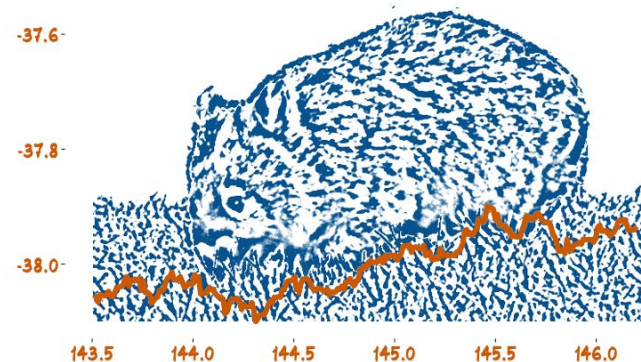


How to Get the Most Out of Your Time

Amy Cook
Making Data Analysis Easier
WOMBAT 2016



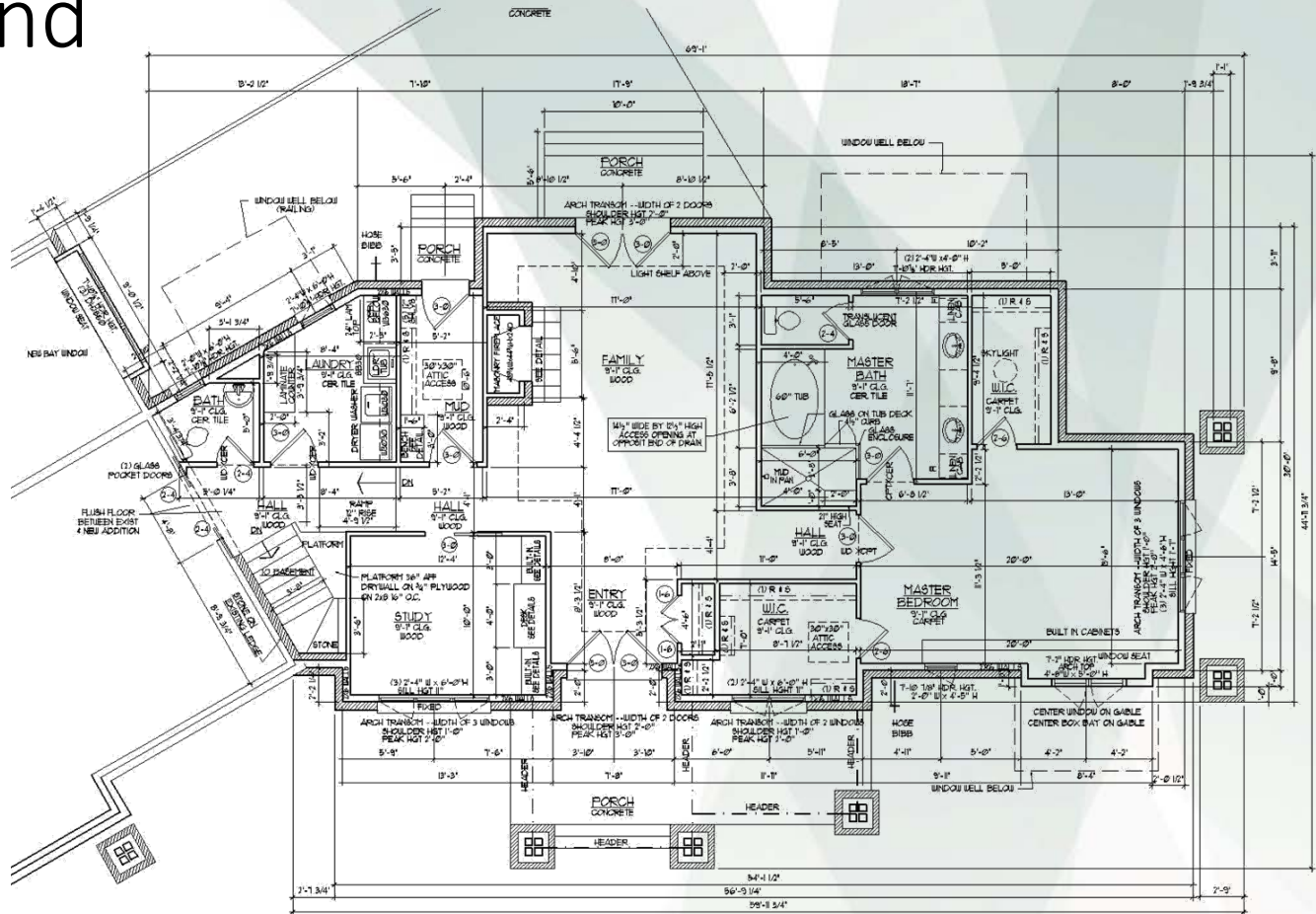
About me



Outline

- Shiny tool for analysis of project data to assist with fee proposals
 - For an engineering consulting company
- Background to the task and available data
- Tool step through
- Impact on Decisions

