

Internet Compact Routing: The Results

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**Revisiting Emulated Network Orchestration and
Visualisation**

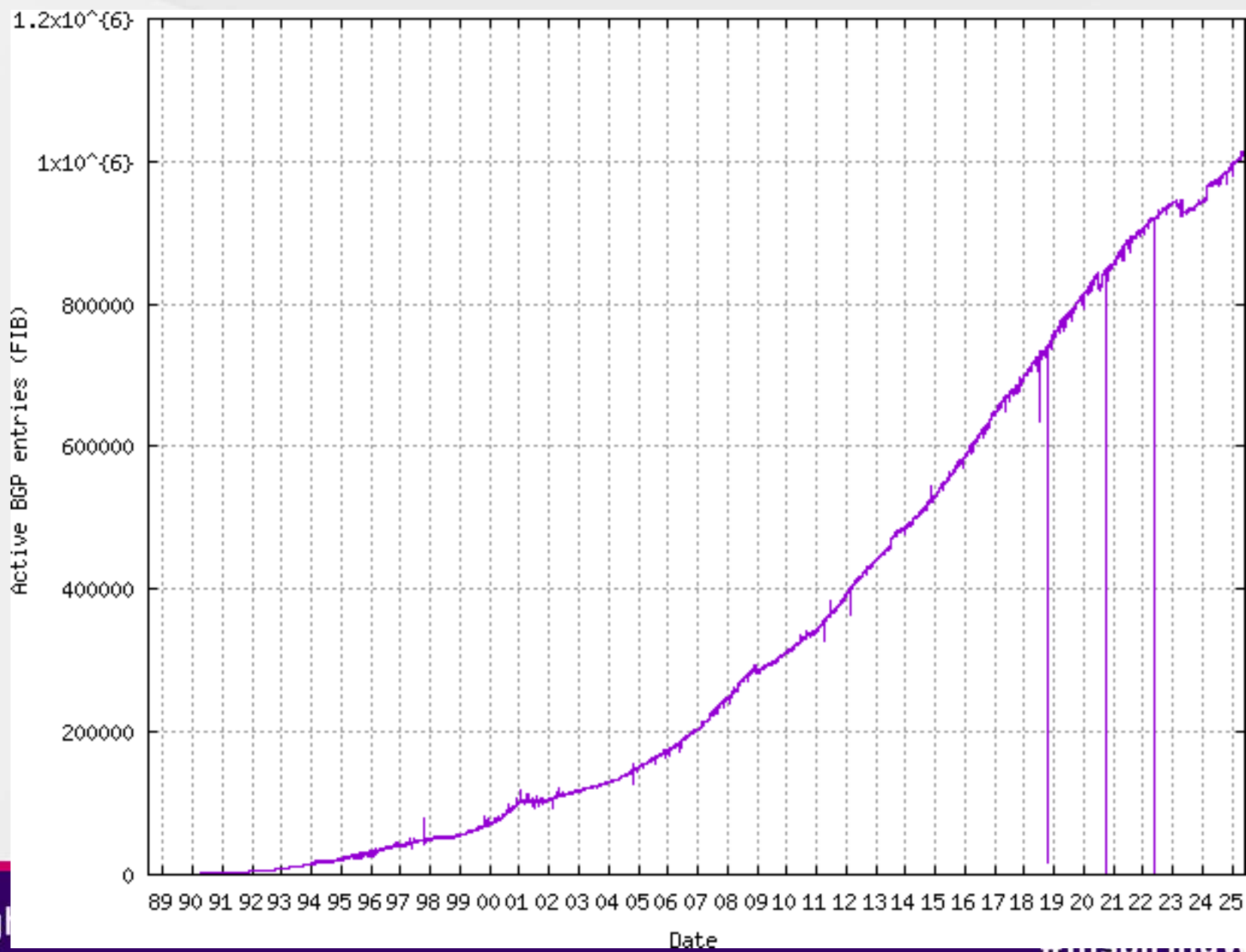
2023

Compact Routing the AS Graph

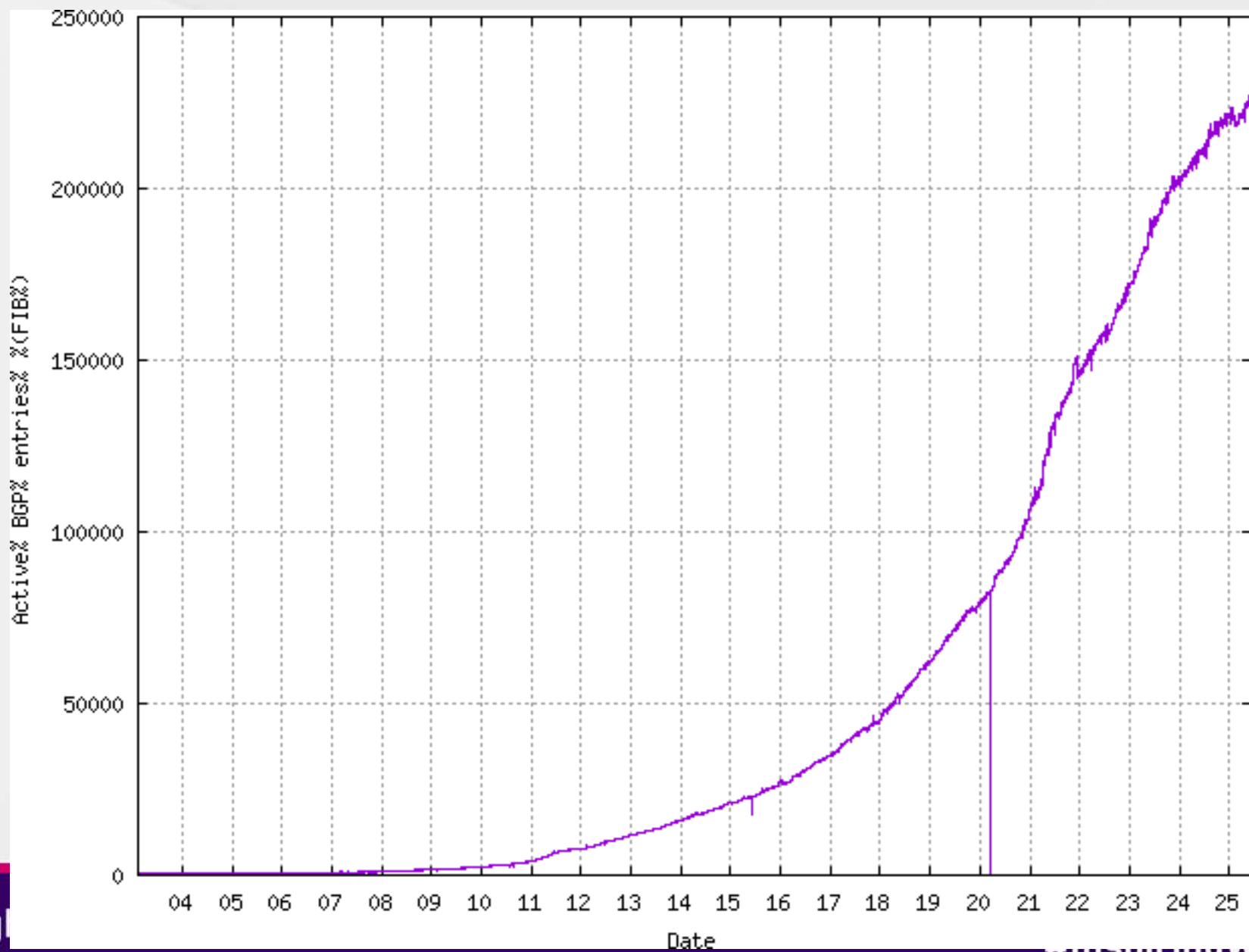
2024

Towards Measuring Content
Locality





CIDR-Report,
Geoff Huston,
2025



CIDR-Report,
Geoff Huston,
2025

Table Size Matters

Increased Storage Requirements

Growing Router Costs

Slower Lookup Times

Compact Routing

What Does Compact Mean?

Sub-Linear Routing Table Growth

How Does Compact Routing Work?

