SCTE CABLE-TEC EXPO '15

OCTOBER 13-16 NEW ORLEANS

Characterization and Impact of User Behavior of OTT Services

Mariela Fiorenzo

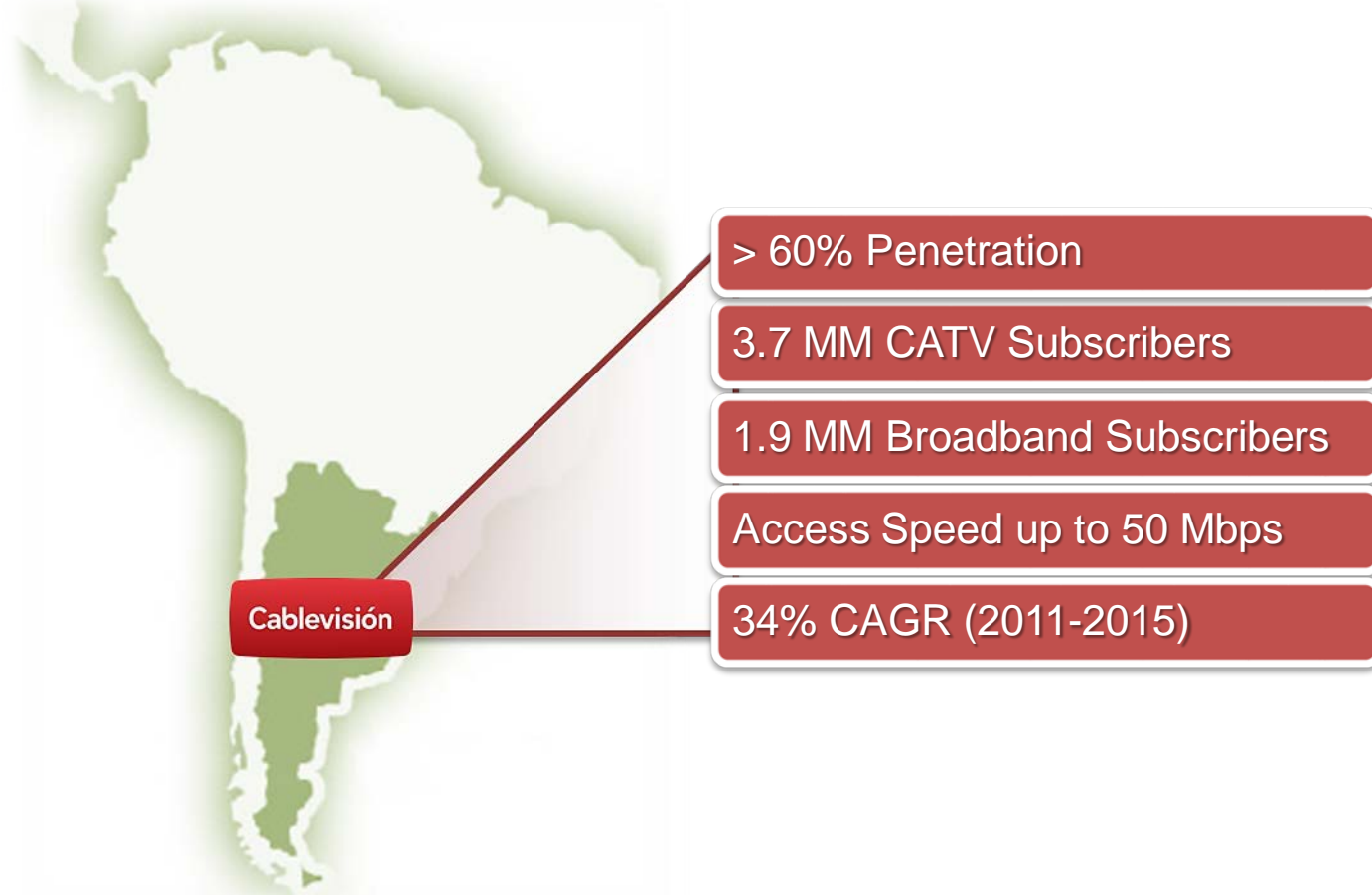*Scientific Analyst*

Cablevisión S.A.

