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MARRYING UX AND DATA VISUALIZATION

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UXPA Boston: May 10, 2019

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AGENDA

Building a Design Team
Design Team and Process
User Persona Impact
Data Visualization Design
Conclusion

BUILDING A DESIGN TEAM

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THE LEADING DATA & ANALYTICS PLATFORM FOR LIFE SCIENCES

- Remove the silos of enterprise data
- Rapidly improve data quality and timeliness
- Drastically reduce time-to-insight
- Generate and disseminate evidence-driven insights at scale

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CLOUD DATA AND ANALYTICS PRODUCTS THAT DELIVER ENTERPRISE INSIGHT, SPEED, AND EFFICIENCY

STRATA Data Platform

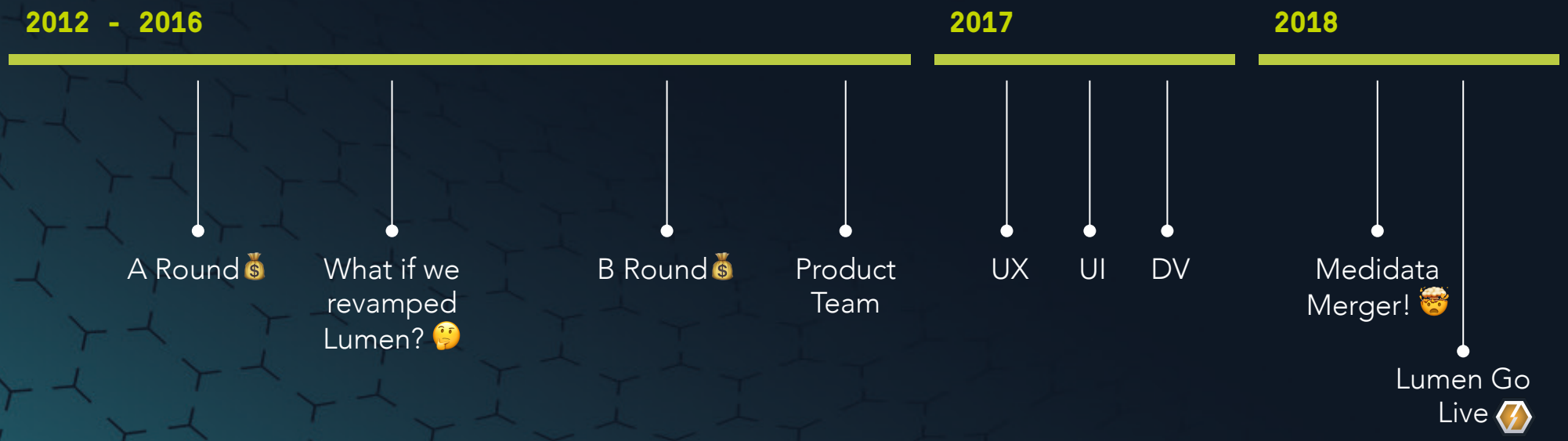
LUMEN Insights Visualization

QUANTUM Real World Evidence

NOVA Patient Navigator

DESIGN TEAM JOURNEY

TRANSFORMING AN ORGANIZATION WITH SOFTWARE



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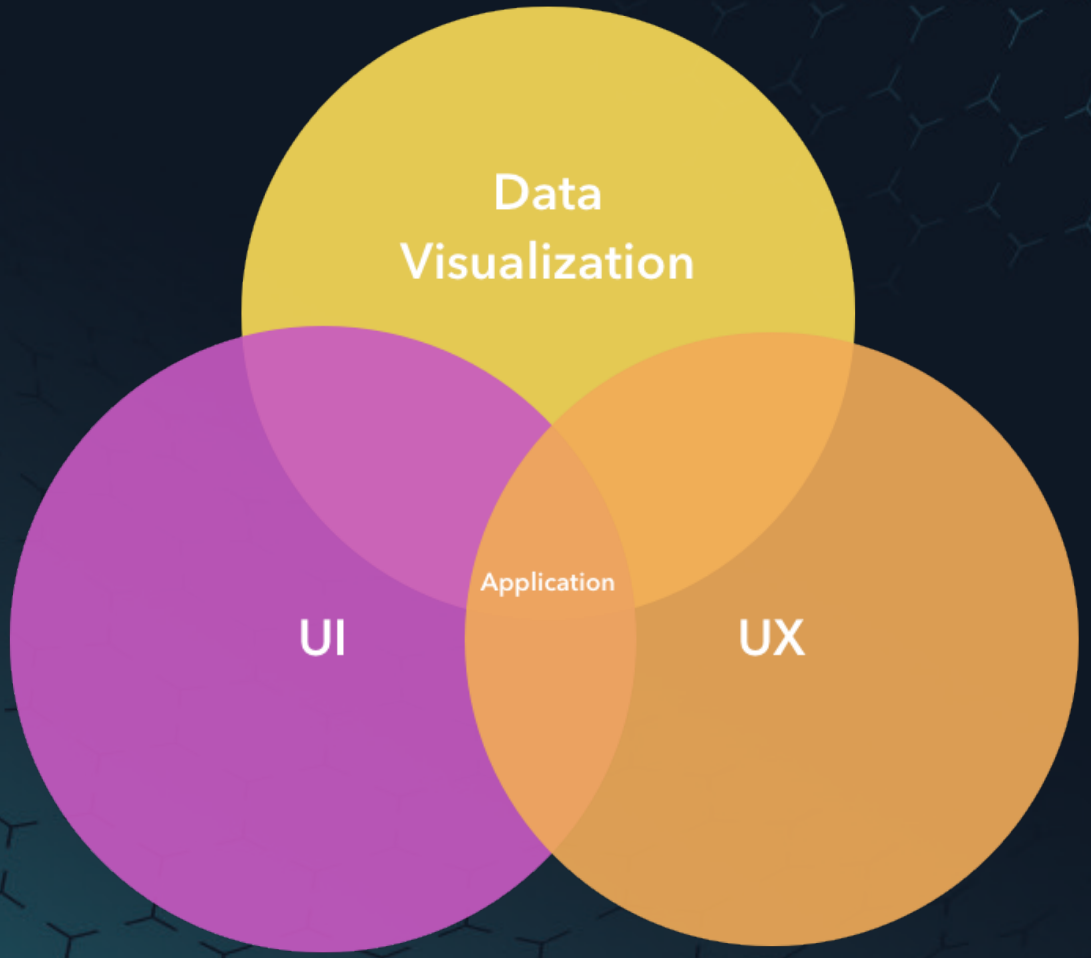
DESIGN TEAM PHILOSOPHY

FIVE PRINCIPLES FOR SHIPPING MAGICAL PRODUCTS

- **Empathy** - "understand [user] needs better than any other company"
- **Focus** - "eliminate all of the unimportant opportunities."
- **Competency** - craftmanship to reach the last mile
- **Users Before Buyers** - consumer apps as a benchmark
- **Process** - operational discipline to iterate and ship quickly

DESIGN TEAM AND PROCESS

WHO ARE WE?



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WHAT IS A DATA VISUALIZATION DESIGNER?

Background

- Skilled in design methods, visual hierarchy and design systems
- Deep understanding of analytical tasks

Role

- Propose creative solutions that meet business needs
- Advocate for an analytically powerful application
- Ensure good design practices
- Serve as an ambassador to engineering (specifications, technical feasibility)

DESIGN PROCESS

DATA VISUALIZATION (DV)

Requirement Generation

Design Prototypes

Interaction Design

Usability Testing

Design Iterations

Final Mockup

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USER PERSONA IMPACTS

WHAT ARE WE BUILDING?

Business-to-Business Market

- Access to end-users is not easy

Existing users

- Users have expectations based on the old version of the application

Variety of Customers

- System should be responsive to different requirements

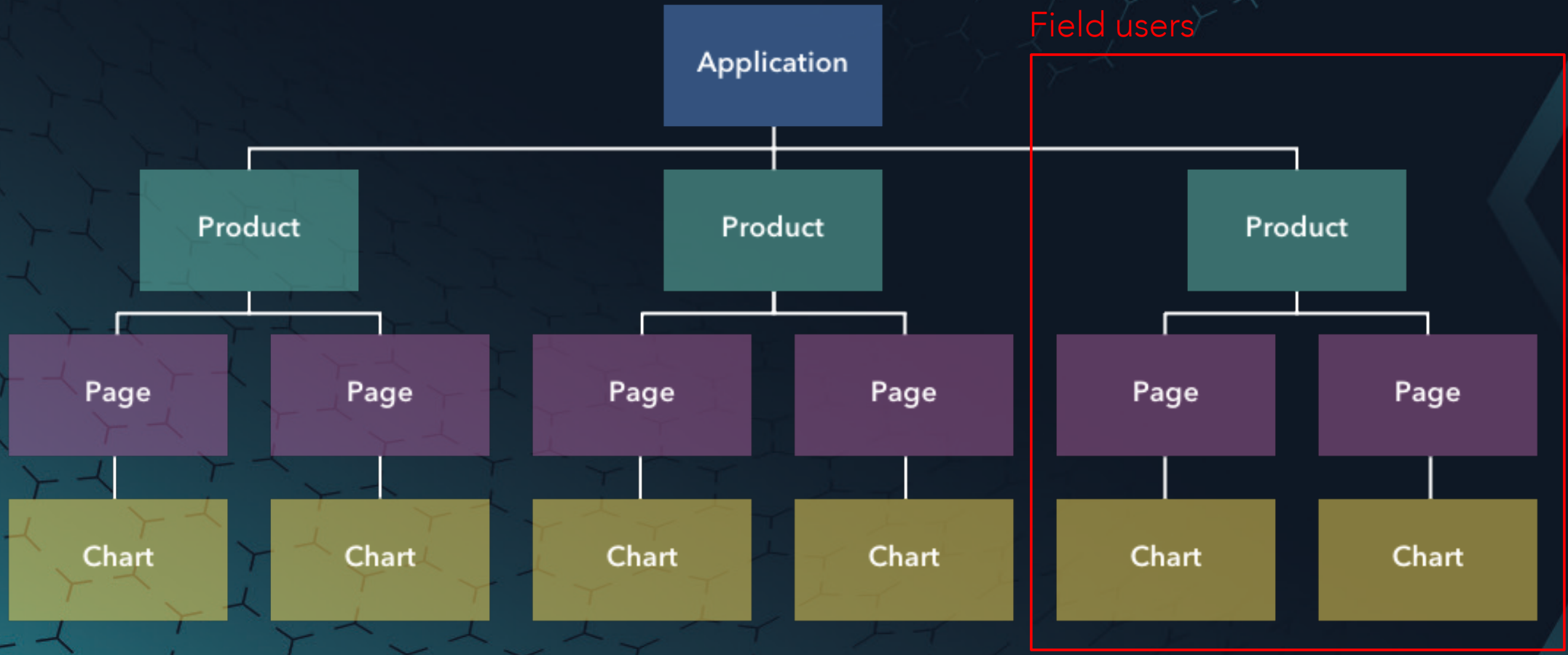
Complicated features

- Difficult to keep it intuitive for all users

FOR WHOM ARE WE DESIGNING?

