The **APA Sustainable Communities Division supports planners** who are committed to planning for **sustainable communities** by **integrating all aspects of sustainability** into our work through the combined **economic, social, and ecological factors** that shape our communities.

SUSTAINABLE COMMUNITIES DIVISION

APA

Sustain

Thanks to our 2015-2016 Sustainable Communities Division Sponsors!

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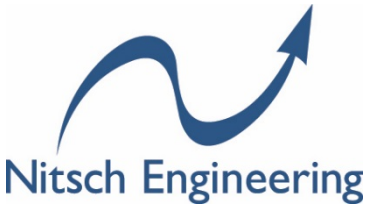
- ICLEI
- Lehigh Valley Planning Commission
- mySidewalk by MindMixer
- Nitsch Engineering
- USGBC
- VHB
- WRT
- Clarion
- Teska



Division Contact Information

- **Website:** planning.org/divisions/sustainable
- **Blog** (sign up for e-bulletin): www.sustainableplanning.net
- **LinkedIn:** APA Sustainable Communities Division
- **Facebook/Twitter:** APASCD
- **Scott Turner, Division Chair:** APASCD@gmail.com

SUSTAINABLE COMMUNITIES DIVISION

APA

Sustain

Today

Smart Cities and Decision-Making: The Art of Building a Better Haystack with Data

- **Rob Kerns, AICP** - Development Division Chief, City of Alexandria (and former Chair of SCD)
- **Nick Bowden** - Chief Engagement Officer, mySidewalk by MindMixer
- **Fred Merrill, FAICP** - Principal, Sasaki
- **Ken Goulding** - Principal, Sasaki

SUSTAINABLE COMMUNITIES DIVISION

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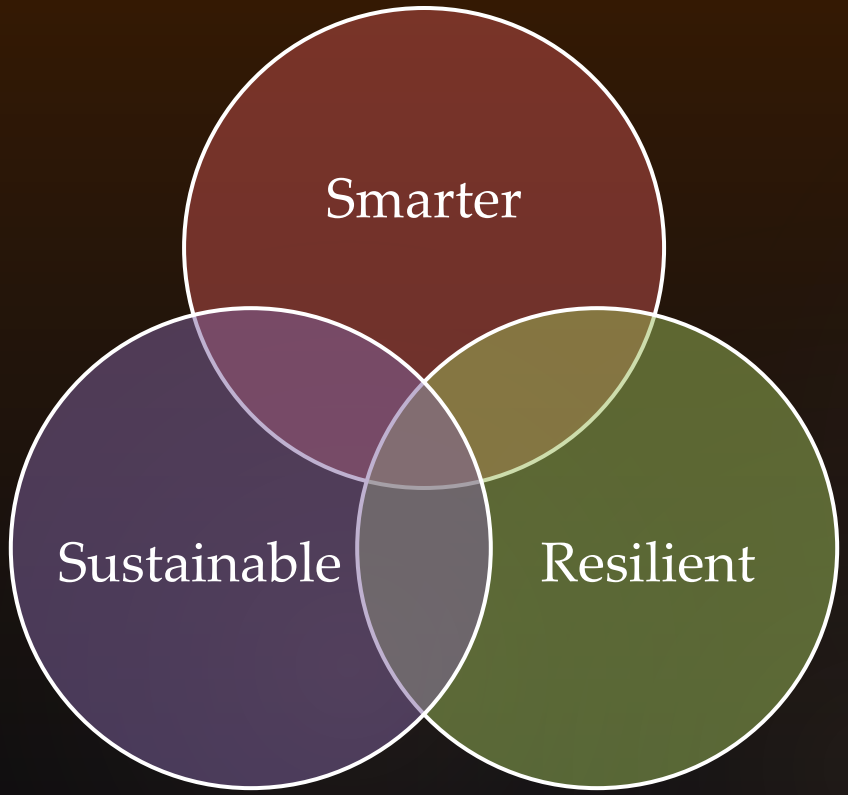
Smart Cities & Sustainability

America Planning Association – Task Force



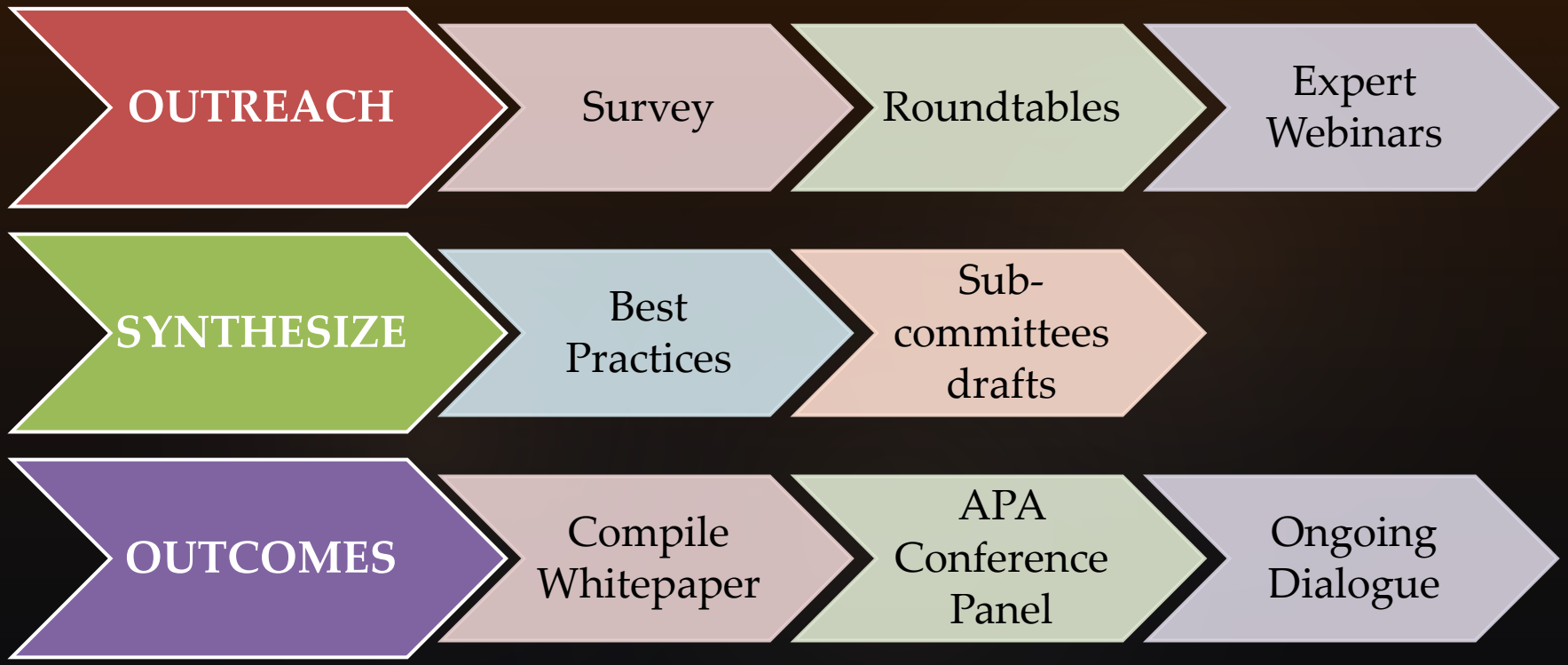
Mission:

Focus on sustainability by addressing recent advances in technology and innovation to cultivate cities which are smarter, more resilient, and sustainable.

Smart Cities and Sustainability Task Force

Goals

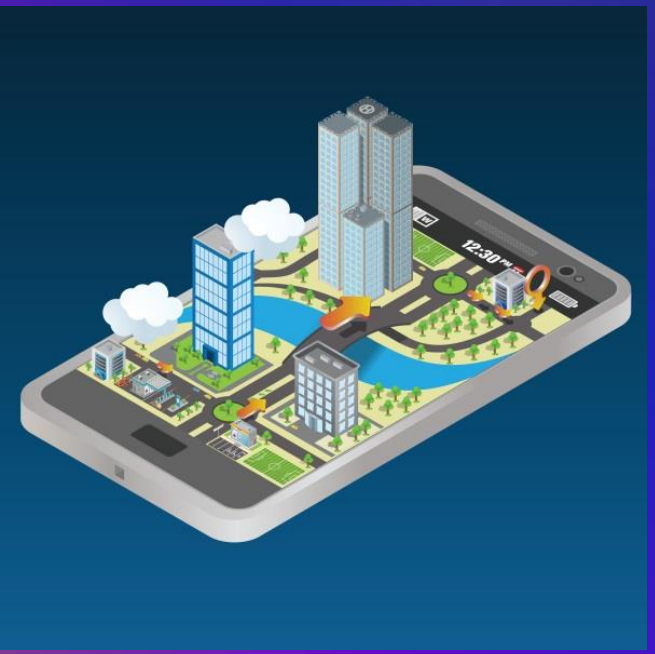
- Anticipate and prepare planners for trends and emerging issues.
- Generate the big ideas to advance in our communities.
- Educate through documentation of best practices and increase the use of smart city innovations by planners, citizens and elected officials.



Task Force Work Plan

SmartCitiesCouncil

LIVABILITY
WORKABILITY
SUSTAINABILITY



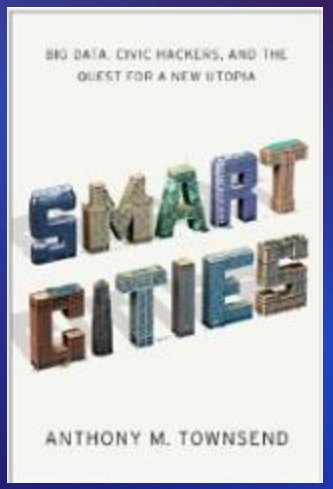
DEFINITION

Digital technology and intelligent design = smart, sustainable cities with high-quality living and high-quality jobs.

APPLICATIONS

- Smart devices and sensors embedded in its roadways, power grids, buildings and other assets provide data
- Smart communications systems with wired and wireless technologies
- Smart software to create valuable information and digitally enhanced services.

Anthony Townsend



DEFINITION

Smart cities as places where information technology is combined with infrastructure, architecture, everyday objects and even our bodies to address social, economic and environmental problems.

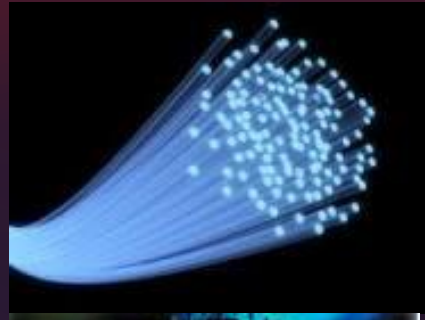
APPLICATIONS

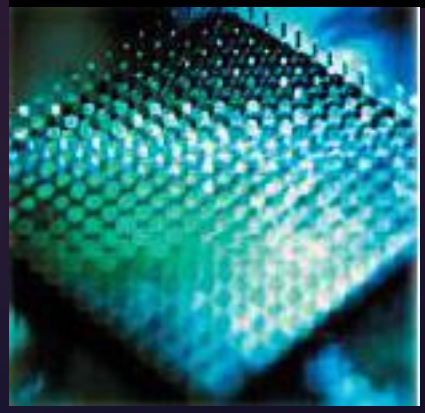
- Open-source software – Participatory governance
- Free Wi-Fi, community networks
- Web and mobile apps for city services. Big Data.