Characterization and Impact of User Behavior of OTT Services

Agenda

- Internet Attitudes and User Preferences

- Access Speed and Netflix User Behavior

- Netflix Open Connect CDN: Improving the QoE

- Significant Growth in Netflix Users

About Cablevisión

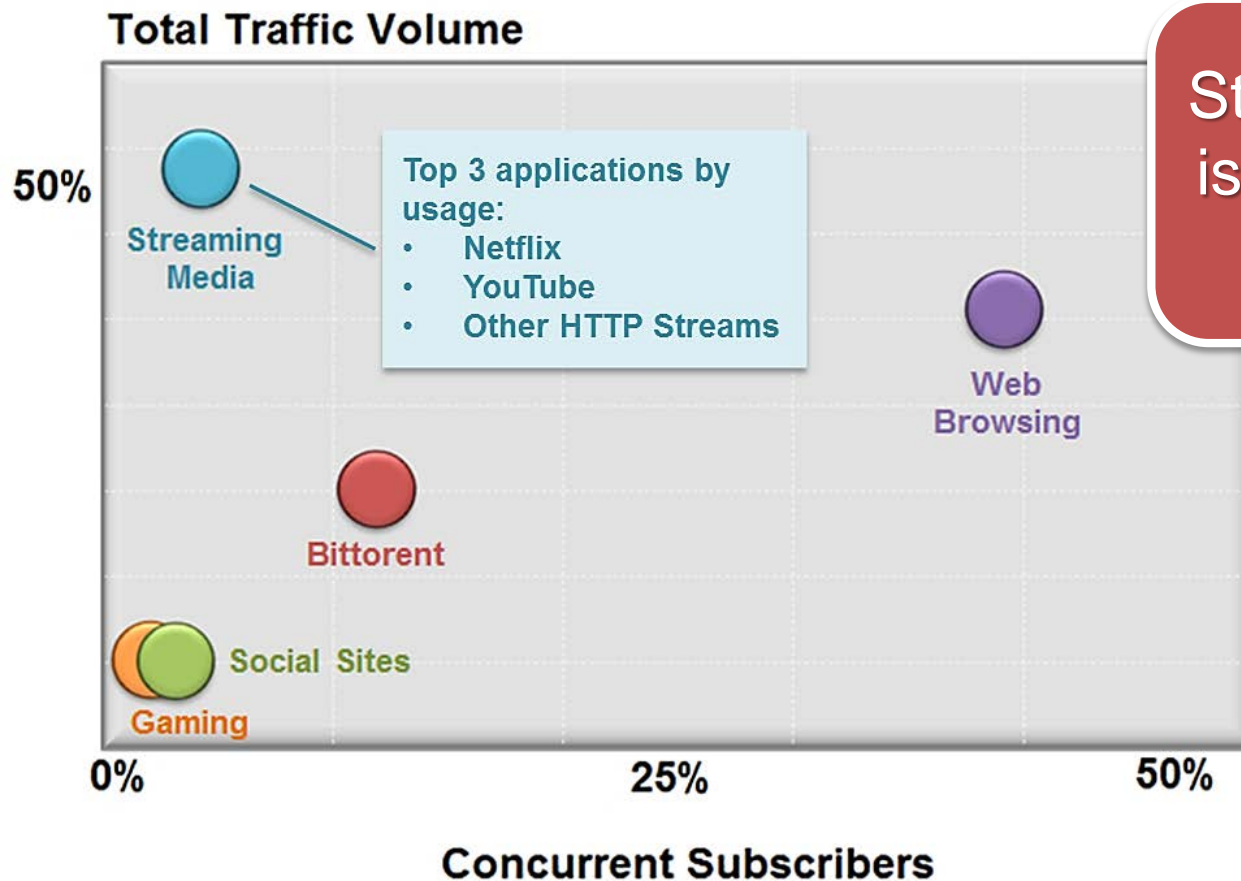- The largest MSO in Argentina and one of the biggest in Latin America

> 60% Penetration

3.7 MM CATV Subscribers

1.9 MM Broadband Subscribers

Access Speed up to 50 Mbps

34% CAGR (2011-2015)

Cablevisión

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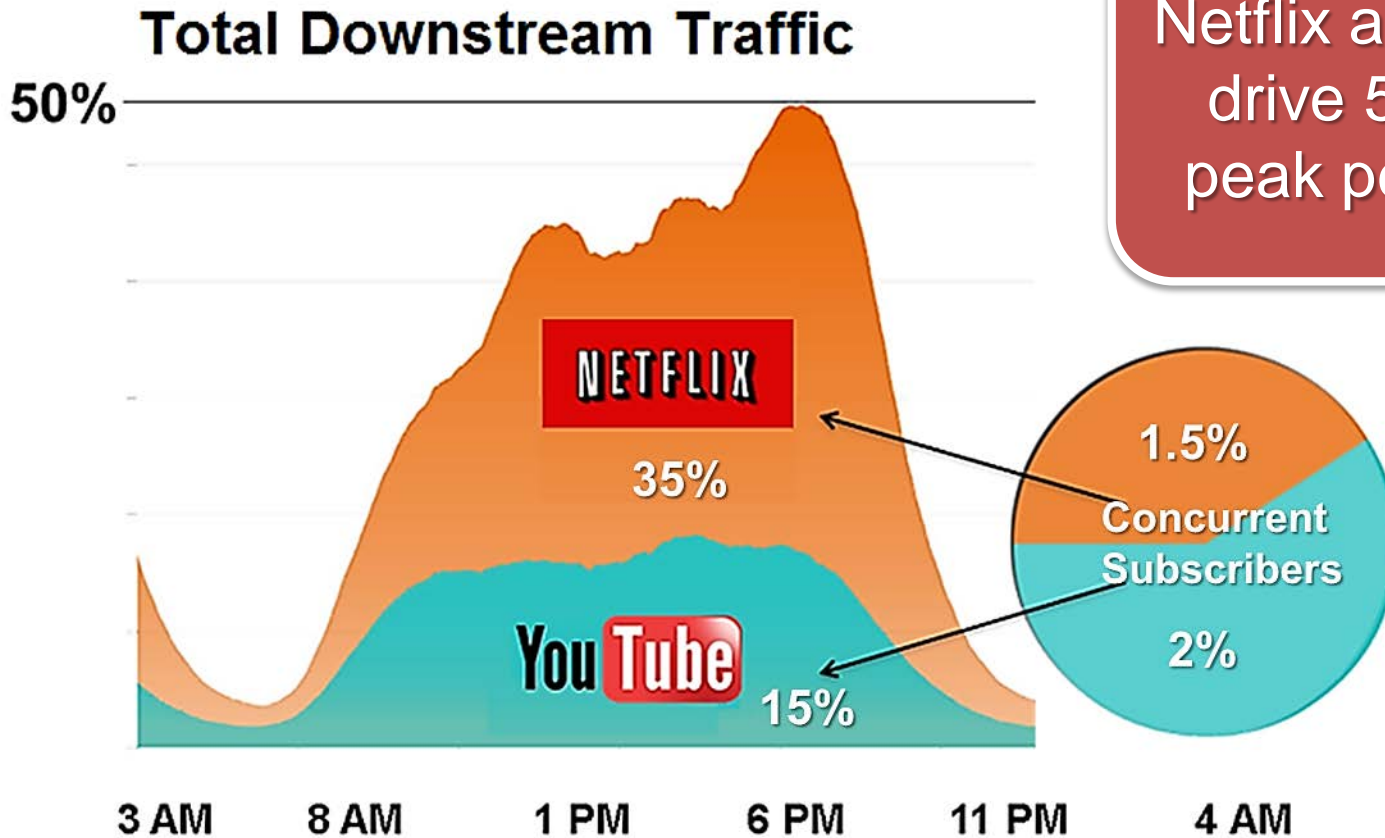
- Significant Growth in Netflix Users

