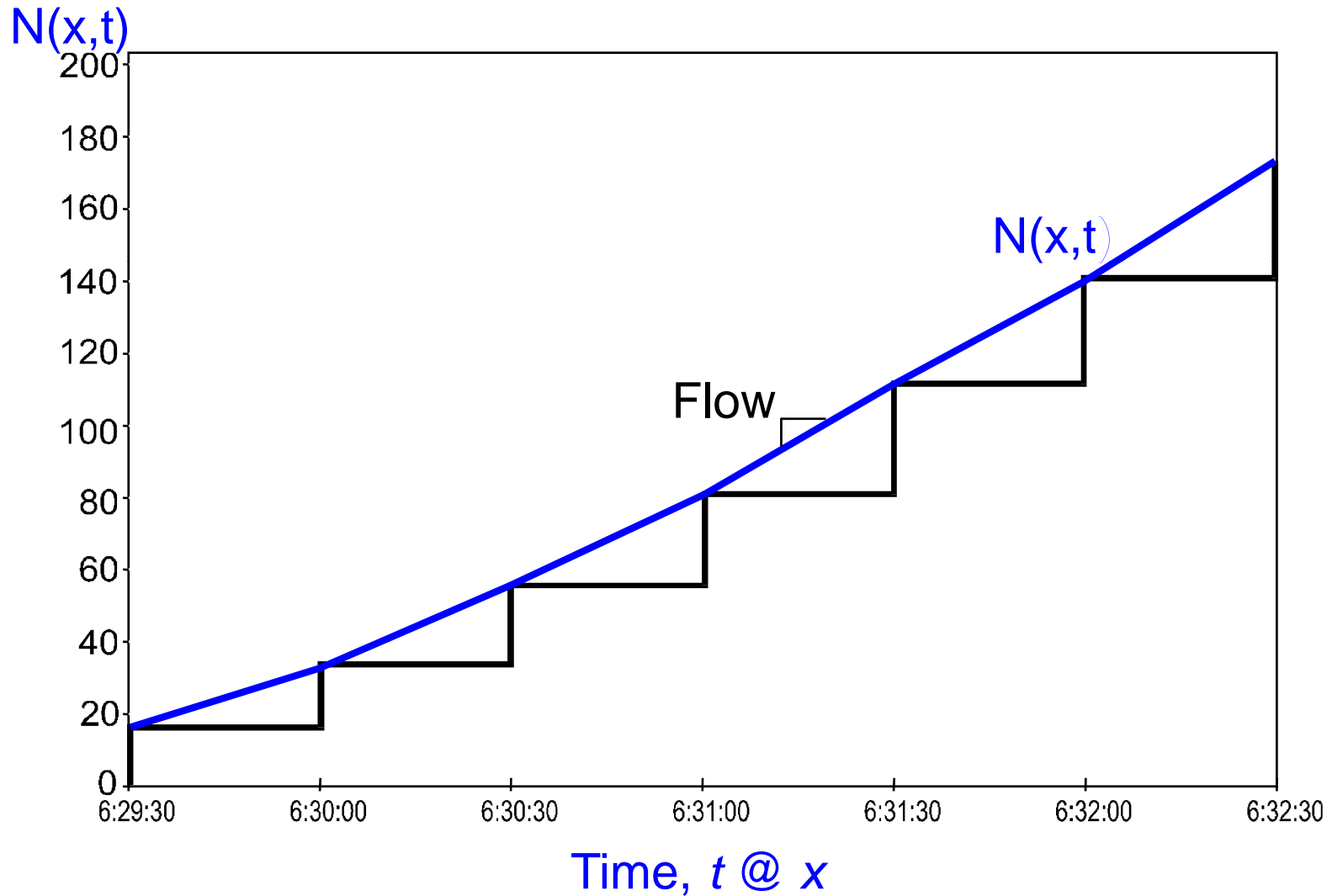
- Queue upstream(上区有排队)
- Freely-flowing traffic downstream(下区自由行驶)
- Temporally and spatially variable(空间与时间参数)



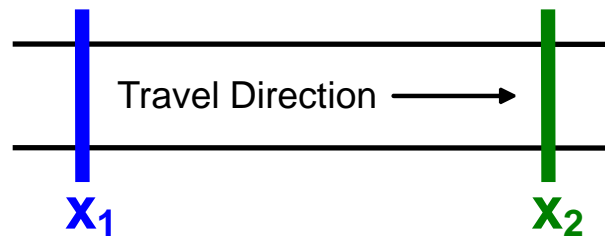
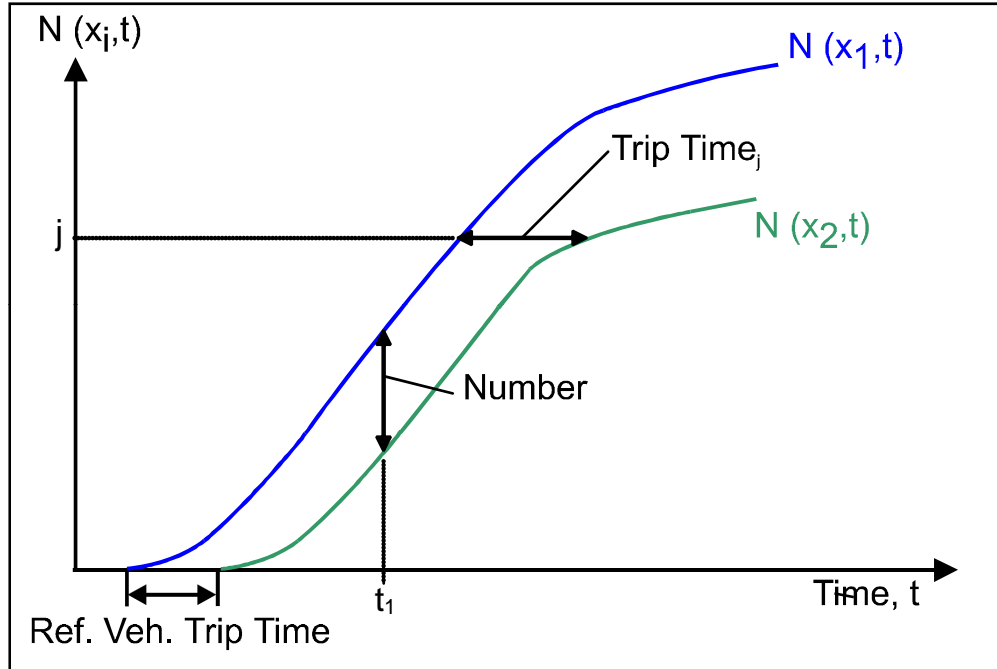
Site Map(地点图)



