



Data Visualization: The new era of revolution in the pharmaceutical industry

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PhUSE 2015





Agenda

- Why Use Data Visualizations
- Data Visualization Example
- Data Visualization in Pharmaceuticals



Vienna 2015
Clinical Data Science
October 11th–14th 2015
Intercontinental Wien Hotel, Vienna



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Disclaimer

The discussion today is from the presenter's opinion only that reflect his experience. The data used is bogus and for illustrations only.

About the presenter

- 21 years experience
- MS Statistician- focus on statistical computation and programming
- In strategic role for past 11 years





Why Use Data Visualizations

- Data is growing exponentially and in complexity by volume, velocity, and variety
- Interpretation of the data is getting more challenging to make informed decisions using standard graphing techniques
- Good data visualization tools are helping users to understand multidimensional complex data at an intuitive level
- Data visualizations have a proven track record as a state-of-art discipline in non-pharma industries
- Penetrating the clinical drug development world



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Responder Analysis Example

Primary objective:

Show Drug A has a higher responder rate than Placebo at Visit 6

Response Measures:

9 separate measures with a Yes (1) or No (0) answer
Each measure is called a response component

Responder Definition:

At least 5 response components are Yes (i.e. Sum of components ≥ 5)

Primary Endpoint: % Responders at Visit 6



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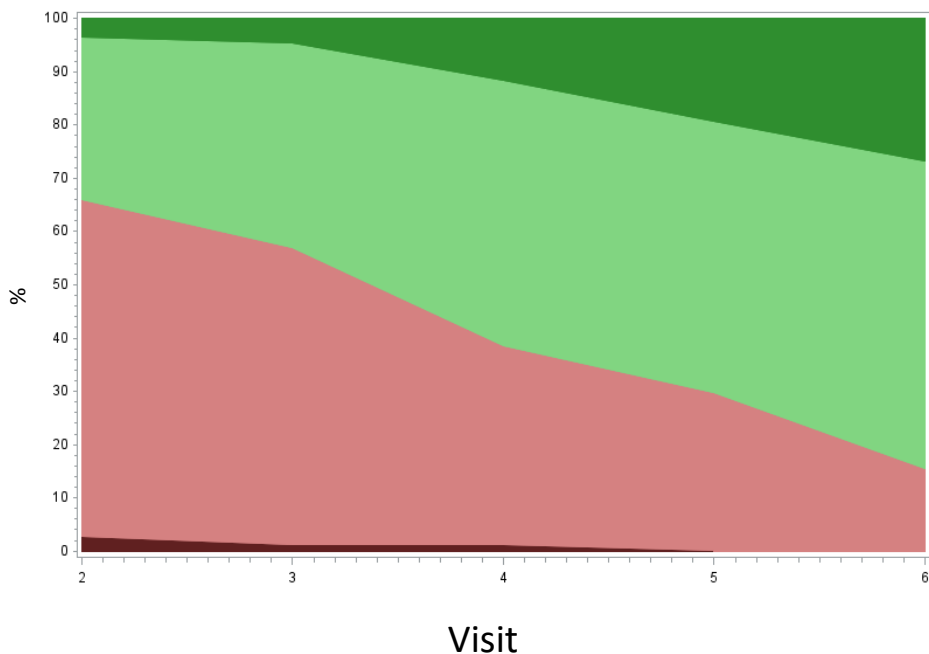
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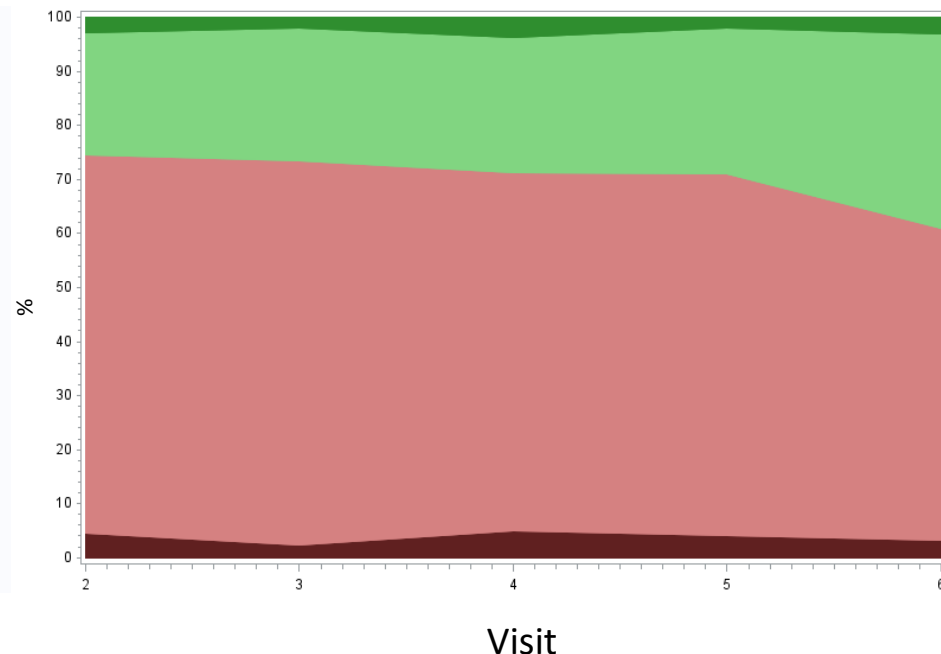
Responders Over Time