Streaming Media

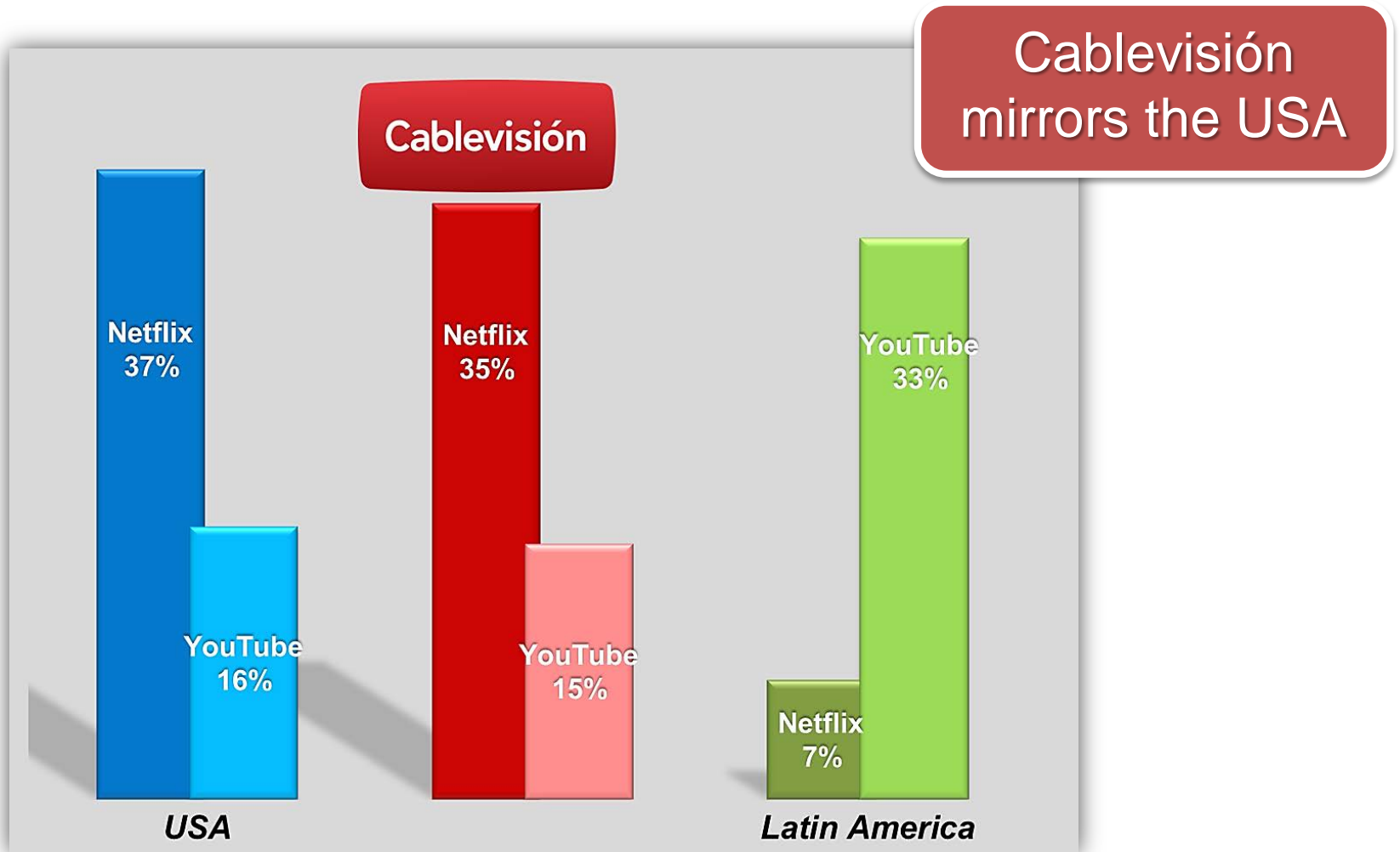## The Top Traffic Volume Applications

Total Traffic Volume

Top 3 applications by usage:
- Netflix
- YouTube
- Other HTTP Streams

Streaming Media

Web Browsing

Bittorent

Social Sites

Gaming

50%

0%   25%   50%

Concurrent Subscribers