Establish a hierarchy

Select networks as landmarks

Associate networks with landmarks

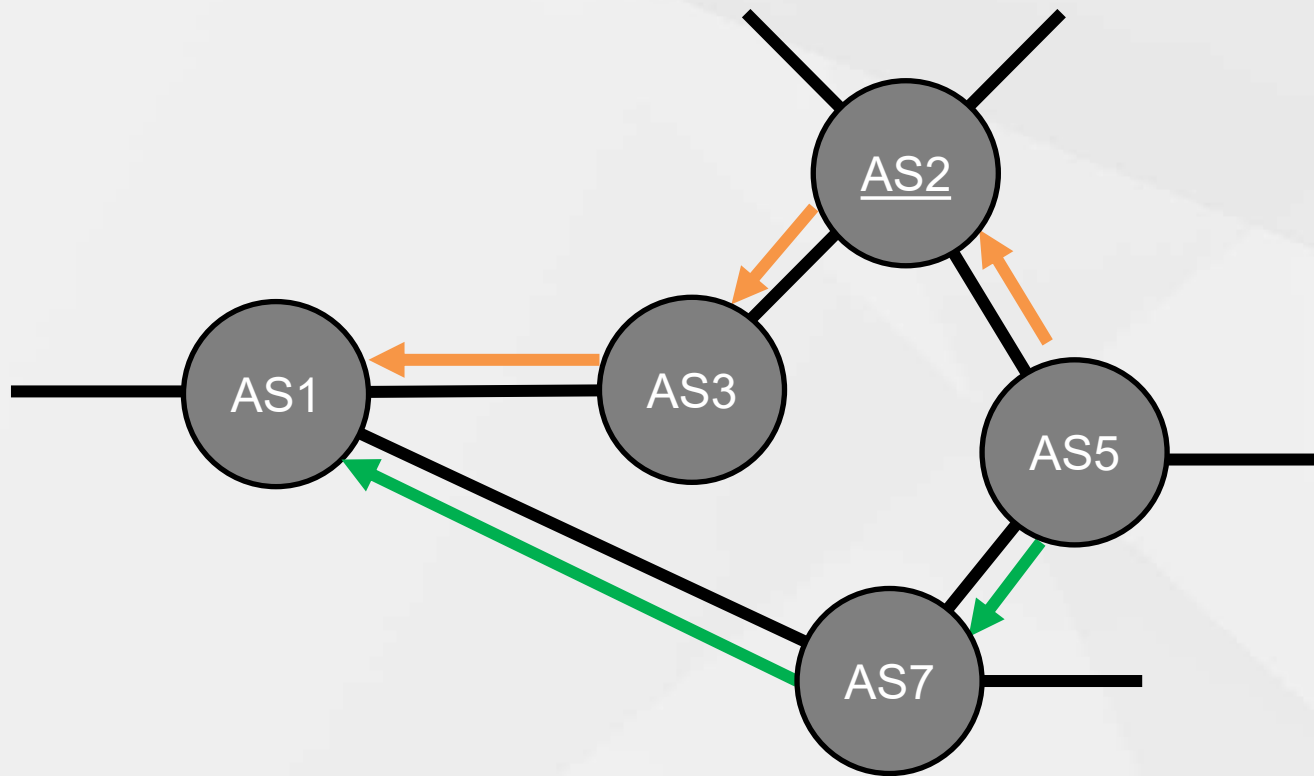
Forward traffic via landmarks

How Does Compact Routing Work? - cont.