FIELD USERS	OFFICE USERS
iPad, iPhone	Desktop
On the move (i.e., indoor, outdoor)	Always in the office
Need data to be explained to them	Need to explore the data
Interested in one product	Interested in more than one product

PERSONA – NAVIGATION



PERSONA – OVERVIEW vs. DETAIL

Overview of Visualizations

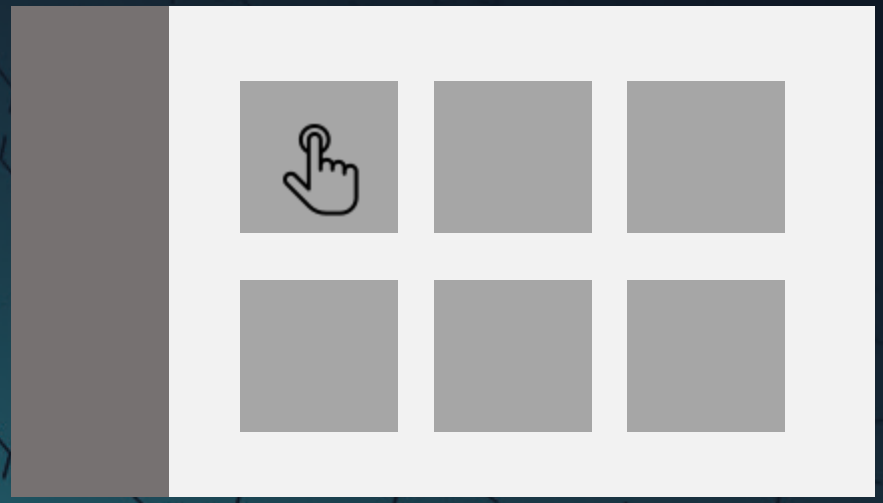
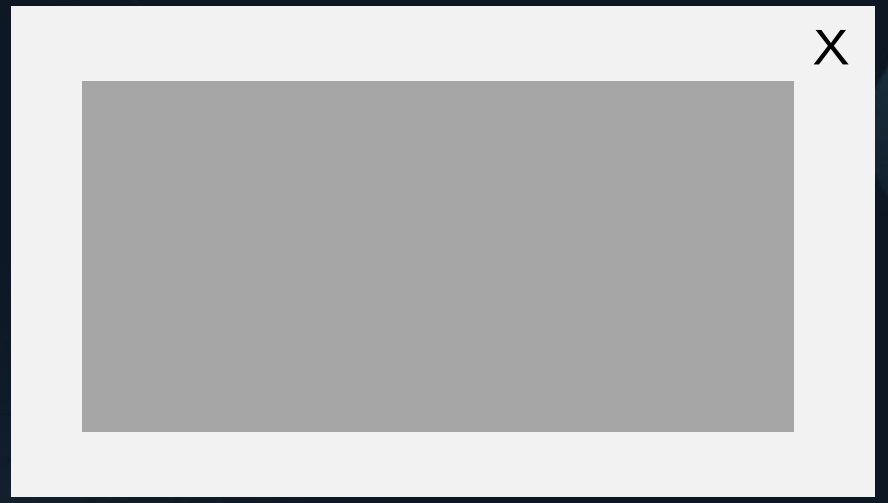
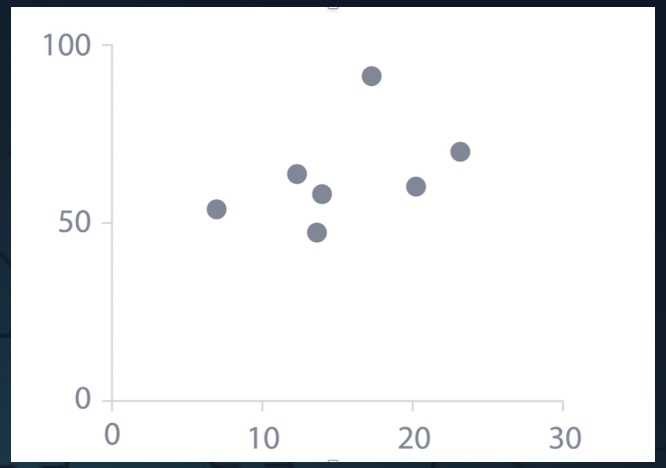


Chart Details



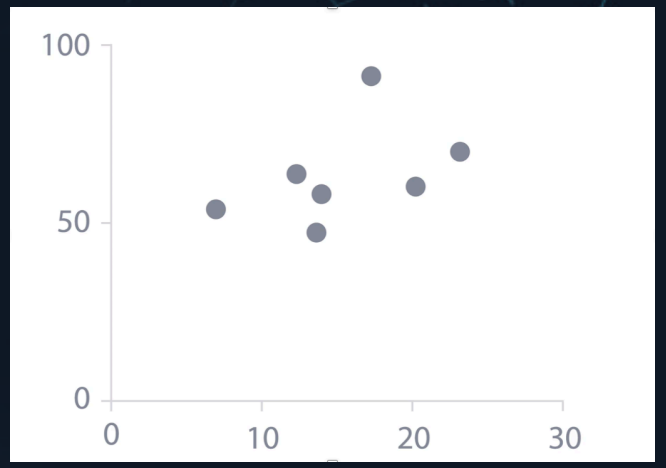
PERSONA – EXPLORE vs. EXPLAIN

Field Users



- **Who should I call?**
- **How am I doing?**

Office Users



- **Is my team's strategy correct?**
  - Distribution of sales
  - Average, median and top performer
  - Compare my products with competitors
  - Future projection

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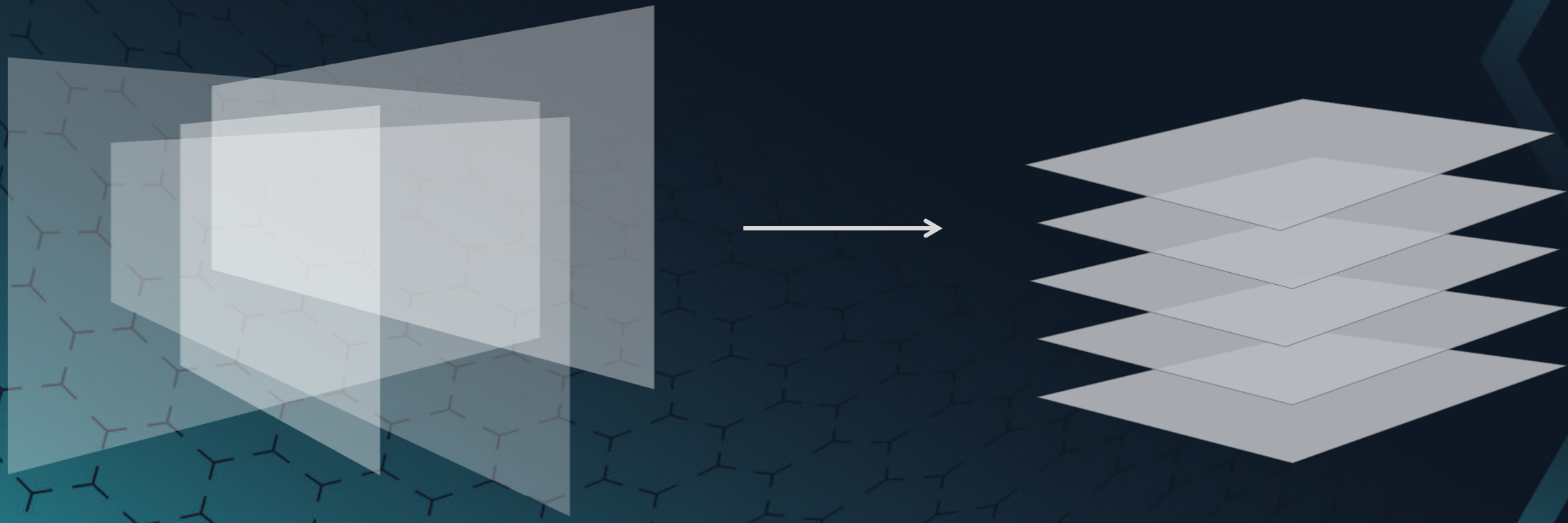
DESIGN FOR DATA VISUALIZATION

DATA IS A DESIGN CHALLENGE

- Present complicated information clearly
- Allow users to access the things they need, when they need them
- Support analytical tasks



DV IS A UX CHALLENGE

Design

- Is less more?
- Does “Don’t make me think” work?
- Can overwhelming design be an option?

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INTRO TO TASK ANALYSIS

- What does a user actually need from this chart?

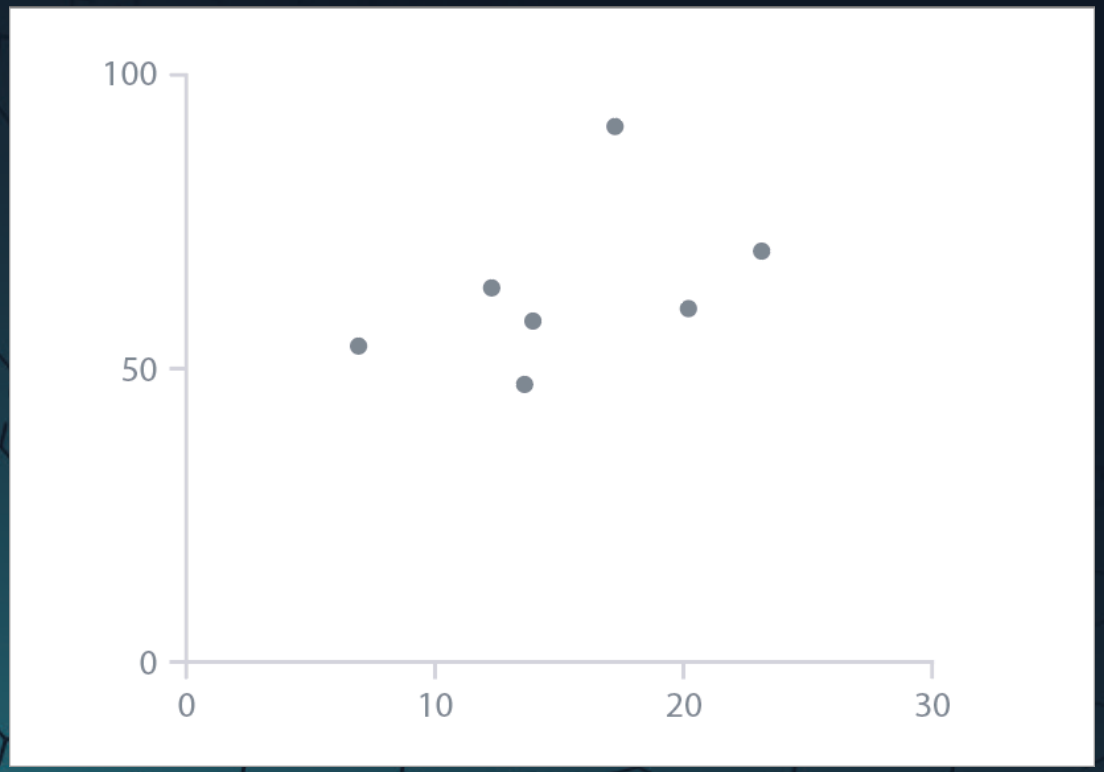
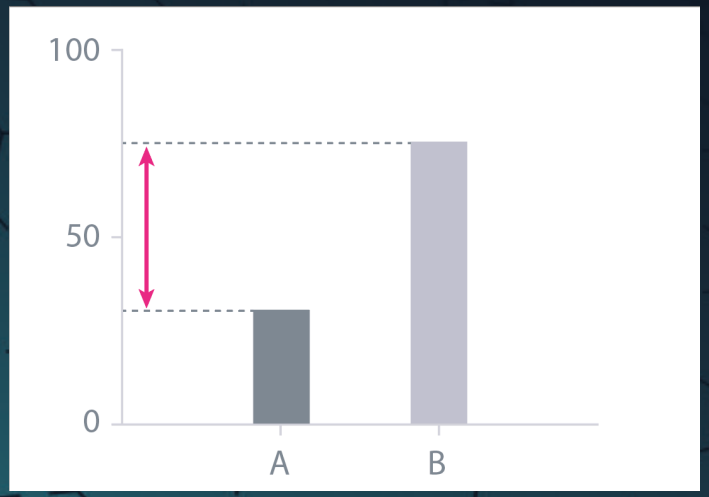