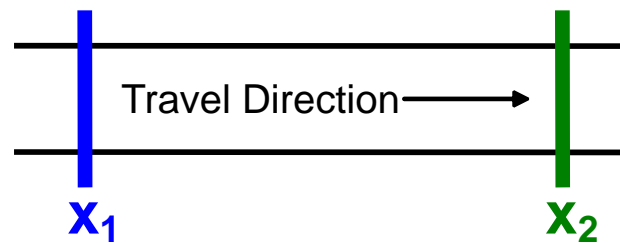
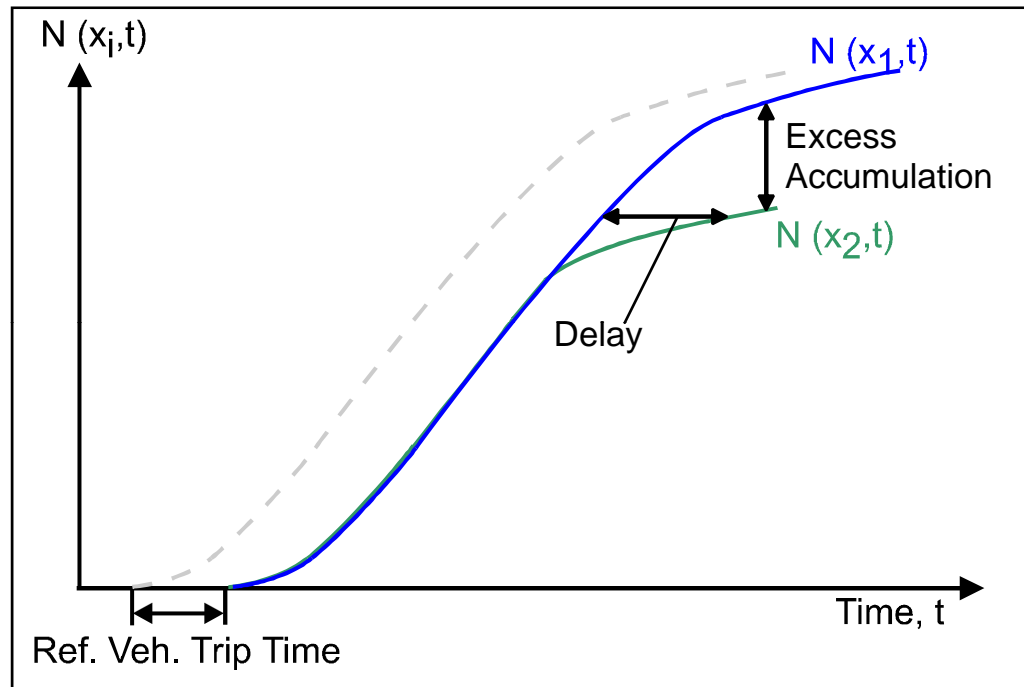
Loop Detector Data (测试装置数据)



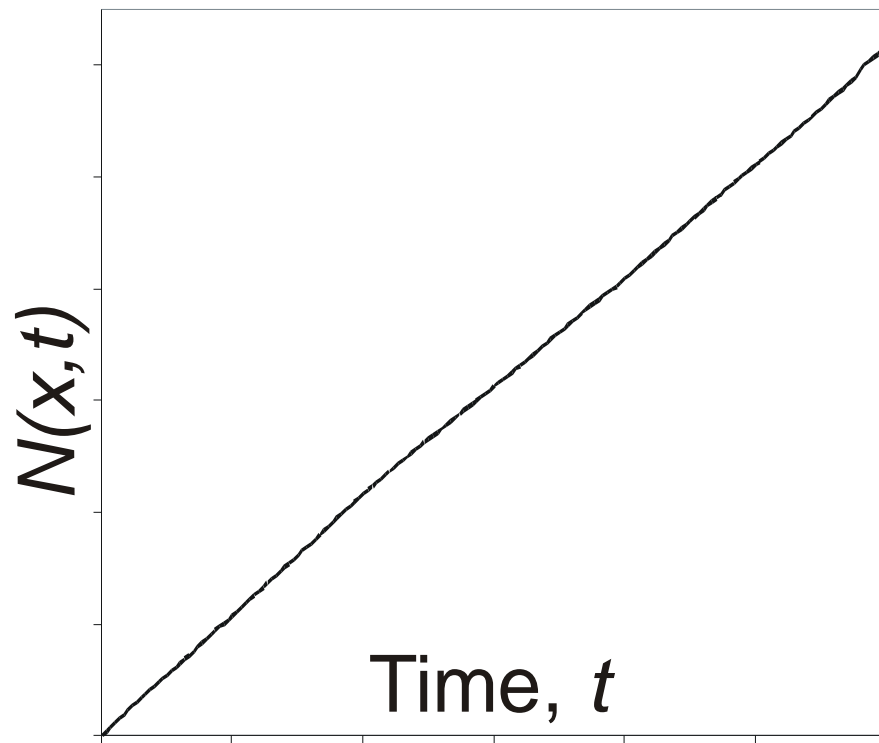
Methodology (理论方法)



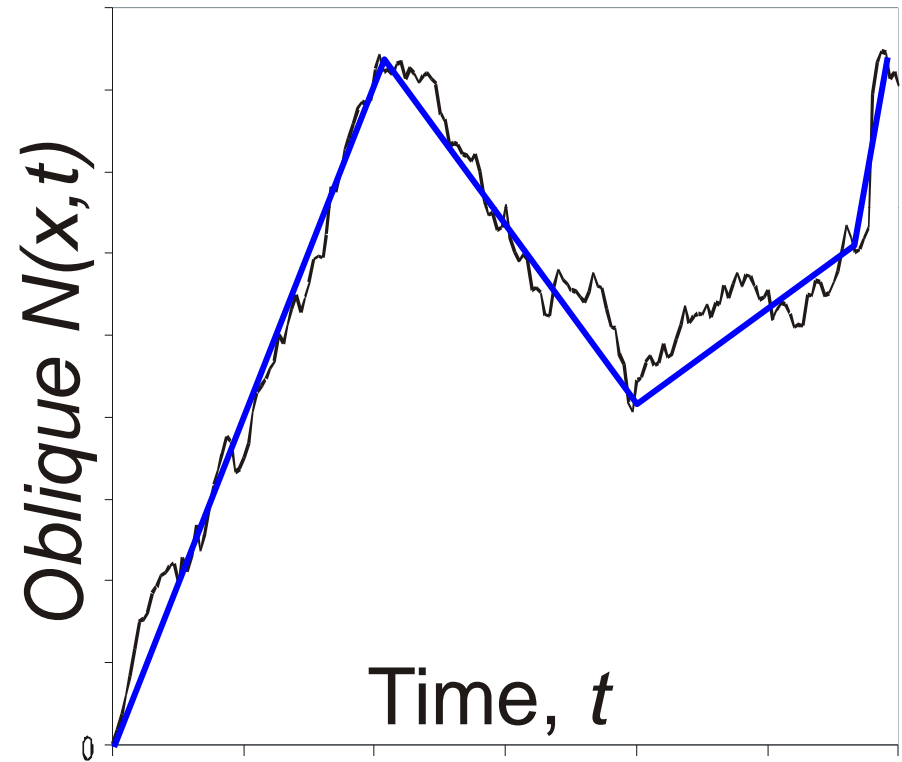
Methodology



Using Oblique Axis (使用变轴坐标)