- Real time transportation data
- Smart Grid
- Crowdsourcing thru mobile apps
- Smart water meters
- Big data analysis of environmental data
- Remote monitoring of water/sewer systems

Smart City Applications

1. Supporting Infrastructure
2. Technology Applications / Big Data
3. Sustainability / Resiliency / Energy
4. Equity / Digital Divide
5. Roles / Governance/ Planners





Smart City Components

Thank You

For more info:

Robert Kerns
215-279-1653
robertkernsjr@gmail.com

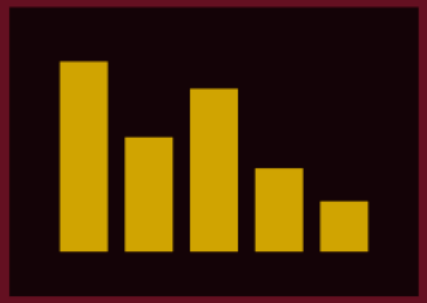
https://www.planning.org/sustainingplaces/smartcities/

https://www.planning.org/resources/ontheradar/smartcities/

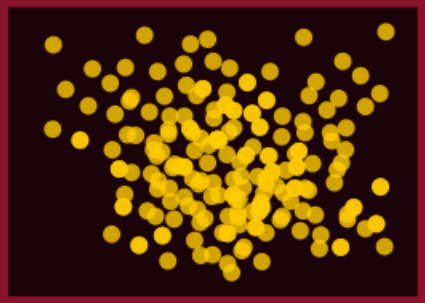
Visualization

&

Data Scales



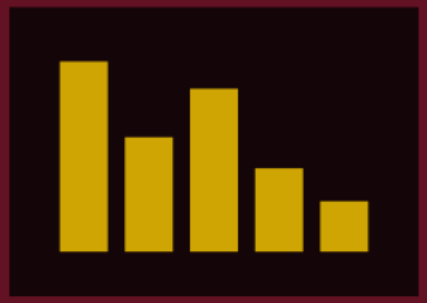
Tiny Data



Visual Data

Queryable Data

Big Data



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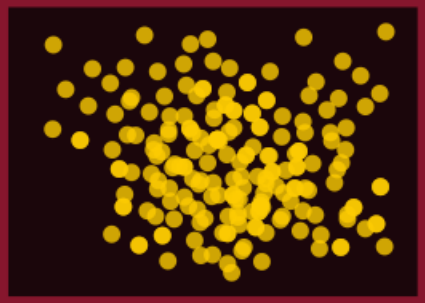


Visual Data

Queryable Data

Big Data

Ranges

As much as you can keep in your head at one time.

Not more than a few dozen

As much as can be visualized in dense display without loosing granularity.

Typically 5-10K points, but can reach 100K or more.

More than can be seen on screen.

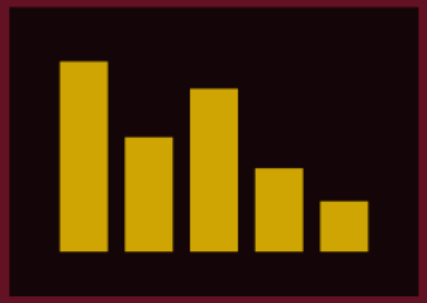
100s of thousands to millions of points.

Real-time queries possible at smaller scales

More than can be queried using standard database tools.

Scalable to billions of points.

Queries take time.



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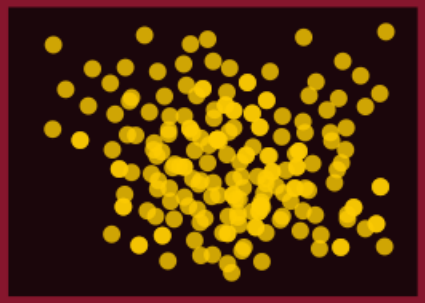


Visual Data

Queryable Data

Big Data

Tools

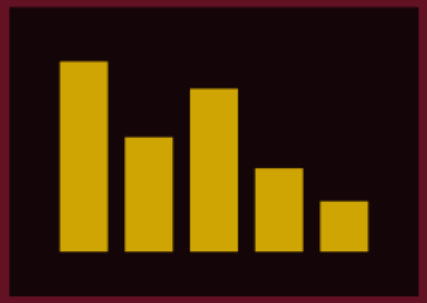
Spark

Hadoop

SQL Databases

Tableau \ Qlik

Excel



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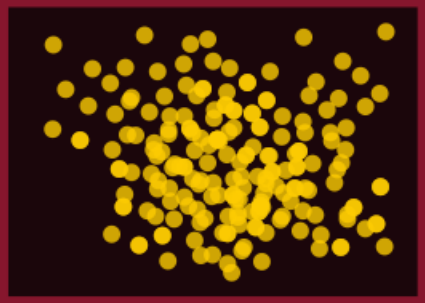