Streaming Media is the most used application

Netflix and YouTube

Total Downstream Traffic

50%

NETFLIX

35%

You Tube

15%

3 AM   8 AM   1 PM   6 PM   11 PM   4 AM

Netflix and YouTube drive 50% of the peak period traffic

1.5%

Concurrent Subscribers

2%

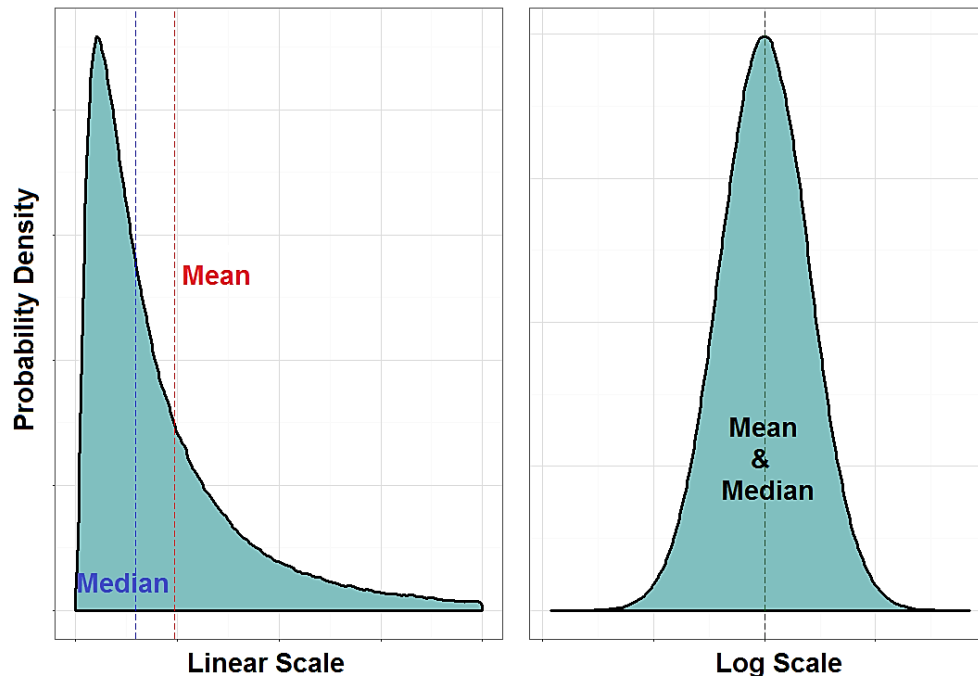# Netflix against other regions