Chart task analysis helps to focus your design efforts on the really critical features of a chart's function and can act as the starting point for building a smart UX design that meets concrete user needs.

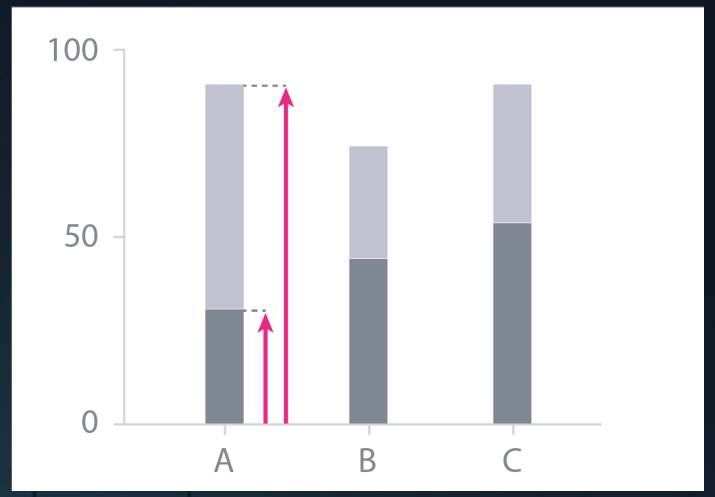
WHAT DO CHARTS ACTUALLY *DO*?

- Support user in making visual comparisons between entities
- Types of comparisons:

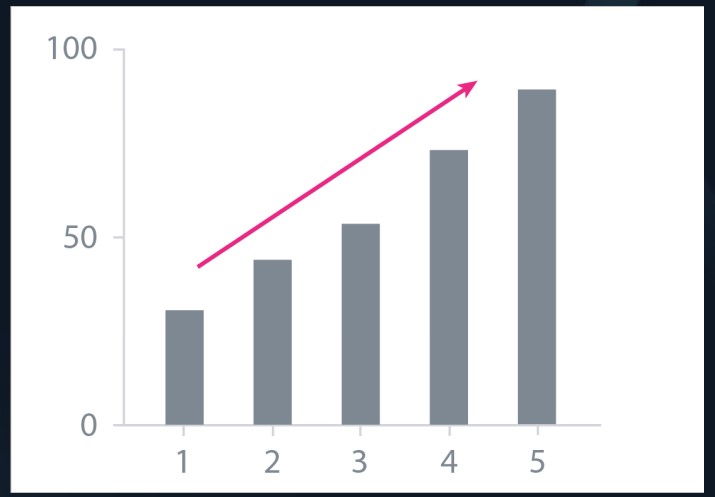
Value/size



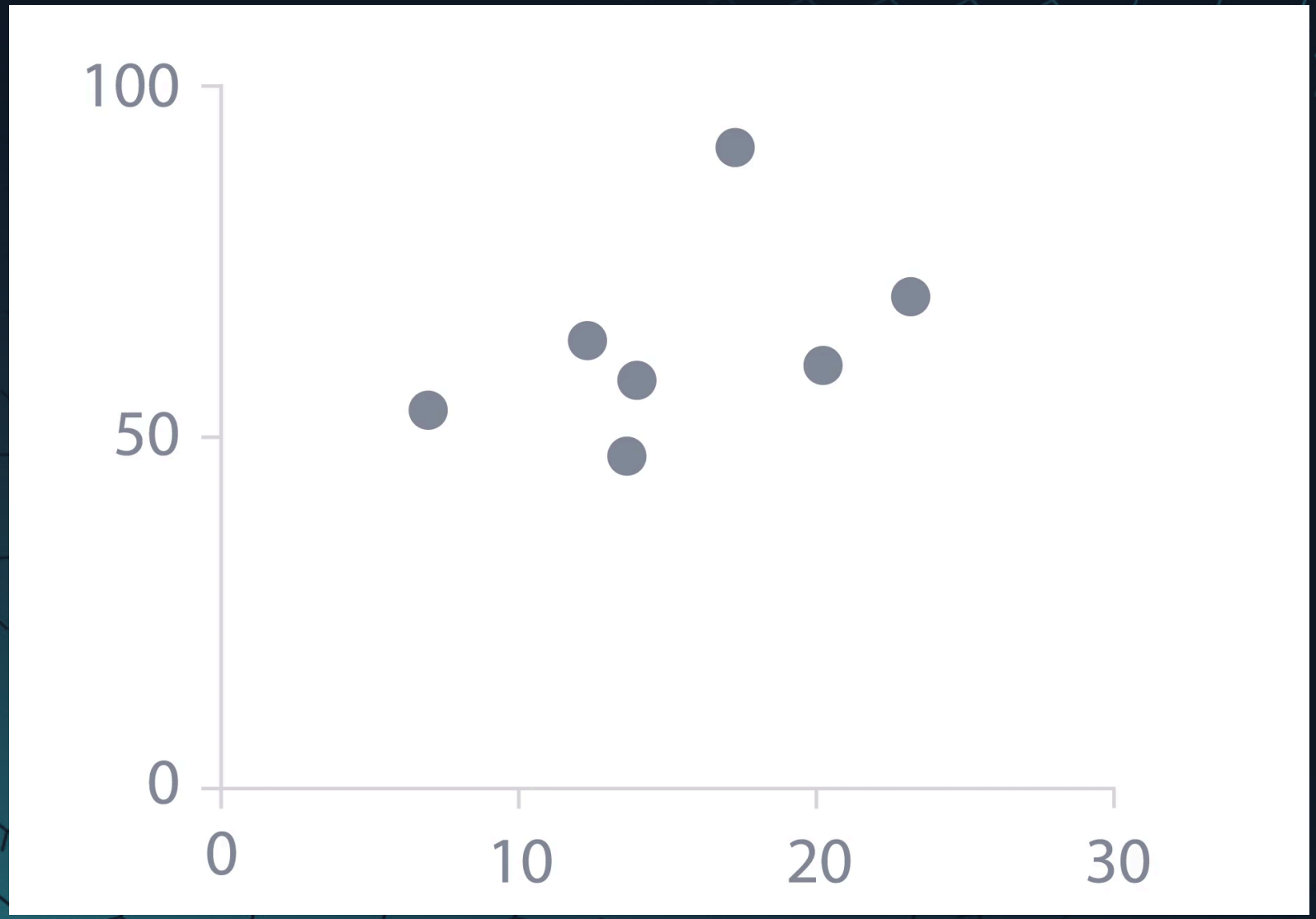
Proportion



Behavior over time

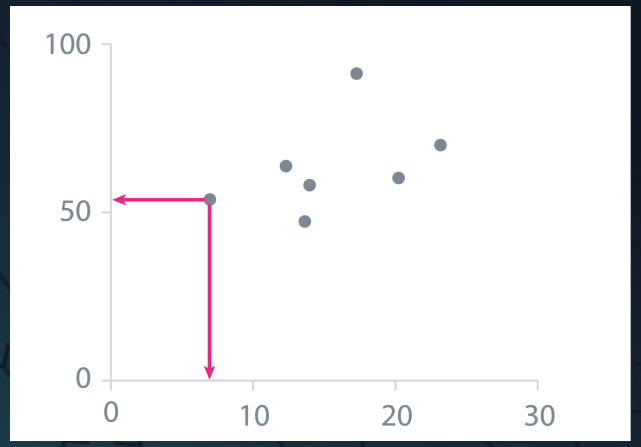


ONE CHART, MANY TASKS

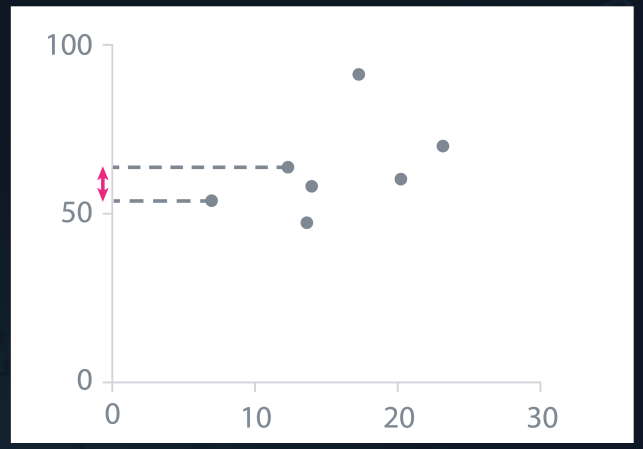


ONE CHART, MANY TASKS (cont.)