All nodes store all landmarks

Landmark nodes store associated nodes

Sender performs landmark lookup



Key

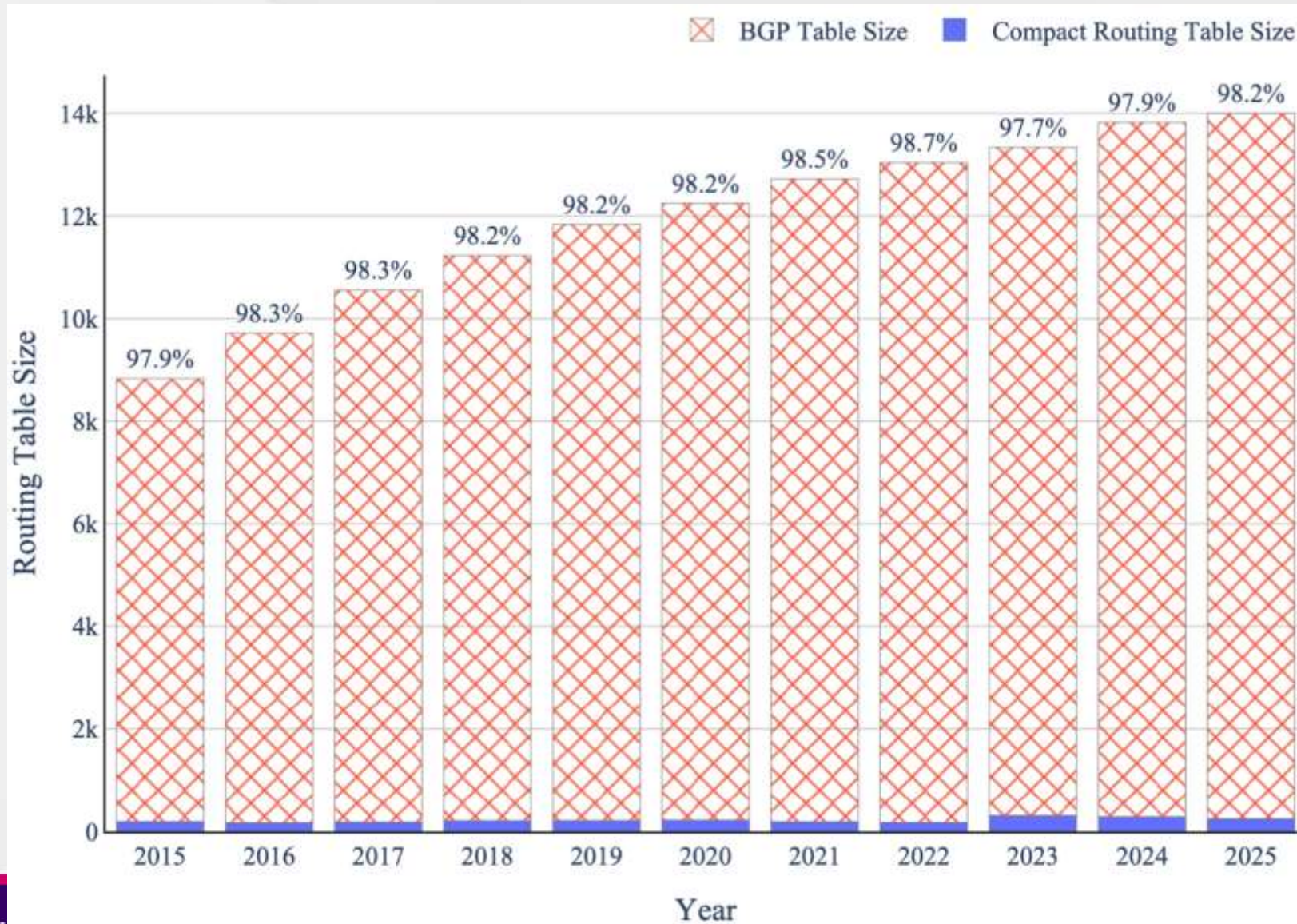
- ← Compact Routing Path
- ← BGP Path
- AS2 Landmark Node