Visual Data

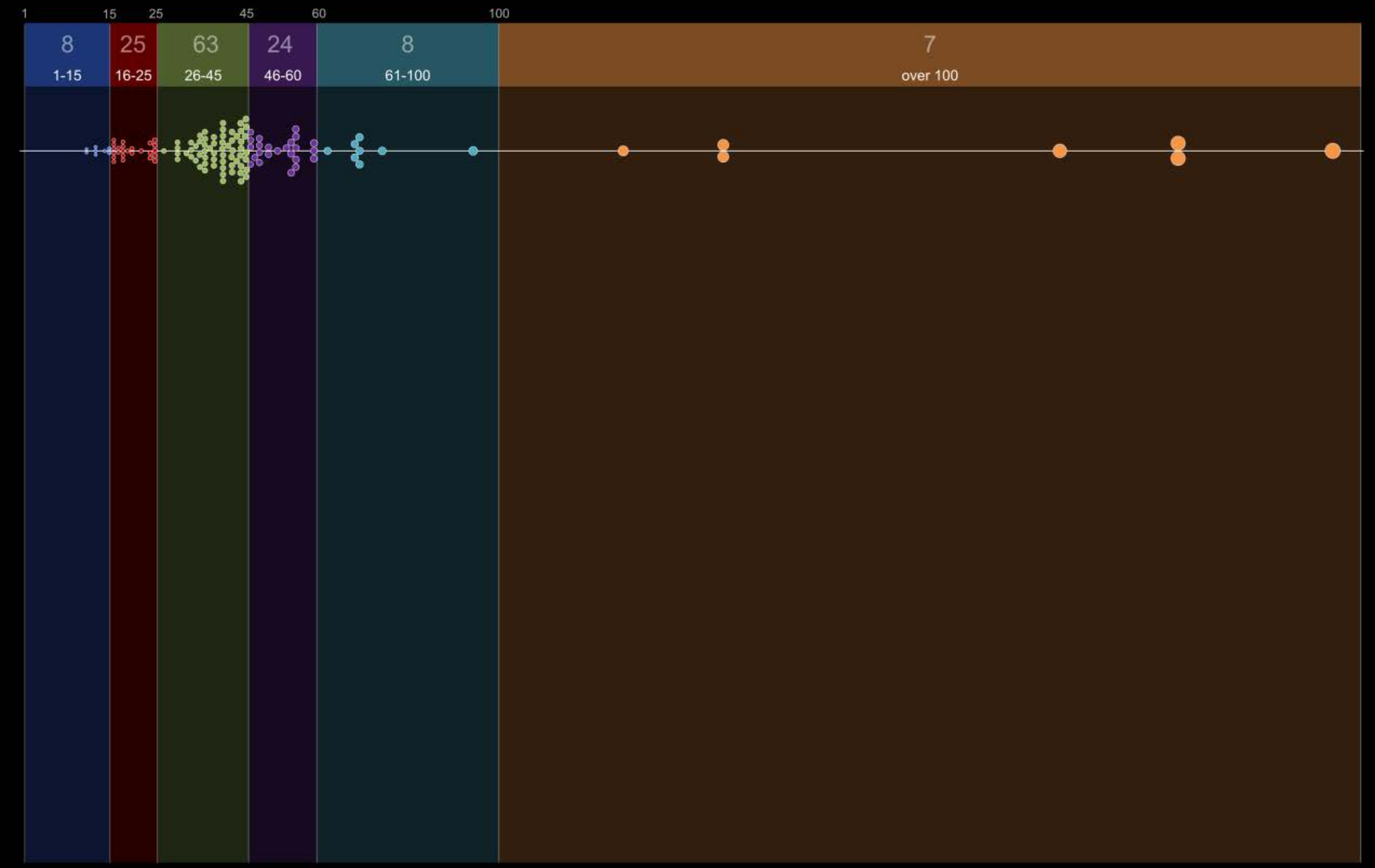
Queryable Data

Big Data

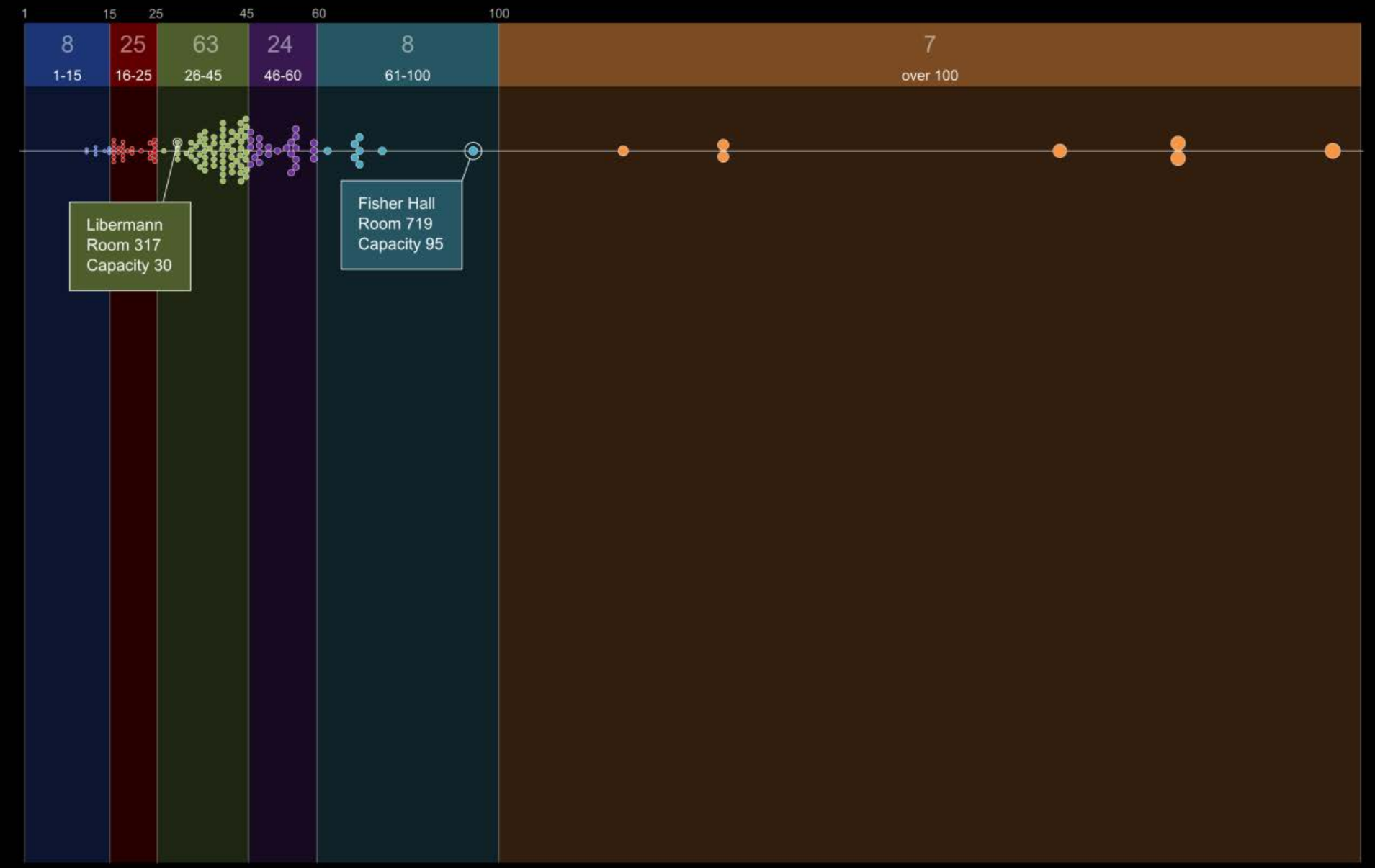
Tools

- D3
- Processing
- Gephi
- WebGL
- Mapping \ GIS

Duquesne Classrooms

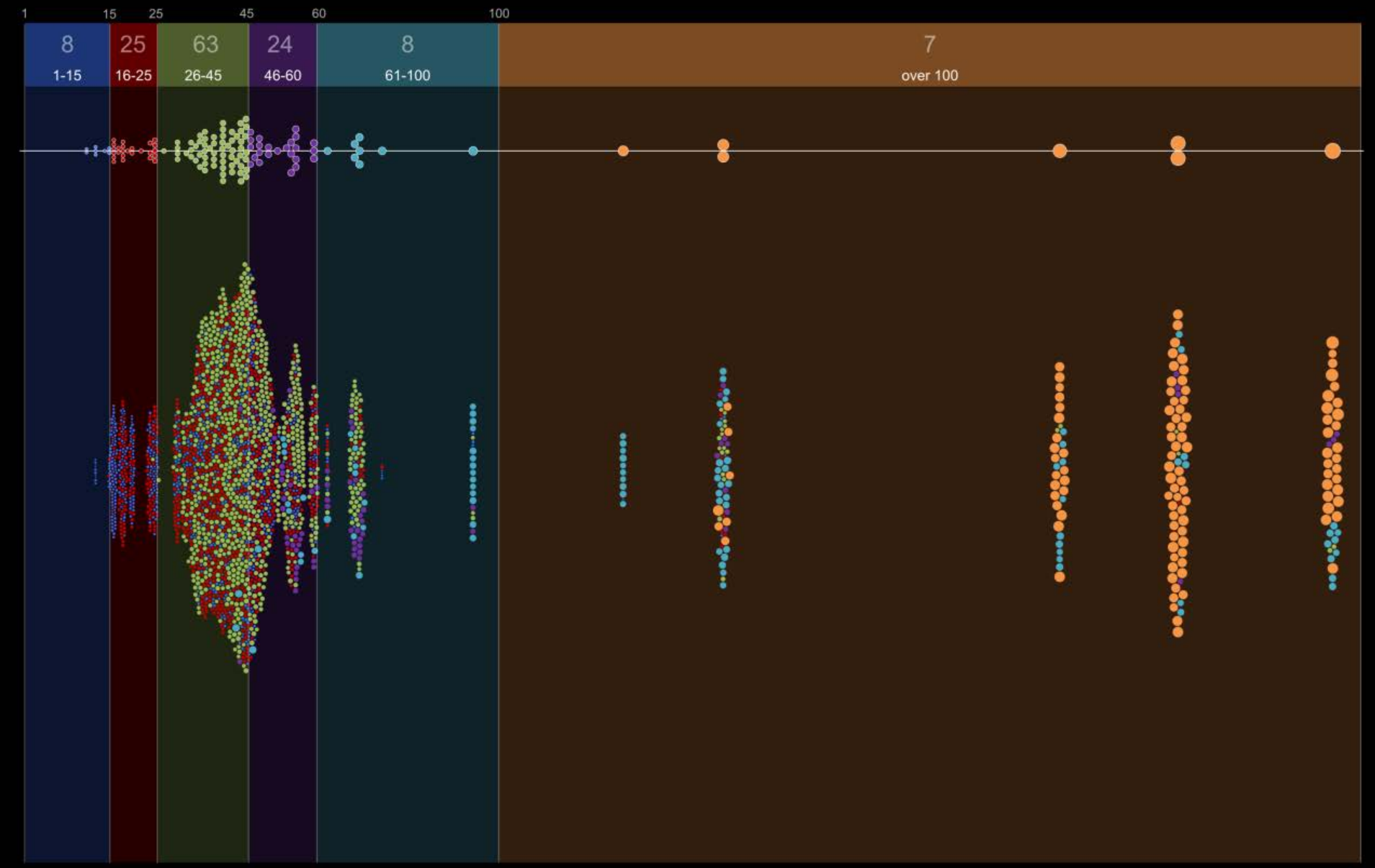


Duquesne Classrooms



Duquesne Classrooms

2,832 points



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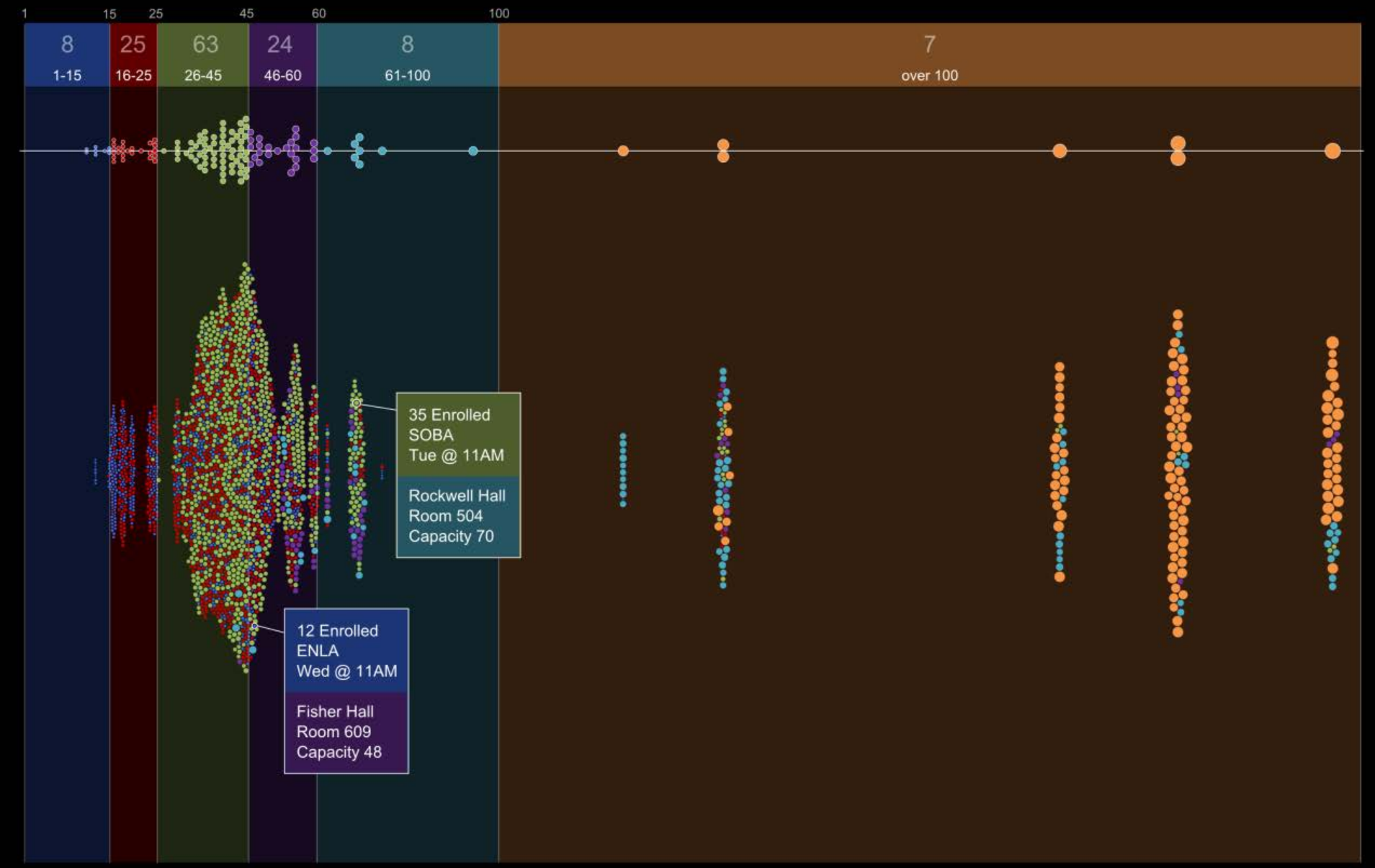

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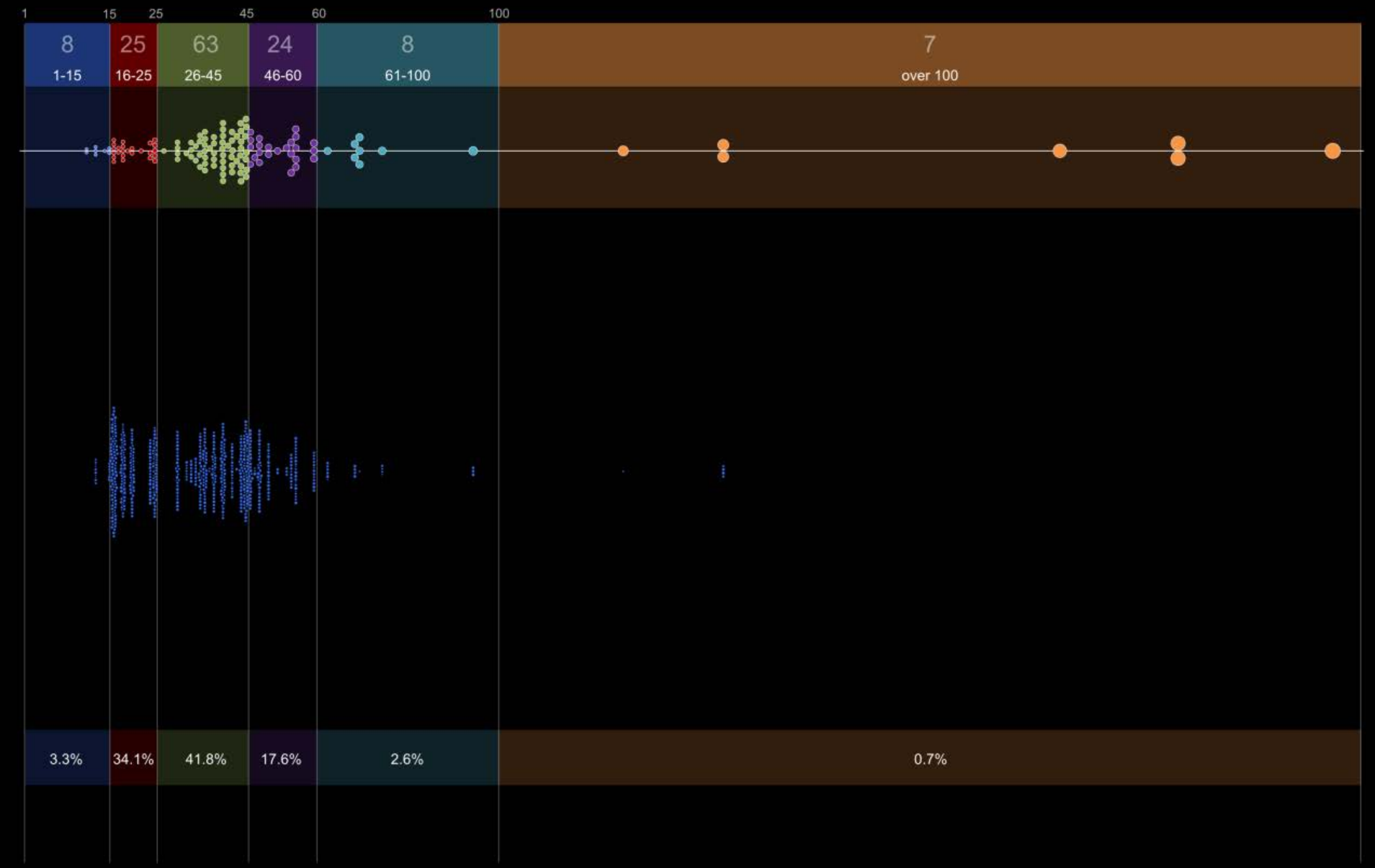

