From Data To Insight
Des Traynor

@destraynor,
COO of @intercom
INTRO

KNOW YOUR AUDIENCE

KNOW YOUR DOMAIN

KNOW YOUR DATA

KNOW YOUR VISUALS

KNOW YOUR STYLE

CLOSING POINTS

FIN
We are drowning in data.
IT’S HARD TO MAKE VISUALS
“Be clear first and clever second. If you have to throw one of those out, throw out clever.
— Jason Fried
VISUALS CAN CONFUSE
2012 PRESIDENTIAL RUN

GOP CANDIDATES

70% BACK PALIN
63% BACK HUCKABEE
60% BACK ROMNEY

SOURCE: OPINIONS DYNAMIC
UNEMPLOYMENT RATE
UNDER PRESIDENT OBAMA

2011
SOURCE: BUREAU OF LABOR STATISTICS

9.0% 8.9% 8.8% 9.0% 9.1% 9.2% 9.1% 9.1% 9.1% 9.0% 8.6%

JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV

FOX NEWS
radio

WAR CHAT AND A TROOP WITHDRAWAL AT THE EN} NAS FUT 2,292.50
UNEMPLOYMENT RATE
UNDER PRESIDENT OBAMA

2011
SOURCE: BUREAU OF LABOR STATISTICS
IF BUSH TAX CUTS EXPIRE

TOP TAX RATE

NOW: 35%

JAN. 1, 2013: 39.6%
INCREASES in the NATIONAL DEBT

- Democratic Debt Increases
- Republican Debt Increases
- various parties (average increase = $2.5 Billion per year)

Gee, Ma! The news always says the **Democrats** are the big spenders!
Visualising the Gulf Oil Spill...
184 Million Milk Jugs
Okay, lets try with football...
If the Gulf of Mexico - the 7th largest body of water in the world, containing approximately 660 quadrillion gallons of water (that's 660 with 15 zeros) - was represented by Cowboys Stadium in Dallas - the largest domed stadium in the world - how would the spill stack up? In this example, the amount of oil spilled - if the Gulf of Mexico was the size of Cowboys Stadium - would be about the size of a 24 ounce can of beer. Cowboys stadium has an internal volume of approximately 104 million cubic feet, compared to the just over 50 cubic inches of volume in a 24-ounce can. Just like the can, the spilled oil represents only 0.0000002788% of the liquid volume present in the Gulf of Mexico, although as the oil is dispersed, the amount of water affected becomes substantially greater.
If the Gulf of Mexico - the 7th largest body of water in the world, containing approximately 660 quadrillion gallons of water (that's 660 with 15 zeros) - was represented by Cowboys Stadium in Dallas - the largest domed stadium in the world - how would the spill stack up? In this example, the amount of oil spilled - if the Gulf of Mexico was the size of Cowboys Stadium - would be about the size of a 24 ounce can of beer. Cowboys stadium has an internal volume of approximately 104 million cubic feet, compared to the just over 50 cubic inches of volume in a 24-ounce can. Just like the can, the spilled oil represents only 0.000002788% of the liquid volume present in the Gulf of Mexico, although as the oil is dispersed, the amount of water affected becomes substantially greater.
The “anti-infographic movement”

No data was harmed in the making of these infographics
@destraynor
Des Traynor

Please consider the environment before creating another infographic.

2 Nov via Twitter for Mac  Favorite  Reply  Delete

Retweeted by andrew_twit and 9 others
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WHO ARE WE DESIGNING FOR?
WHAT ROLE?
The role defines the level of abstraction required.
CEO Level Detail

• Strategic view
• Focus on the long term
• High level overview
• Simple summary
Analyst role

• Query driven analysis
• Precision required
• Emphasis on trend & correlations
Operations

Focus on current status
Issue & Event driven

e.g. Alerts, spikes, trouble
WHAT DEPARTMENT?

The department defines the domain knowledge
SALES DEPARTMENT

Leads, conversions, avg. value per sale, etc
MARKETING DEPARTMENT

Impressions, loyalty, awareness, share
NETWORK & IT

Issues, tickets, lead time, open cases, uptime
<table>
<thead>
<tr>
<th>Role + Department</th>
<th>Information needed</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MANAGEMENT</strong></td>
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<tr>
<td><strong>ANALYST</strong></td>
<td>* My Active leads</td>
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<td>* Value per lead</td>
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<td>* Progress towards target</td>
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<tr>
<td><strong>OPERATIONS</strong></td>
<td>* Active campaigns</td>
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<td>* Current CPM/CPC</td>
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<td>* Landing page</td>
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<td><strong>CUSTOMER SUPPORT</strong></td>
<td>* Satisfaction Rating</td>
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<td></td>
<td>* Trend per quarter</td>
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<td>* Comparison with competitors</td>
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<td>Role + Department = Information needed</td>
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</tbody>
</table>
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WHICH OF THESE?

