City Services Benchmarking:

Public Transportation

CITY & COUNTY OF SAN FRANCISCO

Office of the Controller

City Services Auditor

Peg Stevenson | Joe Lapka

06.03.2014

Performance Measurement Mandate

Appendix F, Section 101 of the City Charter

The Controller shall…

- Monitor the level and effectiveness of services provided to the people of San Francisco,
- Review performance and cost benchmarks, and
- Conduct comparisons of the cost and performance of City government with other cities, counties, and public agencies that perform similar functions

Prescribed Service Areas (areas covered by previous benchmarking reports)

Condition of urban environment	**Transportation**	Human resources
Public health & human services	**Criminal justice**	**City management**
Parks, cultural & recreational facilities	Fire and paramedic services	Public works

March 2014 Benchmarking Report – Public Transportation

Purpose

Compare the cost and performance of directly-operated light rail, bus, and trolleybus service provided by SFMTA with similar services in metropolitan areas

Peer Selection Methodology

- Followed methodology outlined in Transit Cooperative Research Program Report 141 – *A Methodology for Performance Measurement and Peer Comparison in the Public Transportation Industry*
  - Designed to provide a robust, practical, and transparent process for selecting peer agencies based on uniformly defined and readily available data
  - Underwent multiple rounds of review and testing by numerous transit agencies, regional transportation authorities, and state departments of transportation

Peer Screening and Grouping Factors

Screening Factors

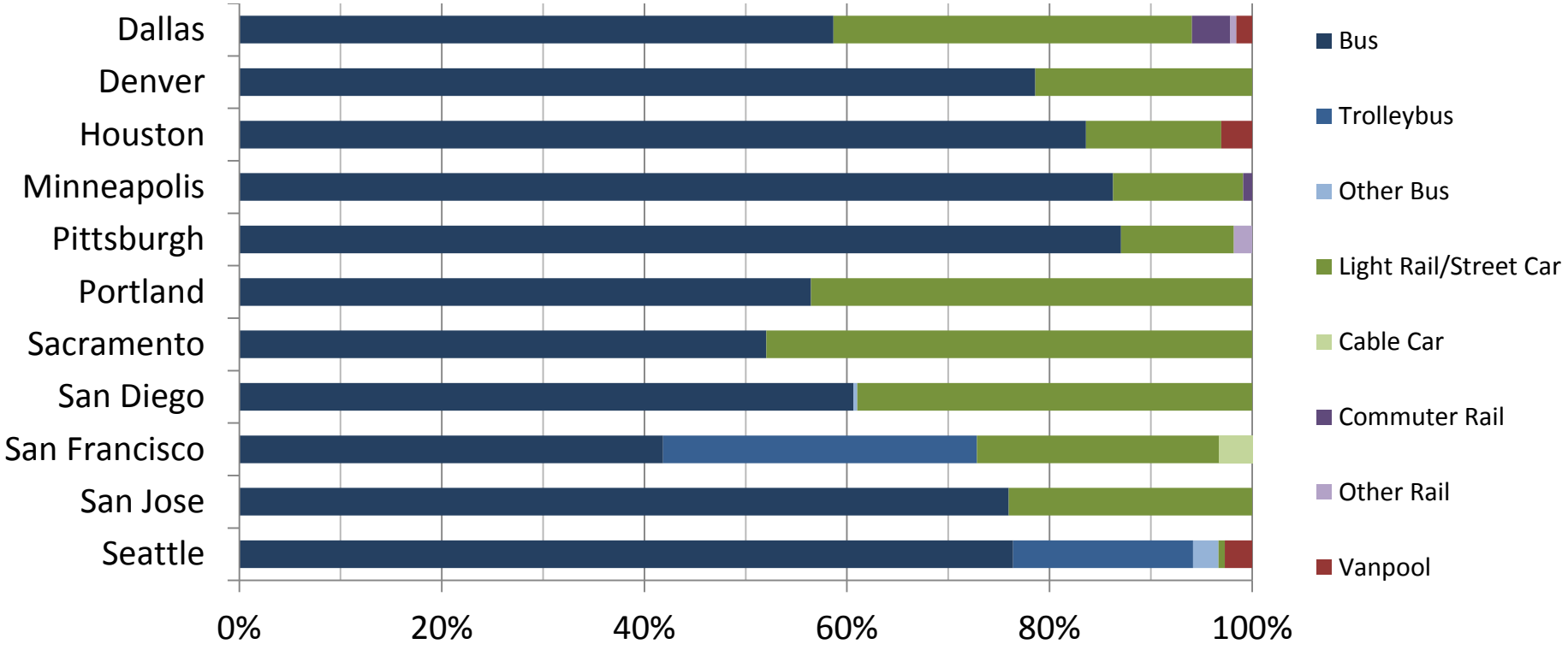
- Rail operator (yes/no)
- Rail operator only (yes/no)
- Heavy-rail operator (yes/no)