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Useful Math

Log-Normal Distribution

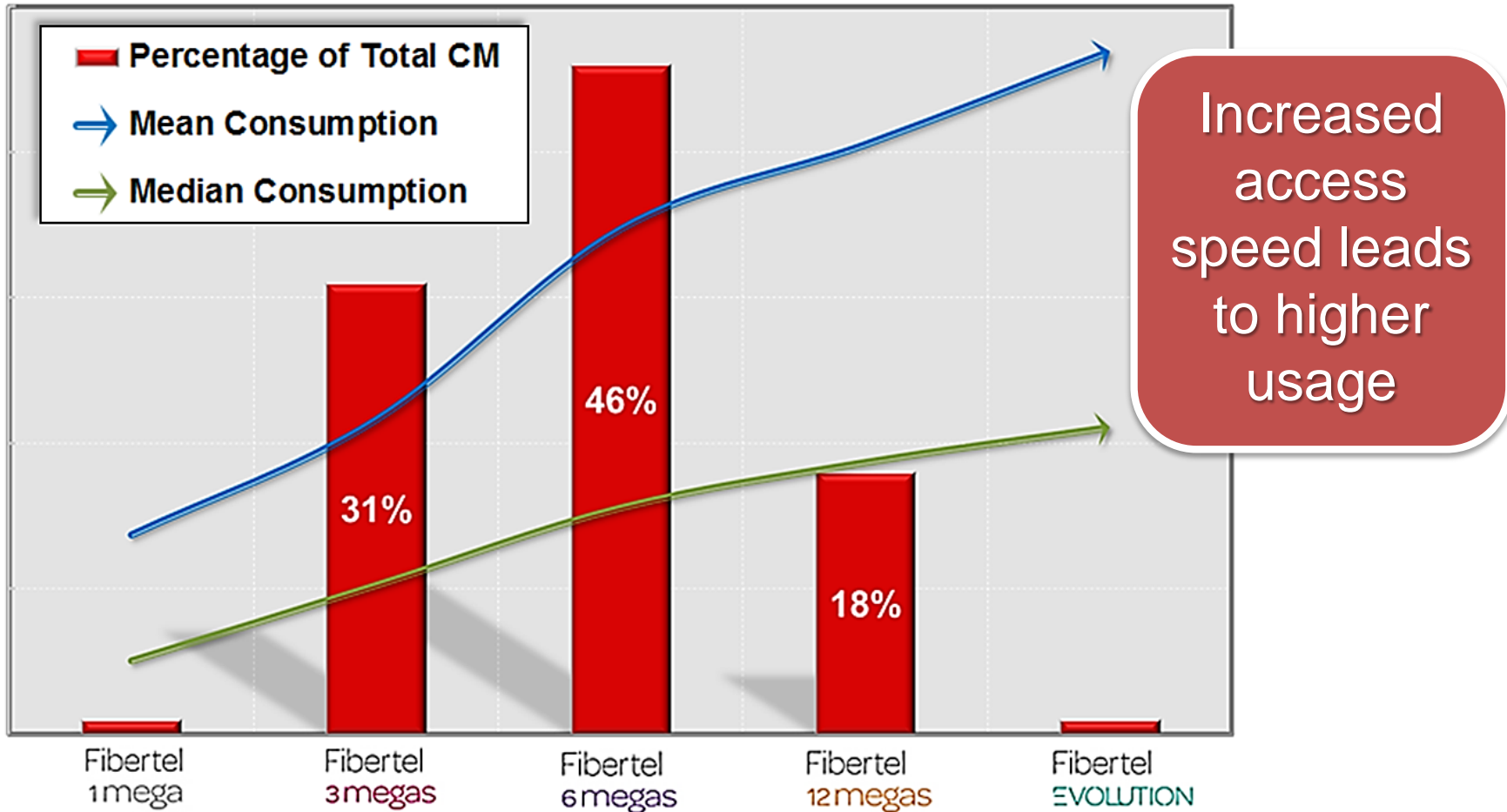Linear Scale

Log Scale

Mean

- Measures central tendency

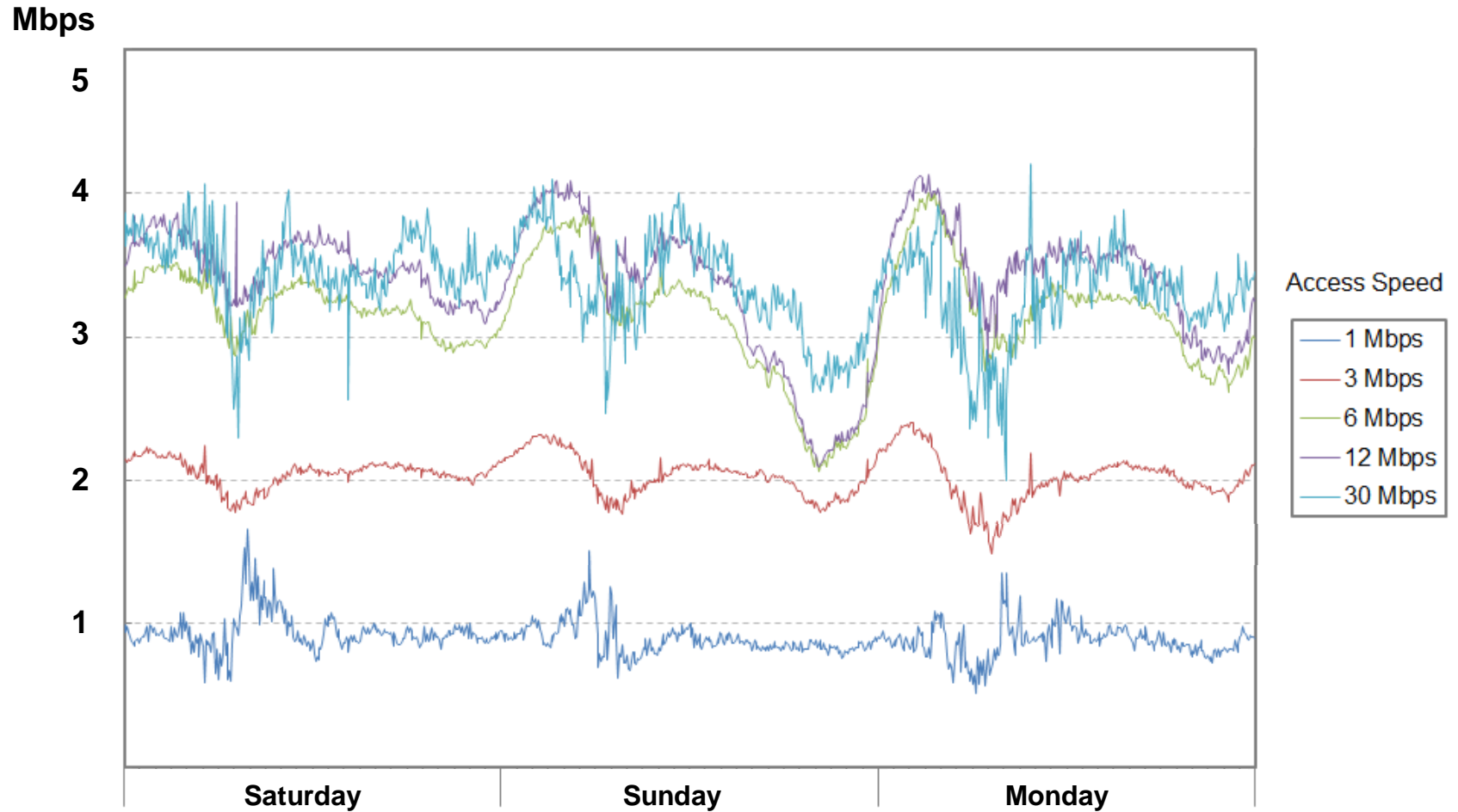- Normal distribution → population is represented best by the mean