$ Sales today

# Unit sales

Avg $ per sale

Us vs Competitor

Avg. $ per customer

This period vs last period

Total this month

% Change in sales

Popular products
WHICH OF THESE?

**Top selling items**

<table>
<thead>
<tr>
<th>Item name</th>
<th>Unit sales</th>
<th>% of total</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oak tree (special edition)</td>
<td>803</td>
<td>18%</td>
<td>11.52%</td>
</tr>
<tr>
<td>Pet Kitten</td>
<td>607</td>
<td>12%</td>
<td>100%</td>
</tr>
<tr>
<td>Skyscraper (high rise)</td>
<td>511</td>
<td>11%</td>
<td>1.52%</td>
</tr>
<tr>
<td>Sycamore tree</td>
<td>430</td>
<td>9%</td>
<td>5.23%</td>
</tr>
<tr>
<td>Dancing disco.</td>
<td>203</td>
<td>4%</td>
<td>1.20%</td>
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<tr>
<td>Other items</td>
<td>2495</td>
<td>52%</td>
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</tr>
</tbody>
</table>

**Total Sales**

$12,240.65  ▲ 5.32%

**Top grossing items**

...
6 THINGS TO COMMUNICATE
1. COMMUNICATE SINGLE FIGURE

Used when context is obvious, precision is required, and past/future is irrelevant to user.

Examples:
AA clerk with a waiting list
Checking bank balance
Sys admin checking current status

Notes:
Single numbers can have states (good, bad
2. SINGLE FIGURE & CONTEXT

“How are we doing lately? Any problems on horizon?”

Examples:
How were this months sales?
Is the network performing well?
Hows our user figures looking?

Notes:
Spark-lines can save space, and provide context
3. ANALYSIS OF A PERIOD

“Show me all the key moments this month”

Examples:
Looking for patterns in longer data sets
Looking ahead based on current data
Comparison with previous period
GOOD LINE CHART

Work best with precise data (e.g. day to day)
This implies lots of things that aren’t necessarily true
GOOD BAR CHART

Never imply precision you don’t have.
GOOD BAR CHART

Never imply precision you don’t have.
The cost of gas just keeps going up, right?
Excellent, the cost of gas has been decreasing all year!
Changes in gas prices aren’t that big a deal
Always watch the axes. If they don’t start at zero, someone is up to something dodgy.
SAME DATA, DIFFERENT STORY
4. ANALYSIS OF PERIOD+ TARGET

Did we hit our sales figures?
Are we fulfilling our five nines quota?

Examples:
Are sales were they should be?
Are all our employees performing okay?
Is our response time better than industry standard?
BAD LINE CHART

Actual  Target
A common error in visualisation is leaving all the processing to the reader. At a glance it looks like we’re doing okay here.

In this case, we’re talking about a delta, but we’re not showing the delta...
A common error in visualisation is leaving all the processing to the reader. At a glance it looks like we’re doing okay here.

In this case, we’re talking about a delta, but we’re not showing the delta...
FOCUS ON THE DELTA

Same data, big difference
This guy is getting a bonus
FOCUS ON THE DELTA

This guy is getting fired.
A full cohort analysis

% Active in months after signup

<table>
<thead>
<tr>
<th>Sign Up</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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18% of January sign ups are still active in July

Highlight drops over: 5%
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<tr>
<th>Months after signup</th>
<th>3</th>
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</table>