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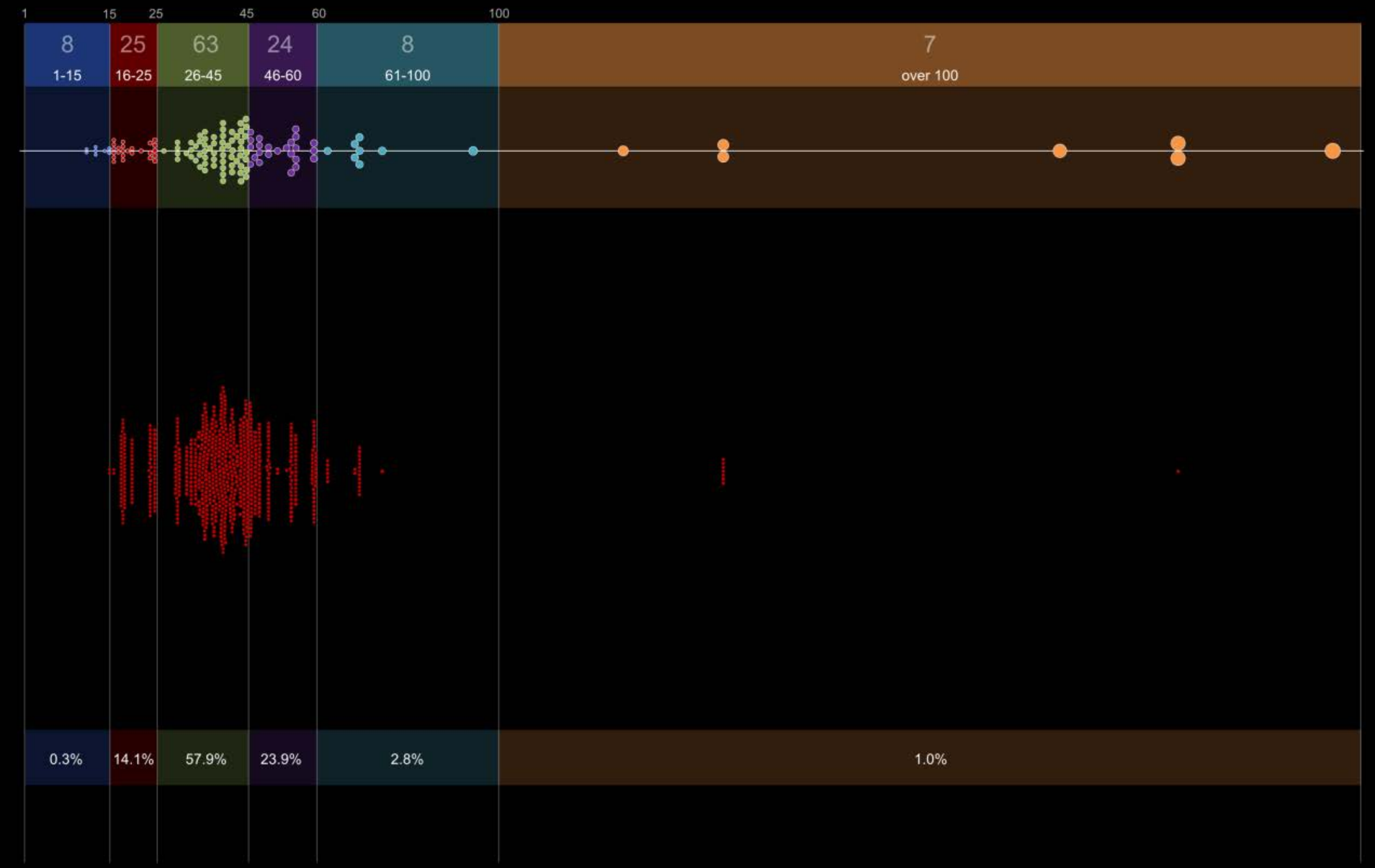

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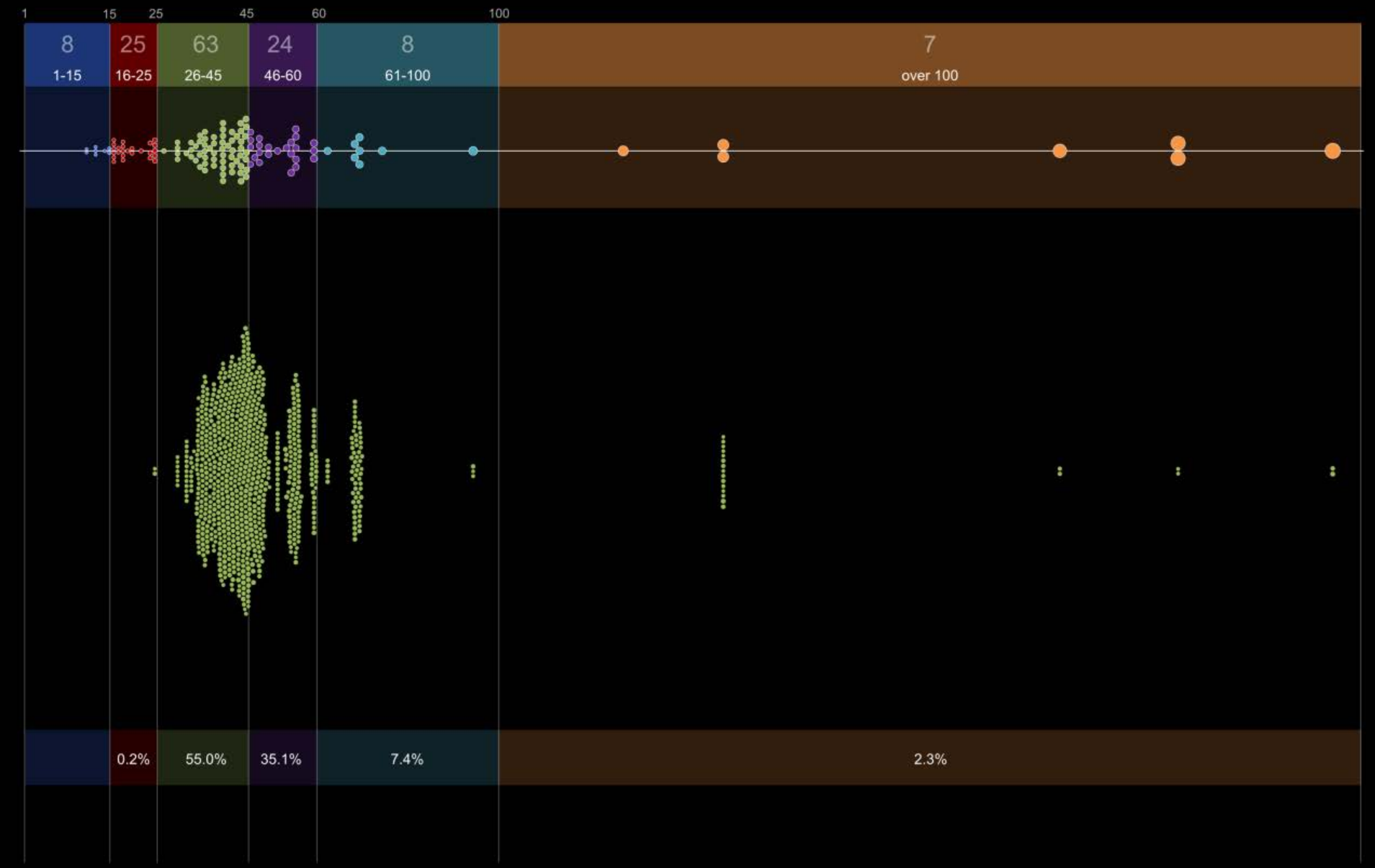

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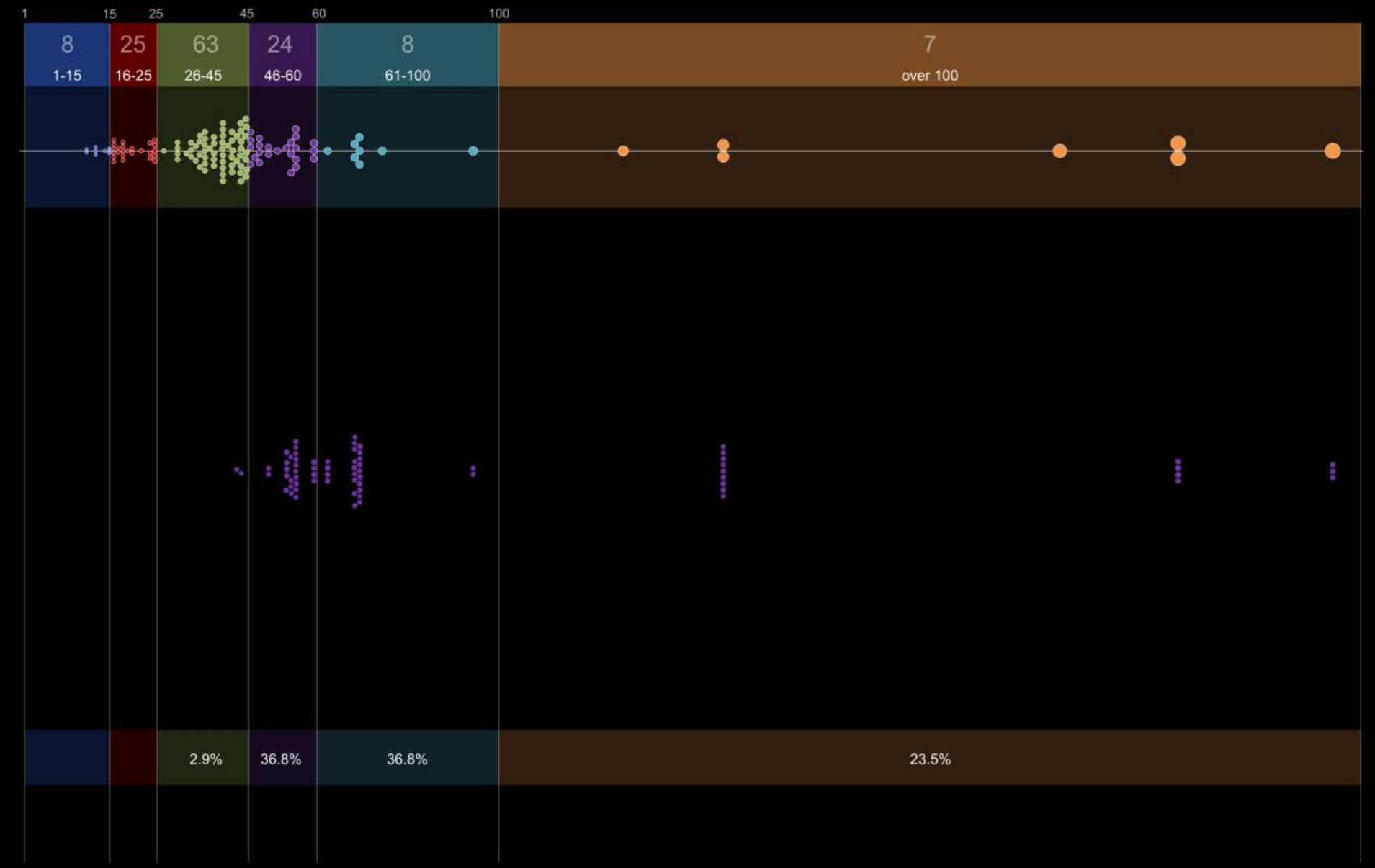