Peer-grouping Factors

- Urban area population
- Total annual vehicle miles operated
- Annual operating budget
- Population density
- Service area type
- State capital (yes/no)
- Percent college students
- Population growth rate
- Percent low-income population
- Annual roadway delay per traveler
- Freeway lane miles per capita
- Percent service demand-responsive
- Percent service purchased
- Distance from target agency

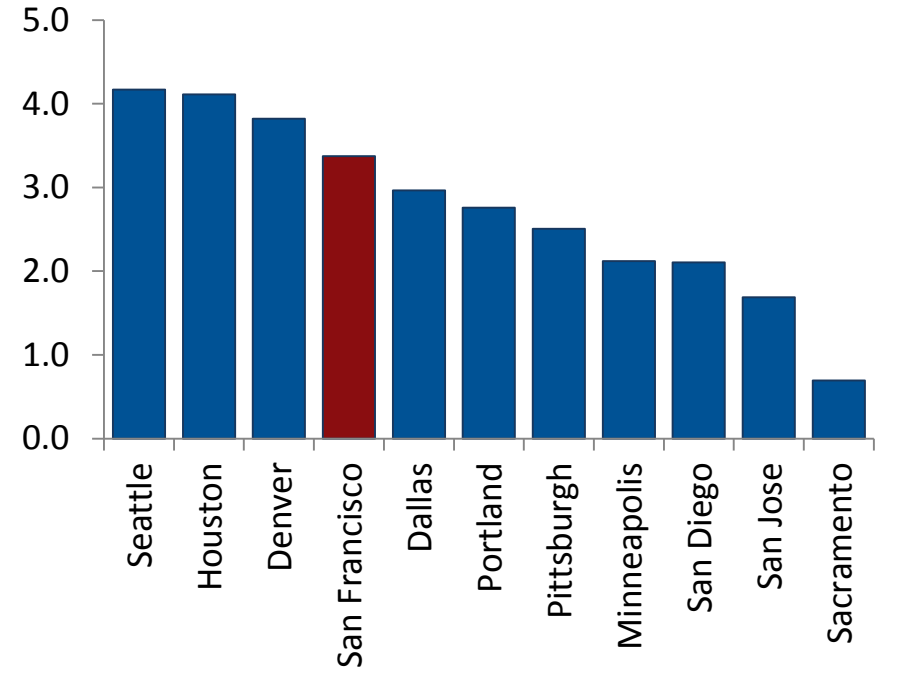
Peer Group Characteristics

Percentage of Passenger Trips Carried by Mode of Transportation

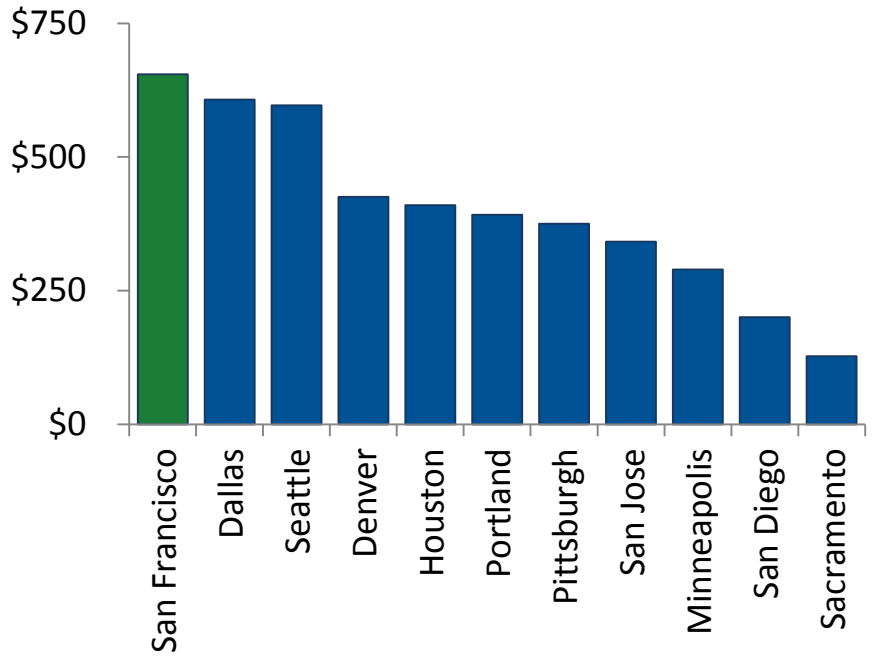


Peer Group Characteristics

Annual System Wide Revenue Hours (millions)



System Wide Operating Expenditures (millions)



Performance Measures Utilized

Cost-efficiency

- Operating costs per revenue hour
- Operating costs per revenue mile

Cost-effectiveness

- Operating costs per boarding
- Farebox recovery ratio
- Subsidy per boarding

Productivity

- Boardings per revenue mile
- Boardings per FTE

Resource Utilization

- Revenue hours per FTE
- Avg. in-use energy efficiency & fuel economy

Transit Investment

- Average fleet age

Maintenance Administration

- Total maintenance expenditures
- Maintenance expenses per revenue mile
- Revenue miles between vehicle failures

