



RIPE NCC
RIPE NETWORK COORDINATION CENTRE

AS-Hegemony

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Name | Date | Event



AS Interdependency

- How does a network depend on other networks?
 - Directly: upstreams
 - Indirectly: upstream from that
- Data we have: RIPE RIS + Oregon Routeviews
- Problem: BIAS!
 - only ~0.5k full feeds (“clue core”), vs. 65k ASNs
 - BGP hides information

Key concepts: Betweenness



- Betweenness:
 - Estimates how central a node is in a graph
 - How central is a network (ASN) in the network of networks (Internet)
- Global vs. local
 - Global: what's between all the things
 - Local: what's between a network and the rest of the things
- https://pam2018.inet.berlin/wp-content/uploads/2018/04/pam2018_fontugne.pdf

Key concepts: Truncated Mean

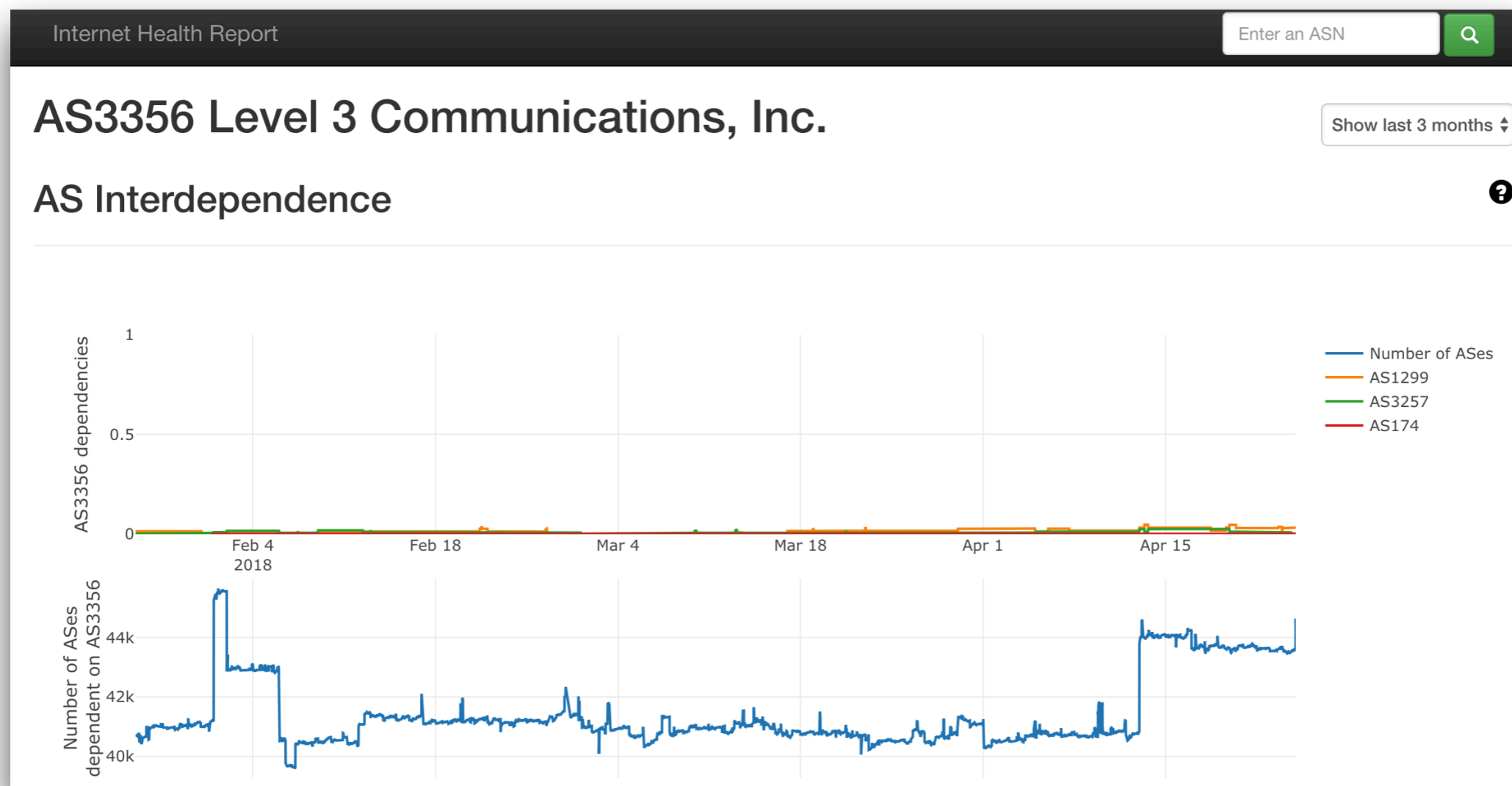


- Route collector systems are biased
- Truncated mean attempts to solve
- Solves averaging problem:
 - What's the average income when Mark Z. is in a baseball stadium?
- https://en.wikipedia.org/wiki/Truncated_mean
- Open question: how much truncating?

Try This Yourself!



- <http://ihr.iijlab.net/ihr/3356/asn/?date=2018-04-24&last=90>



Try This Yourself!



- <http://ihr.ijlab.net/ihr/15169/asn/>

AS15169 Google Inc. Show last 1 week ▾

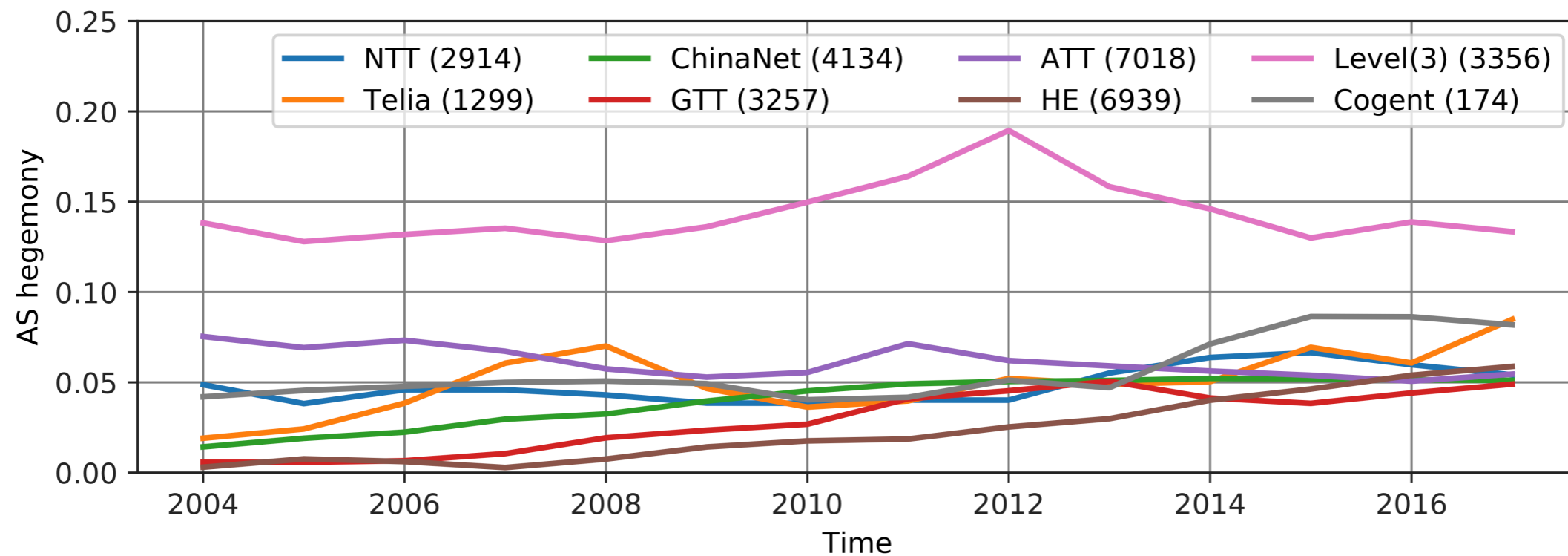
AS Interdependence ?

This network has no significant AS dependency 

No significant dependencies!