18% of January sign ups are still active in July.
<table>
<thead>
<tr>
<th>Month</th>
<th>% Active in months after signup</th>
<th>% of total</th>
<th>% of prev. month</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>100%</td>
<td>29%</td>
<td>26%</td>
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<tr>
<td>Feb</td>
<td>100%</td>
<td>32%</td>
<td>23%</td>
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<tr>
<td>Mar</td>
<td>100%</td>
<td>33%</td>
<td>21%</td>
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<td>Apr</td>
<td>100%</td>
<td>34%</td>
<td>28%</td>
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<td>May</td>
<td>100%</td>
<td>35%</td>
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<td>Jun</td>
<td>100%</td>
<td>40%</td>
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<td>Jul</td>
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<td>41%</td>
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<td>Aug</td>
<td>100%</td>
<td>48%</td>
<td>32%</td>
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<td>Sep</td>
<td>100%</td>
<td>50%</td>
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<td>Oct</td>
<td>100%</td>
<td>52%</td>
<td>41%</td>
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<tr>
<td>Nov</td>
<td>100%</td>
<td>54%</td>
<td>48%</td>
</tr>
<tr>
<td>Dec</td>
<td>100%</td>
<td>55%</td>
<td>51%</td>
</tr>
</tbody>
</table>

Showing: % of total, % of prev. month

A full cohort analysis

18% of January sign ups are still active in July
How many stick around for a second month?

<table>
<thead>
<tr>
<th>Month</th>
<th>Signed up:</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>25%</td>
</tr>
<tr>
<td>February</td>
<td>27.5%</td>
</tr>
<tr>
<td>March</td>
<td>29%</td>
</tr>
<tr>
<td>April</td>
<td>32.4%</td>
</tr>
</tbody>
</table>

The graph shows the percentage of users who stick around for a second month, with April having the highest percentage at 32.4%.
Retention using a cycle plot

- Month 2 Retention: 35%
- Month 3 Retention: 30%
- Month 4 Retention: 25%
- Month 5 Retention: 20%
Signups in April 2011
26% Still Active in June
101 retained - 290 lost.
5. BREAKDOWN OF A VARIABLE

“What age groups are buying our stuff?”
“What countries are we big in?”

Examples:
Who are our customers?
What's our awareness like in each demographic?
What browsers are people using these days?
BAD PIE CHART

- America
- Ireland
- U.K.
- Canada
- Australia
- Spain
- France
YOU COULD ADD THE DATA...

- America: 15%
- Ireland: 9%
- U.K.: 23%
- Canada: 11%
- Australia: 18%
- Spain: 15%
- France: 9%
SORTED BAR CHART

Ireland
U.K.
America
Spain
Canada
Australia
LYING WITH GROUPINGS

The 100K to 200k is where we need to tax!
LYING WITH GROUPINGS

Or maybe not...
LYING WITH GROUPINGS

Fun With Charts: Making the Rich Look Poor

The chart has been making the conservative blog rounds, from Power-line to Hoosierpundit to Reihan Saltz to (not really conservative) Andrew Sullivan, who reproduces it under the heading “Where the Money Is.” The chart most certainly does not demonstrate the Journal’s point. It instead relies upon an optical illusion.

Democrats have been arguing that their tax increases should solely affect income over $250,000 a year. The Journal makes that pot of income appear small by shrinking it up into seven different lines. See, the $200,000-$200,000 line is biff, and all the other lines to the right of it are short. That tall line must be where the money is!

As a public service, I’ve redrawn the chart for the Journal. On the left is the original. On the right is the chart that shows the actual amount of money earned by the tiny handful of people making over $200,000. It’s a lot.

The Middle Class Tax Target

The amount of total taxable income (left scale) for all filers is adjusted gross income level for 2008

$14,000

$4.4 trillion

LYING WITH ROTATIONS

U.S. Smartphone Marketshare

- RIM: 21.2%
- Apple: 39.0%
- Palm: 7.4%
- Motorola: 3.1%
- Nokia: 9.8%
- Other: 19.5%
TRUTH AGAIN
BAD: AREA PLOT
BAD: AREA PLOT

Which would you pick?
BAD: AREA PLOT

How “big” is this?
BAD: AREA PLOT
BAD UNIT PLOT
5. BREAKDOWN OF A VARIABLE

“Bar charts aren’t sexy, but they rely on an innate skill, following a line.”
If you had to fight one of them...
If you had to fight one of them...
6. BREAKDOWN OVER TIME

“How has the composition changed over the last year?”

Examples:
How has the browser market changed?
Has our revenue sources shifted recently?
America peaked in July?
How has U.K. done?
LYING WITH DIMENSIONS

Lots more yellow pixels here now...
LET'S TRY A LINE CHART

- Ireland
- U.K
- America
LINE CHART OF SAME DATA?

Same data. Different story.
BAR CHARTS AGAIN?