Service Quality

- Average system speed
- Route miles per square mile of service area
- Avg. # of vehicles in operation during weekday midday service

Service Utilization

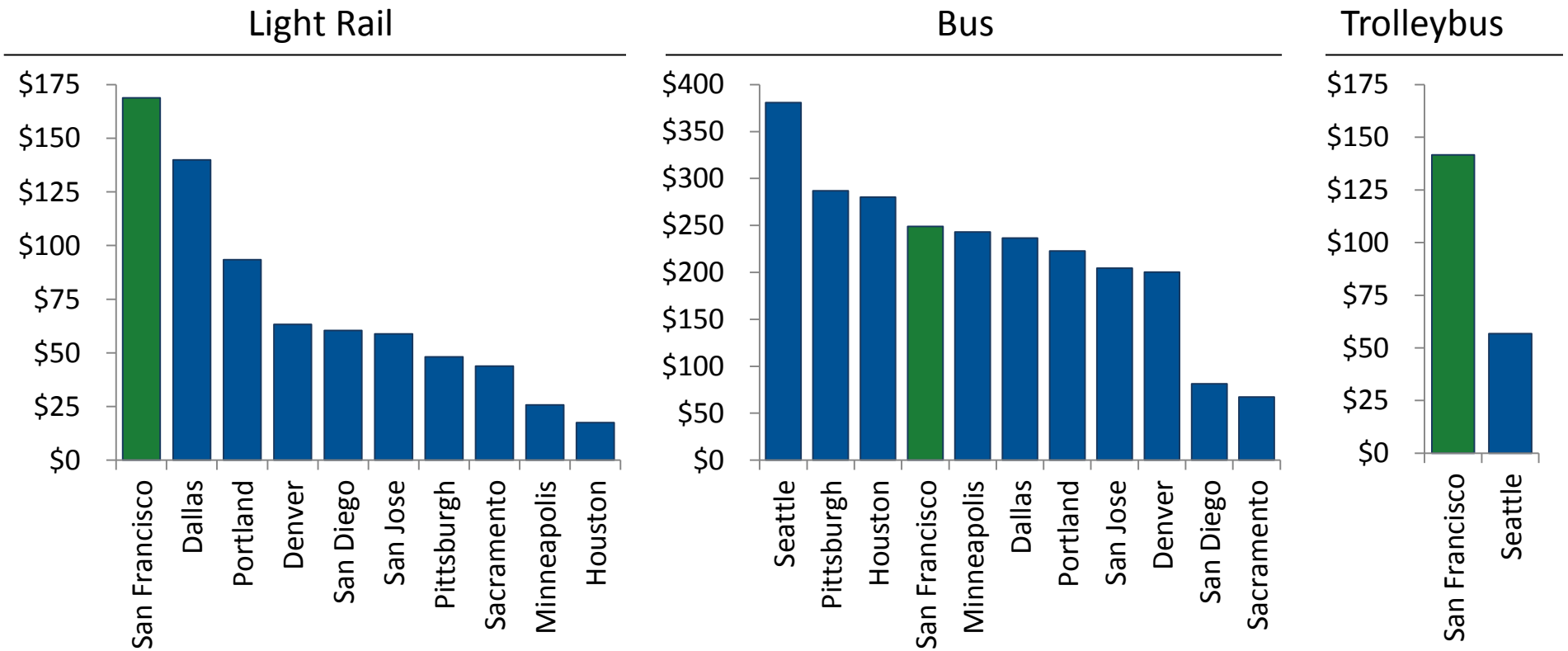
- Number of boardings

Other Measures

- Fares
- Total operating costs