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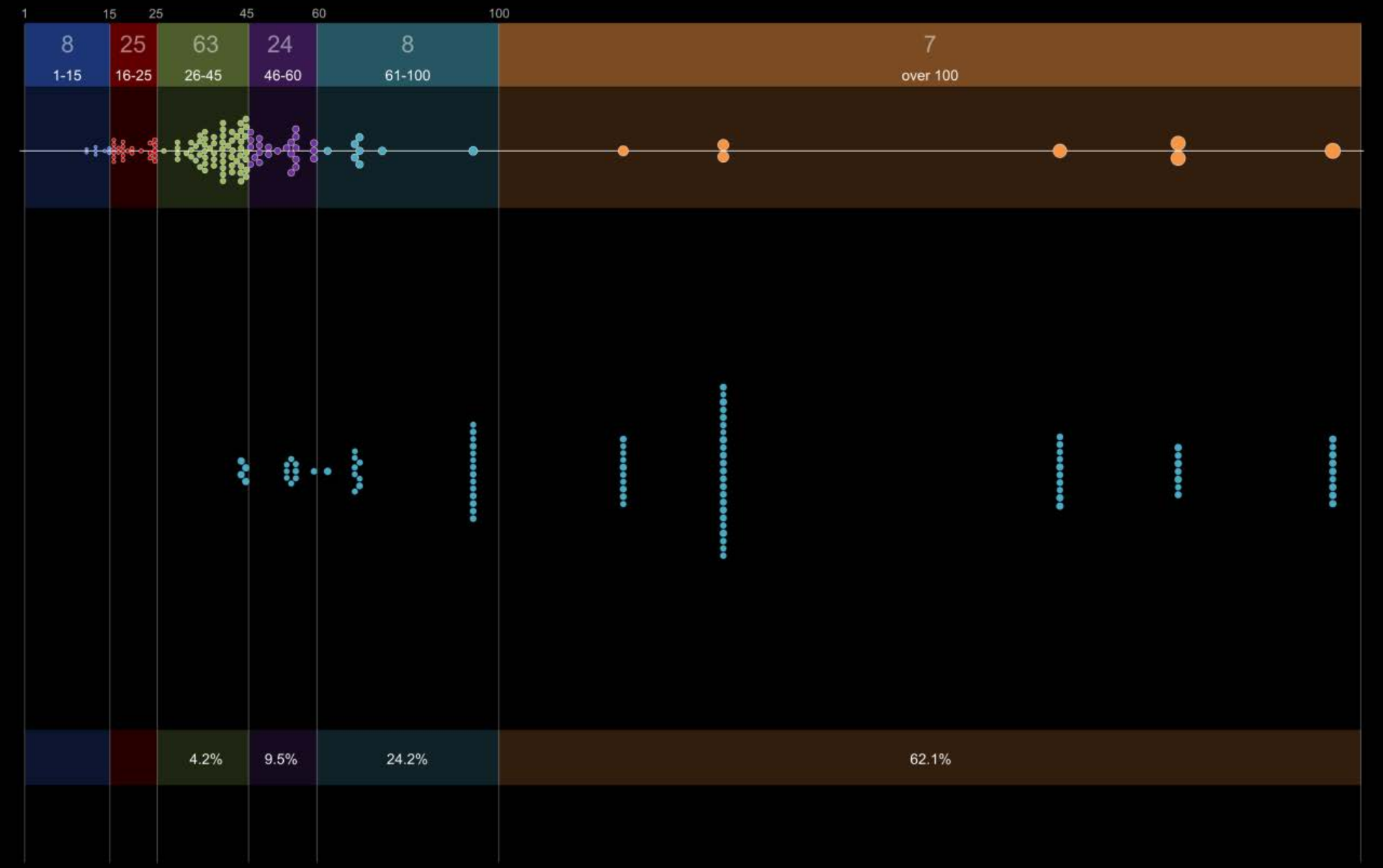

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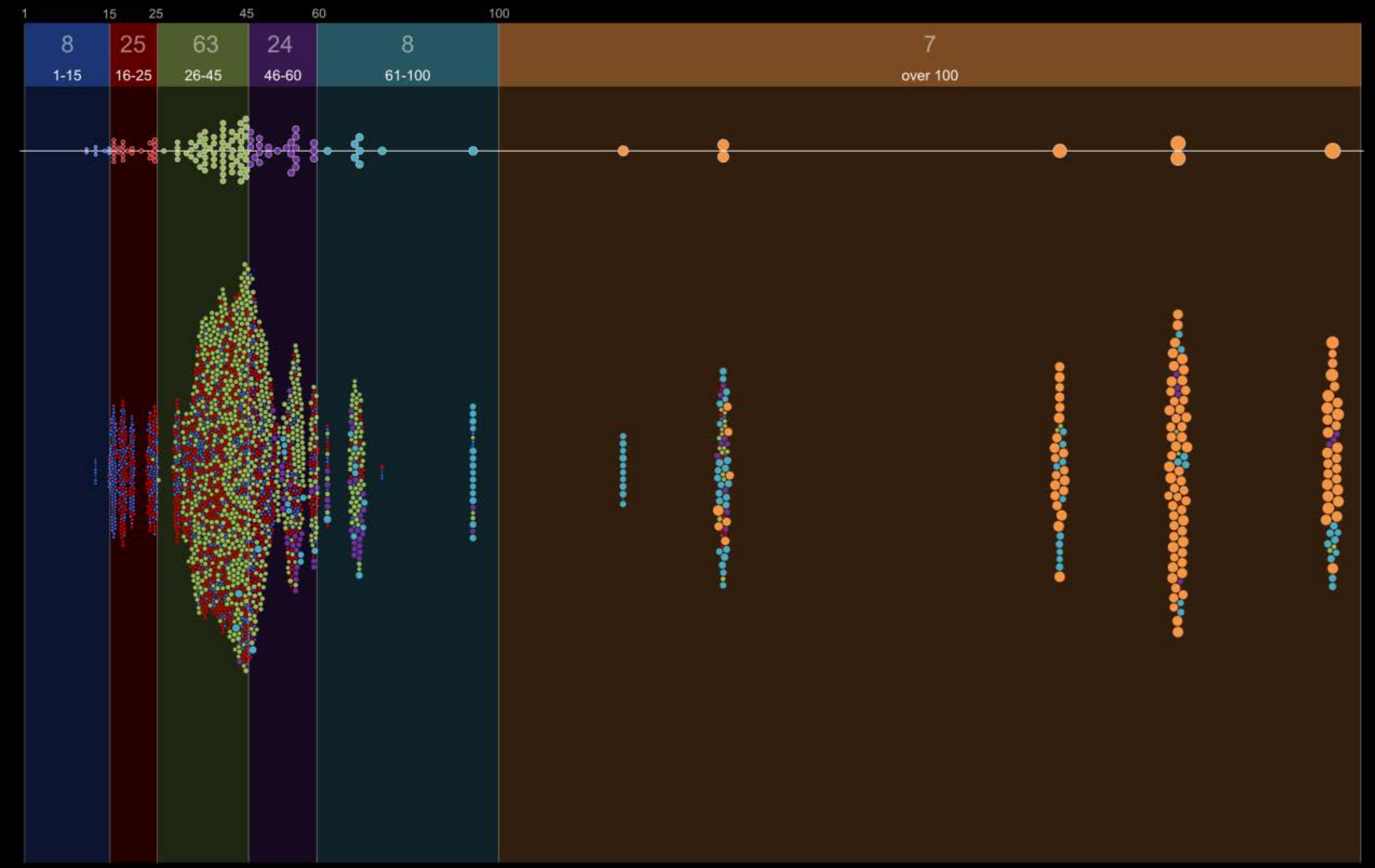

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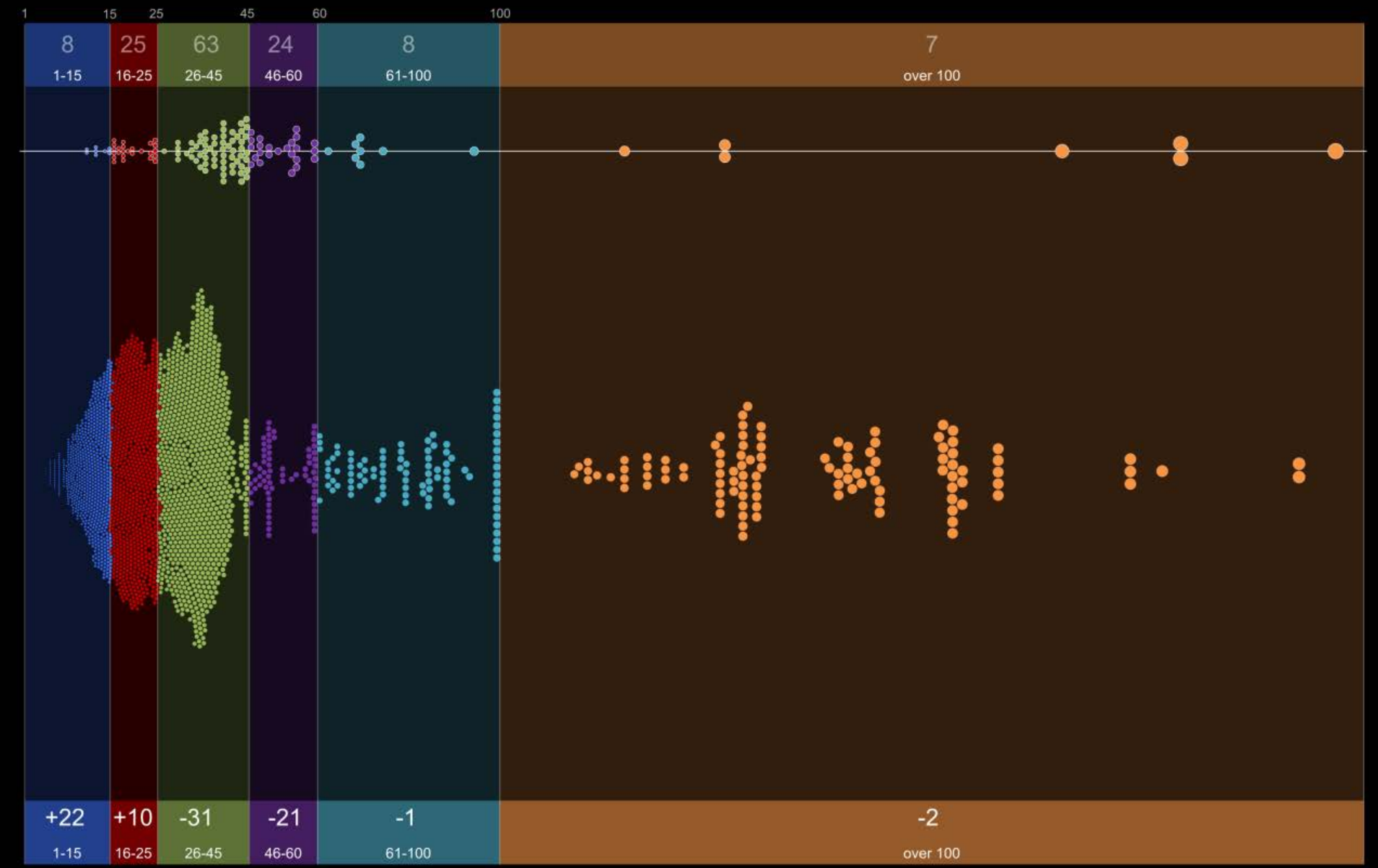
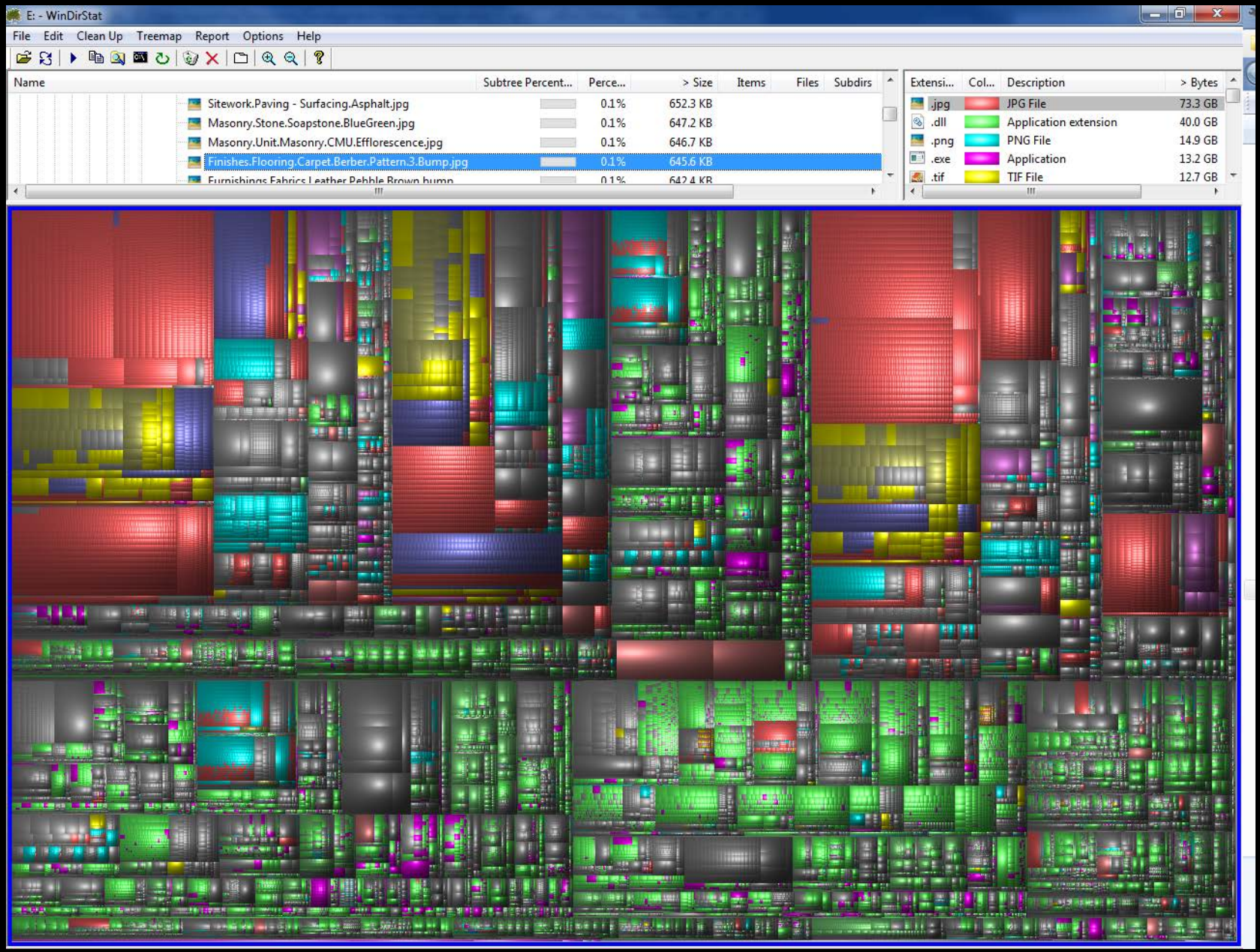