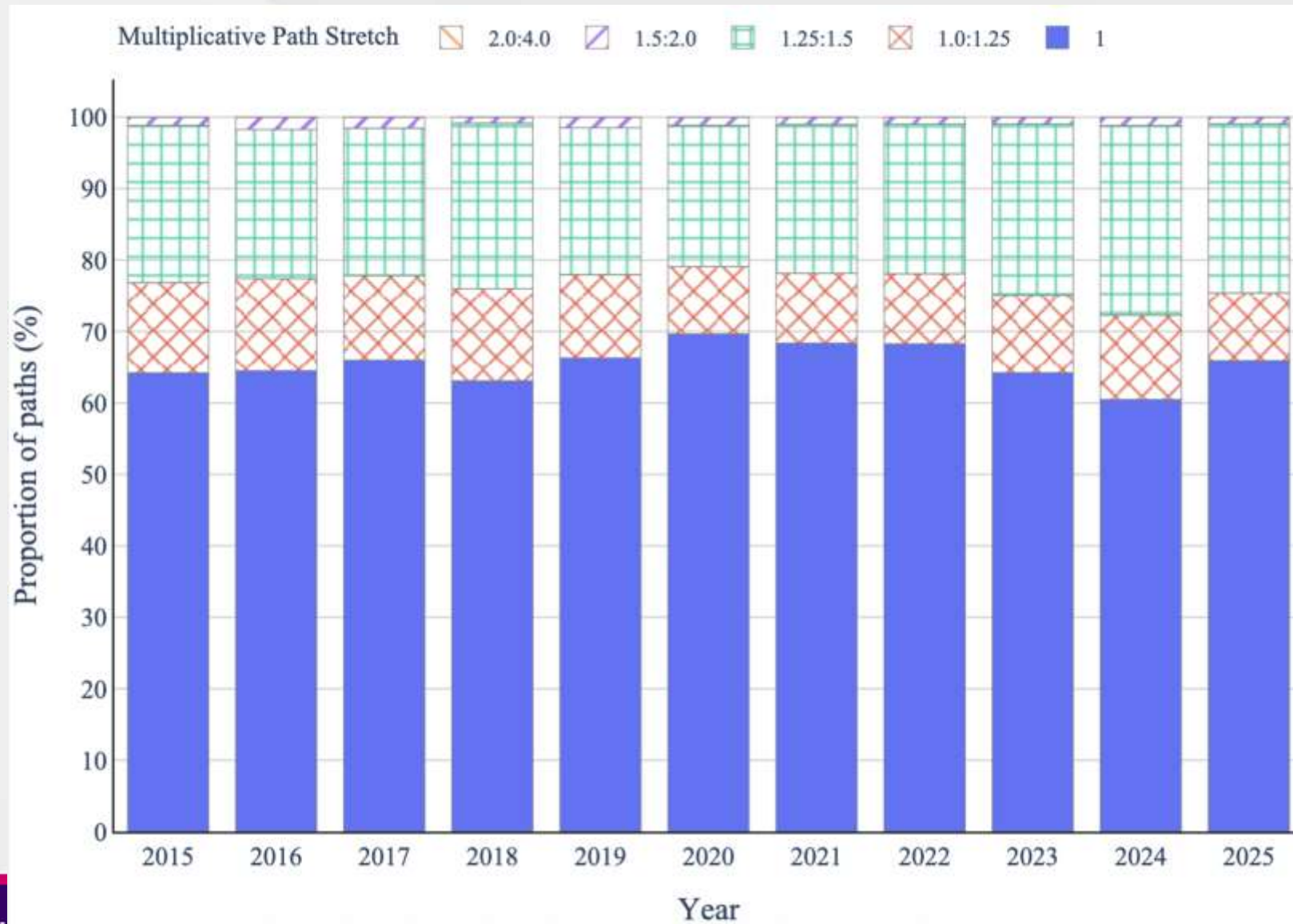
Table Reduction vs Path Length Increase

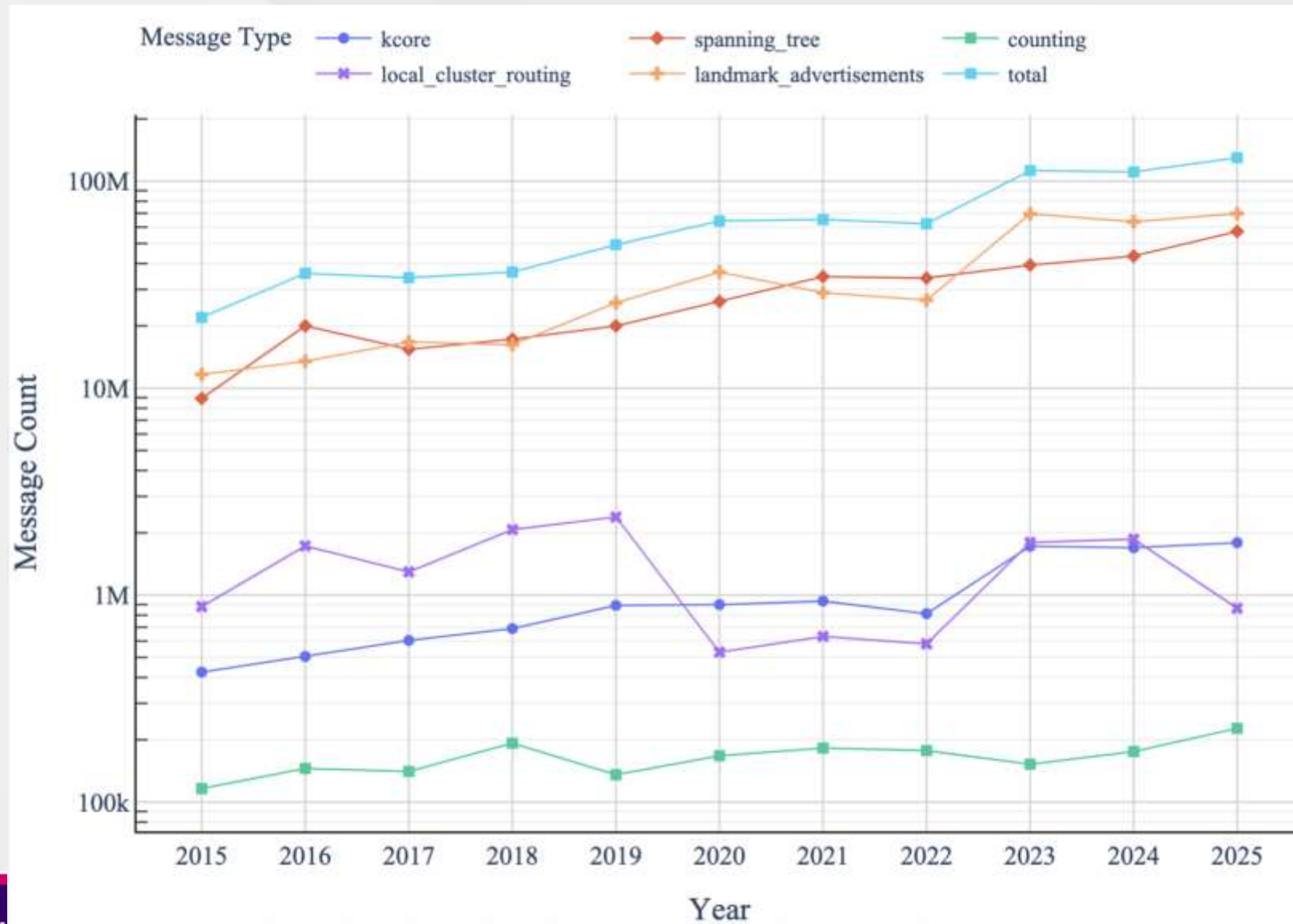
Simulations

CAIDA AS Relationships Dataset
(IPv6, 2015 - 2025)