- Boardings per capita

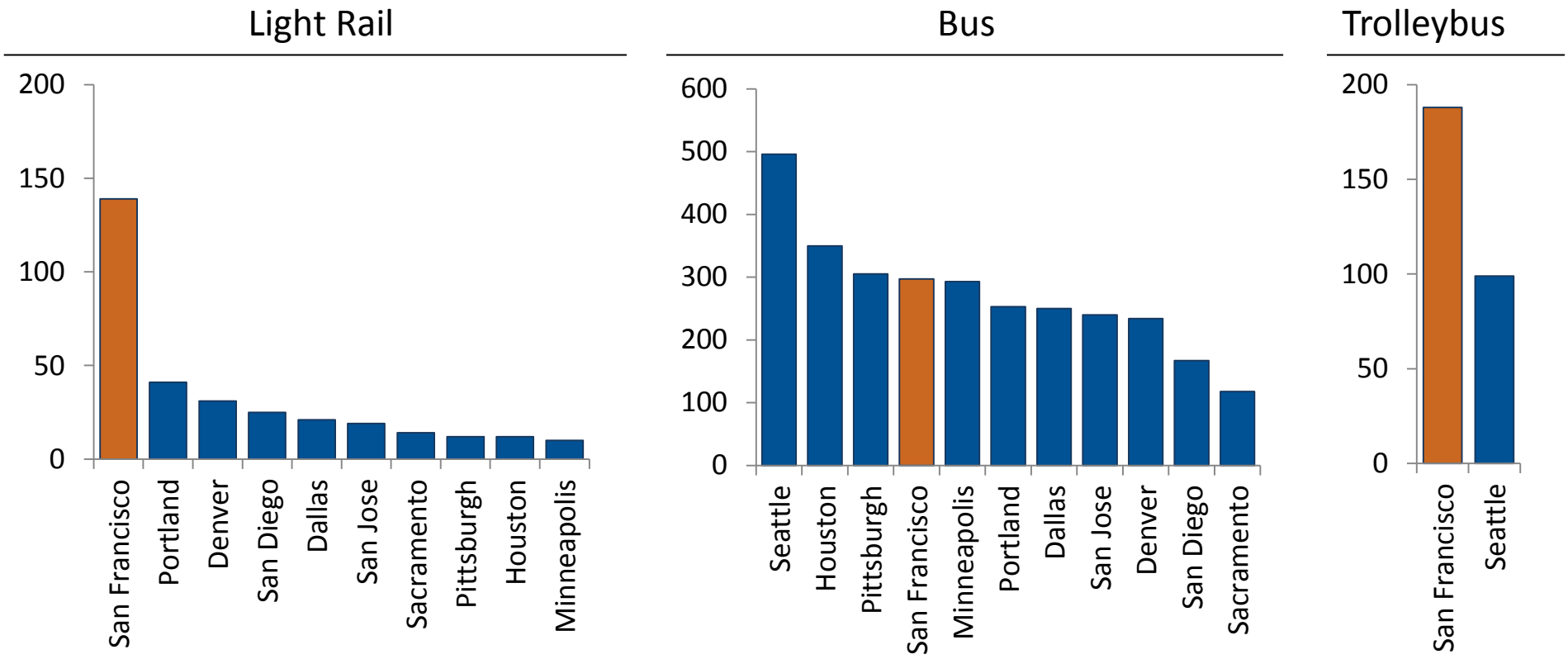
Operating Costs by Mode of Transportation

in millions of dollars



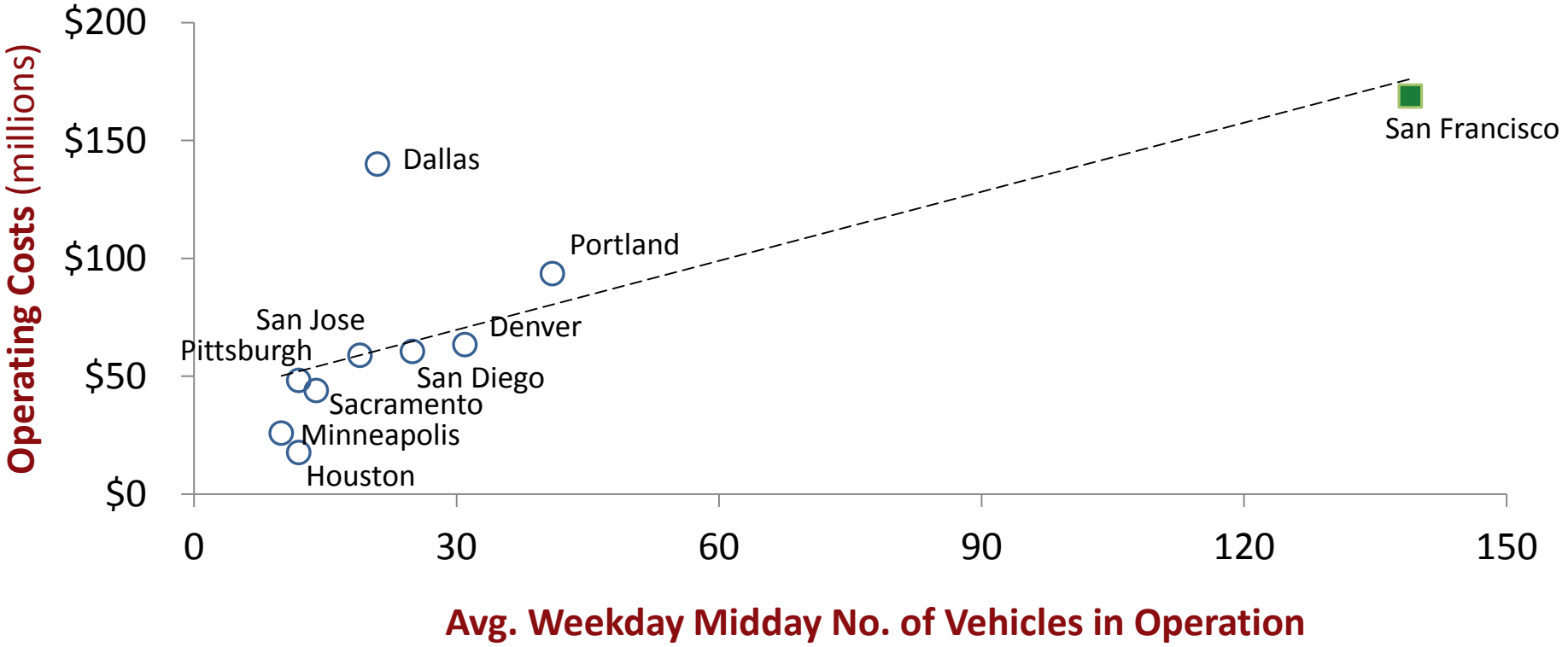
Differences among light rail systems may partially account for the wide variation in operating costs across agencies