WinDirStat TreeMap

1.7 M points (not all visible)

http://windirstat.info/



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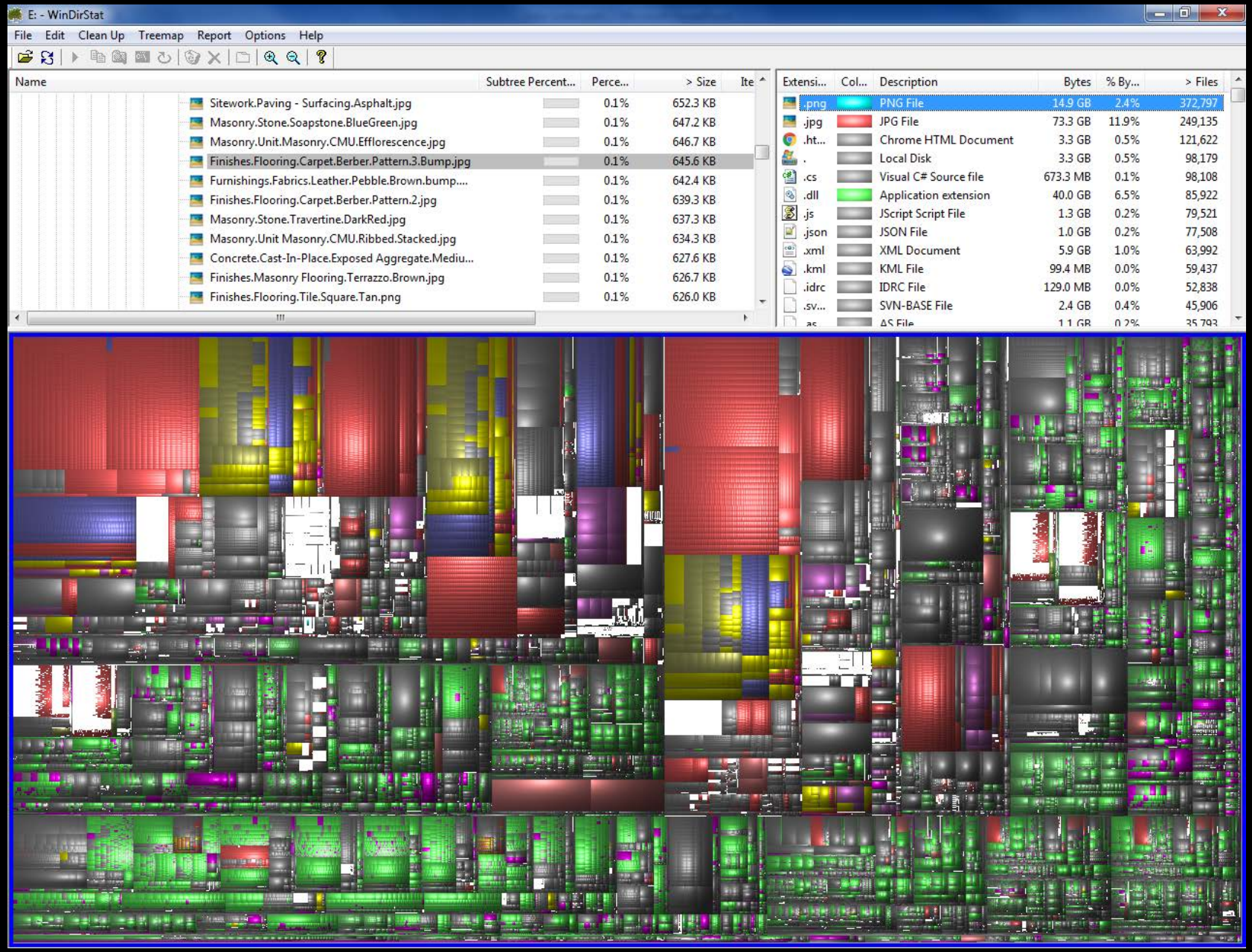
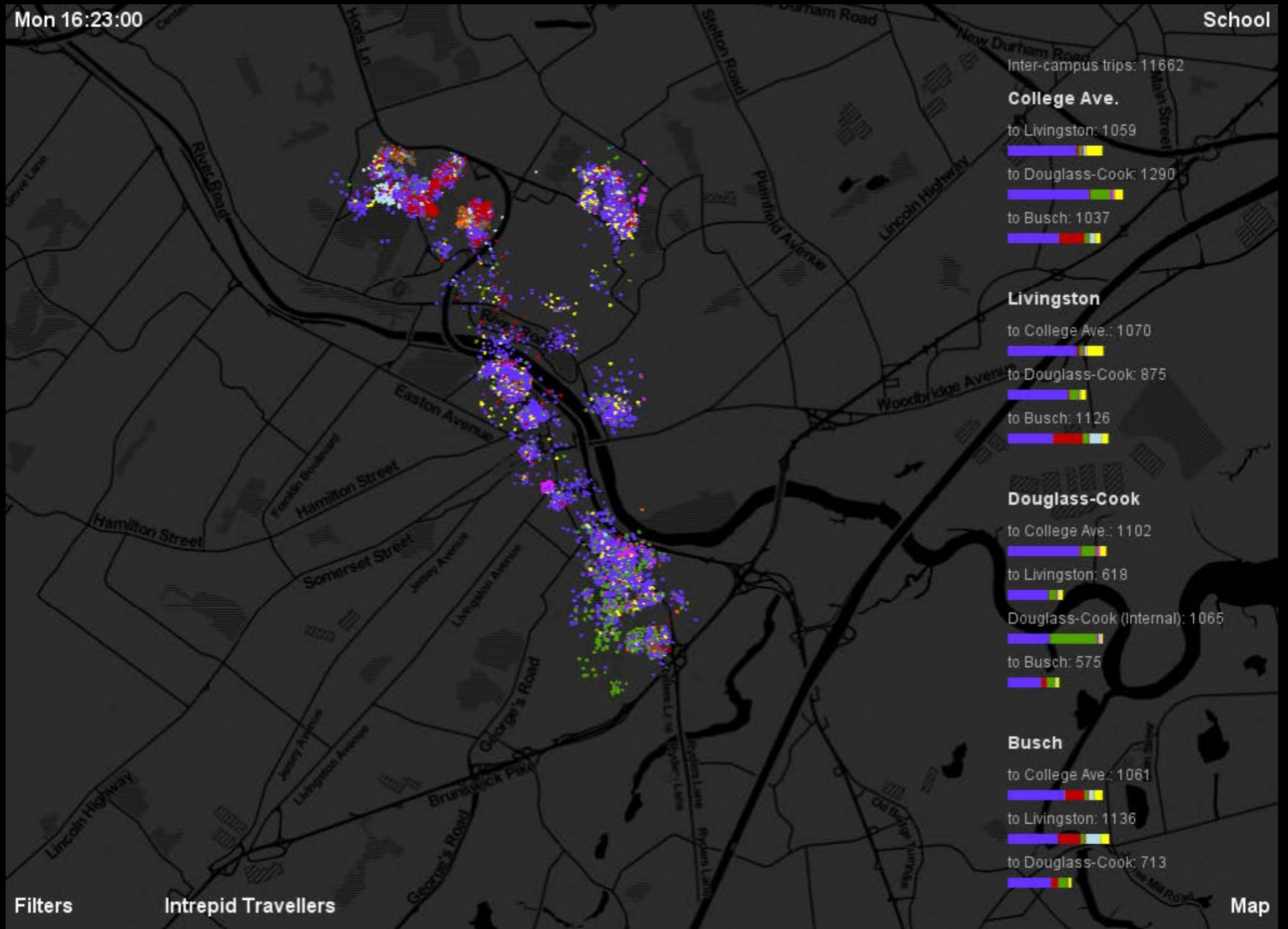