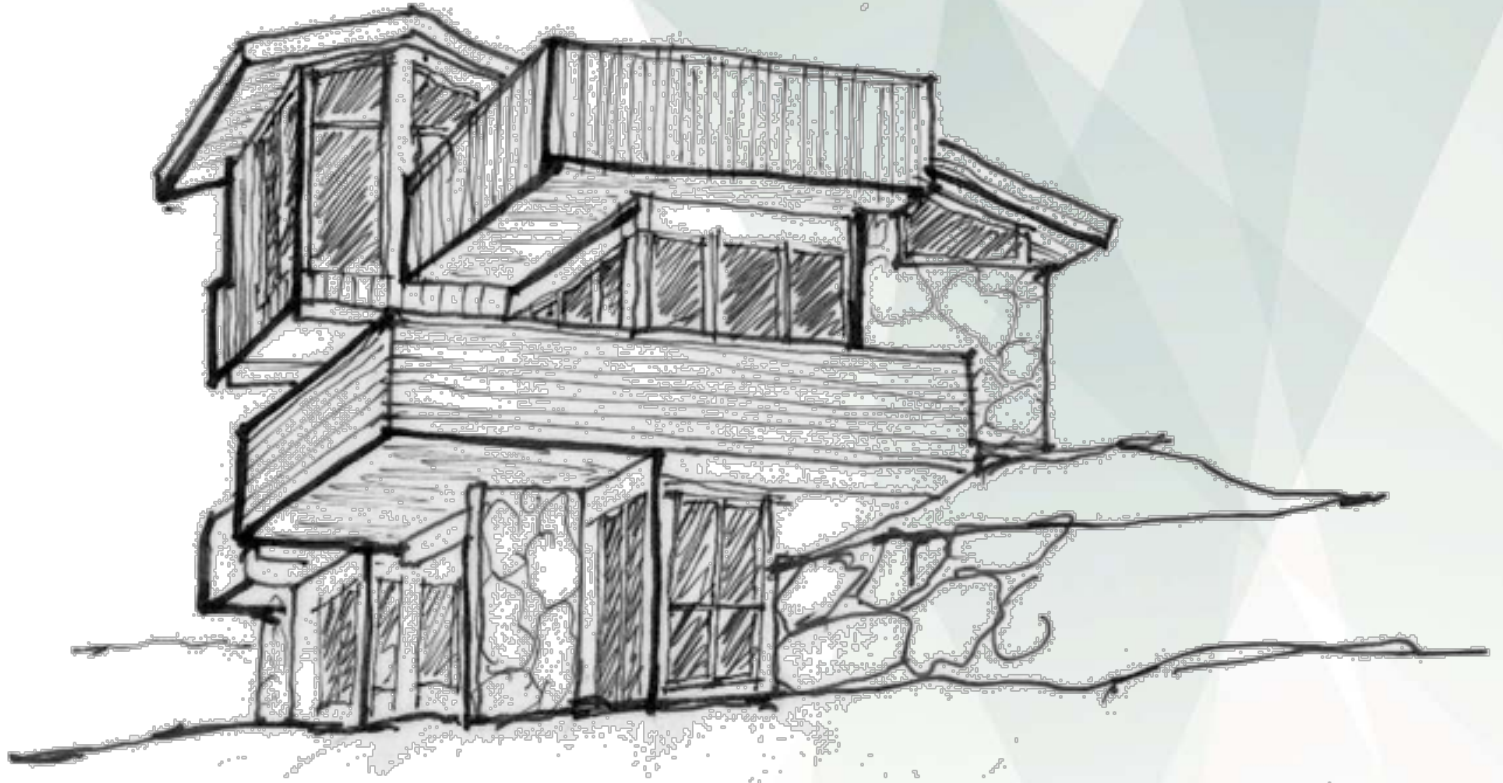
Background



How does an engineering-consulting business work?

What data is collected?

Currently, how is a new job analysed?



- Experience
- Intuition
- Not perfect - risk

Do managers use their data?

- Short answer is no
- Too hard, no time
 - Need many examples to draw a conclusion



Why is looking up data time consuming?

Only source of data:

The screenshot displays the Sage CRM interface. At the top, the browser address bar shows the URL: `http://img-win2k8-accp/CRM/eware.dll/go`. The Sage CRM header includes a search bar with the text "Find: Donation". On the left, there is a navigation menu with options like "Main Menu", "Administration", "Find", "New", "My CRM", "Team CRM", "Reports", "Marketing", and "Log Off".