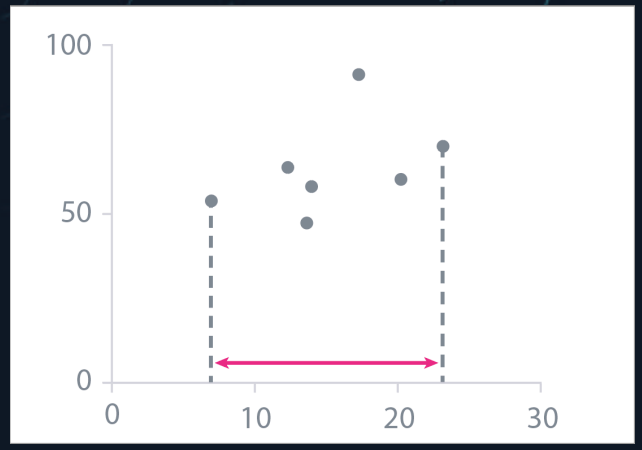
Read value of a point



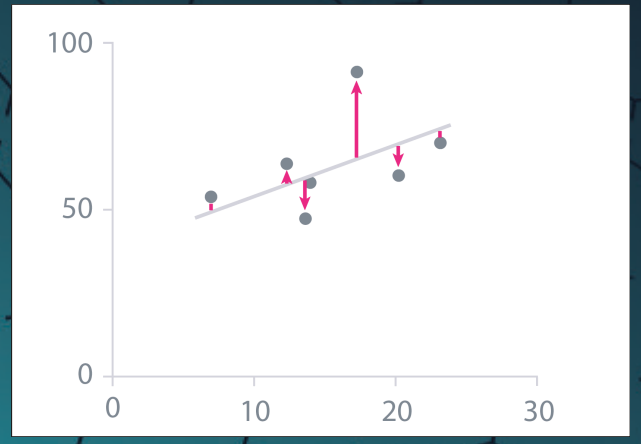
Compare two points



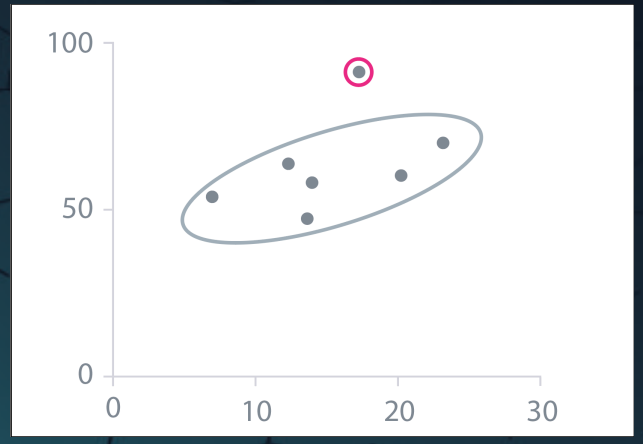
Max and min value in chart



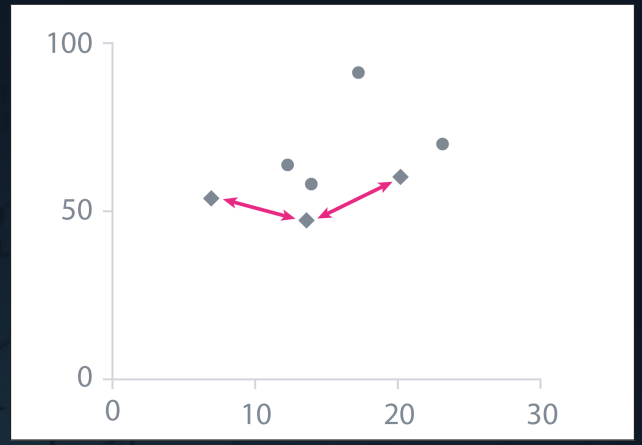
Compare to trendline



Look for outliers



Compare series values



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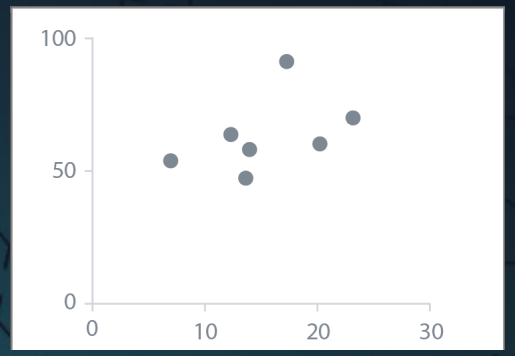
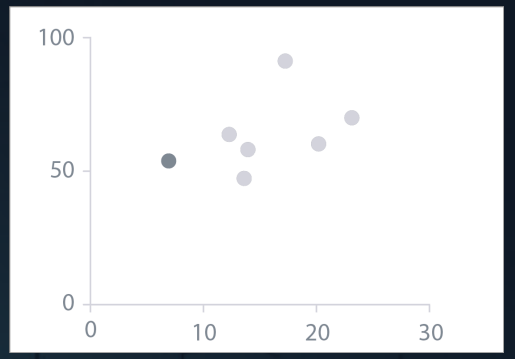
FUNCTIONAL UI

- Using visual hierarchy to increase understanding
- Designing Interactions to support chart tasks

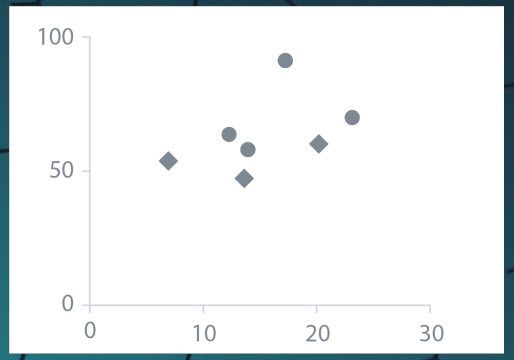
Base chart



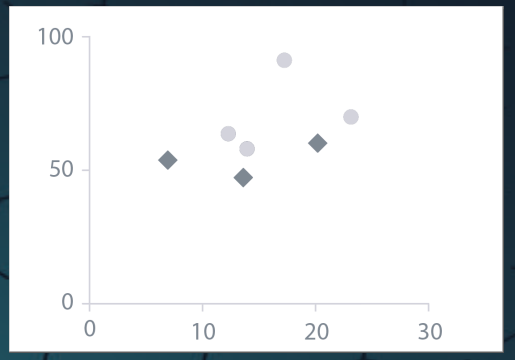
Select a point



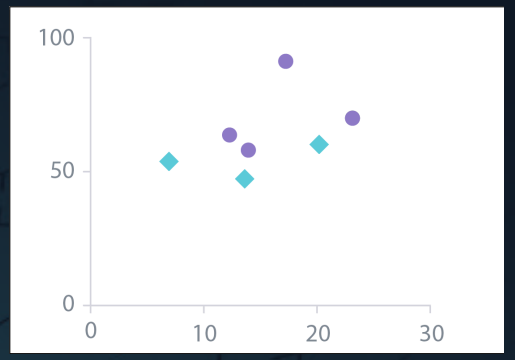
+ Series (symbols)



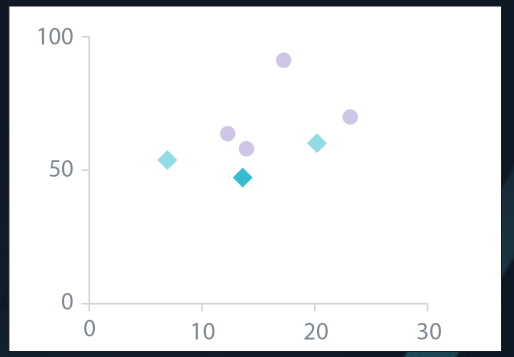
Select a series



+ Series (symb. + color)



Select point + series



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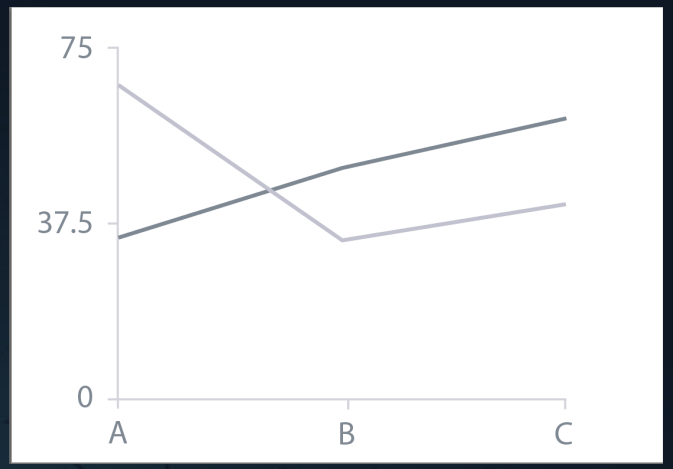
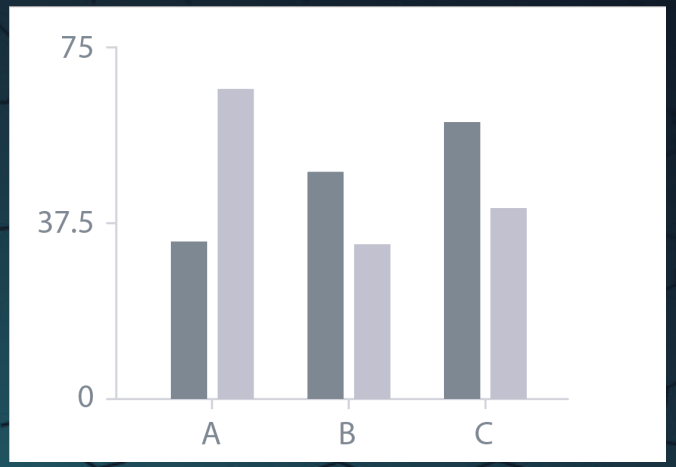
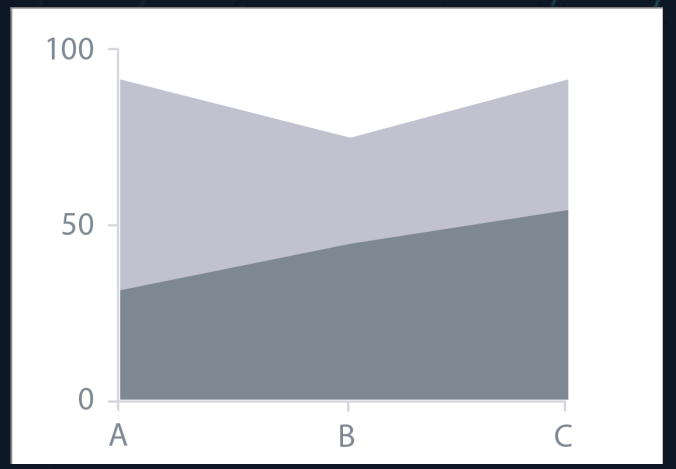
DIFFERENT CHARTS FOR DIFFERENT TASKS