Ireland

U.K

America
BAR CHARTS AGAIN?
BAR CHARTS AGAIN?
BAR CHARTS AGAIN?
INTERACTIVE, REMEMBER?

You can adapt based on interactions.
Why is it so hard to follow the U.K here?
If it was easy, we'd all be great at snooker
Comparison

Relationship

Distribution

Composition

What would you like to show?

Many Categories

Two Variables

Changing Over Time

Many Items

Cyclical Data

Single or Few Categories

Many Periods

Many Periods

Few Items

Non-Cyclical Data

Many Variables

Few Periods

Over Time

One Variable per Item

Three Variables

Static

Few Periods

Many Variables

Over Time
Chart Suggestions—A Thought Process

- **Variable Width Column Chart** for Two Variables per Item
- **Table or Table with Embedded Charts** for Many Categories
- **Bar Chart** for Many Items
- **Column Chart** for Few Items
- **Circular Area Chart** for Cyclical Data
- **Scatter Chart** for Two Variables

Comparison

Relationship

What would you like to show?
Relationship

What would you like to show?

Distribution

Composition

Changing Over Time

Few Periods

Only Relative Differences Matter

Stacked 100% Column Chart

Relative and Absolute Differences Matter

Stacked Column Chart

Many Periods

Only Relative Differences Matter

Stacked 100% Area Chart

Relative and Absolute Differences Matter

Stacked Area Chart

Simple Share of Total

Pie Chart

Accurate Subtraction
Visuals communicate 2 things.

Category

Quantity
WAYS TO VISUALISE QUANTITY

- Line length
- Line width
- Colour intensity
- Size
- Quantity
- Speed
WAYS TO VISUALISE QUANTITY

- Line length
- Line width
- Colour intensity
- Size
- Quantity
- Speed
WAYS TO VISUALISE QUANTITY

- Line length
- Line width
- Colour intensity
- Size
- Quantity
- Speed

5th Takeaway
HOW TO VISUALISE CATEGORY

Line type

Colour

Shape

Location
HOW TO VISUALISE CATEGORY

Line type

Colour

Shape

Location

6th Takeaway
HOW TO USE ALL THIS?

You’ve just taken over a hotel. You’re handed the accounts. Excel hell.

Where do we start?
Q: Are we making any money?

Profit is the delta between costs and revenue. Let’s see that for the year.
Q: What makes us money?

Let's compare the percentage of revenue generated by each category.
Q: What sort of prices do we charge per room?

Let's look at the price range the median value, with a Pareto plot
Design to support analyst queries...

<table>
<thead>
<tr>
<th>MIDWEST HOTELZ</th>
<th>REPORT</th>
<th>TYPE</th>
<th>ROOM TYPE</th>
<th>PERIOD</th>
<th>GUEST TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>REVENUE</td>
<td>ROOMS &amp; EXTRAS</td>
<td>KING SUITES</td>
<td>LAST YEAR</td>
<td>ALL GUESTS</td>
</tr>
</tbody>
</table>

Drill down, Date Selector, Saved Filters, Daily reports etc
Another example.

What the hell is going on in Europe?
It's All Connected: A Spectator's Guide to the Euro Crisis

Charting the web of debt exposure among sagging economies.

The global financial system is highly interconnected. No problem in any part of the world can be severed from almost everywhere else — it is a network of defaults, contagion, contracting credit and collapsing economies.

5 And Reach American Shorelines...

American banks and money-market funds are invested heavily in debt issued out of European banks, which are funding a growing debt crisis. Within the consortium "La Grande Bande," which in turn lends to and indirectly finances the Luxembourg Brothers Holdings, Ltd. (in the second circle), American banks are highly exposed.

6 Unless Bailouts Are Big Enough...

The payroll tax cut could save some estimates, roughly about $13.6 billion to support the government. More critically, the government must keep the deficit from becoming too large, but the size of the European economy and the potential for large transfers from one country to another are crucial factors.

7 One of Many Crisis Unknowns...

The European Union is facing a crisis unprecedented in its history. How much support will be required? How will the crisis be financed? These are questions that require a framework for thinking about large-scale financial interventions.
It Starts With The Euro ...

In 1999, most countries of the European Union adopted the euro as a common currency. The union spread prosperity across Europe, Italy, Greece, Spain and Portugal were able to borrow cheaply in euros. Despite the euro's success, Germany, even though its industries were more dynamic, still had a clear economic advantage. This gave a clear strategic incentive to increase.