The main content area is titled "Find" and contains several search filters:

- Person:** A text input field with a search icon.
- Type:** A dropdown menu set to "--All--".
- Program:** A text input field with a search icon.
- Fund:** A dropdown menu set to "--All--".
- Gift Date:** A "Between" range selector with two input fields and "And" buttons.
- Total Donation Amount:** A dropdown menu set to "Equal To" followed by an input field.
- Advantage:** A dropdown menu set to "--All--".
- Advantage Qty:** A dropdown menu set to "Equal To" followed by an input field.
- Receipt Amount:** A dropdown menu set to "Equal To" followed by an input field.
- Receipt Date:** A "Between" range selector with two input fields and "And" buttons.
- Receipt Number:** A text input field.

Below the filters, there are radio buttons for "In Honor Of" (Checked, Not Checked, Either) and "In Memory Of" (Checked, Not Checked, Either). There are also radio buttons for "Exported" (Checked, Not Checked, Either) and "Receipt Sent" (Checked, Not Checked, Either). On the right side, there are "Find" and "Clear" buttons.

The search results are displayed in a table titled "25 Donation, Page 1 of 2". The table has the following columns: Person, Type, Program, Fund, Gift Date, In Honor Of, In Memory Of, Total Donation Amount, Receipt Amount, and Receipt Date. The table contains 25 rows of data.

Person	Type	Program	Fund	Gift Date	In Honor Of	In Memory Of	Total Donation Amount	Receipt Amount	Receipt Date
Sarah Cane	Gift	Follow up Mailer	Fund 3	05/04/2010	-	Y	1,500.00	1,500.00	-
Mick Hansen	Sponsorship	Leaflets and Lollipops	Fund 2	18/01/2010	-	-	250.00	225.01	18/01/2010
Mick Hansen	Grant	Mailer to target companies	Fund 2	17/04/2010	Y	-	500.00	500.00	17/06/2010
Mick Hansen	Gift	Mailer to target companies	Fund 3	17/05/2010	-	-	200.00	200.00	17/06/2010
Mick Hansen	Gift	Leaflets and Lollipops	Fund 3	17/06/2010	Y	-	1,500.00	1,500.00	17/06/2010
Maureen Henderson	Gift	Internal Telemarketing Follow Up	Fund 2	22/03/2010	-	-	50.00	50.00	-
David Simpson	Membership	Leaflets and Lollipops	-	17/05/2010	-	-	150.00	130.00	-
William Anties	Grant	Leaflets and Lollipops	Fund 2	01/01/2010	-	-	1,500.00	1,300.00	-
William Anties	Endowment	Mailer to verified Professional Services	Fund 3	01/01/2010	-	-	800.00	780.00	-
William Anties	Soft Credit	TimeNExpense_Conference Stand	Fund 2	02/05/2010	-	-	25.00	25.00	02/05/2010
William Anties	Grant	Mailer to target companies	Fund 1	15/12/2009	-	-	5,000.00	5,000.00	15/12/2009
Michael Catling	Endowment	TimeNExpense_Conference Stand	Fund 2	02/06/2010	Y	-	3,600.00	3,600.00	-
Antony Wallis	Gift	Attendees - Outbound	Fund 2	03/01/2010	Y	Y	10,000.00	7,000.00	-
Antony Wallis	Membership	Follow up Mailer	Fund 2	01/06/2010	Y	Y	200.00	188.00	06/10/2010

Software Pros

- Necessary for consulting business
- User interfaces



Software Cons





Aim: Make analysis of
past projects easier –
ultimately:
predict whether a job
will be profitable or not

Create a
tool that..



probability of
loss-making
job



Nearest
neighbours

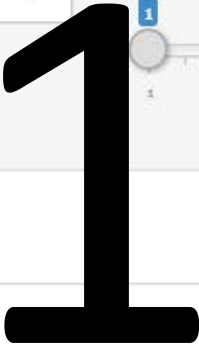
3 components to the App



1. Enter details for new project
2. Profitability prediction from machine learning algorithm
3. Visualisation of 'nearest neighbour' projects

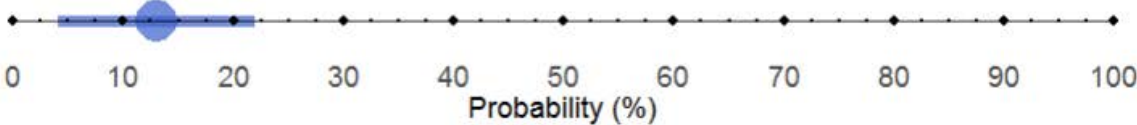
Quote Assist

Discipline: Civil	Client: Please start typing	Main Contributor of Time: Director	Timespan (days): 60
Billing Type: Hourly Rate	Client Industry: Please start typing	% Hours by Main Employee: 50	Approximate Fee: 20,000
Job Type: Please start typing	Client sector: Government	Team Size: 1	Calculate