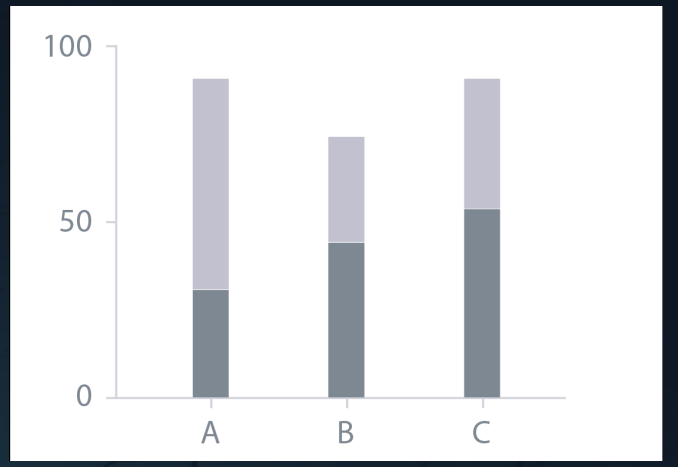
Absolute representations





Proportional representations





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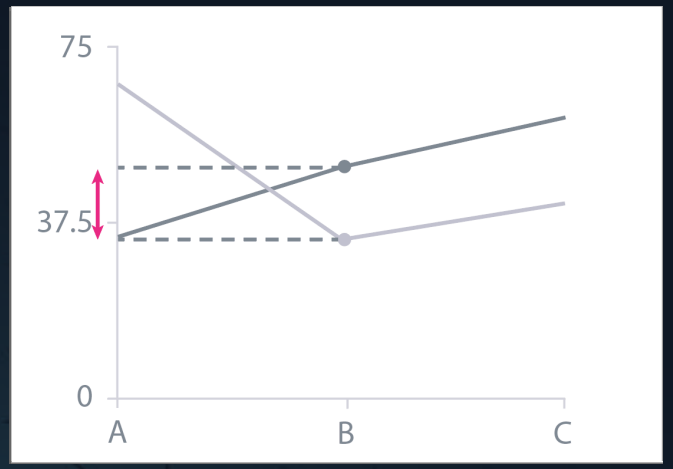
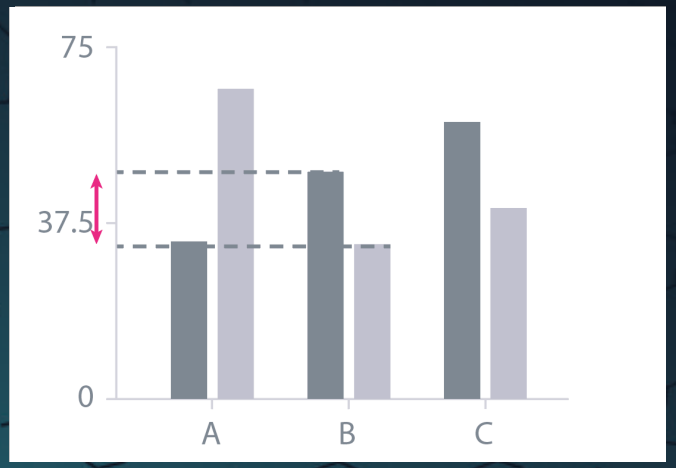
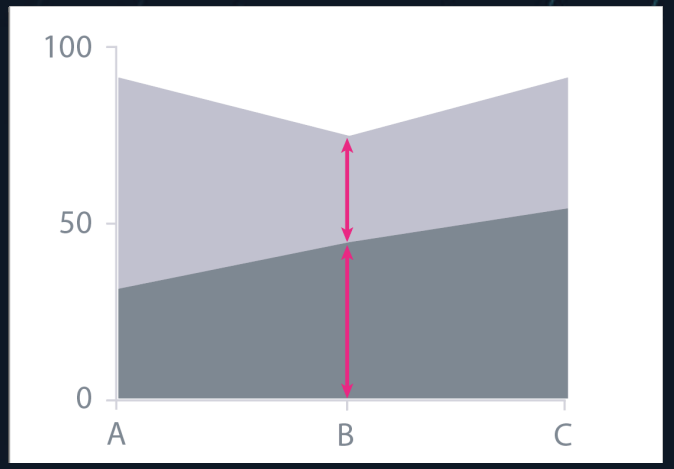
DIFFERENT CHARTS FOR DIFFERENT TASKS (cont.)

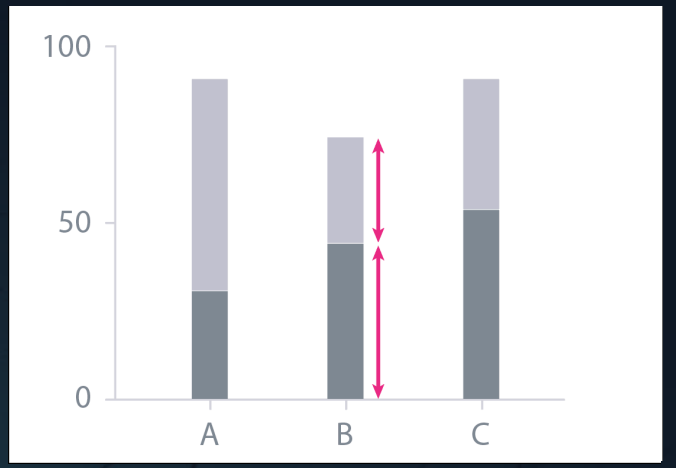
Absolute representations



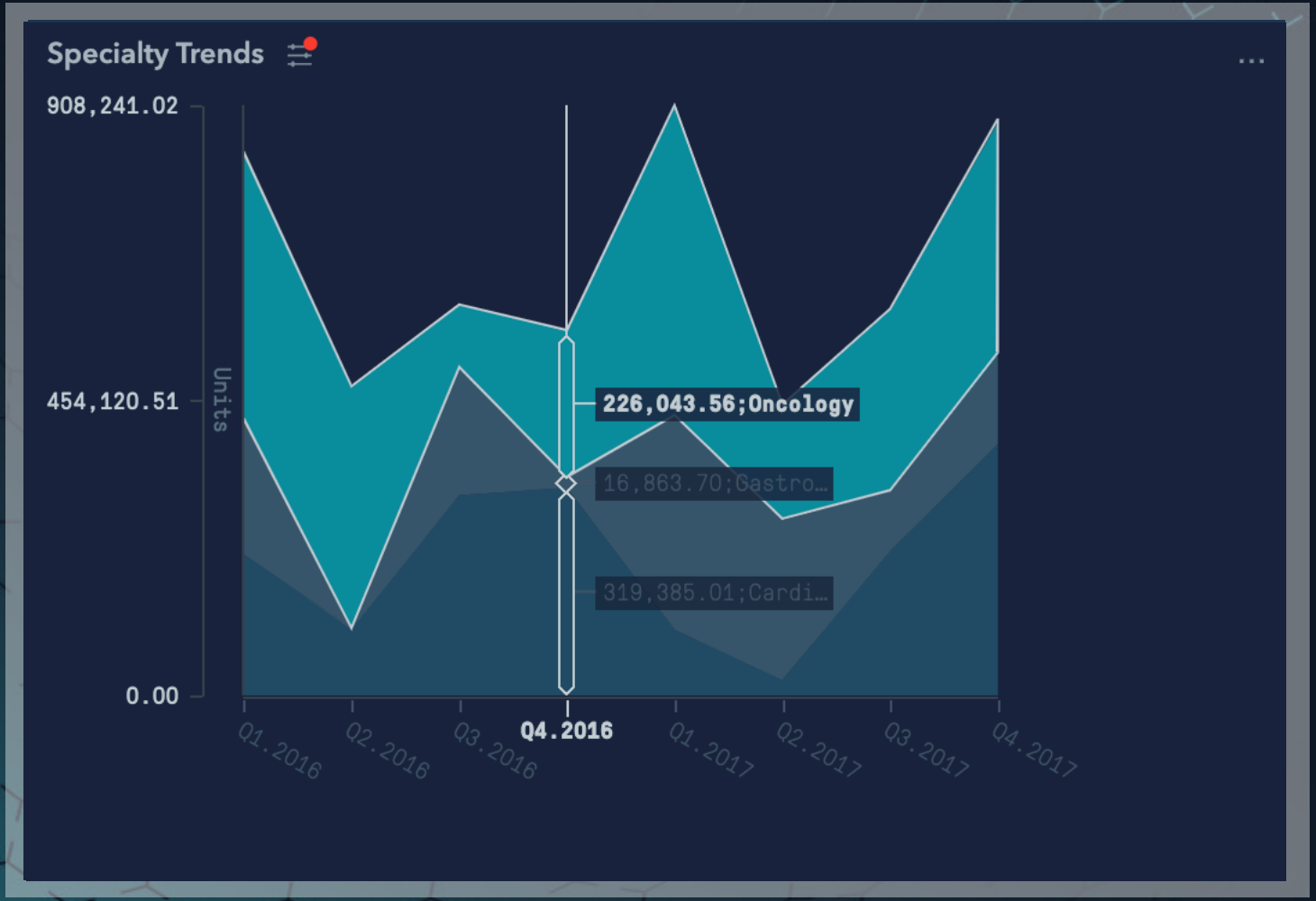


Proportional representations





GRAPHICACY, CAN INTERACTIONS HELP?



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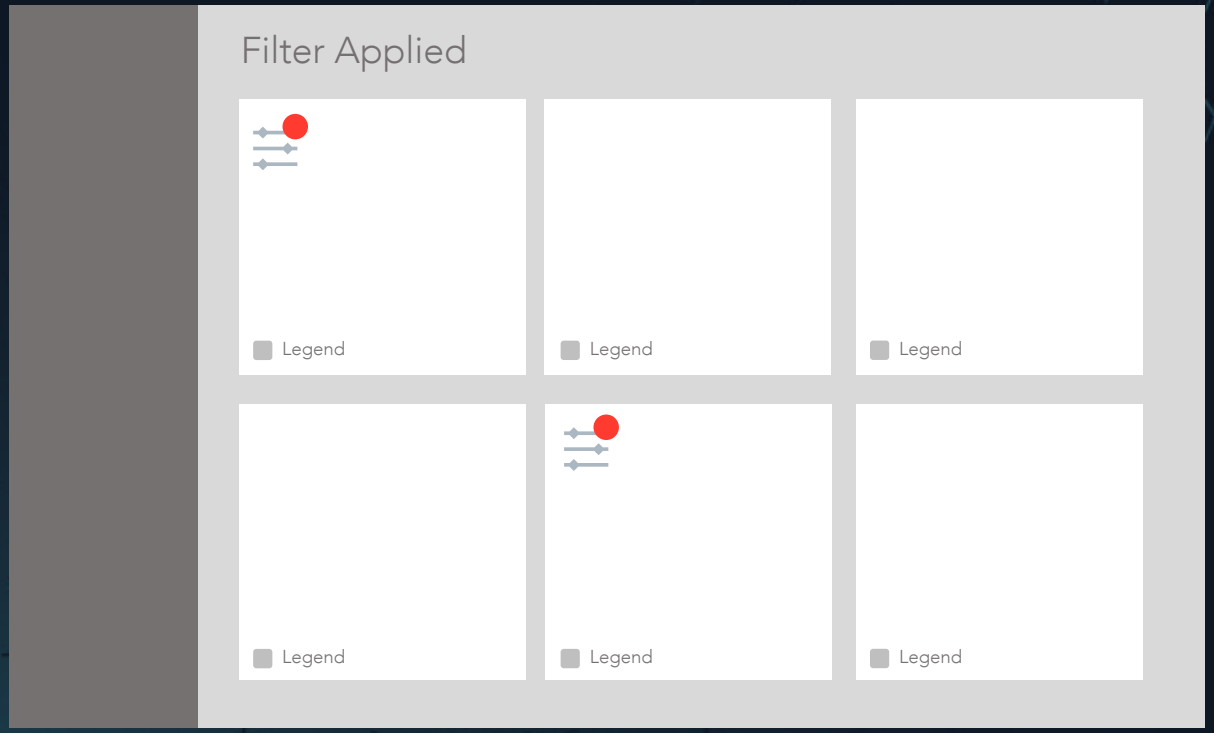
WHAT IF NO INTERACTION