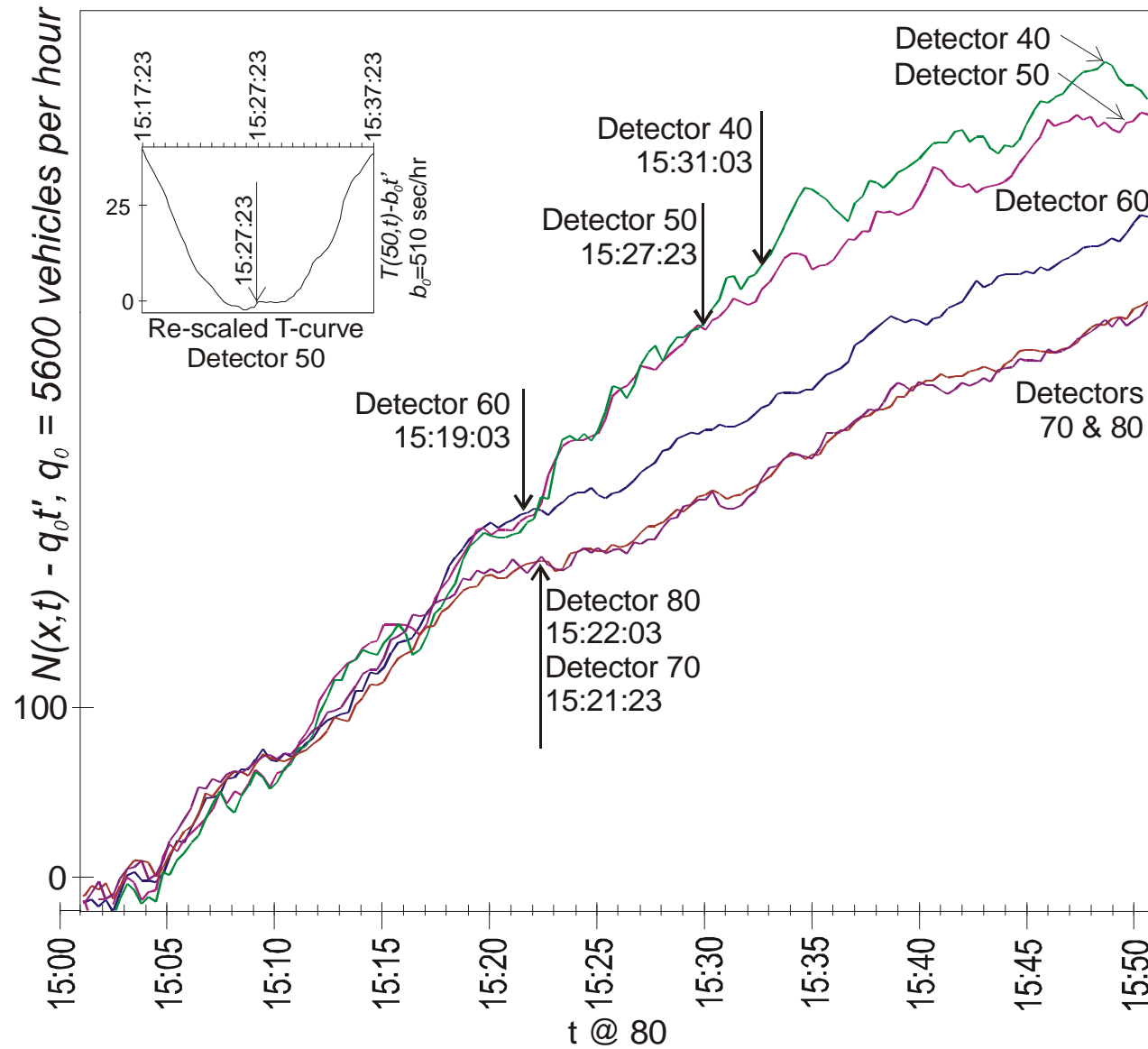


(a)