Avg. Number of Vehicles in Operation in Weekday Midday Service



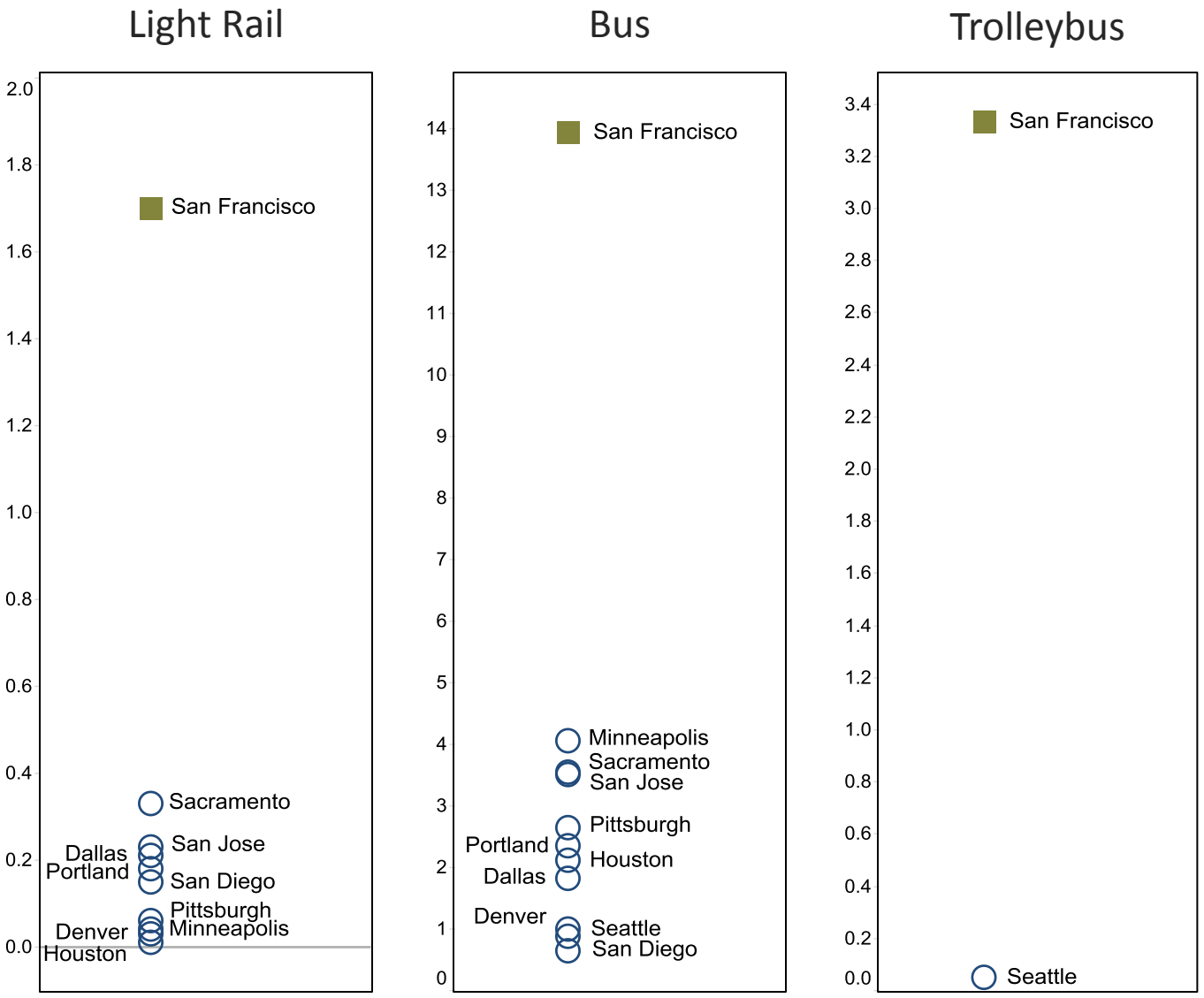
During non-commute hours on a typical weekday, the SFMTA operates between 3 and 14 times the number of light rail vehicles than its peers, and it operates nearly double the number of trolleybuses

Operating Costs vs. Vehicles in Operation



The data demonstrate a clear tend of increasing costs with an increase in the number of vehicles in operation