Median

- The number separating the higher from the lower half

- Skewed distribution → population is represented best by the median

Access Speed and Netflix Usage

Access Speed and Netflix Traffic

Mbps

Access Speed
- 1 Mbps
- 3 Mbps
- 6 Mbps
- 12 Mbps
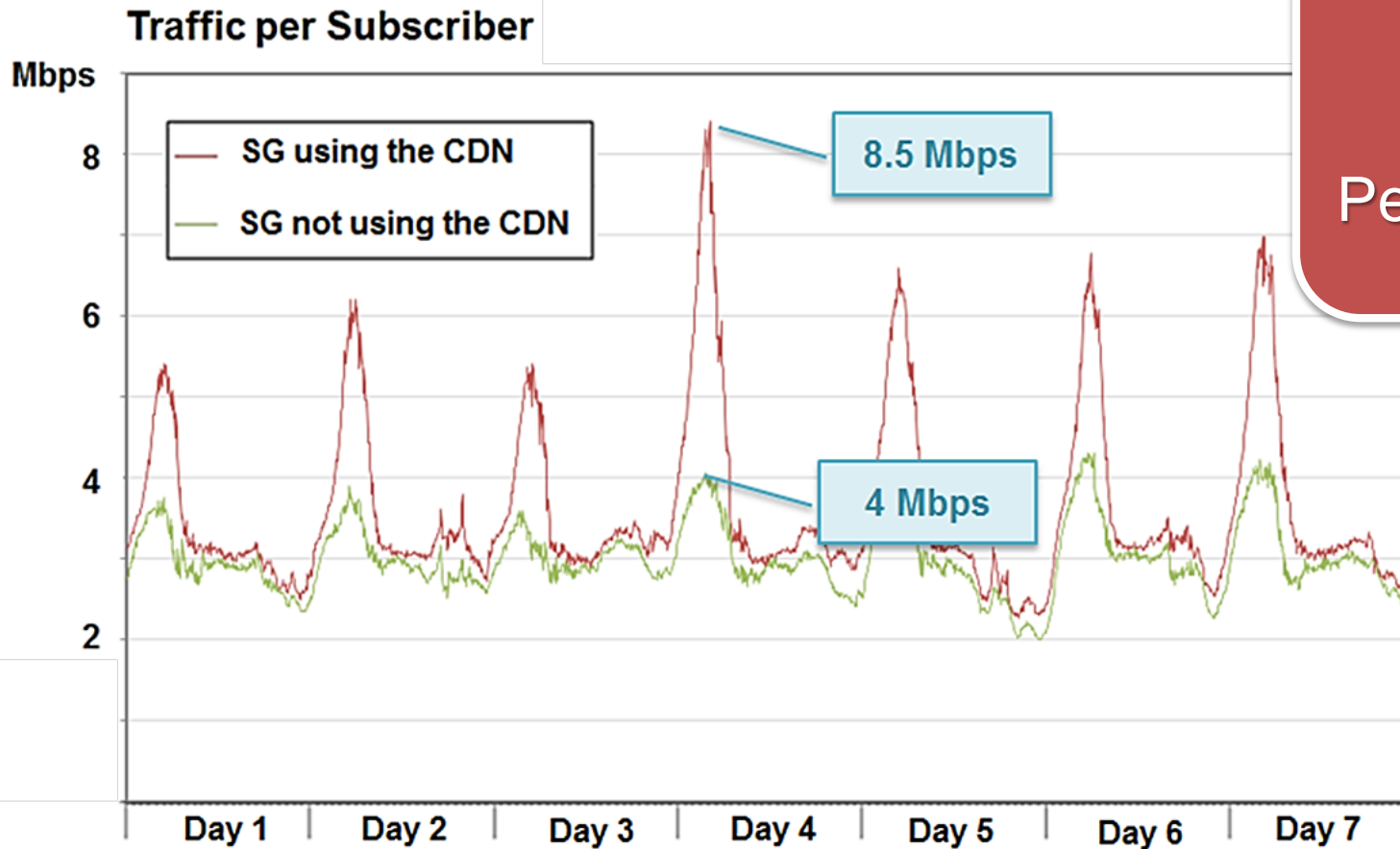- 30 Mbps

Saturday · Sunday · Monday

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SCTE Society of Cable Telecommunications Engineers

Improving Netflix QoE

Traffic per Subscriber

Legend:
- SG using the CDN
- SG not using the CDN

8.5 Mbps
4 Mbps

X-axis: Day 1, Day 2, Day 3, Day 4, Day 5, Day 6, Day 7
Y-axis (Mbps): 2, 4, 6, 8

50% gap; 23% in Peak Periods

CABLE-TEC EXPO.'15

Society of Cable Telecommunications Engineers

Projecting Traffic Growth

Definitions

N_{pre}: Previous Netflix Traffic

T_{pre}: Previous Total Traffic

N_{post}: Post Netflix Traffic

T_{post}: Post Total Traffic

Δ: Traffic Growth

Hypothesis

$$N_{post} = N_{pre} + \Delta N$$

$$T_{post} = T_{pre} + \Delta T$$

$$\Delta T = \Delta N$$

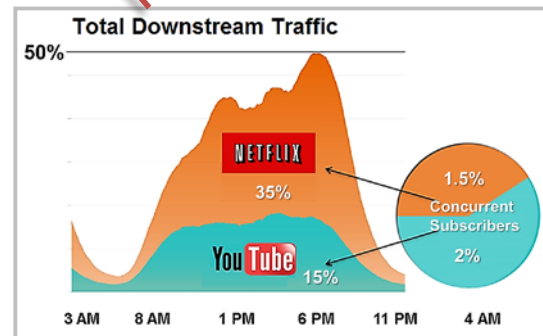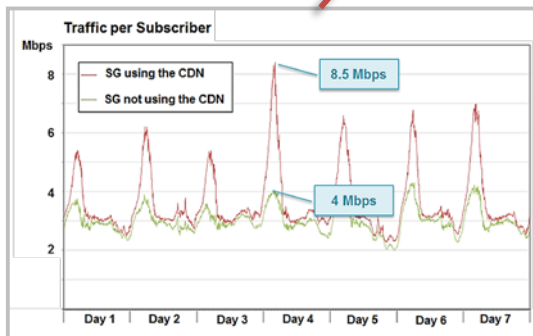$$T_{post} = T_{pre} + \Delta N$$