Rutgers Swarm Visualization

11,600 points

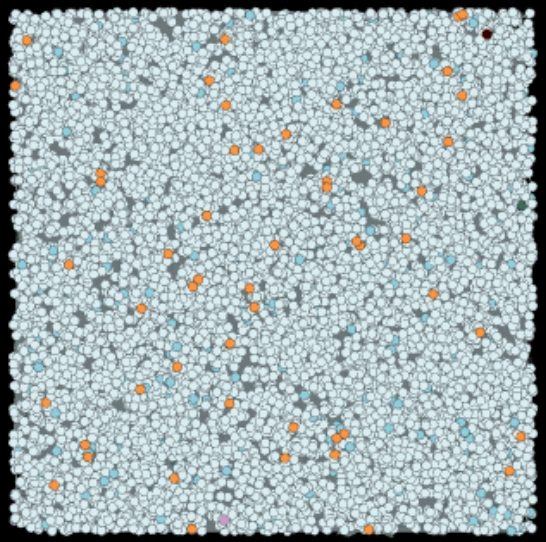


Dartmouth Galaxy Visualization

4,182 points

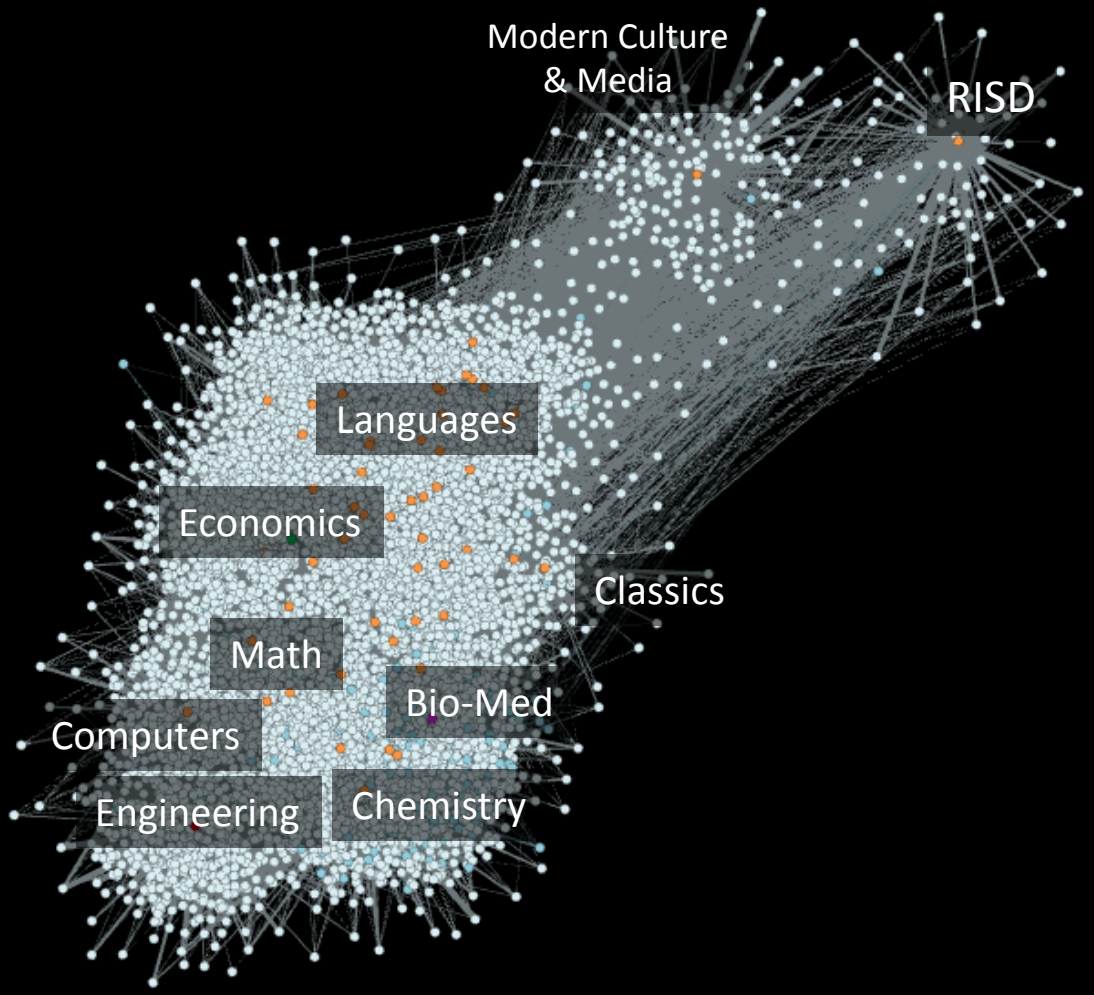
Brown Galaxy Visualization

9,726 points



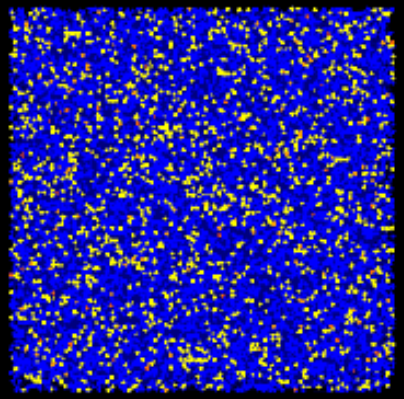
Brown Galaxy Visualization

9,726 points



Rutgers Galaxy Viewer

12,621 points



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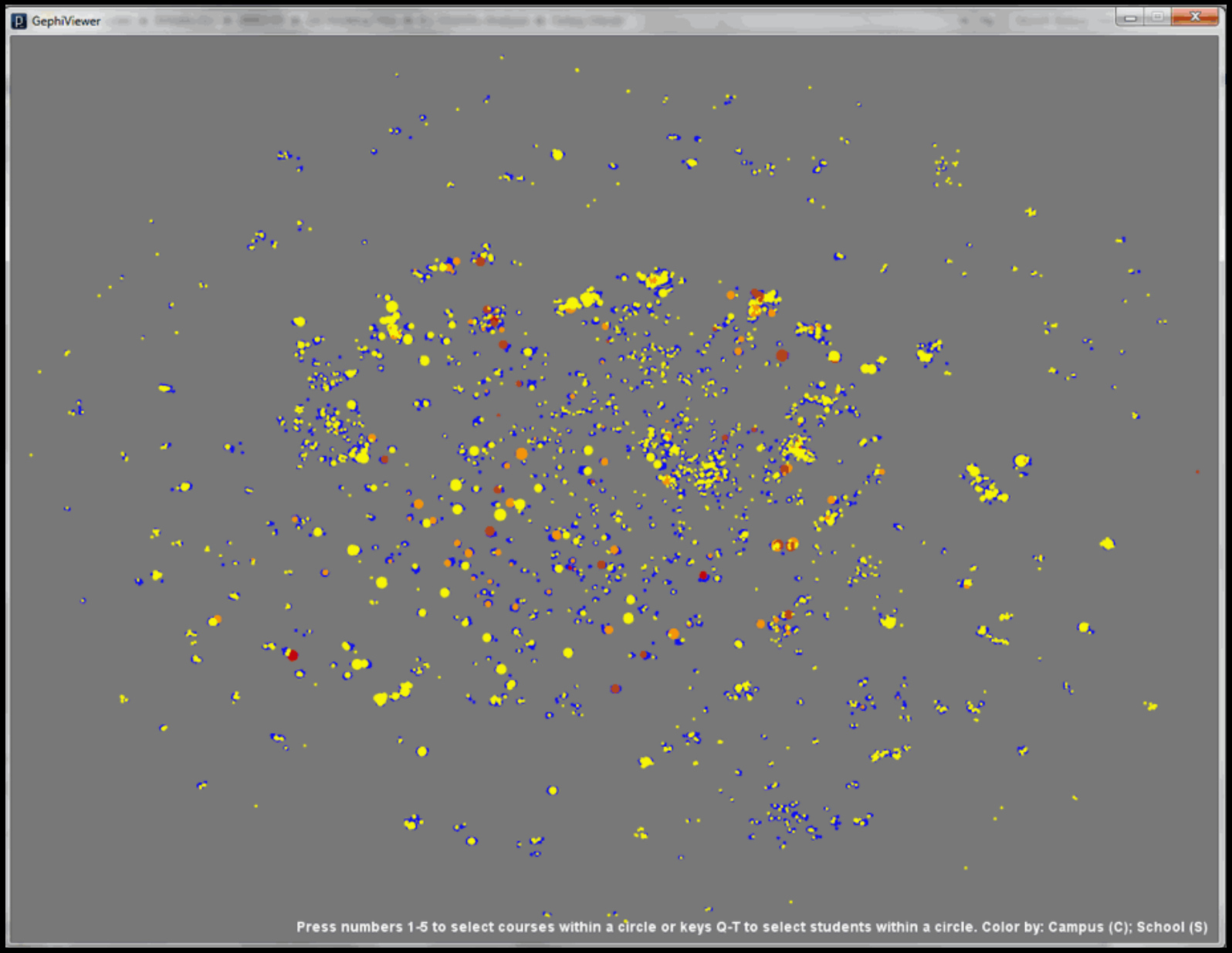
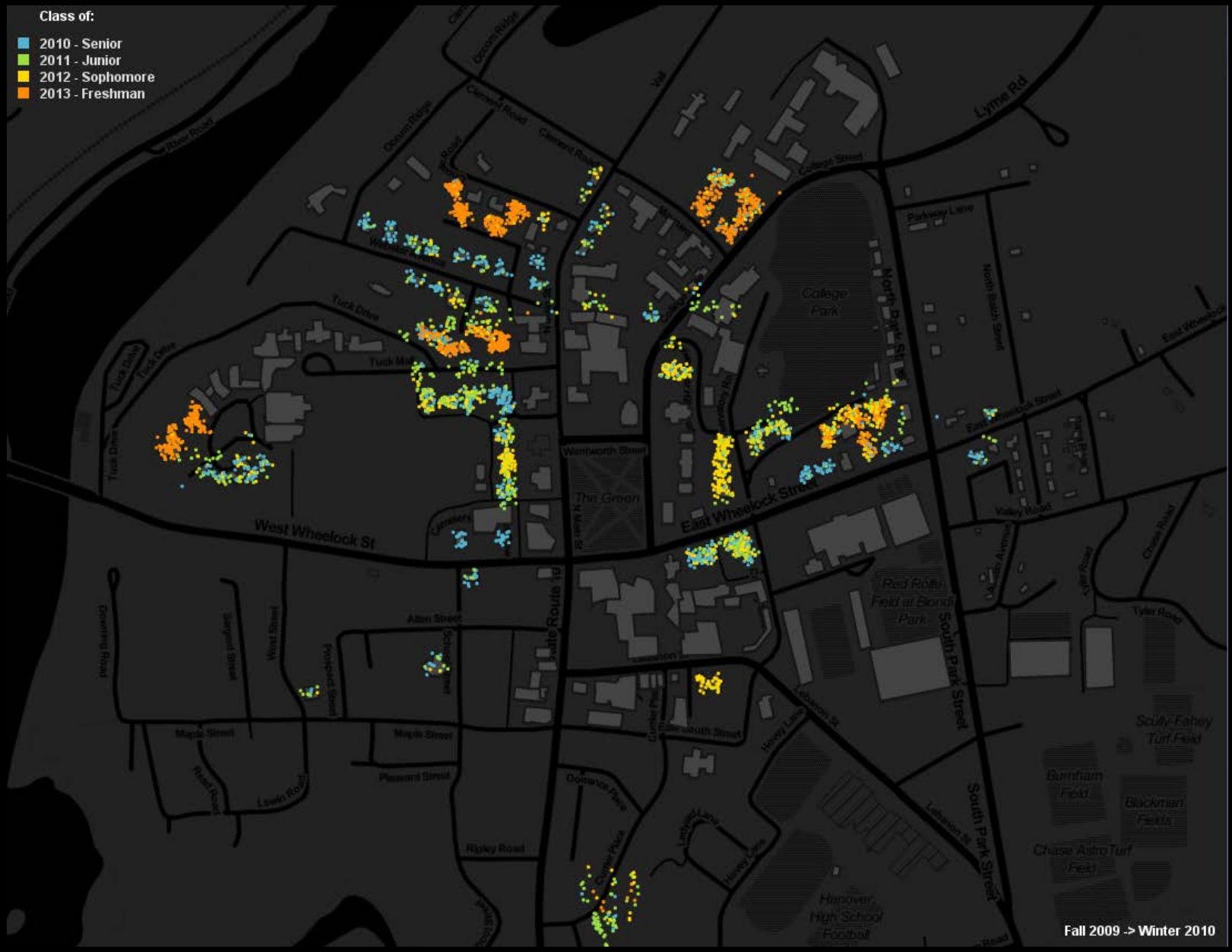