Route Miles Per Square Mile of Service Area



The number of route miles per square mile of service area reflects the overall availability of transit service

The SFMTA stands apart from its peers in the amount of coverage it provides

The SFMTA's dense transit network serves many neighborhoods that would otherwise be inaccessible due to a hilly topography

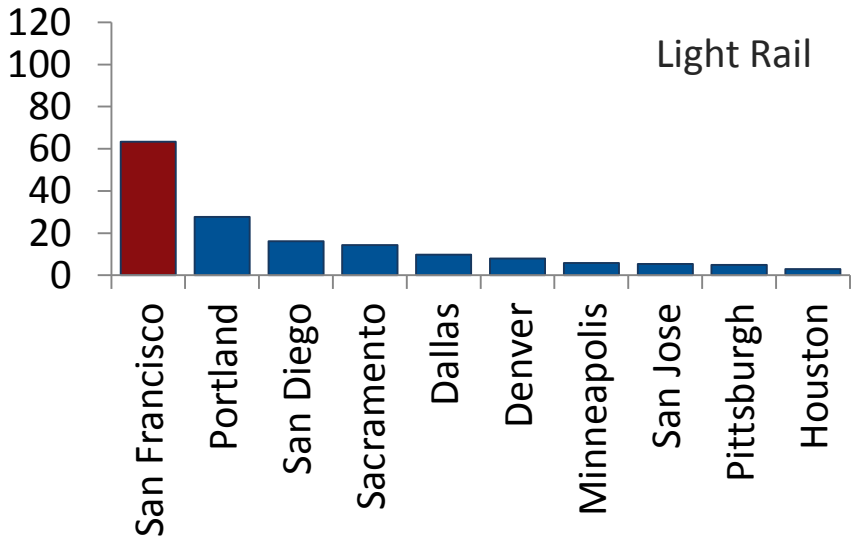
Bus Fares During Peak Periods of Operation

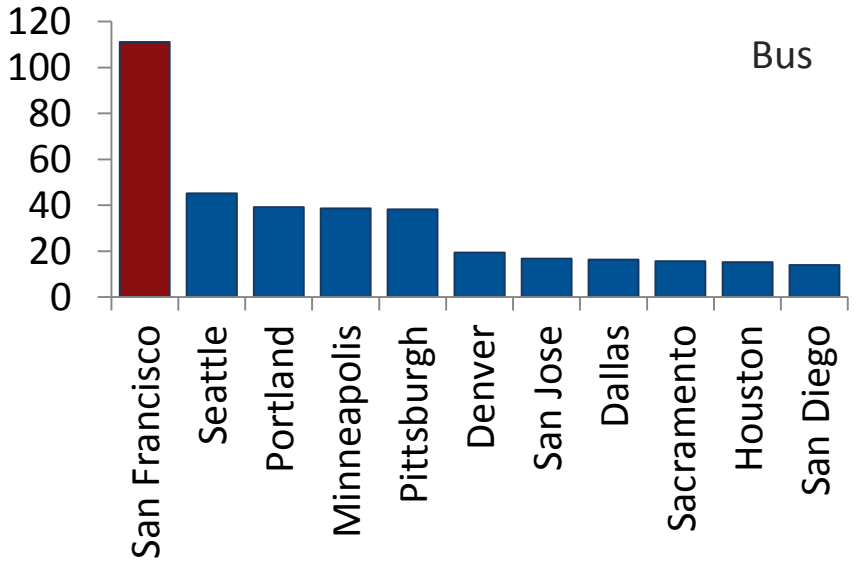
A review of published transit fares reveals that fares in San Francisco are equal to or lower than those in virtually all of the peer cities

Agency	Full Fare	Reduced Fares			
		Youth	Seniors	Persons w/ Disabilities	Medicare Card Holders
Pittsburgh[1]	$3.25	$1.60	$0.00	$1.25	NA
Dallas	$2.50	$1.25	$1.25	$1.25	$1.25
Portland	$2.50	$1.65	$1.00	$1.00	$1.00
Sacramento	$2.50	$1.25	$1.25	$1.25	$1.25
Seattle	$2.50	$1.25	$0.75	$0.75	$0.75
Denver	$2.25	$1.10	$1.10	$1.10	$1.10
San Diego	$2.25	NA	$1.10	$1.10	$1.10
Minneapolis	$2.25	$2.25	$2.25	$0.75	$2.25
San Francisco	$2.00	$0.75	$0.75	$0.75	$0.75
San Jose	$2.00	$1.75	$1.00	$1.00	NA
Houston[1]	$1.25	$0.60	$0.60	$0.60	$0.60

Note: 1. Fares are distance based – values shown here are representative only.