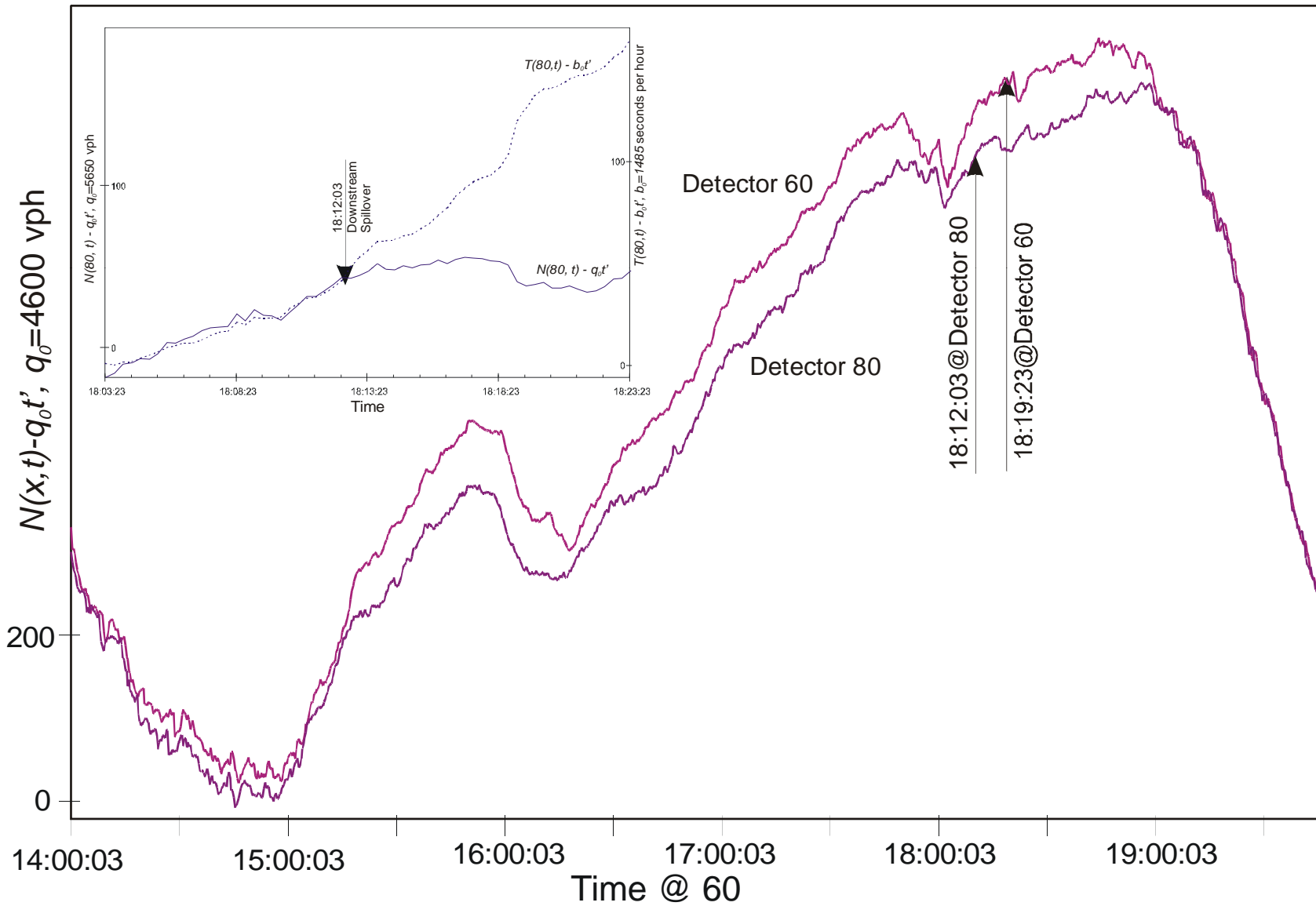


(b)

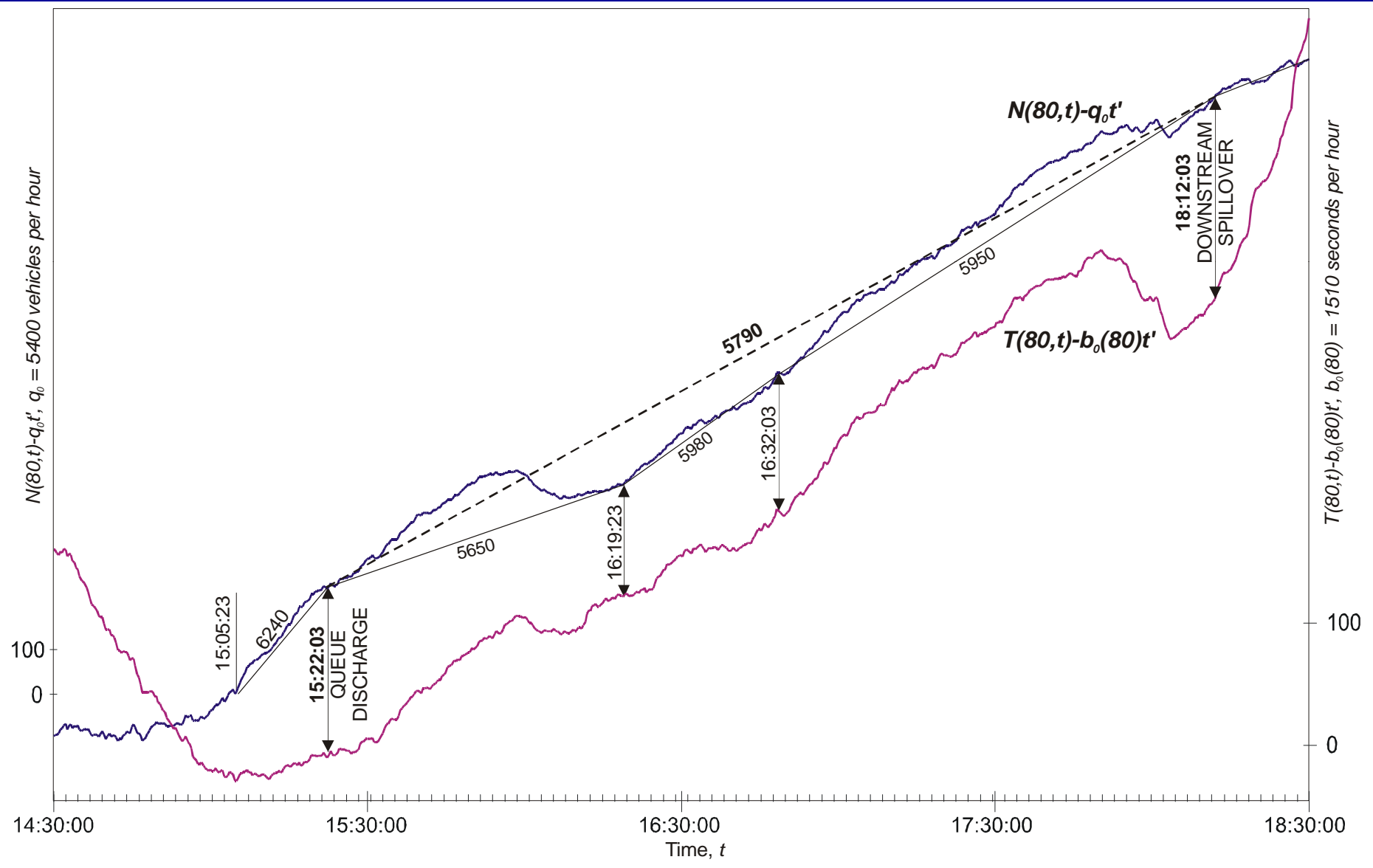
Bottleneck Activation (瓶颈形成)