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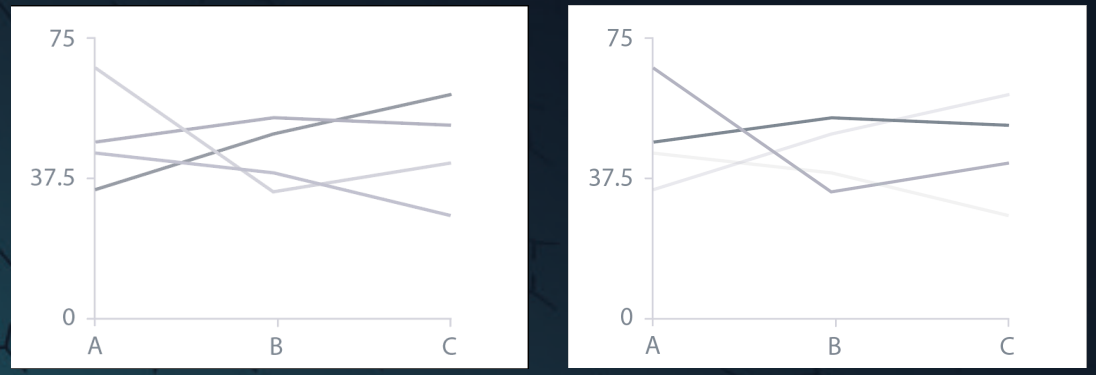
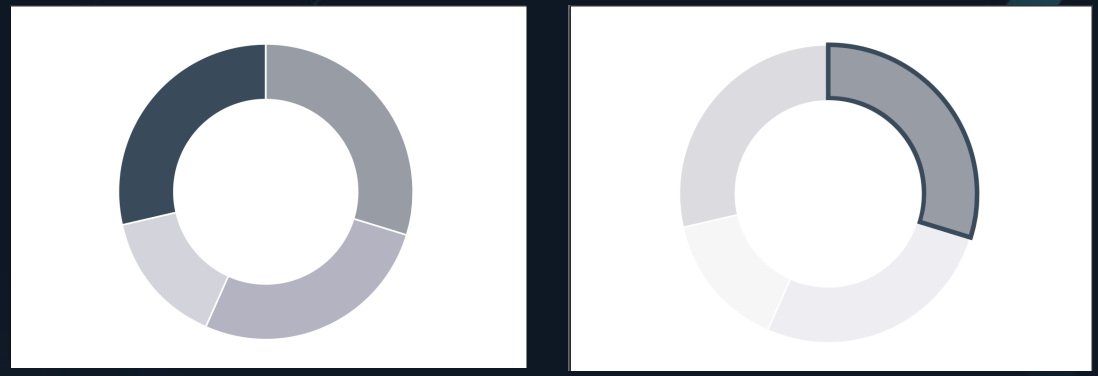
INTERACTIONS ACROSS CHARTS

- How do we keep interaction design consistent across different chart types?