Graph 1 Summed Components Over Time

Trt A



Placebo



Total Number Positive Components

0-1

2-4

5-6

7-9

The deeper the color the stronger response for either result



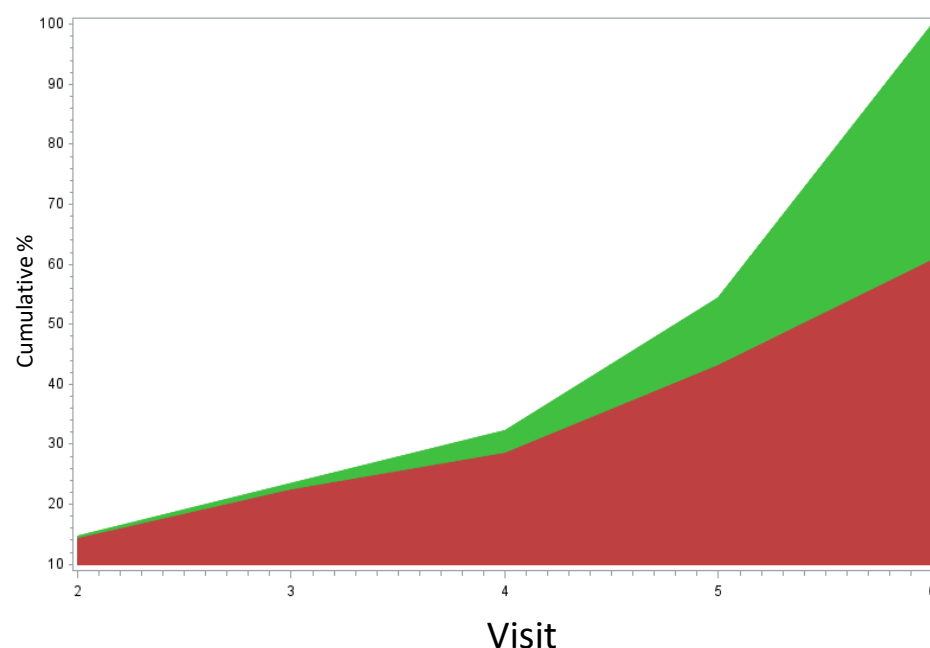
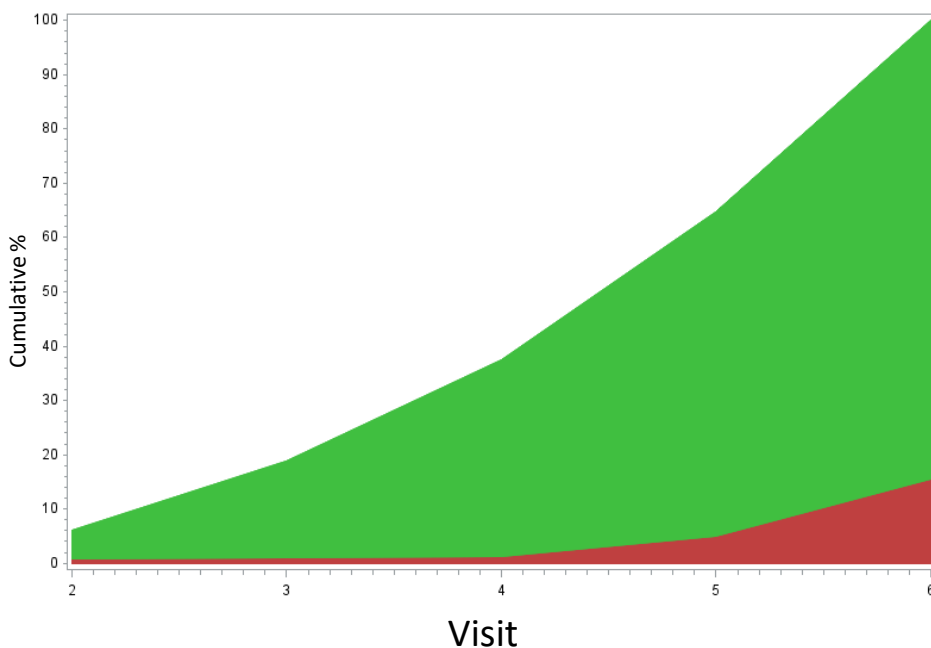