Analysis [Similar Jobs](#)

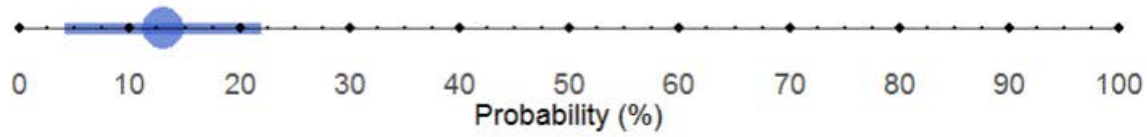
Probability of Project Making a Loss



Analysis

Similar Jobs

Probability of Project Making a Loss



2

Timespan

Team Size

Total Invoiced

% Professional Hours

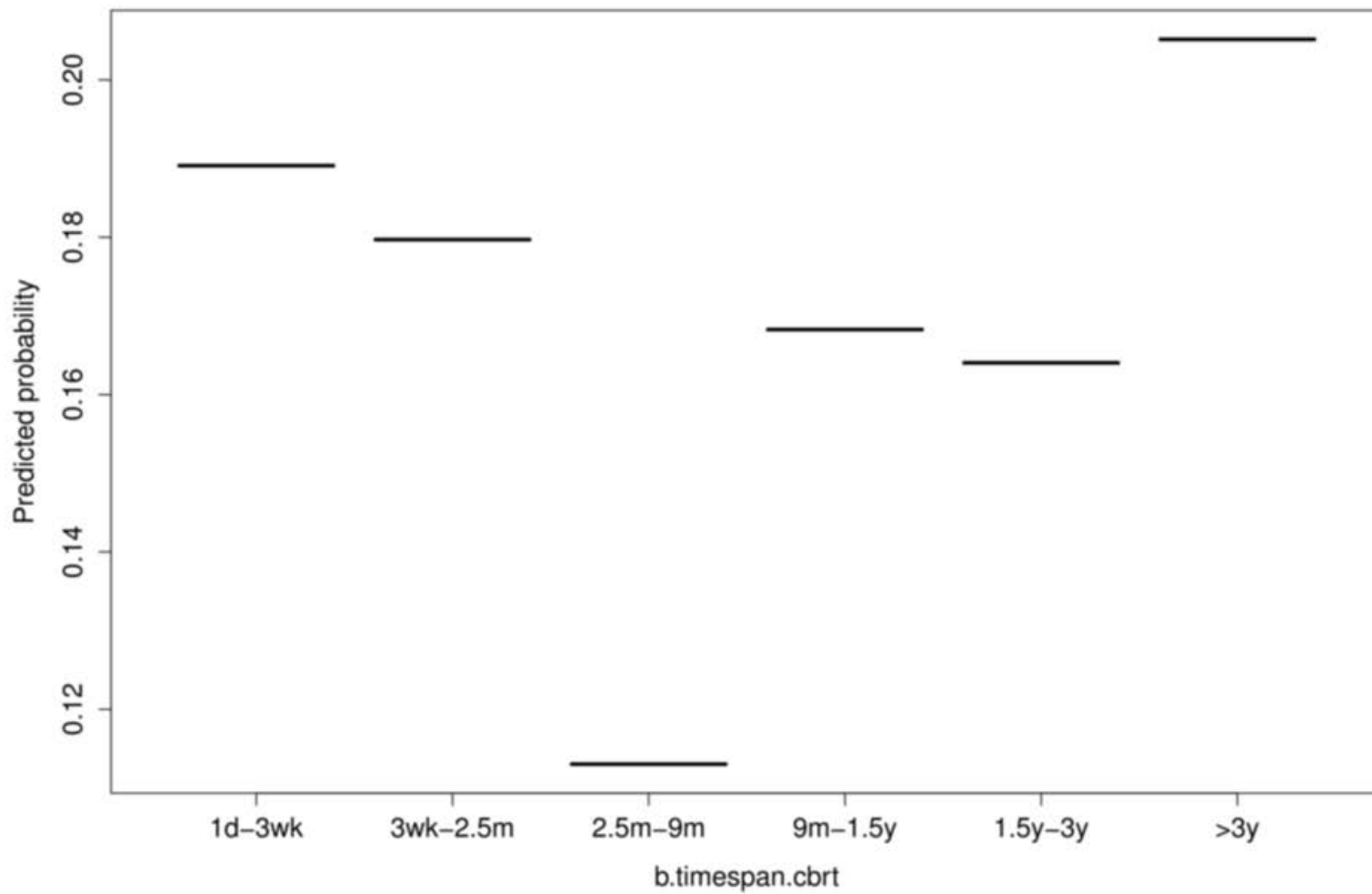


Timespan

Team Size

Total Invoiced

% Professional Hours



Quote Assist

Discipline: Civil	Client: C2002	Main Contributor of Time: Director	Timespan (days): 340
Billing Type: Fixed Fee	Client Industry: Business	% Hours by Main Employee: 52.5	Approximate Fee: 20,000
Job Type: wharf/port	Client sector: Private	Team Size: 2	Calculate