Projecting Traffic Growth

$$T_{post} = T_{pre} + \Delta N$$

$$T_{post}/T_{pre} = 1 + \Delta N/T_{pre}$$

$$T_{post}/T_{pre} = 1 + \Delta N/N_{pre} * N_{pre}/T_{pre}$$

$$T_{post}/T_{pre} = 1 + 0.23 \cdot 0.35$$

8.05% Growth

Traffic per Subscriber

Mbps

SG using the CDN
SG not using the CDN

8.5 Mbps

4 Mbps

Day 1 | Day 2 | Day 3 | Day 4 | Day 5 | Day 6 | Day 7

Total Downstream Traffic

50%

NETFLIX 35%

You Tube 15%

1.5% Concurrent Subscribers 2%

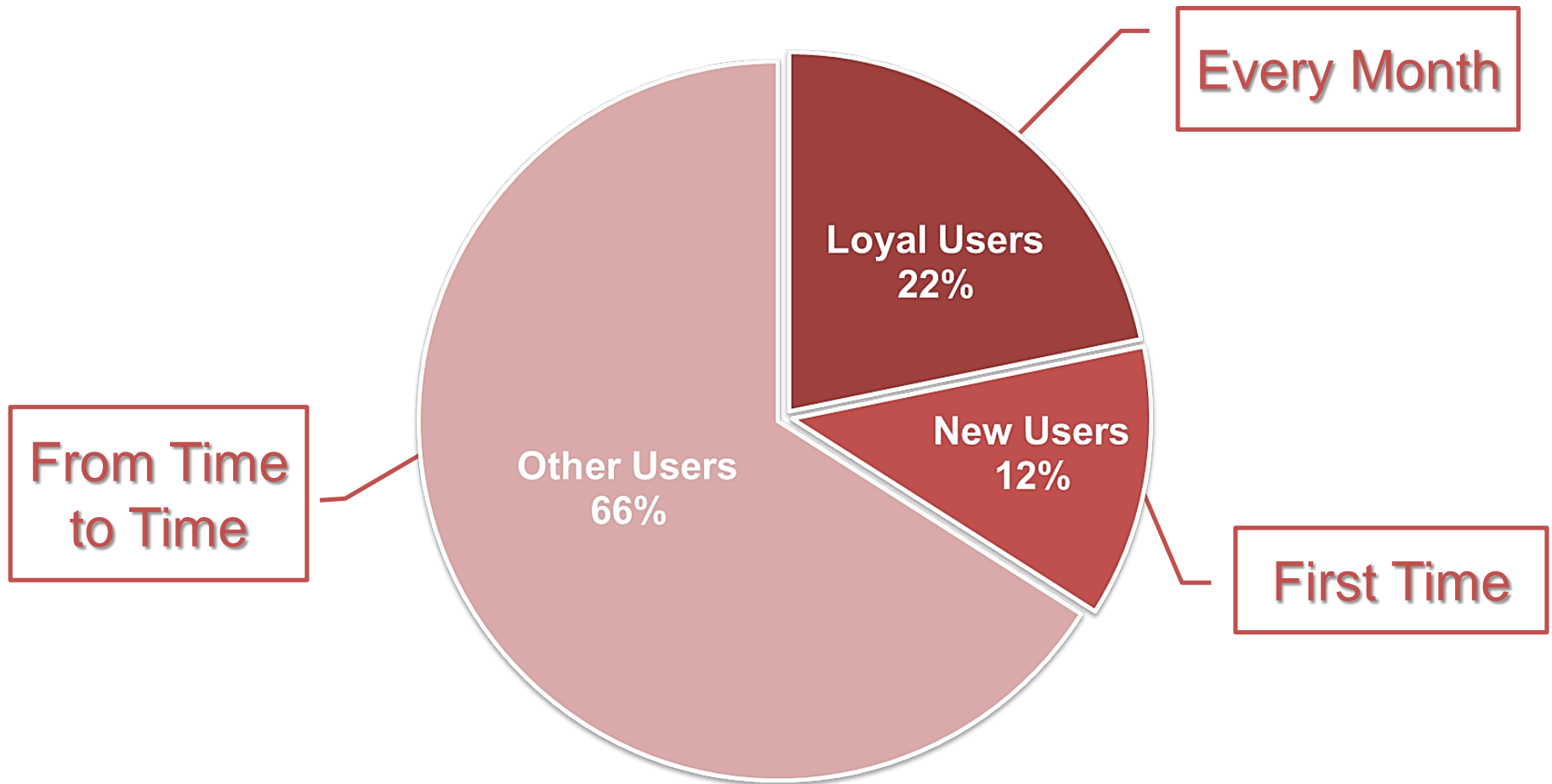3 AM | 8 AM | 1 PM | 6 PM | 11 PM | 4 AM

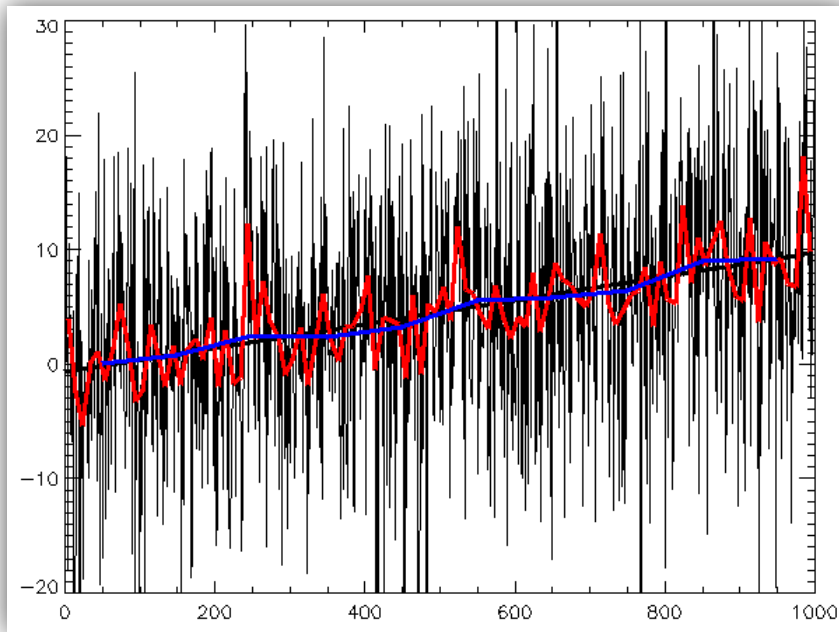# Characterization and Impact of User Behavior of OTT Services