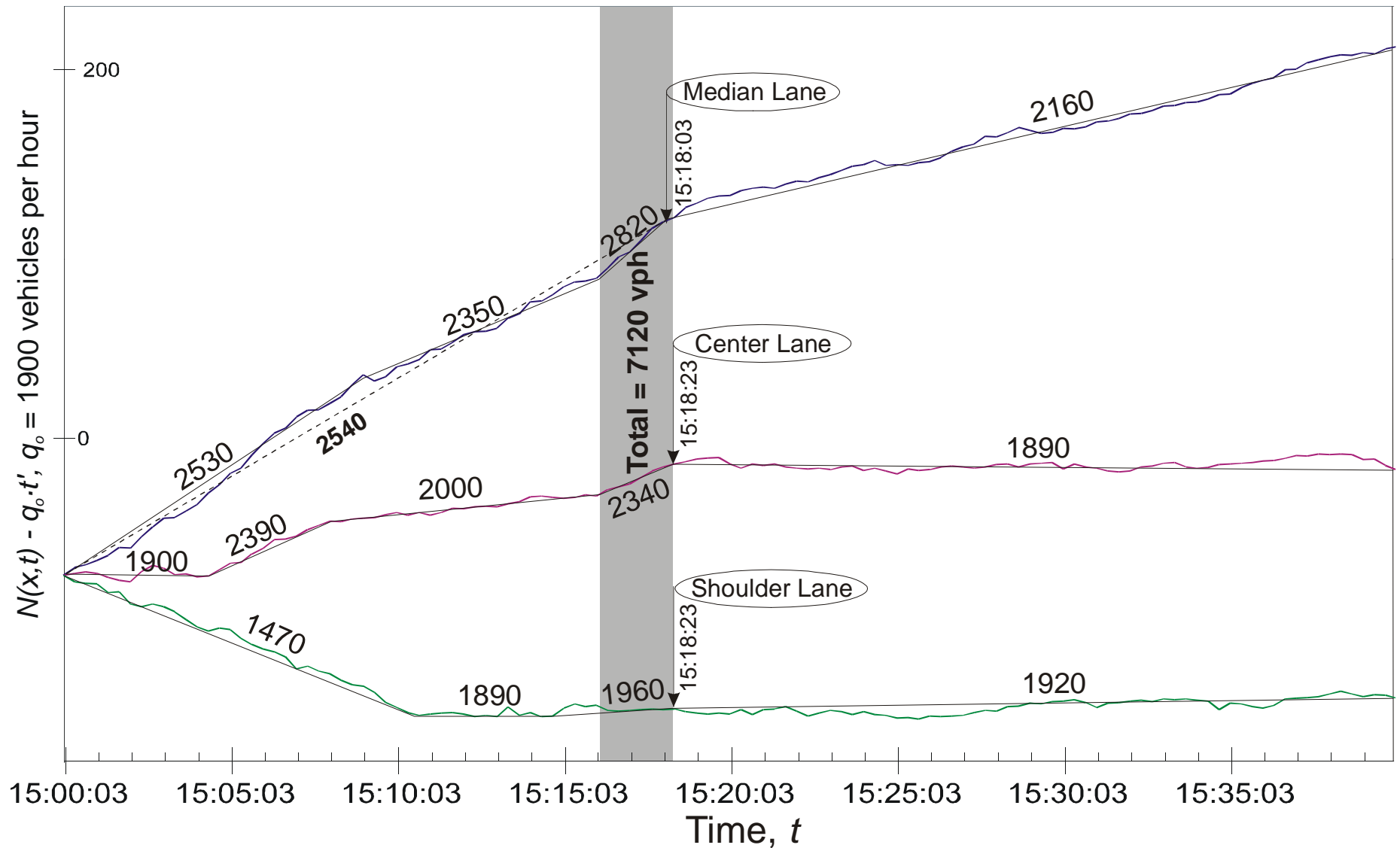
Continued Presence of Queue(持续的队长)



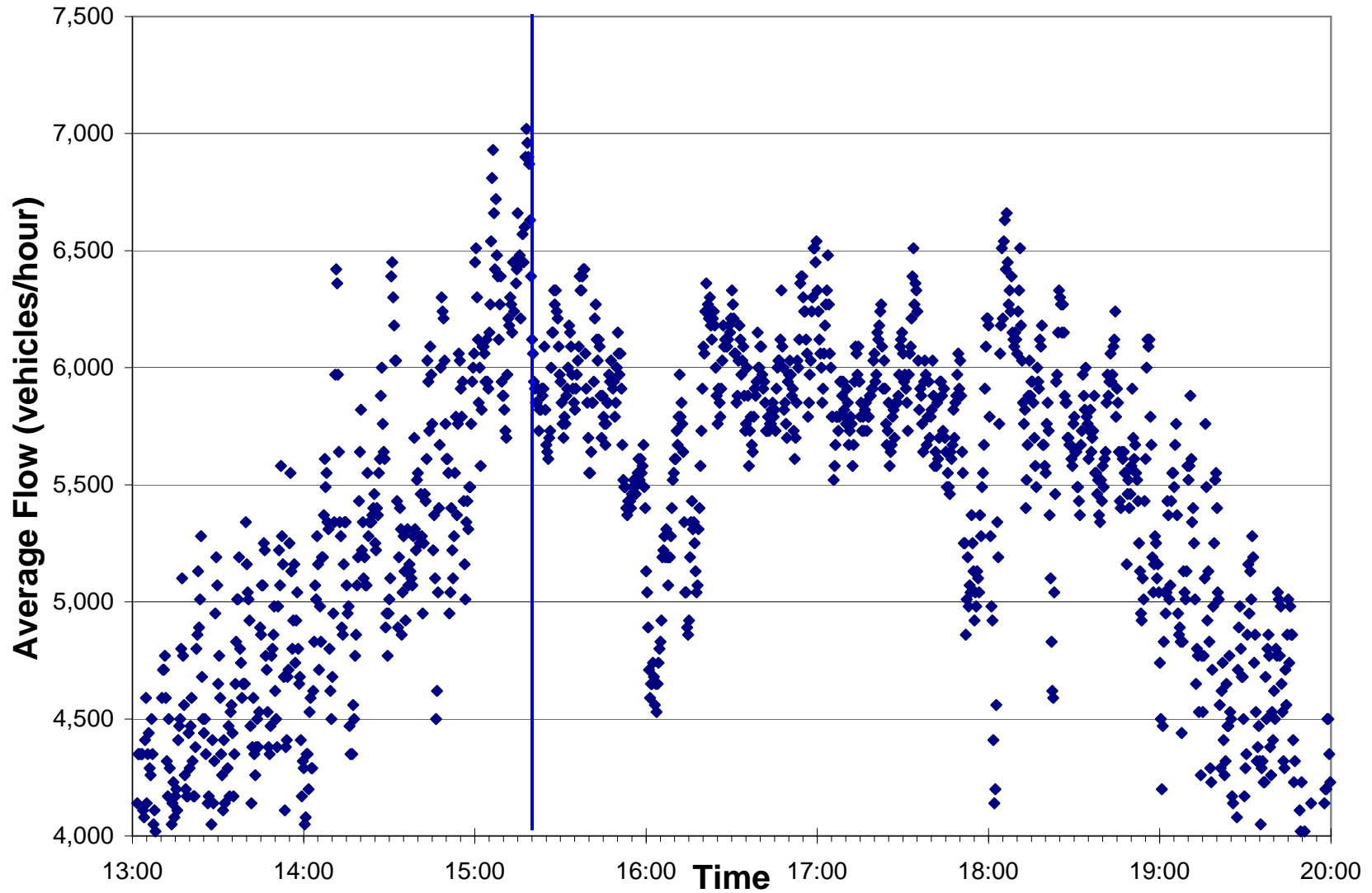
Bottleneck Discharge Features (车队消散特性)