No routing policy
Compared to shortest path







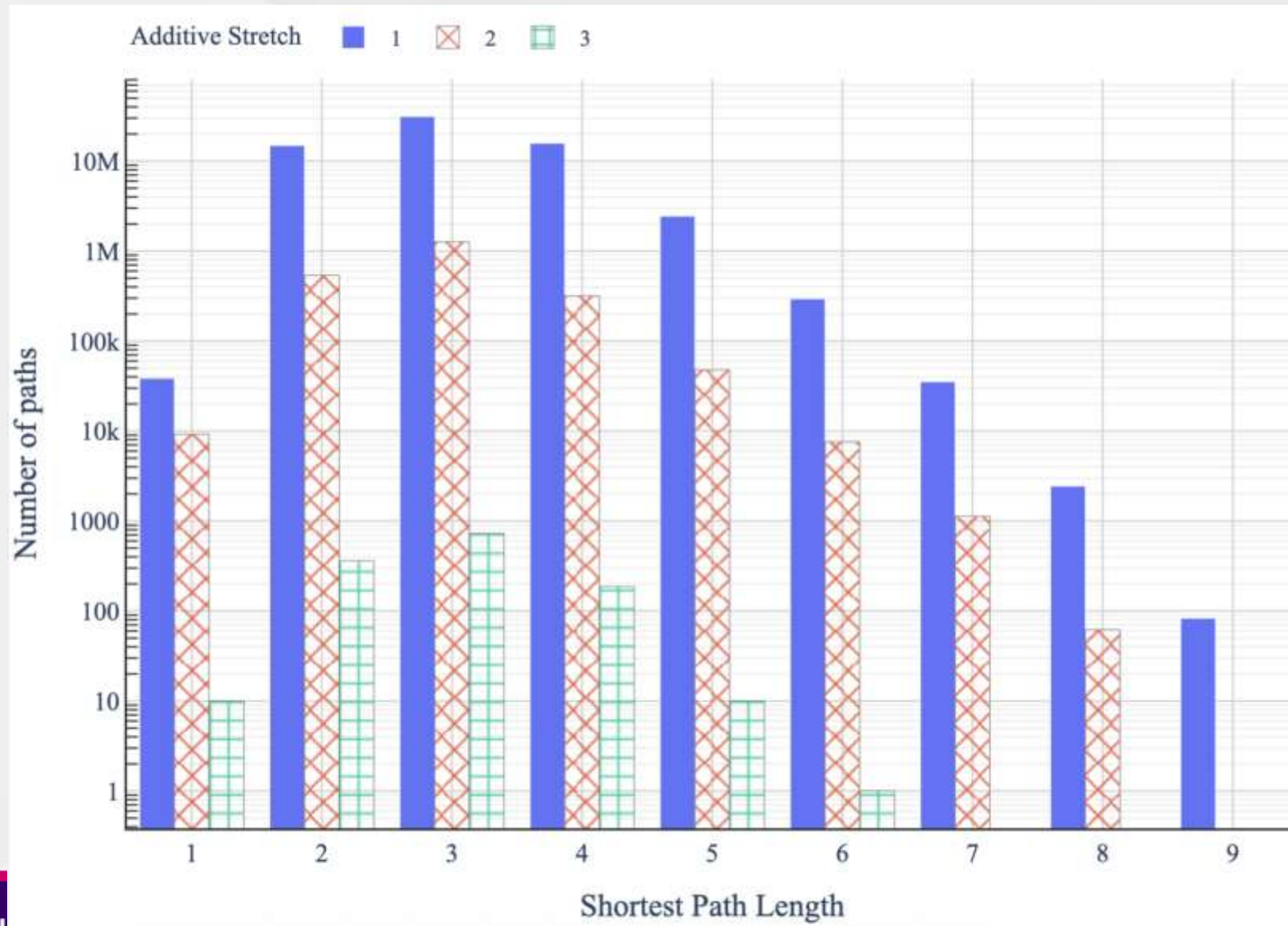
Results – 2025 Graph

Mean Table Reduction: 98%

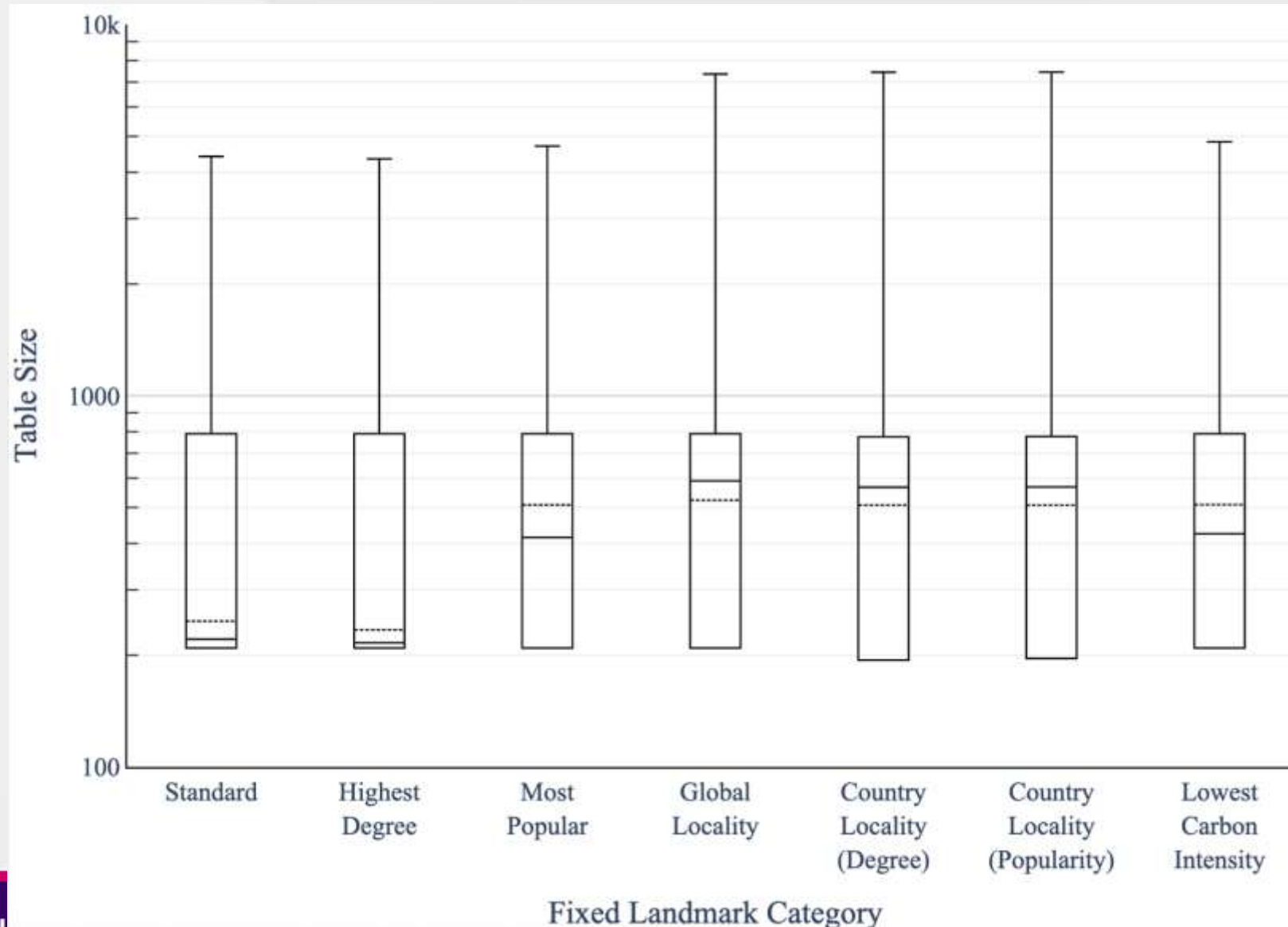
Average Path Length Increase: 11%

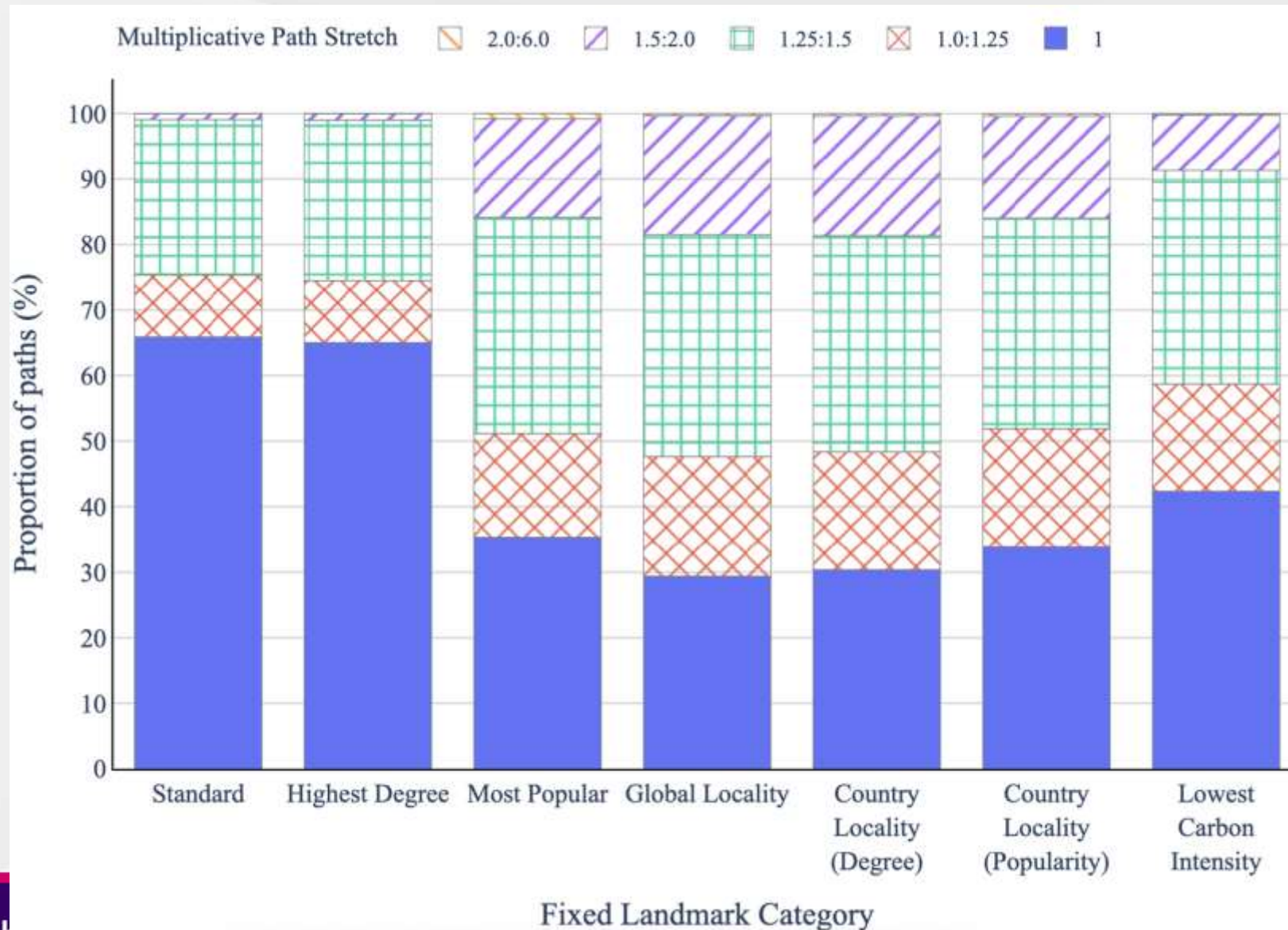
Paths Unaffected: 65%

Affected Paths: 31% Increase



Alternative Landmark Selection





Contributions

Compact routing protocol algorithms

Evaluations on realistic network topologies

Considerations on protocol security and landmark selection criteria

Future Work

Prove algorithmic convergence

Evaluate using routing policy

Standardise the protocol

Summary

Excessive routing table growth causes problems

Compact routing achieves a 98% table reduction with only 11% path length increase

Compact routing can also support alternative routing goals

Additional Slides

Extra Info

Landmark Selection: 14x combined reduction

Stretch w/out shortcuts is 12% (37% paths affected)

209 standard landmarks selected

Average landmark distance 1.4 hops