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Netflix User Consumption

Every Month

Loyal Users
22%

From Time
to Time

Other Users
66%

New Users
12%

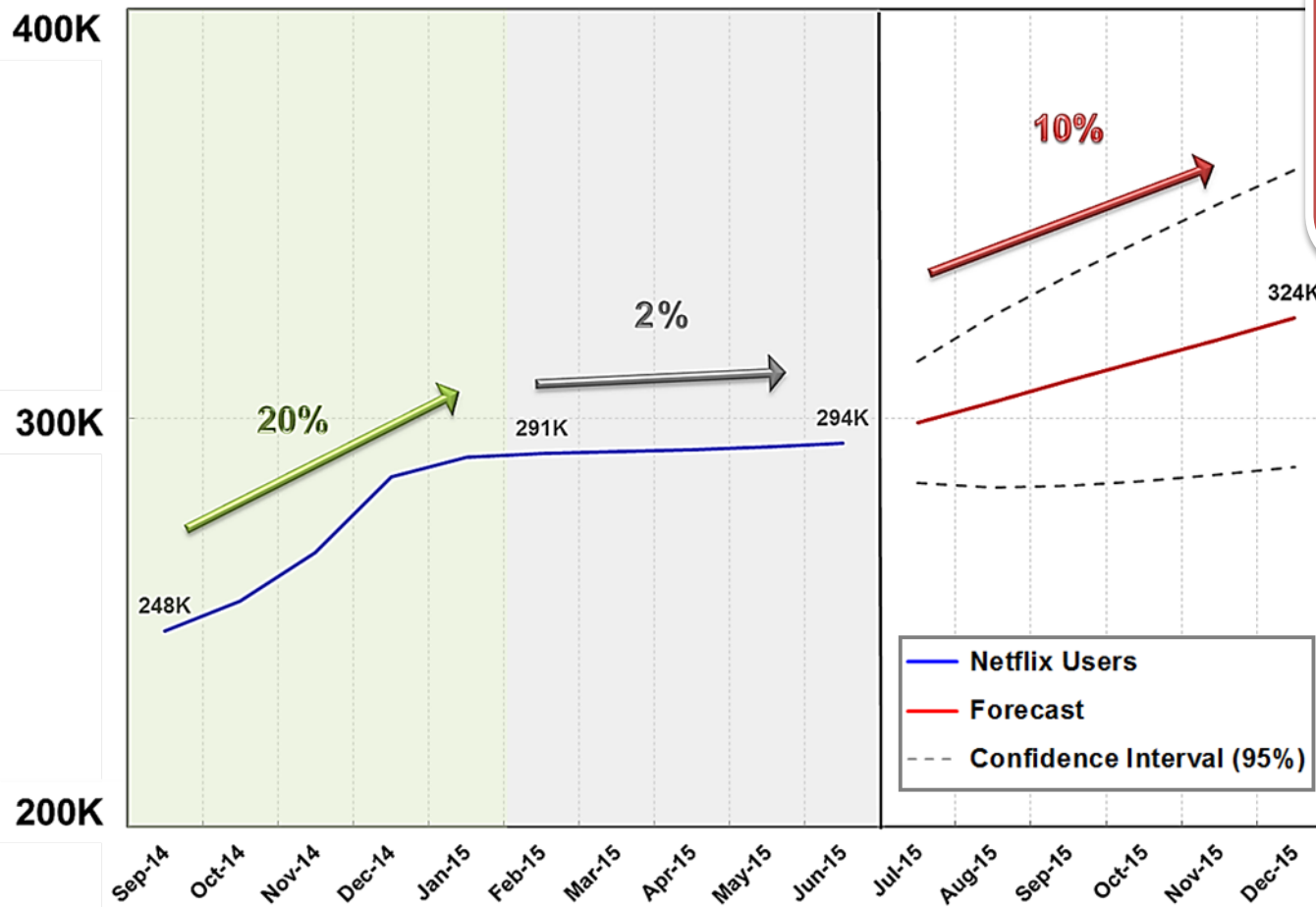First Time

Time Series

Definition

- Sequence of numerical data points in succesive order.

Applications

- Understand characteristics of the series.

- Forecast on previous values through different models.

Forecasting Our Growth

Characterization and Impact of User Behavior of OTT Services

In closing…

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