2 ... And Goes Bad In Greece ...

Greece financed a large public welfare state and built up huge debts for the simple fact that it has more Eurozone nations. In 2008, European financial institutions began bailing out Greece (Eirelde and Ireland). Greece, Spain, Spain, Italy, Portugal, etc. had an identity crisis of the identity, they agreed to modern, majority debt-reduction plans or "sustainability frameworks." Every time, a new round of debt increased, and the credit crisis grew over as lenders charge more and demand government cuts, which in turn provoke more civil unrest. Greece continued to borrow from the eurozone to grow, and the Greeks were found.

The problem is, this Greek debt default could tear all European banks apart, as the euro is a means to pay interest. It's impossible for Germany to pay the Greek credit over the years, and maybe cause a violent financial crisis. So bailout continue — for now, at least.

FIND CASE: Bailouts in the form of new European credit eventually result in Greek pay-down by its debtors with a combination of growth and austerity by year-in/year-out.

ONE DEMONOMY: Germany's debt growth is an essential or declining country. The country defaults, either in a negotiated, orderly manner or chaotically, forcing lenders to take losses either way. This could damage the currency if it was not caught in the same wave of losses. Even if Greece is saved, the euro zone could become the epicenter of the four other shaky members: Ireland, Portugal, Spain and Italy. This is what the European Union is trying to agree on this issue, as France finds a more reluctant Germany.

What does happen with the euro? The European Union is trying to agree on this issue, as France finds a more reluctant Germany.

7 ... One of Many Crisis Unknowns ...

Who warns of the euro's collapse? Greece is on the brink of a new debt crisis, and no one is sure what the outcome will be. The euro zone is trying to agree on a new issue, as France finds a more reluctant Germany.

WHAT TO EXPECT FROM THE EURO: Greece is on the brink of a new debt crisis, and no one is sure what the outcome will be. The euro zone is trying to agree on a new issue, as France finds a more reluctant Germany.

WHAT'S EXPECTED TO BE NEXT? Greece is on the brink of a new debt crisis, and no one is sure what the outcome will be. The euro zone is trying to agree on a new issue, as France finds a more reluctant Germany.

WHAT TO WATCH FOR: Greece is on the brink of a new debt crisis, and no one is sure what the outcome will be. The euro zone is trying to agree on a new issue, as France finds a more reluctant Germany.

WHERE THEY ARE NOW: Greece is on the brink of a new debt crisis, and no one is sure what the outcome will be. The euro zone is trying to agree on a new issue, as France finds a more reluctant Germany.
 interconnected. So problems in one part of the world can reverberate almost everywhere else — risking a cascade of default, contagion, contracting credit and collapsing economic activity. Exhibit A now is Europe.

European Union leaders are meeting this week to at last deal with a debt crisis rattling investors worldwide who once thought lending to euro zone countries was virtually risk-free. The graphic here helps you see the intertwined complexities.

1 It Starts With The Euro...

In 1999, most countries in the European Union adopted the euro as a common currency. This union allowed poorer countries like Portugal, Italy, Ireland, Spain and Greece to borrow money at the same low interest rates as rich and financially prudent Germany, even though their inflation rates were higher. That gave them a strong incentive to borrow.

2 ... And Goes Bad In Greece...

Greece financed a large public-welfare state and built up huge debt for its size that it has scant hope of repaying now.
INTRO

KNOW YOUR AUDIENCE

KNOW YOUR DOMAIN

KNOW YOUR DATA

KNOW YOUR VISUALS

FIN

KNOW YOUR STYLE

CLOSING POINTS
A WORD ON CONTEXT
This is a car.
This is a Nuclear power station.
This is a space shuttle
This is none of those things...
Chances are this is where your user is.
The point is, we’re not always fighting for attention.