Boardings Per Capita

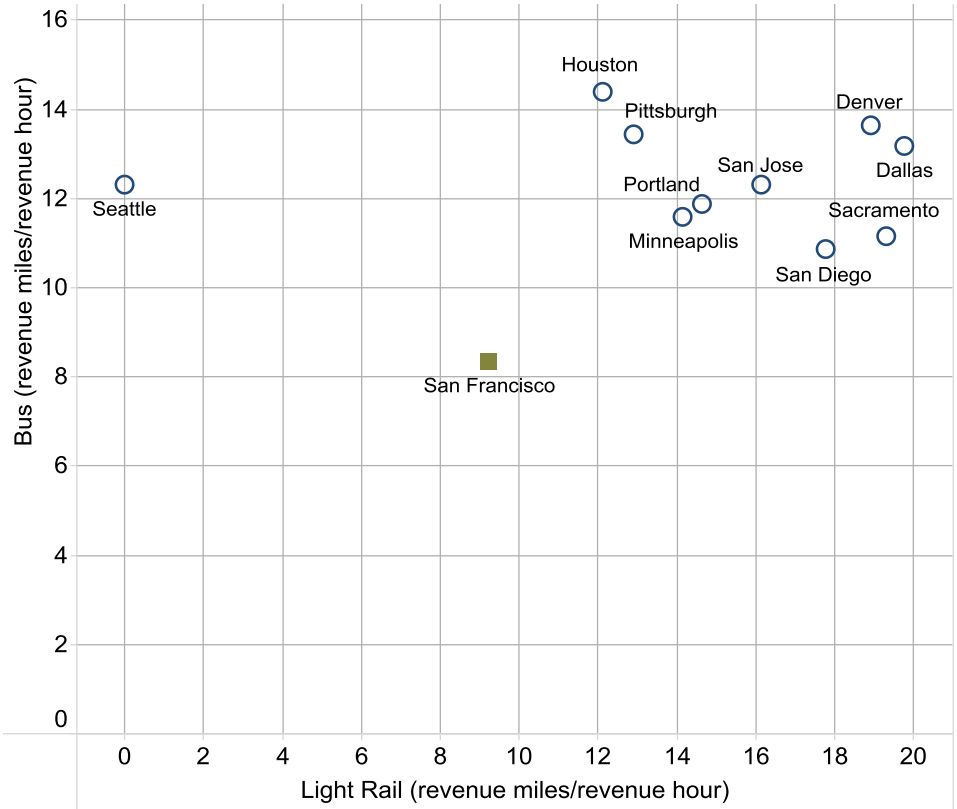




With 100% of the City's residential areas within a quarter mile of a bus stop and comparatively lower fares, Muni is an attractive choice for transportation

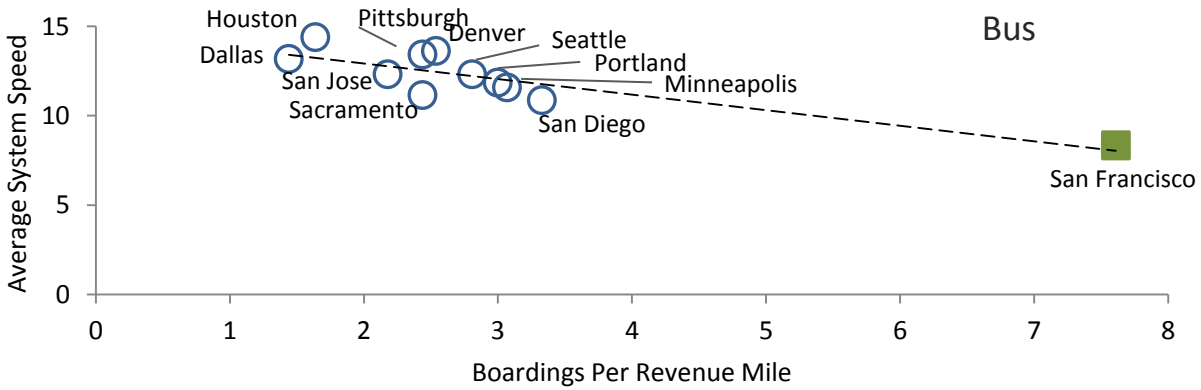
The more than 1,000 vehicles in the SFMTA's fleet support an average of 700,000 boardings each weekday

Average System Speed



The amount of time a bus takes to traverse its route is influenced by the number of passengers that are served

Each time the bus stops to board or alight passengers, it experiences a delay, which reduces the average speed of the bus. This effect likely contributes to the SFMTA's lower average speeds



The data show a high correlation between the number of boardings per revenue mile and average bus speed