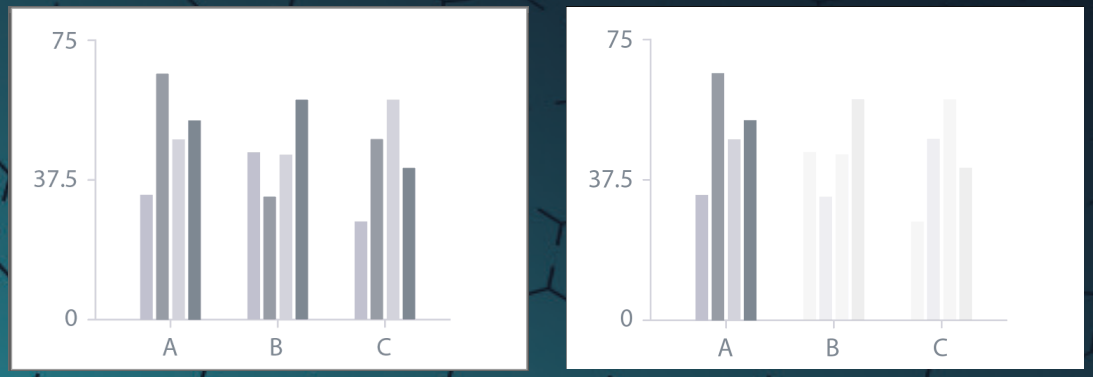
Series multiselect



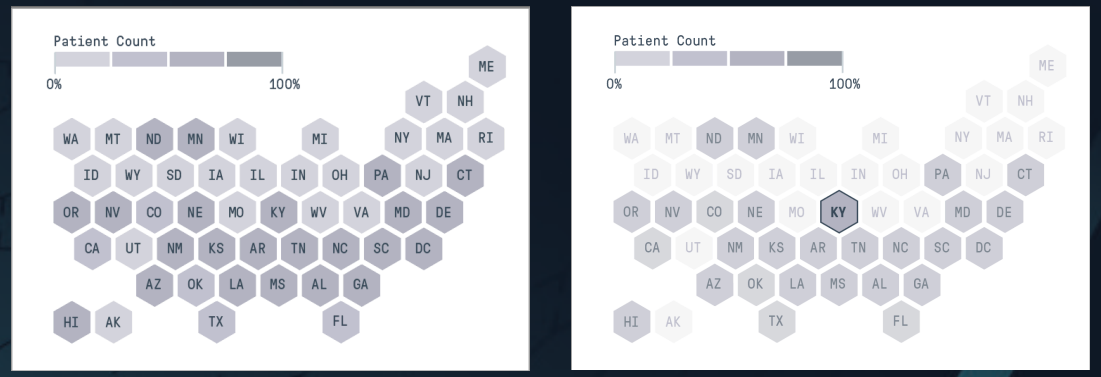
Element select



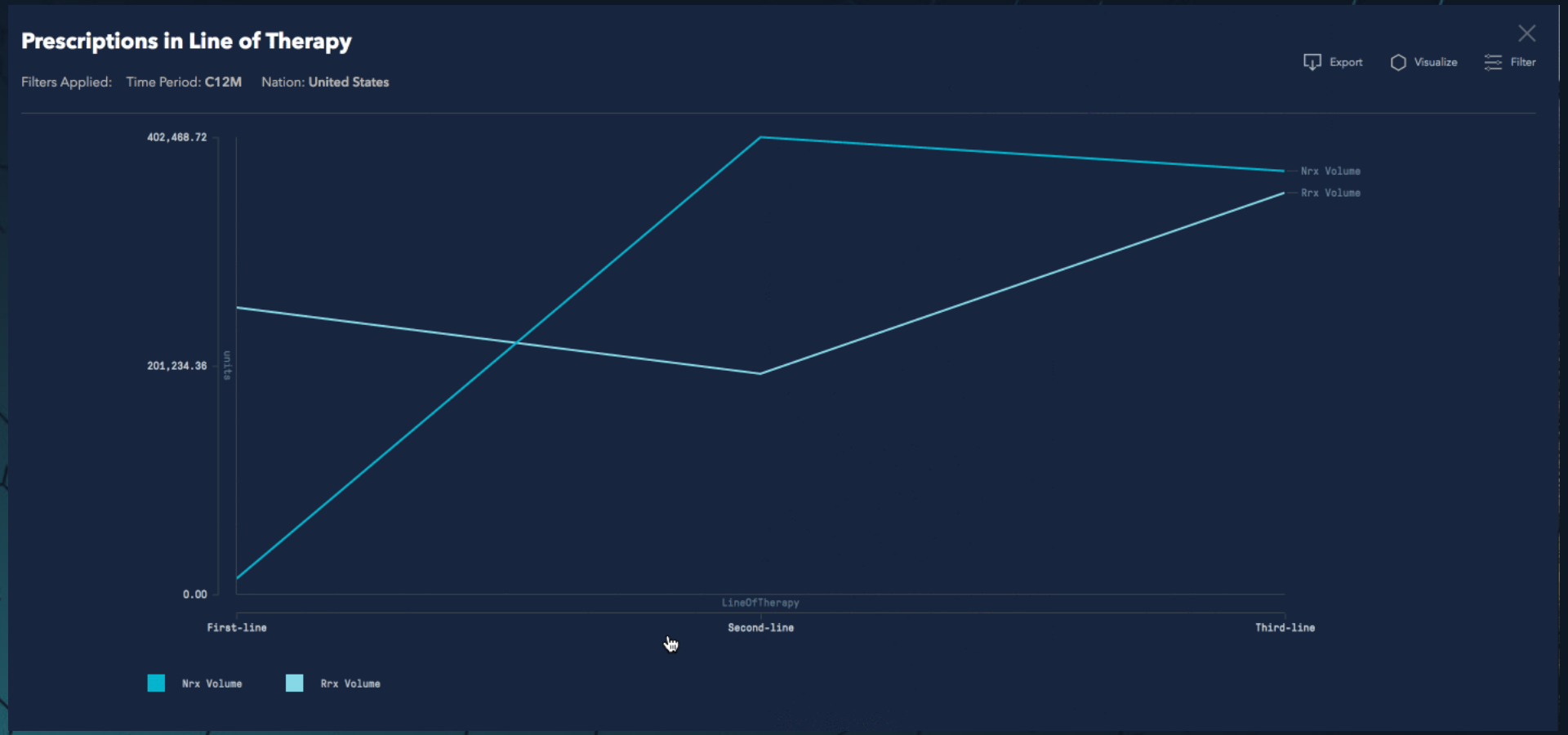
Group select



Element + context select



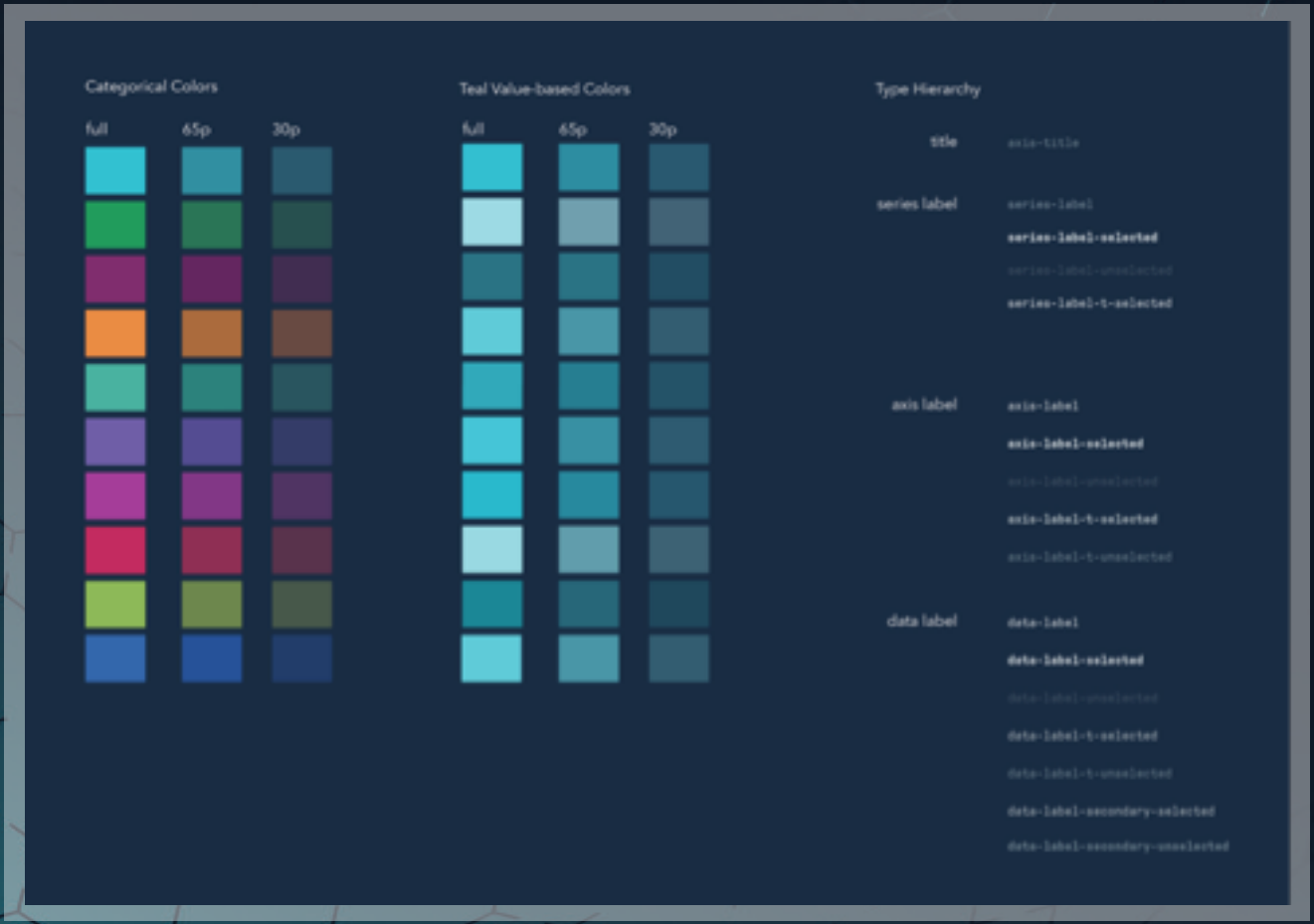
LINE CHART SELECTION: OPTION 1



LINE CHART SELECTION: OPTION 2

CHART UI – HIERARCHY & COLOR

- Hierarchy, color, and other UI considerations for thoughtful data displays



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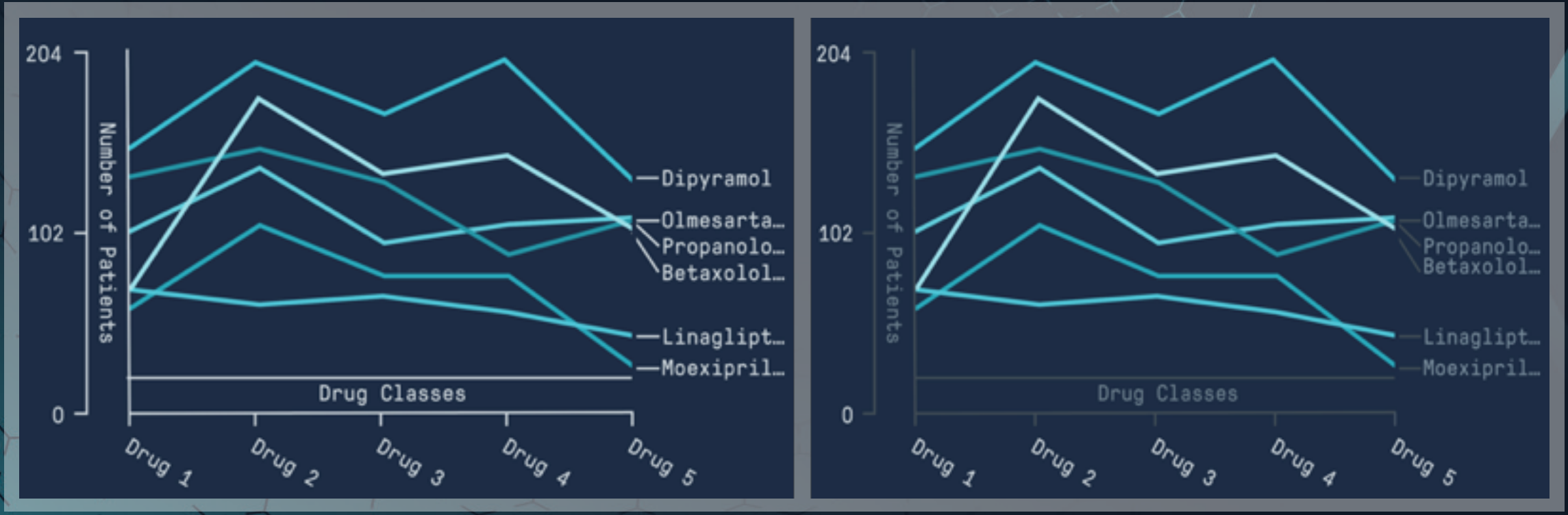
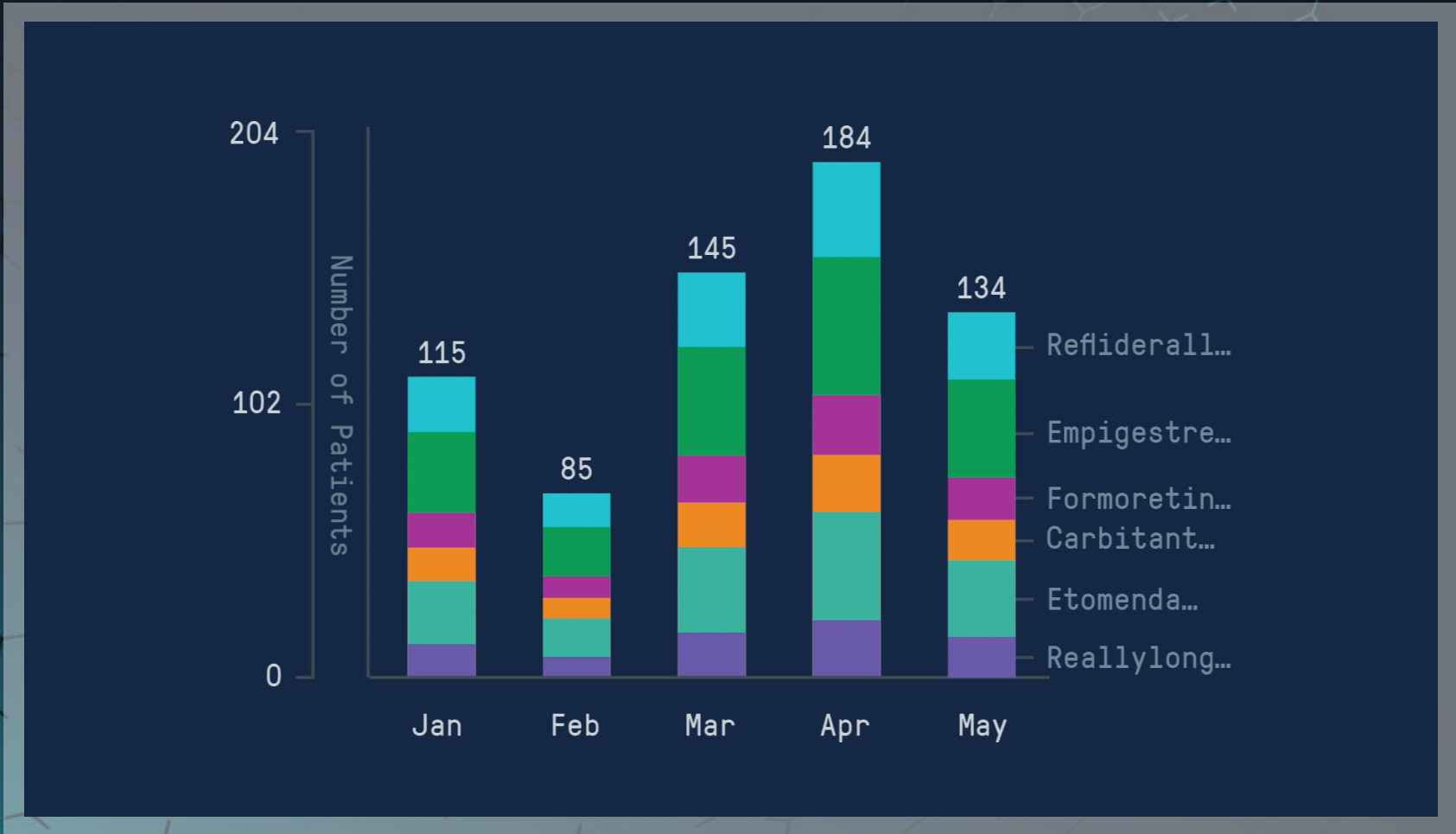
APPLYING HIERARCHY TO CHARTS



FUNCTIONAL UI

- Expanding a UI system to support interaction



APPLYING UI HIERARCHY – INTERACTIONS

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CONCLUSION

LESSONS LEARNED

Good data visualization

- Is a collaboration between UX, UI and DV.
- Focuses on user task.
- Is grounded in business goals and engineering technology.
- Sometimes re-defines UX rules.

Design Team recommendations

- Start early, and involve all roles.
- Stay focused on user personae.
- Collaborate to manage competing interests.
- Prepare to design within constraints.

QUESTIONS?

THANK YOU!