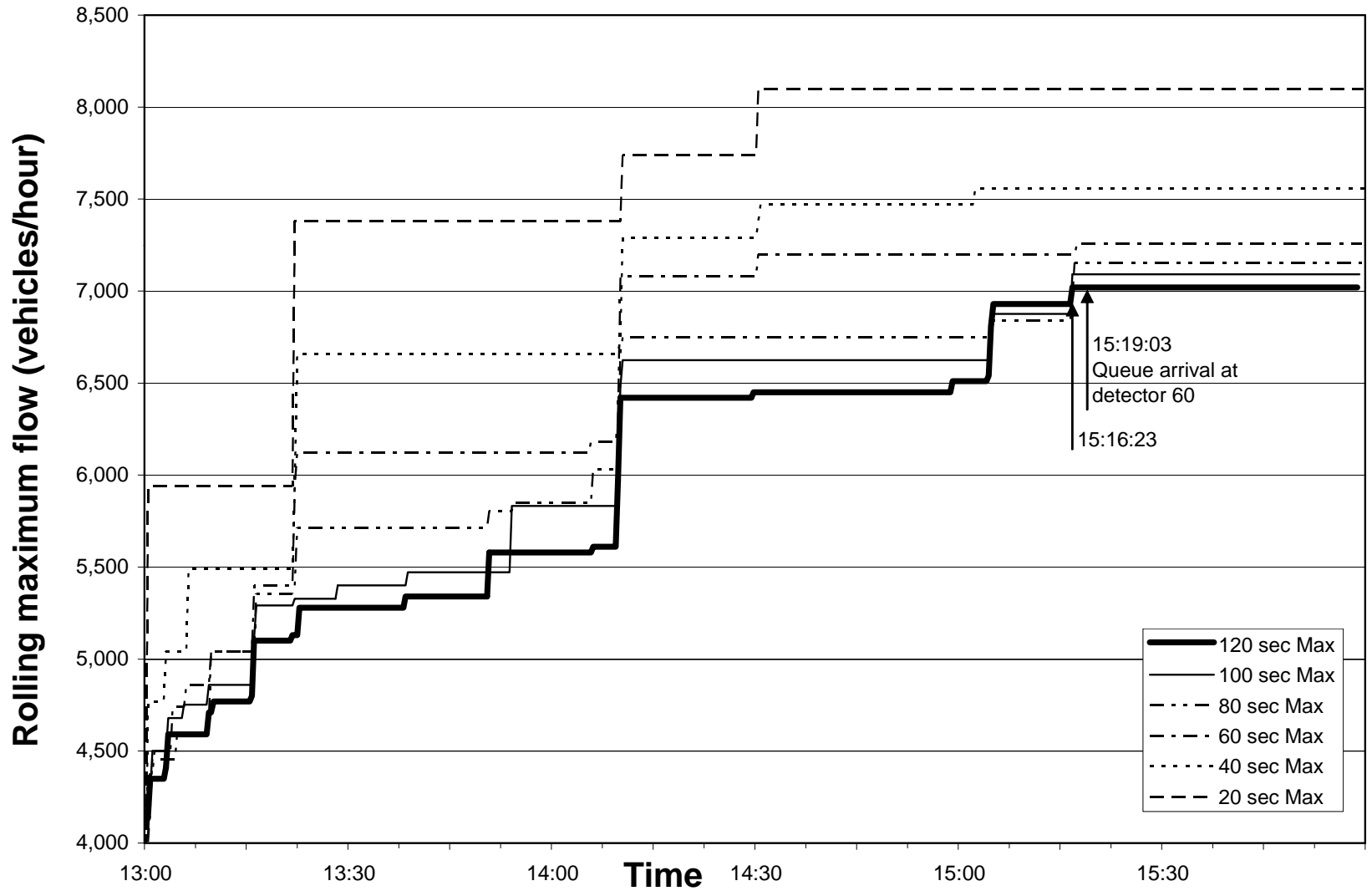
Individual Lane Flows (单独车道流量)



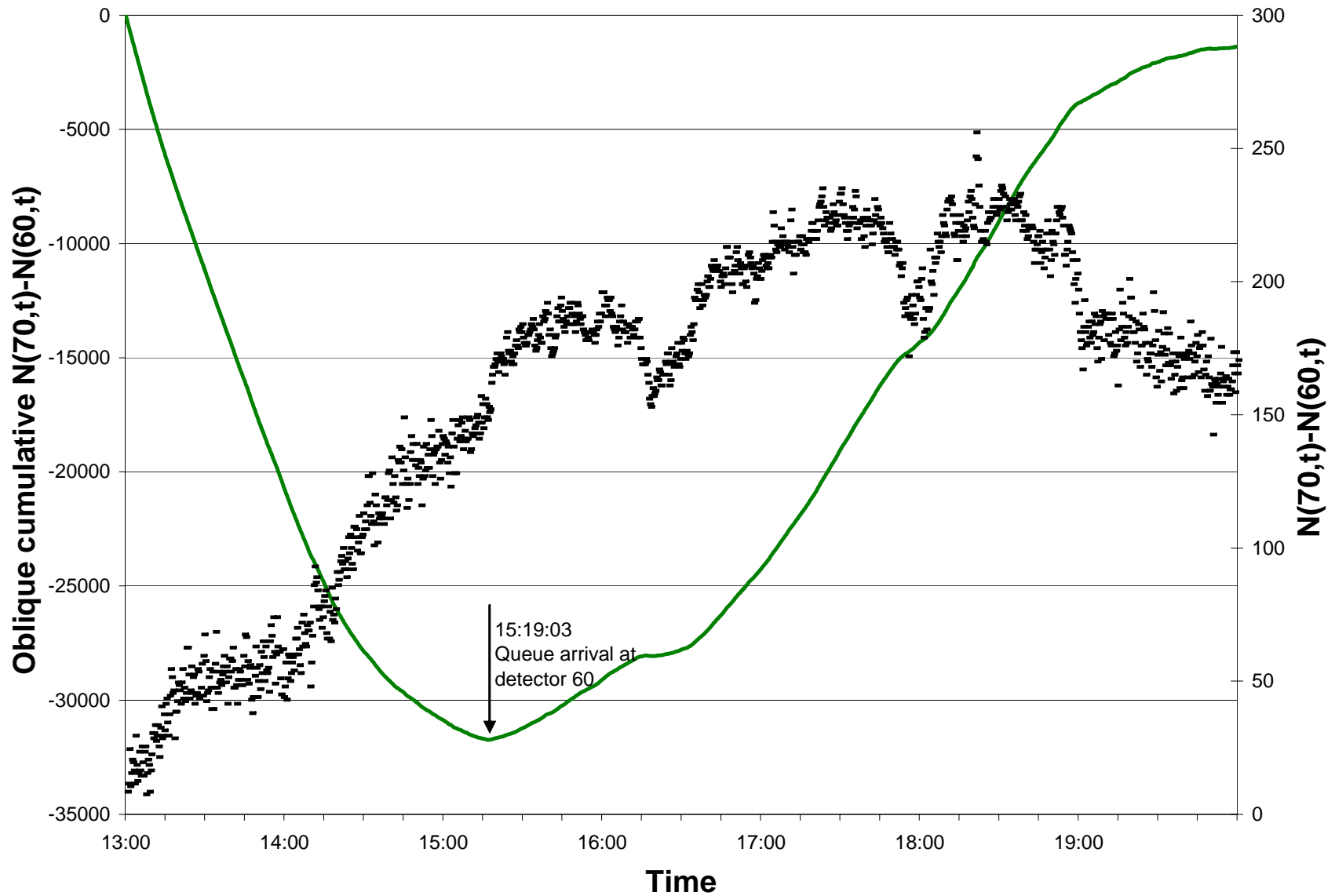
Total Bottleneck Input Flow(进入总流量)