3

Plot Similar Jobs

Number of similar jobs: 8	Sort points by: Timespan (days)
Narrow search by: none	Colour points by: Majority Employee
Apply Changes	

Similar Past Projects

--	--	--	--	--	--	--	--



Narrow search by:

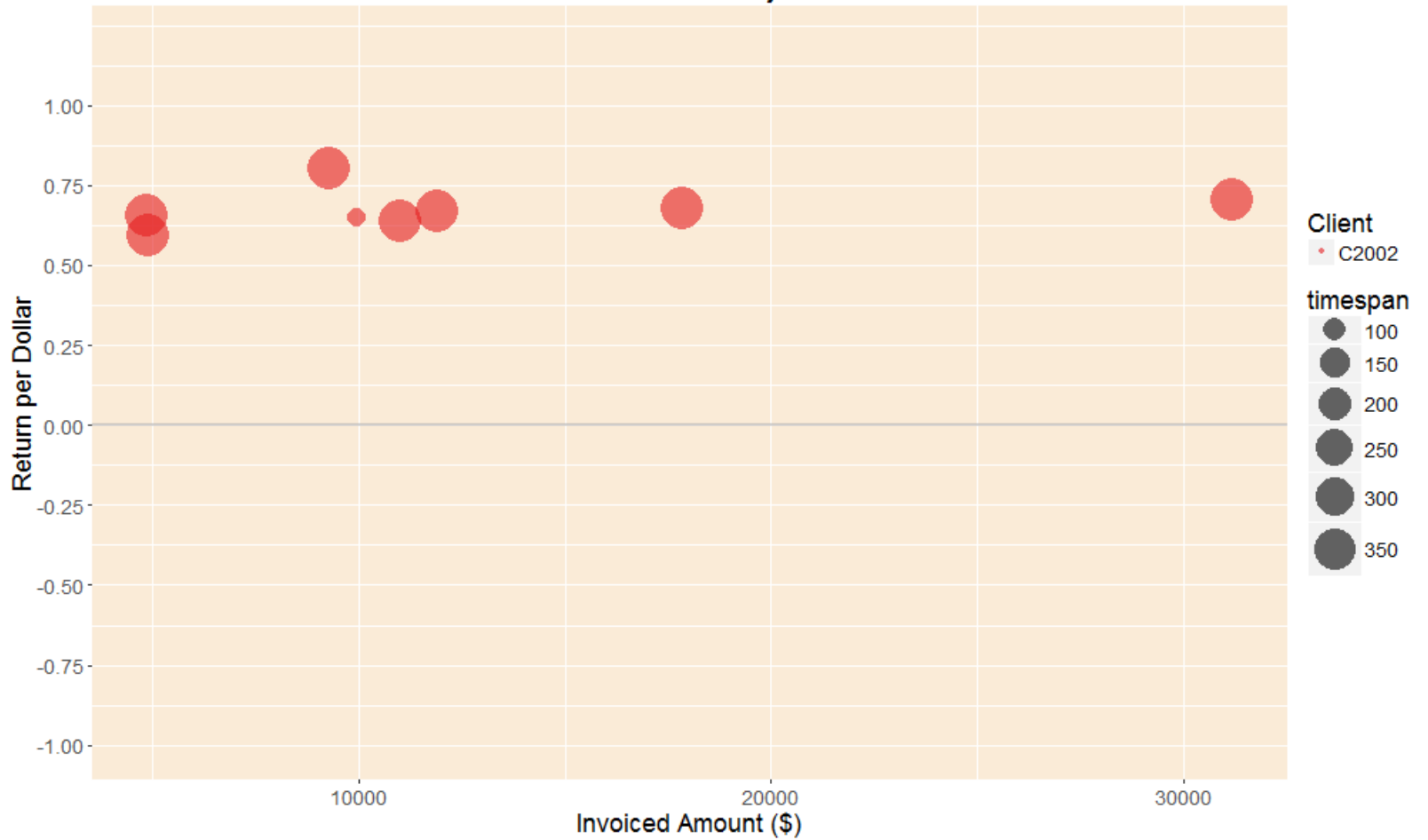
none

Colour points by:

Client

Apply Changes

Similar Past Projects

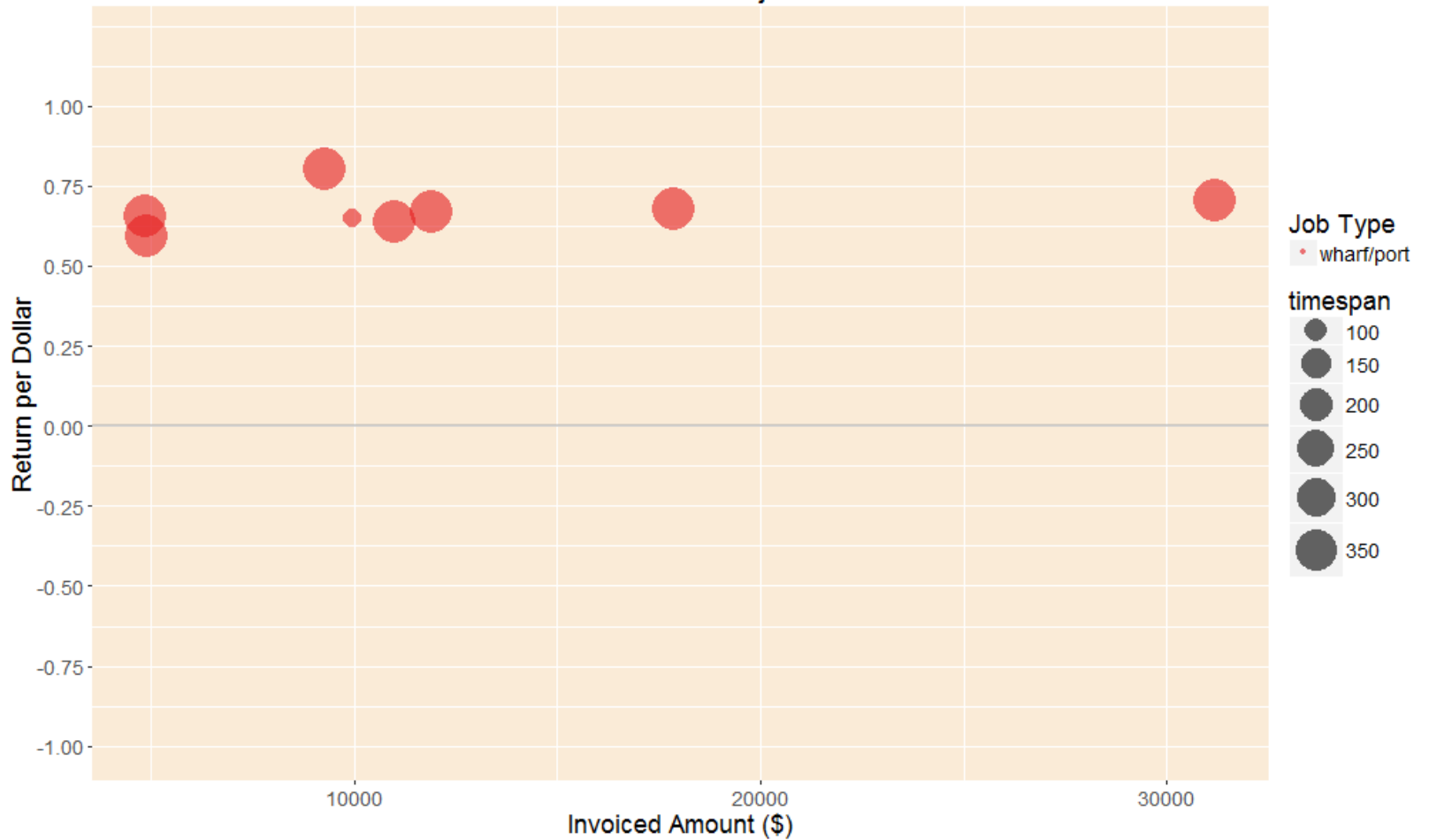


Narrow search by:

Colour points by:

Apply Changes

Similar Past Projects



Narrow search by:

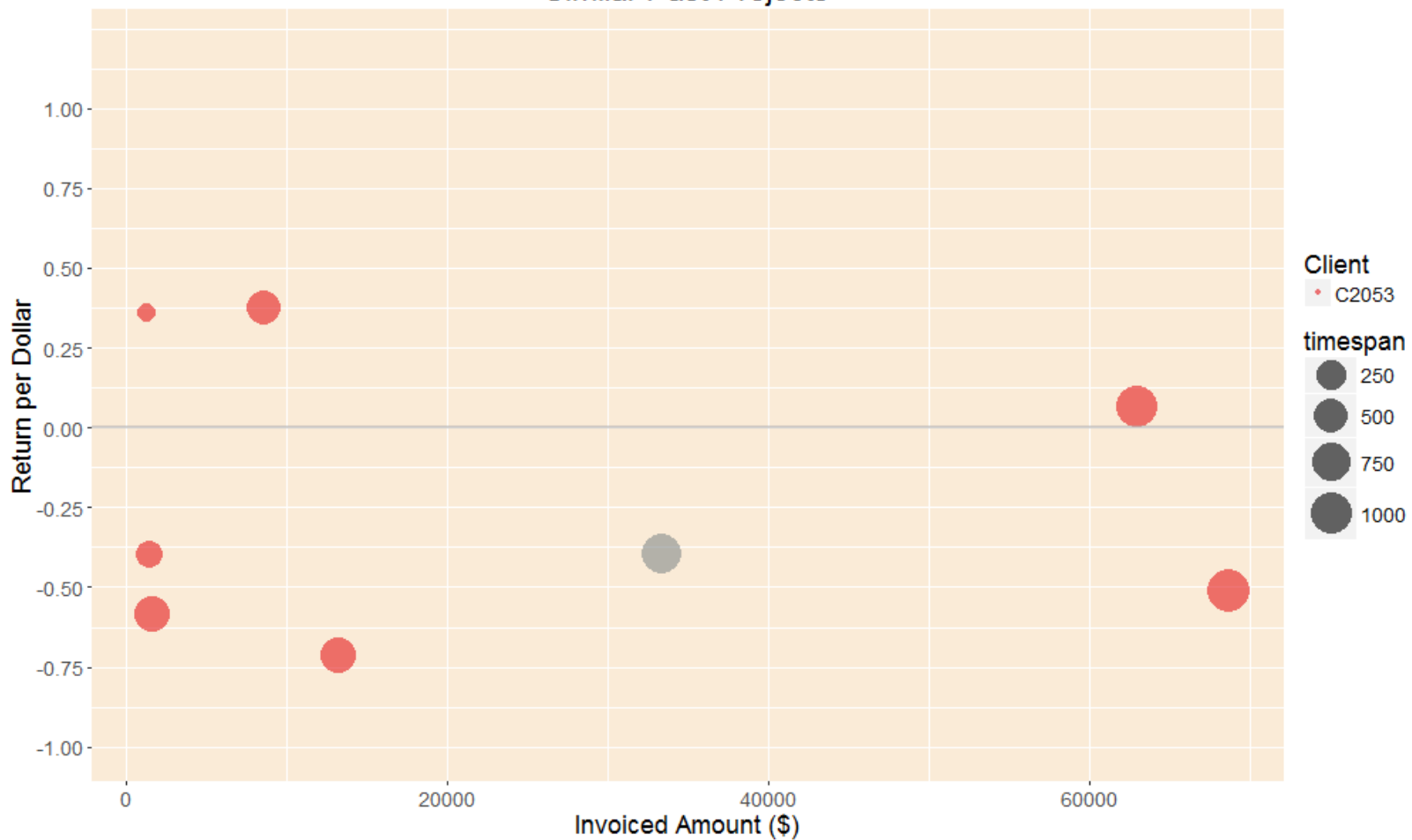
none

Colour points by:

Client

Apply Changes

Similar Past Projects



Narrow search by:

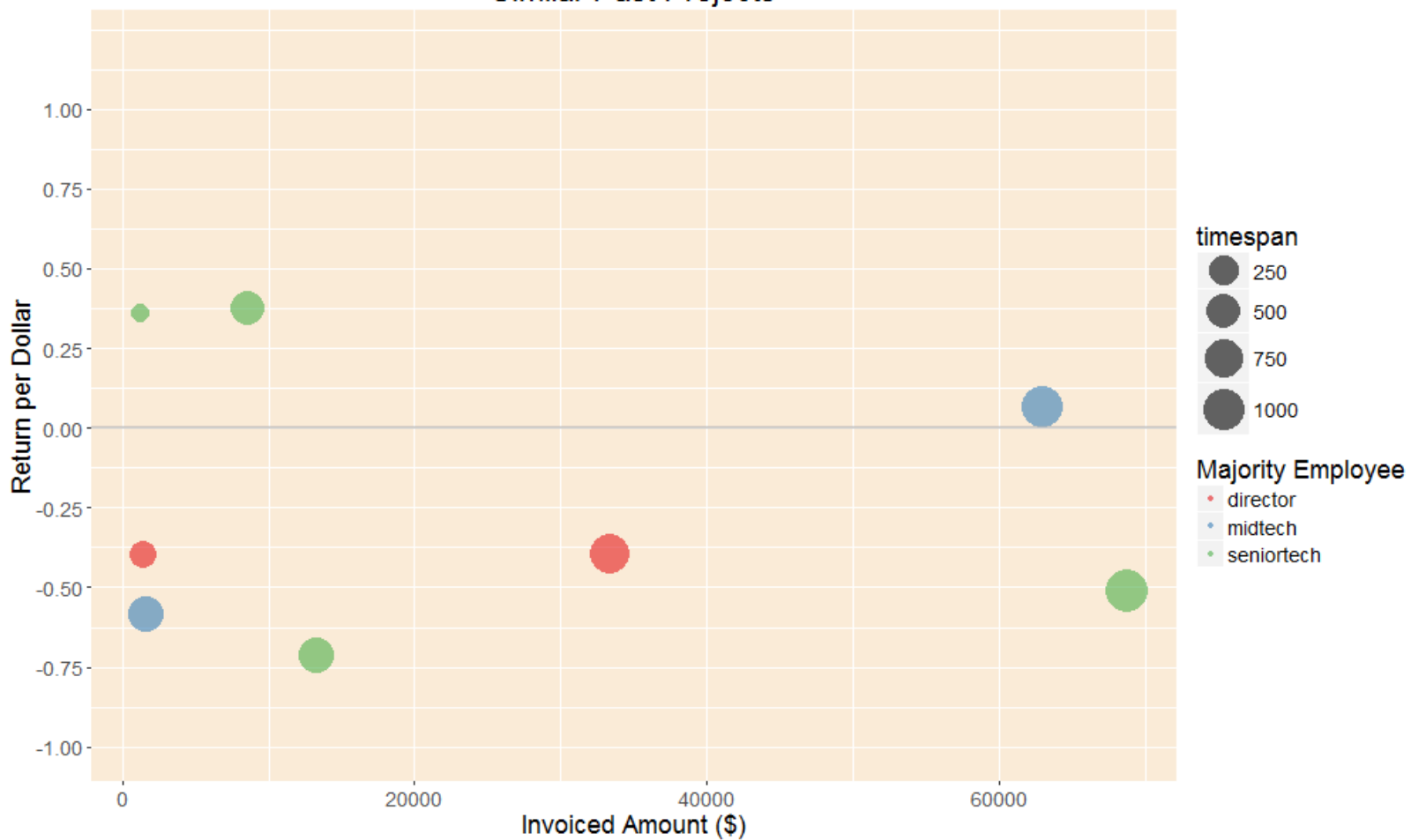
none

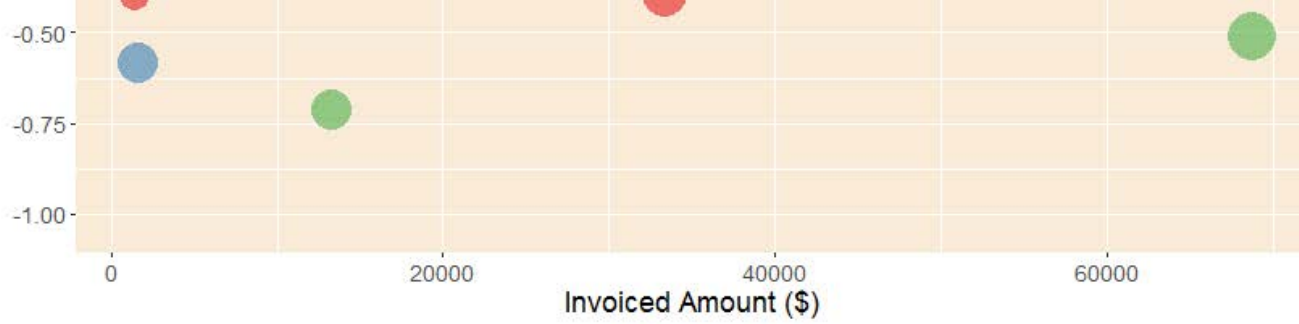
Colour points by:

Majority Employee

Apply Changes

Similar Past Projects





Job Details

id	description	unit	quantity	unit price	total
1	1	...	...
2	2	...	...
3	2	...	...
4	2	...	...
5	2	...	...
6	2	...	...
7	2	...	...
8	2	...	...

Finances

id	bill type	amount	...	...	...
1	Final Quote	2207.87	...	...	...
2	Final Quote	2427.46	...	...	...
3	Final Quote	2170.36	...	...	...
4	Final Quote	5519.25	...	...	...
5	Final Quote	2527.36	...	...	...
6	Final Quote	2219.82	...	...	...
7	Final Quote	6192.21	...	...	...
8	Final Quote	8020.42	...	...	...

Impact on decisions

- Faced with negative data
 - Fee structure
 - Increase fixed fee
 - Team ratio
- Faced with positive data
 - predictable fee structure

Conclusion

- Previous: manually sift through timesheet software
- With tool: results of machine learning algorithm and visualisation of similar jobs in seconds

Questions?