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APPENDIX

DESIGN SYSTEMS TO SUPPORT DATA VISUALIZATION

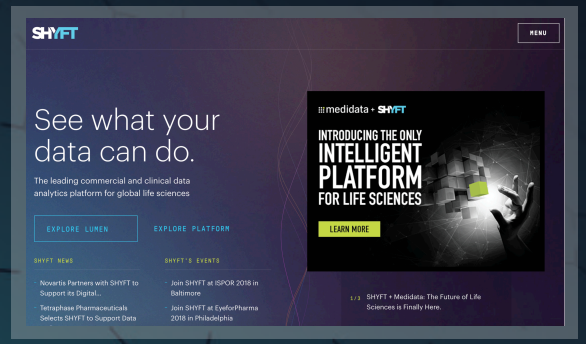
- Configuring/selecting a chart (user task)
- Chart capacity – guard rails for the kinds of data we can show (based on task and other design limitations)
- Interactions (UX)
- Chart display
- Basic structure/skeleton
- Chart colors
- Chart UI to support data legibility and interactions styling

“PICKING COLORS” – DEFINING CONTEXTS FOR USING COLOR

Business: Convey identity

(Brand)

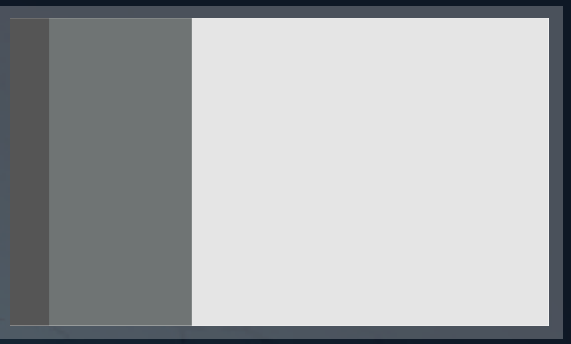
Maintain brand integrity



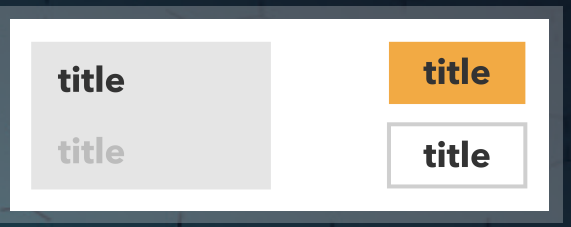
UX / UI: Direct Attention

(App palette)

Support Flow



Indicate importance

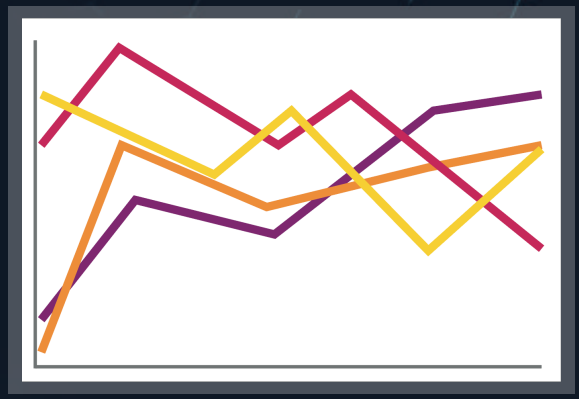


Report status

Data Vis: Identify data

(DV palette)

Within a chart



Between charts

In relation to UI hierarchy

Based on data (global colors)

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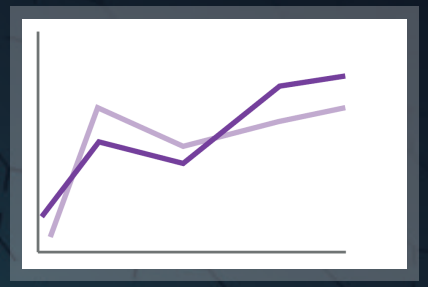
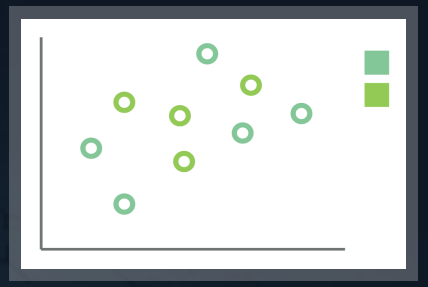
"PICKING COLORS" – DESIGNING A TECHNICAL COLOR PALETTE

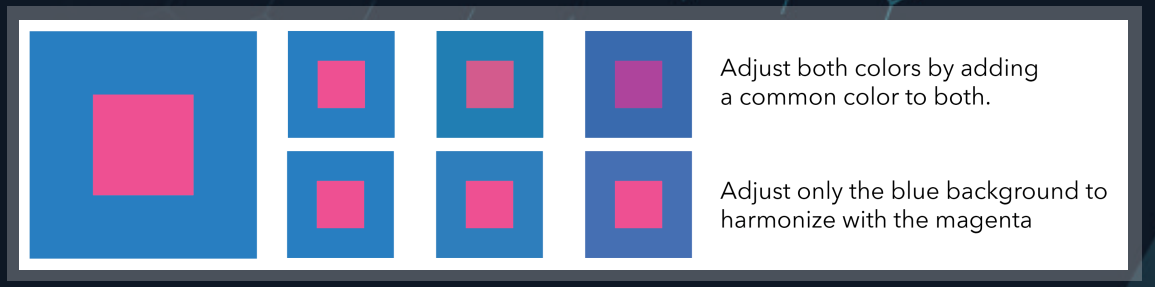
Balanced Value



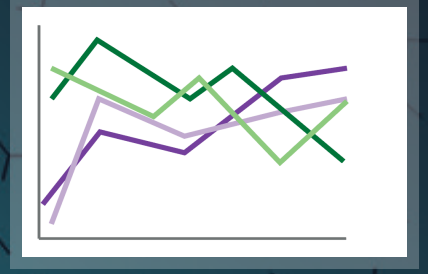
Distinguishable hue



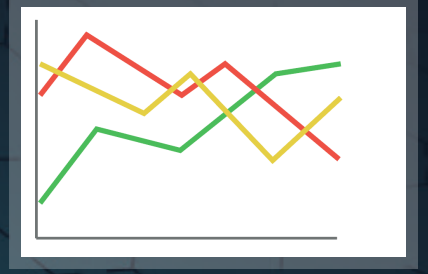
Minimize simultaneous contrast



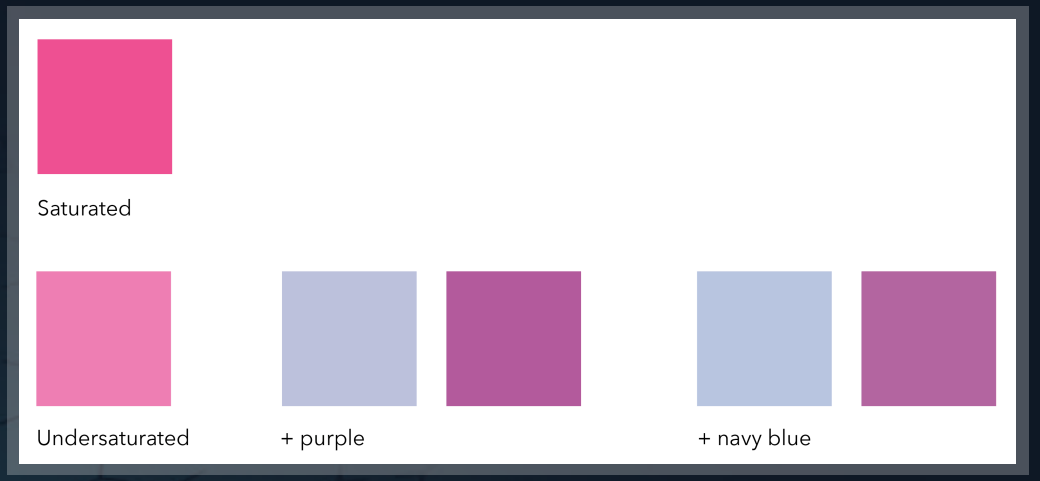
Reduce color groupings



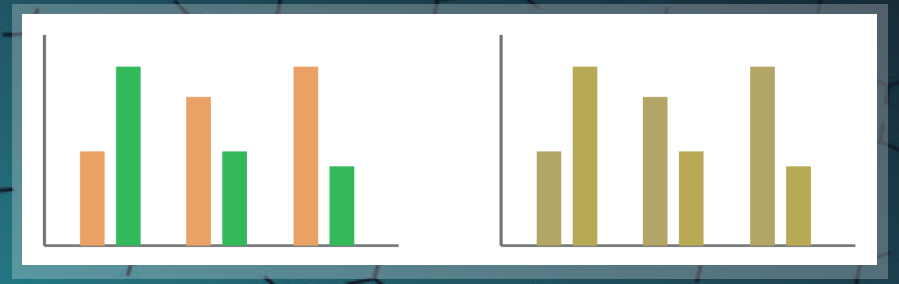
Avoid symbolic meanings



On Brand/Aesthetically pleasing



Accessible



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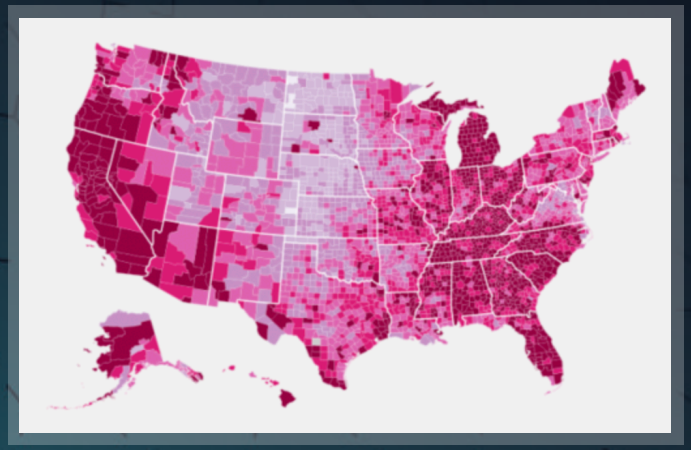
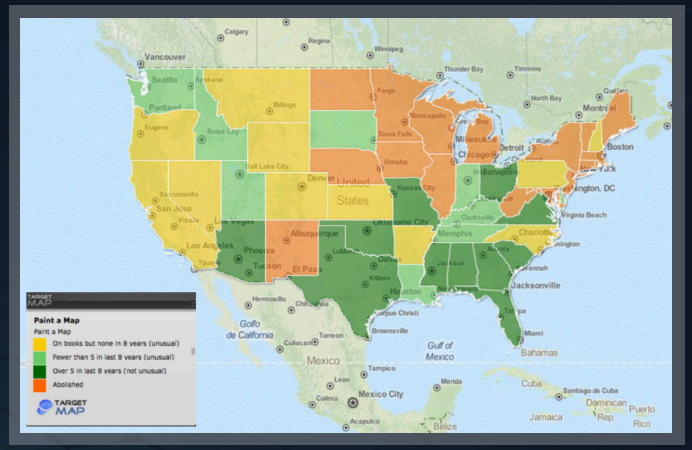
SEMIOLOGY OF COLOR

Colors can take on different meaning based on how they are applied

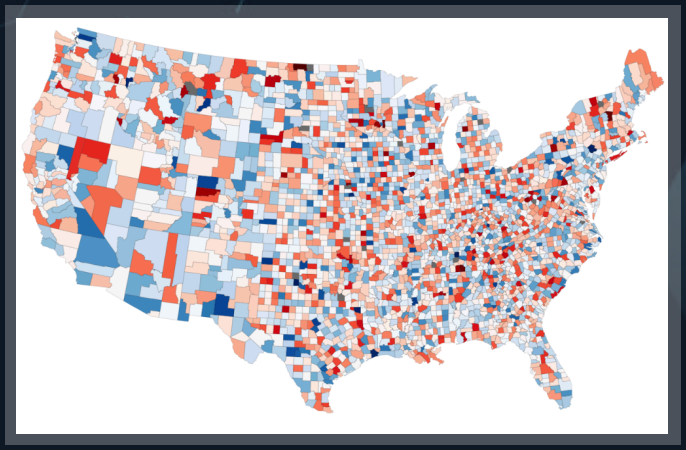
Sequential: Color as value



Categorical: Color as group/label



Diverging: Color as category + value



COLOR APPLICATION ORDER

Sequence

Categories

Multi-hue

Monochrome