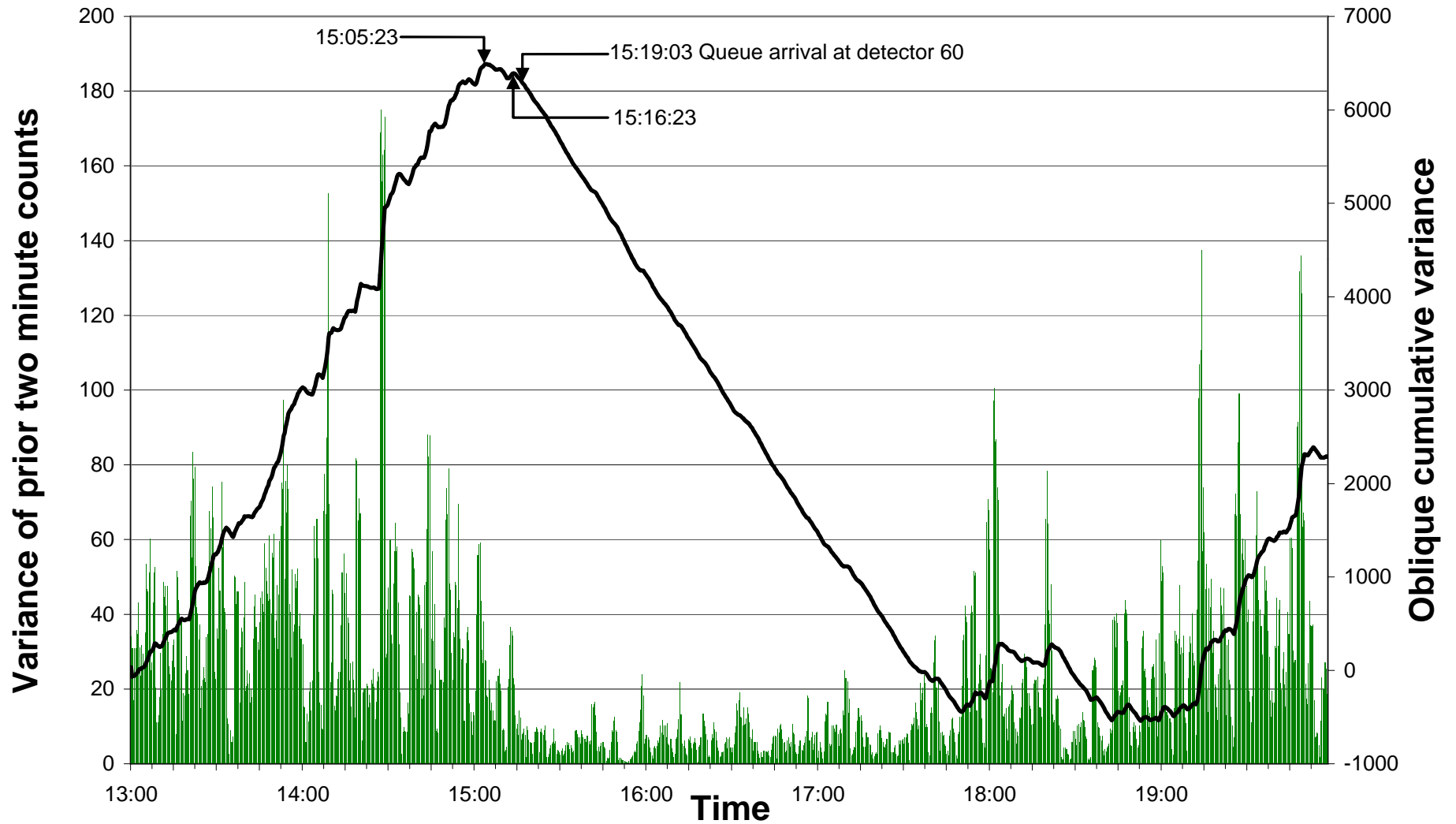
Maximum Bottleneck Input (最大入力量)