### Sales Report Jan 2012

**ORDERS**
12,247

**ACCOUNTS**
7,343

**Revenue per product**

<table>
<thead>
<tr>
<th>Category</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Books</td>
<td>$88.50</td>
</tr>
<tr>
<td>Electronics</td>
<td>$72.50</td>
</tr>
<tr>
<td>Magazines</td>
<td>$54.05</td>
</tr>
<tr>
<td>Appliances</td>
<td>$45.25</td>
</tr>
<tr>
<td>e-goods</td>
<td>$32.75</td>
</tr>
</tbody>
</table>

**Top products**

<table>
<thead>
<tr>
<th>Product</th>
<th>Orders</th>
<th>$ Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>The girl with the dragon tattoo</td>
<td>1</td>
<td>88.50</td>
</tr>
<tr>
<td>Inception</td>
<td>9</td>
<td>72.50</td>
</tr>
<tr>
<td>The girl who kicked the hornet's nest</td>
<td>15</td>
<td>54.05</td>
</tr>
<tr>
<td>Iron Man 2</td>
<td>8</td>
<td>45.25</td>
</tr>
<tr>
<td>Max Payne 2</td>
<td>6</td>
<td>32.75</td>
</tr>
</tbody>
</table>
Sales Report Jan 2012

ORDERS 12,247  CHANGE ▲ 0.32%
ACCOUNTS 7,343  CHANGE ▲ 4.32%

Revenue per product

Let's use this strawman
Let's take 3 points from Tufte
Chart junk: the stuff that doesn't change when the data changes
Data Ink Ratio: what percentage of your ink shows data
Smallest Effective Difference: the least you can do to highlight
Smallest Effective Difference: the least you can do to highlight

These colours would get very loud. Unnecessarily so.
Smallest Effective Difference: the least you can do to highlight

These are far quieter.
Sales Report Jan 2012

Revenue per product

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Gradients, shadows, colors, gridlines. All non-content
Sales Report Jan 2012

ORDERS 12,247
GROWTH 0.32%
ACCOUNTS 7,343
GROWTH 4.32%

Revenue per product

<table>
<thead>
<tr>
<th>Category</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Books</td>
<td>32.75</td>
</tr>
<tr>
<td>Electronics</td>
<td>22.50</td>
</tr>
<tr>
<td>Magazines</td>
<td>10.75</td>
</tr>
<tr>
<td>Appliances</td>
<td>9.50</td>
</tr>
<tr>
<td>e-goods</td>
<td>34.25</td>
</tr>
<tr>
<td>Other</td>
<td>14.25</td>
</tr>
</tbody>
</table>

Top products

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Let's kill the gradients
Sales Report Jan 2012

ORDERS | CHANGE | ACCOUNTS | CHANGE |
--------|--------|----------|--------|
12,247  | 0.32%  | 7,343    | 4.32%  |

Revenue per product

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<thead>
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<tr>
<td>Books</td>
<td>30</td>
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<tr>
<td>Electronics</td>
<td>20</td>
</tr>
<tr>
<td>Magazines</td>
<td>10</td>
</tr>
<tr>
<td>Appliances</td>
<td>10</td>
</tr>
<tr>
<td>e-goods</td>
<td>40</td>
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<tr>
<td>Other</td>
<td>10</td>
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Let's kill the colours
HTML has a `<strong>` tag but no `<weak>` tag.

As a result, we forget to think about what’s less important on the screen.

— Ryan Singer
Sales Report Jan 2012

ORDERS 12,247  CHANGE 0.32%  ACCOUNTS 7,343  CHANGE 4.32%

Revenue per product

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Let's adjust the shading.
Let's add the necessary differences
Sales Report Jan 2012

ORDERS 12,247
ACCOUNTS 7,343

Revenue per product

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Sales Report Jan 2012

ORDERs 12,247

ACCOUNTS 7,343

Revenue per product

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SALES REPORT MAY 2012

ORDERS
12,247 0.4%

ACCOUNTS
2,323 1.4%

Revenue per product

Top products

<table>
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## SALES REPORT MAY 2012

### Orders

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</table>

### Accounts

<table>
<thead>
<tr>
<th>Product</th>
<th>Accounts</th>
<th>$ Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Books</td>
<td>10</td>
<td></td>
</tr>
<tr>
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<td></td>
</tr>
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<td></td>
</tr>
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</table>

### Revenue per product

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</tr>
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<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>

### Key Metrics

- **Orders:** 12,247 (0.4% increase)
- **Accounts:** 2,323 (1.4% decrease)

### Graphs

- **Site:** Green line graph
- **Payment:** Red line graph
- **Fulfillment:** Yellow line graph

---

**Revenue per product**
4 Points on Visual Design

1. Remove Chart Junk
2. Maximise your data ink ratio
3. Use the “least effective difference” to highlight
4. Remember to quieten down less important parts.
4 Points on Visual Design

1. Remove Chart Junk
2. Maximise your data ink ratio
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7th Takeaway
INTRO