Stable Response Over Time

Graph 2 Stable Responders and Non-Responders Over Time

Trt A

Placebo



Stable Non-Responder

Stable Responder

Note: Each colored area shows the cumulative effect of subjects becoming a responder (non-responder) and staying a responder (non-responder)
Once again, green for go (i.e. responder) and red for no-go (i.e. non-responder)

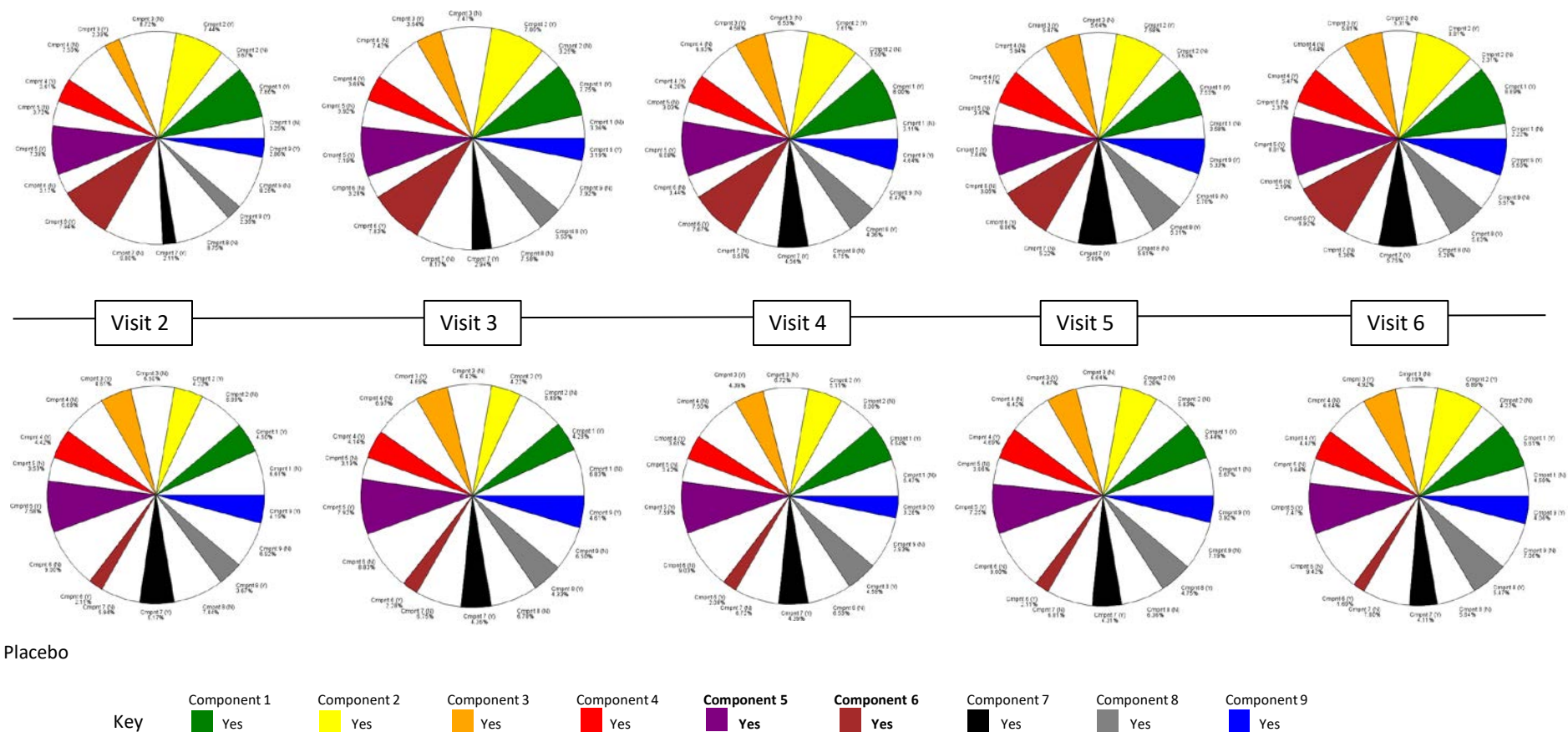




Component Response over Time

Figure 3 Percent of Positive Components (Y) across Visits and by Treatment Group

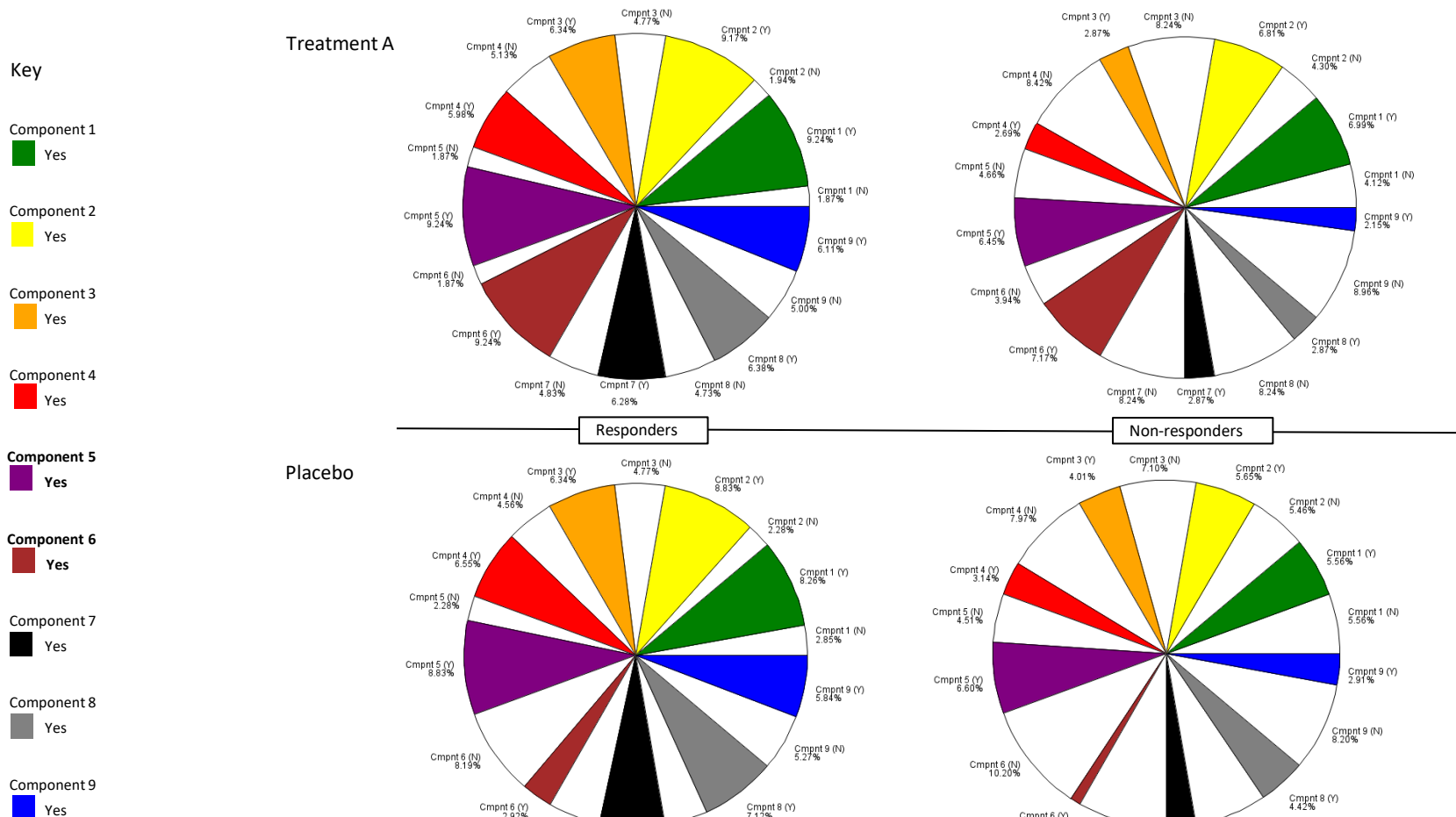
Treatment A



Placebo

Components by Treatment and Response

Figure 4 Percent of Positive Components (Y) at Visit 6 and by Responder Status





Data Visualizations

- It is all about how quickly to get your story out with data that is complex and intuitive. (color, size, etc)
- Tufte Principle: The rate of transmission of information
- They are only as good as you design them
 - A whole new topic
 - Cautious of scales
- A picture is worth 1,000 words



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Examples of Uses in Pharmaceuticals

- Drug Discovery
- Data Management
- Monitoring
- Statistical QC of Data
- Trial data analysis
- Marketing Analysis
- ... and more



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Conclusion

- Data Visualizations are an unmet need in pharma's growing data addressing complexity by volume & variety
- Advantage over traditional graphing / tabular methods – particularly dynamic graphing
- Data Visualization tools are helping users, non-analysts at an intuitive level
- Continues to penetrate our industry
- PhUSE CS Working Group: Emerging Trends and Technologies
 - Data Visualizations for Clinical data





Thank You

Questions?

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