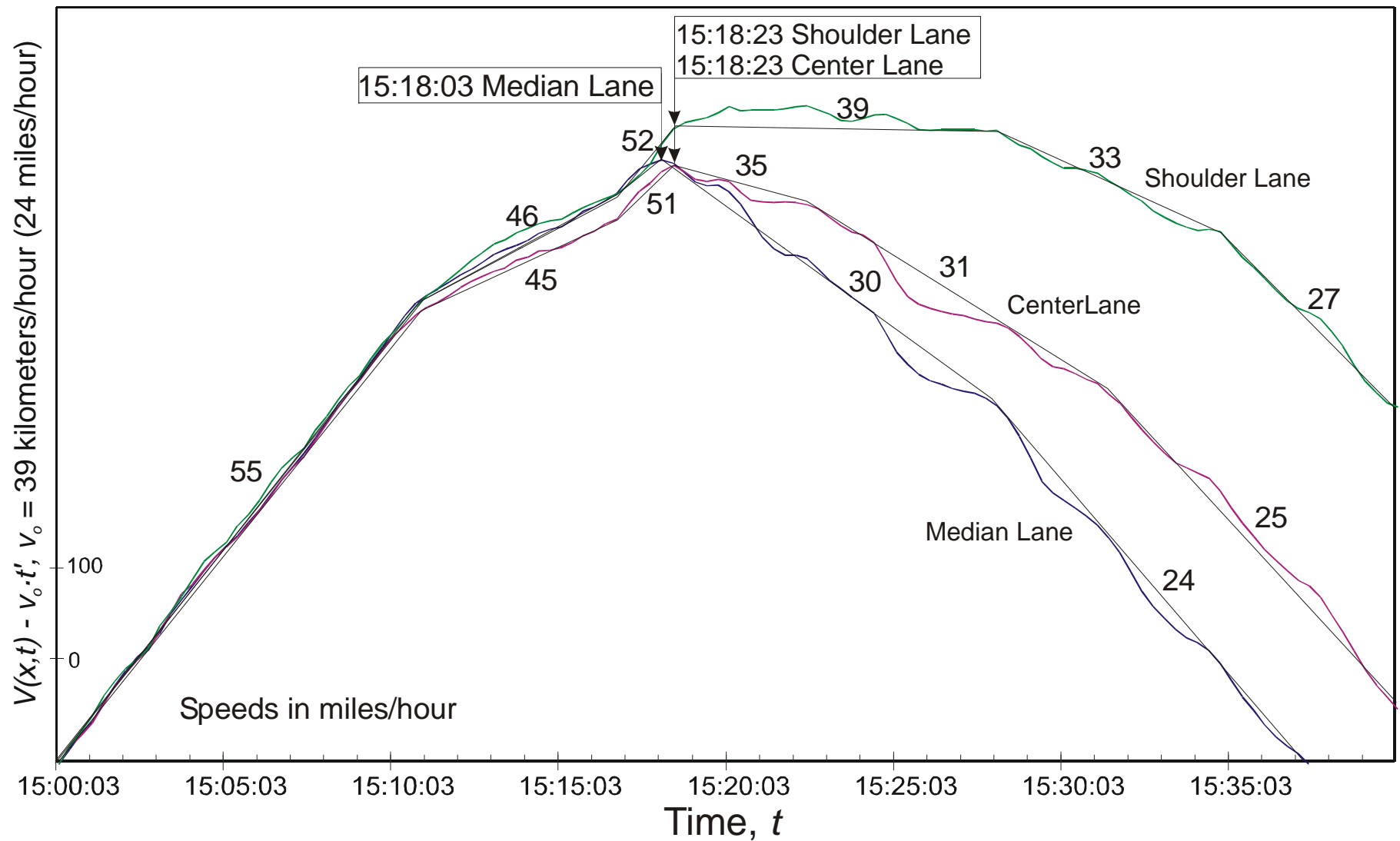
Cumulative Count Difference(加总流量差)



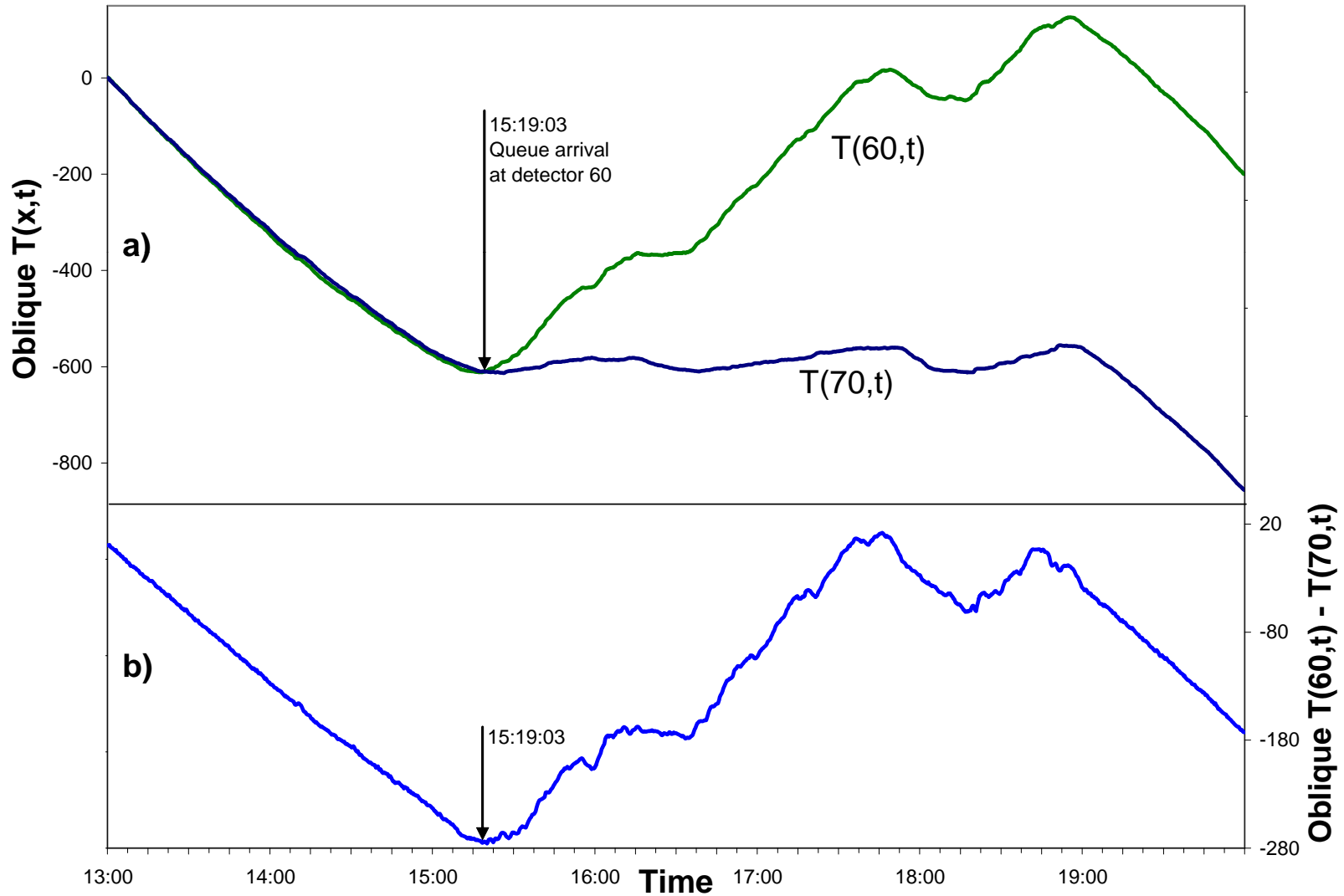
Count Variance(流量波动)



Oblique Velocity(变异速率)



Oblique Cumulative Occupancy(加总密度)



Conclusions(结论)

- Possible to diagnose bottleneck location and activation/deactivation times(瓶颈确认可能性)
- Reproducible high flow signal(重新产生高流量信号)
- Other signals demonstrated(其他信号演示)
- Systematic approach needed(系统过程需要)

Acknowledgements (感谢)

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- National Science Foundation
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More information(更多信息)

- Email: bertini@pdx.edu
- Web: <http://www.its.pdx.edu>
- Bottleneck data readily available.