Local “flattening of the Internet”

Top8 “Tier1” AS Hegemony Scores

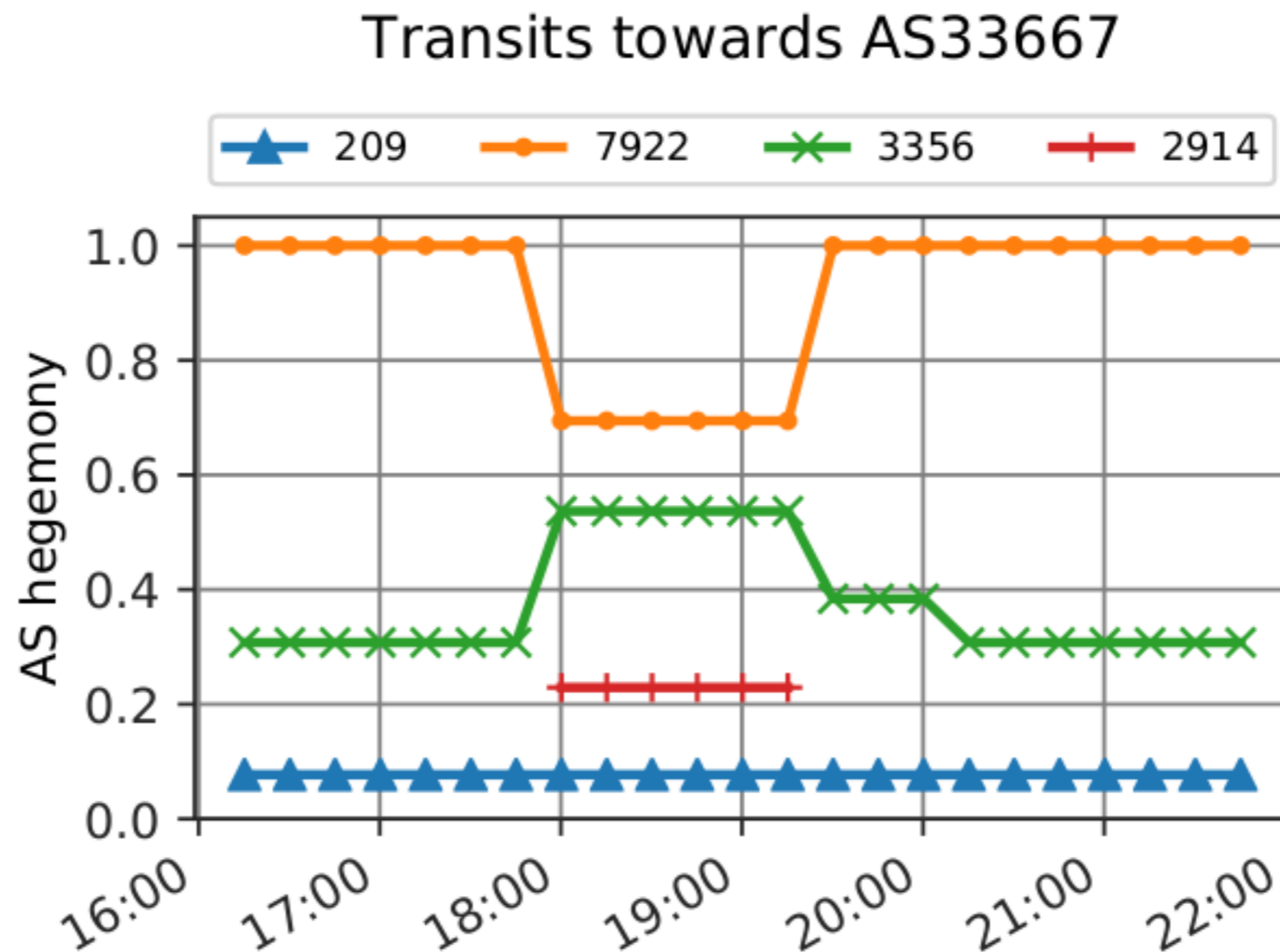


- Truncated mean of betweenness in route collector paths (RIS+Routeviews)

What happens during Events



- Level3 leaked AS33667 (Comcast)





What we want from You

- Validation:
 - Do you see weird things in this that didn't match your expectation
 - Unexpected dependencies (esp. if not immediate upstream)
- Where to take this?
 - Alerts: LIR Portal?
 - <<your idea here>>



Questions



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