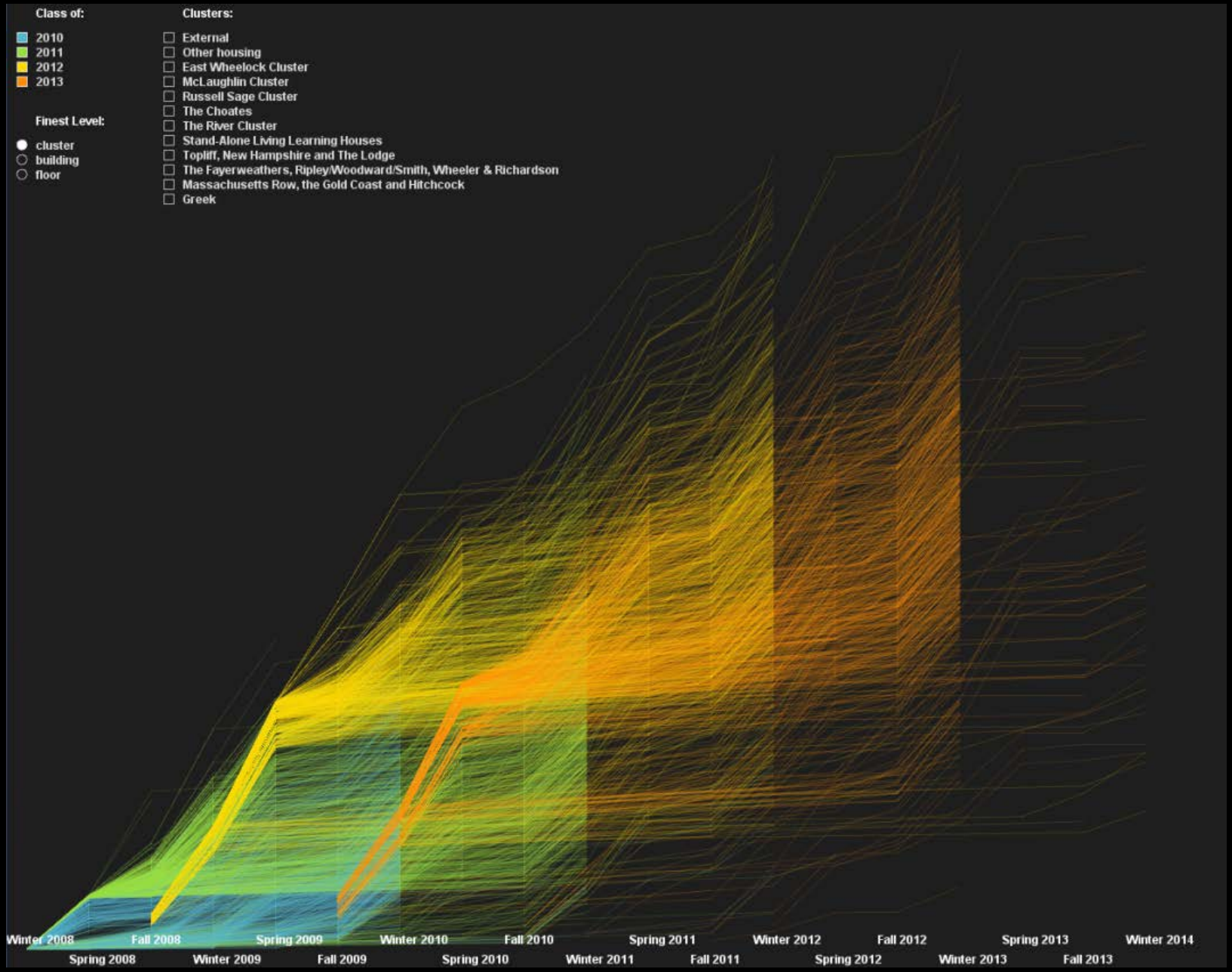
Dartmouth Student Housing

4,425 points



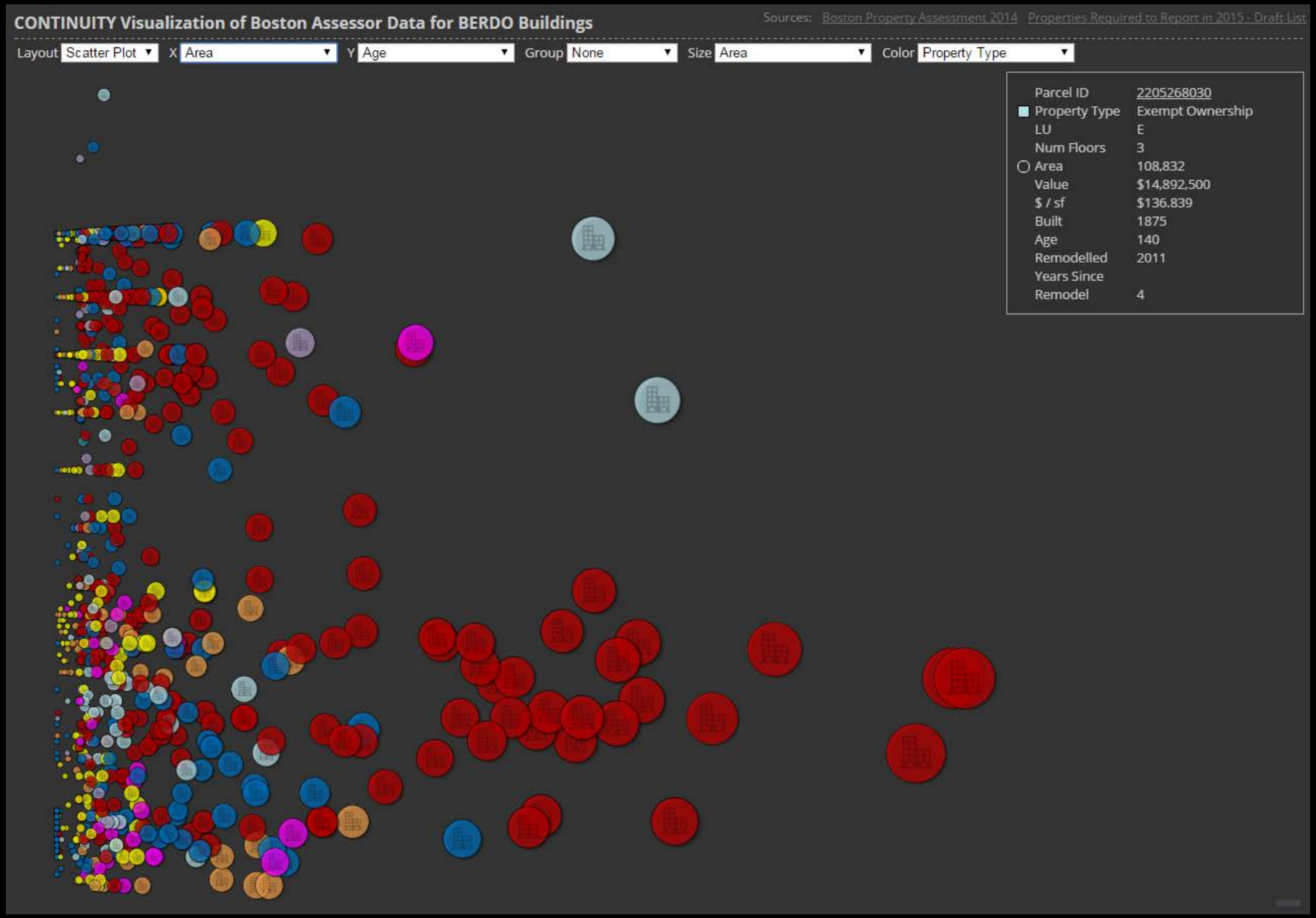
Dartmouth Student Housing

4,425 lines



Boston Assessor Data

1,260 points



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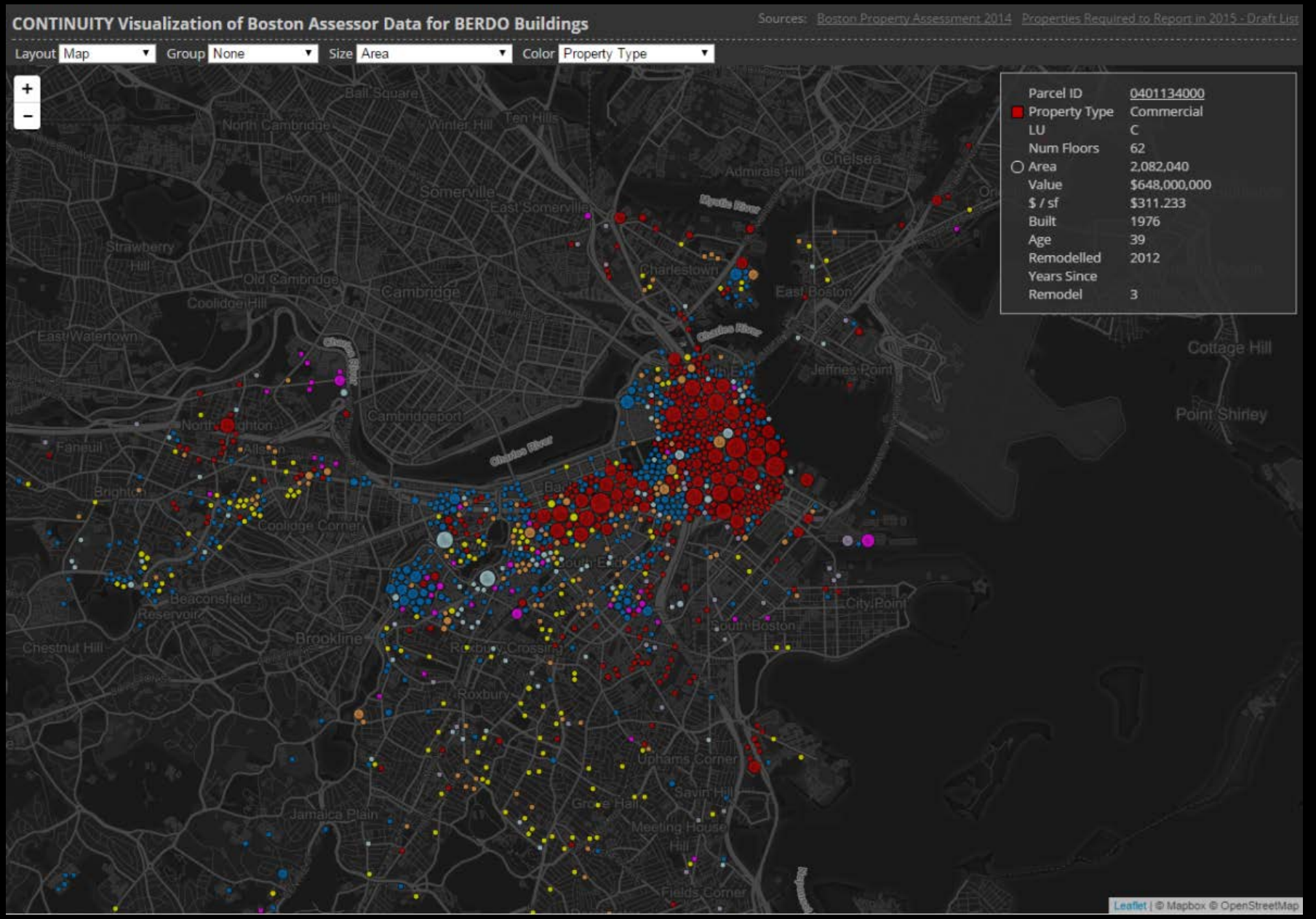

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Smart Cities and Decision-Making: The Art of Building a Better Haystack

October 23, 2015

We all want to make better decisions

HOW BIG IS THE HAYSTACK?

- Every public agency, big and small, has thousands of “active” data sets
- Data.gov has 141,192 open data sets

WHAT KIND OF DATA DO YOU HAVE?

- Boundary Data (districts, neighborhoods)
- Line Data (streets, transit lines, infrastructure)
- Point Data (public building, public assets)
- Financial Data
- Crime Data
- Traffic Data
- Service Delivery Data (311)
- Sentiment Data (citizen satisfaction survey, online engagement)
- Property Management Data
- Census Data
- Vendor Management
- Seemingly unending list..

PUBLIC STRUCTURES

- Government agencies are vertical (functional) in their structure
- Budgets fund functional projects (transportation master plan)
- Functional projects generally do not enable experimentation

“CREATIVE” PROBLEM SOLVING

- “Creativity is the power to connect the seemingly unrelated.”
- Requires lateral thinking
- The freedom to explore and experiment

OPEN DATA PORTALS

- Allow government to be functional and the public to be creative
- “Just because you buy a new Iphone, doesn’t mean more people call you.”
- Means to an end…