KNOW YOUR AUDIENCE

KNOW YOUR DOMAIN

KNOW YOUR DATA

KNOW YOUR VISUALS

KNOW YOUR STYLE

CLOSING POINTS

FIN
1. VISUALS SHOULD SAY SOMETHING

The worst visualisations are the ones you look at just think “Heh.”
Looks great, but makes very little sense.
Hey girl,
I know your company is going bankrupt and all your servers are down, but check out these sweet graphics...
2. DASHBOARDS & VISUALS EVOLVE

Revisit them as your data increases
VANITY DASHBOARDS
START WITH THE BASICS

<table>
<thead>
<tr>
<th>Event</th>
<th>Mar 10</th>
<th>Mar 9</th>
<th>Mar 8</th>
<th>Mar 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>New users signed up</td>
<td>11</td>
<td>8</td>
<td>5</td>
<td>21</td>
</tr>
<tr>
<td>Users upgraded from trial</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>New trials</td>
<td>0</td>
<td>1</td>
<td>11</td>
<td>15</td>
</tr>
<tr>
<td>Comments posted</td>
<td>11</td>
<td>7</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Images uploaded</td>
<td>38</td>
<td>11</td>
<td>8</td>
<td>1</td>
</tr>
</tbody>
</table>
ADD INSIGHT AS YOU NEED IT

<table>
<thead>
<tr>
<th>Metrics (mean)</th>
<th>Aug</th>
<th>Jul</th>
<th>Jun</th>
<th>May</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean users per account</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Mean images per user</td>
<td>11</td>
<td>8</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Avg time between visits (days)</td>
<td>2.3</td>
<td>3.8</td>
<td>5.6</td>
<td>7.4</td>
</tr>
</tbody>
</table>

Engagement metrics

- Signups this month: 307 (↓2.5%)
- Images uploaded: 8,168 (↑15.3%)
- Comments: 4,121 (↑11.2%)
- Trial conversion rate: 12.32% (↑1.4%)
YEARLY VIEW, AFTER A YEAR
INCREASE INSIGHTS & ACTIONS
CONSIDER ADDING PROJECTIONS
GET INSIGHTS INTO ENGAGEMENT

What types of users do we have?
GET INSIGHTS INTO ENGAGEMENT

2 main clusters it appears.
How's that Freemium model working out for us?
3. PRESENTING AN ARGUMENT

It’s okay to add visuals if your goal is more than the factual presentation of information.
The world is **not filled with professional statisticians**.

Many of us would like a quick glance just to get a good idea of something.

If a graph is made easier to understand by such irrelevancies as a pile of oil cans or cars, then I say all the better.

— Don Norman
Get your data first.
FRENCH FRY CONSUMPTION BY MONTH
IN 2010
Bring the fancy shit afterwards.
Usability is **not everything**. If usability engineers designed a nightclub, it would be clean, quiet, brightly lit, with lots of places to sit down, plenty of bartenders, menus written in 18-point sans-serif, and easy-to-find bathrooms. **But nobody would be there.** They would all be down the street at Coyote Ugly pouring beer on each other.

— Joel Spolsky
4. THEY’RE NOT ALL FIRST TIMERS

Like chess players understand chessboards, people can learn to understand visualisations.
This isn't immediately understandable for everyone.
For those used to it, it's perfect.
5. IMPLEMENTATION TOOLS

HTML for the win.
Highcharts is excellent and worth the money
Flotr2 is new, but popular
D3 is Immense.
D3 is Immense.
Rickshaw (based on D3) is powerful
HTML Charting Libraries

1. Highcharts
2. D3
3. Rickshaw
4. Flotr 2
5. selection.datavisualization.ch
HTML Charting Libraries

1. Highcharts
2. D3
3. Rickshaw
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Lastly...
Lastly...

Show data that’s meaningful, not just “easy to find”

Visualise to communicate, not to post on Dribbble

In short, get the right data, then get the data right. Right?
6. REFERENCES

Where can I read more?
Books

Stephen Few - “Dashboard Design” & “Now you see it”
Edward Tufte - “The visual display of quantitative information”
Brian Suda - “Designing with Data” - available at designingwithdata.com

Blogs

Stephen Few -> http://perceptualedge.com
Intercom (me) -> http://blog.intercom.io

These slides will be on http://speakerdeck.com/u/destraynor,
I'll tweet when they're live.