Vehicle Failures Defined

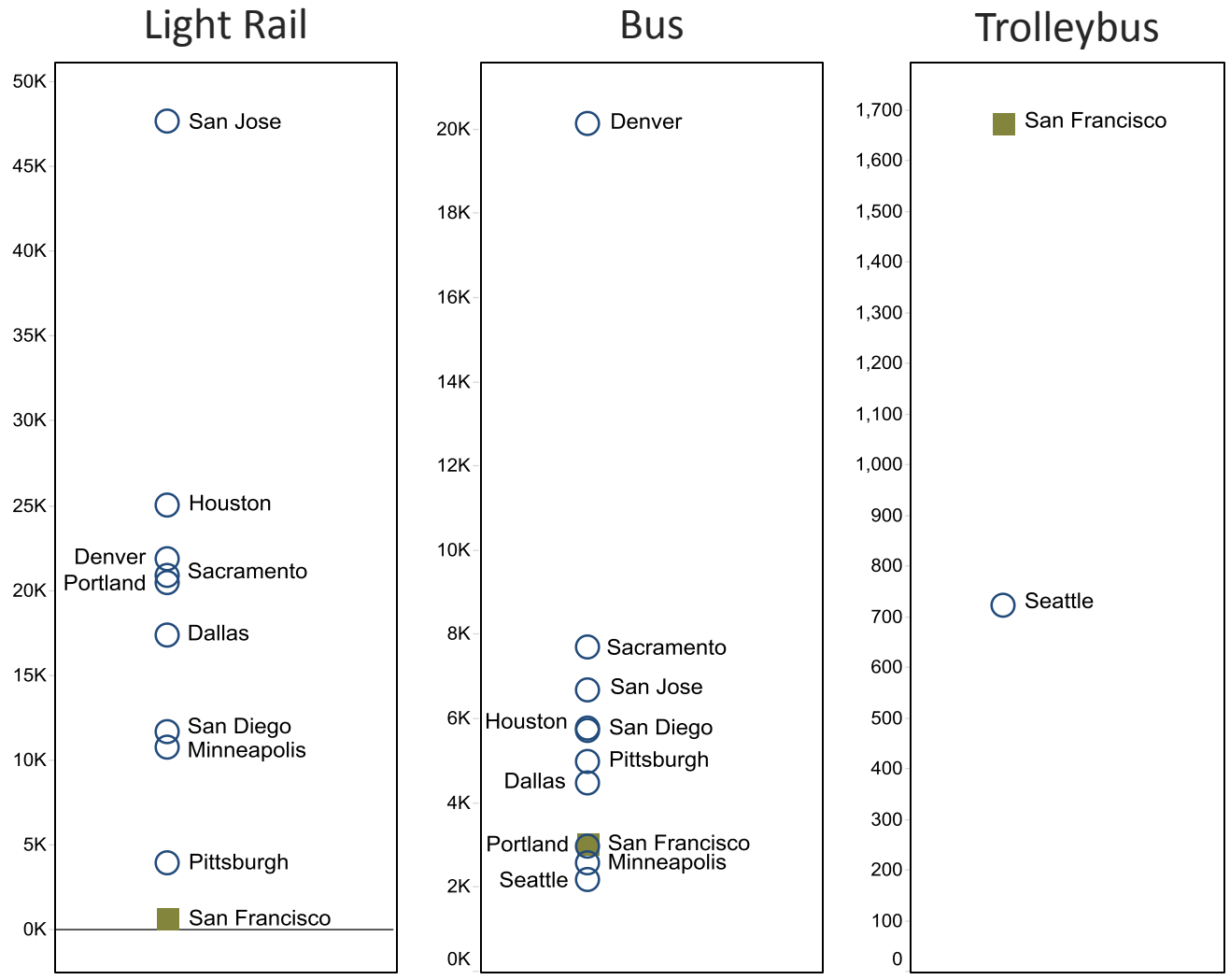
Major Mechanical System Failure

A failure of some mechanical element of the revenue vehicle that prevents the vehicle from completing a scheduled revenue trip or from starting the next scheduled revenue trip because actual movement is limited or because of safety concerns

Minor/Other Mechanical System Failures

A failure of some other mechanical element of the revenue vehicle that, because of local agency policy, prevents the revenue vehicle from completing a scheduled revenue trip or from starting the next scheduled revenue trip even though the vehicle is physically able to continue in revenue service

Revenue Miles Between Total Vehicle Failures



A “vehicle failure” is considered to be a “breakdown of **either** a **major or minor** element of the…vehicle's mechanical system.”

This measure is often used as a general indicator of delays that arise due to equipment problems.

Compared to its peers, the SFMTA experiences a higher frequency of light rail vehicle and bus failures.

Light Rail Vehicle Failures by Failure Type (2011)

Location	Major Mechanical Failures	Minor/Other Mechanical Failures	Revenue Miles	Revenue Miles Between Major Failures ↑	Revenue Miles Between Total Failures
San Francisco	**2,329**	**7,136**	5,838,027	**2,507**	**617**
Pittsburgh	184	282	1,828,316	9,937	3,923
Minneapolis	104	87	2,054,607	19,756	10,757
Dallas	235	162	6,897,909	29,353	17,375
Portland	266	116	7,808,150	29,354	20,440
Sacramento	98	79	3,696,693	37,721	20,885
San Jose	55	7	2,953,079	53,692	47,630
Denver	**92**	**295**	8,455,301	**91,905**	21,848
Houston	**8**	**28**	901,218	**112,652**	25,034
San Diego	**23**	**623**	7,518,512	**326,892**	11,639

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