# The Visualization of the St. Paul's City Budgets Through Using Effective, Interactive Techniques

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CSci 5609: Visualization

#### Introduction

2014 Community Development & Housing	Planning Economic Development	PED Operations	Materials and Supplie	Office Supplies	General Office Supplies	2000	2000 F	PED Administration	Special Fund	1
2014 Community Development & Housing	Planning Economic Development	PED Operations	Materials and Supplie	Office Supplies	General Office Supplies	0	0	PED Administration	Special Fund	1
2014 Community Development & Housing	Planning Economic Development	PED Operations	Materials and Supplie	Office Supplies	General Office Supplies	25000	25000 F	PED Administration	Special Fund	1
2014 Community Development & Housing	Planning Economic Development	PED Operations	Materials and Supplie	Office Supplies	General Office Supplies	0	0	PED Administration	Special Fund	1
2014 Community Development & Housing	Planning Economic Development	PED Operations	Materials and Supplie	Office Supplies	General Office Supplies	1500	1500 F	PED Administration	Special Fund	1
2014 Community Development & Housing	Planning Economic Development	PED Operations	Materials and Supplie	Office Supplies	General Office Supplies	0	0	PED Administration	Special Fund	1
2014 Community Development & Housing	Planning Economic Development	PED Operations	Materials and Supplie	Office Supplies	General Office Supplies	250	250	PED Administration	Special Fund	1
2014 Community Development & Housing	Planning Economic Development	PED Operations	Materials and Supplie	Repair and Maintena	Vehicle Repair and Mainter	200	200	PED Administration	Special Fund	1
2014 Community Development & Housing	Planning Economic Development	PED Operations	Materials and Supplie	Special Materials an	c Gen Materials and Supplies	0	0	PED Administration	Special Fund	1
2014 Community Development & Housing	Planning Economic Development	PED Operations	Materials and Supplie	Special Materials an	c Gen Materials and Supplies	2000	2000	PED Administration	Special Fund	1
2014 Community Development & Housing	Planning Economic Development	PED Operations	Materials and Supplie	Special Materials an	c Gen Materials and Supplies	0	0	PED Administration	Special Fund	1
2014 Community Development & Housing	Planning Economic Development	PED Operations	Materials and Supplie	Special Materials an	c Gen Materials and Supplies	0	0	PED Administration	Special Fund	1
2014 Community Development & Housing	Planning Economic Development	PED Operations	Other Financing Uses	Debt Issuance	Capital Close Out	0	0	PED Administration	Special Fund	1
2014 Community Development & Housing	Planning Economic Development	PED Operations	Other Financing Uses	Transfers Out	Transfers Out Operations	0	0	PED Administration	Special Fund	1
2014 Community Development & Housing	Planning Economic Development	PED Operations	Other Financing Uses	Transfers Out	Transfers Out Operations	202097	202097	PED Administration	Special Fund	1
2014 Community Development & Housing	Planning Economic Development	PED Operations	Services	Additional Services	Other Service Expense	0	0	PED Administration	Special Fund	1
2014 Community Development & Housing	Planning Economic Development	PED Operations	Services	Additional Services	Other Service Expense	50	50 F	PED Administration	Special Fund	1
2014 Community Development & Housing	Planning Economic Development	PED Operations	Services	Additional Services	Other Service Expense	14080	14080	PED Administration	Special Fund	1
2014 Community Development & Housing	Planning Economic Development	PED Operations	Services	<b>Contracted Services</b>	Skilled Service	0	0 1	PED Administration	Special Fund	1
2014 Community Development & Housing	Planning Economic Development	PED Operations	Services	<b>Contracted Services</b>	Skilled Service	1300	1300	PED Administration	Special Fund	1
2014 Community Development & Housing	Planning Economic Development	PED Operations	Services	<b>Contracted Services</b>	Skilled Service	0	0	PED Administration	Special Fund	1
2014 Community Development & Housing	Planning Economic Development	PED Operations	Services	<b>Contracted Services</b>	Skilled Service	19700	19700	PED Administration	Special Fund	1
2014 Community Development & Housing	Planning Economic Development	PED Operations	Services	<b>Contracted Services</b>	Professional Service	0	0	PED Administration	Special Fund	1
2014 Community Development & Housing	Planning Economic Development	PED Operations	Services	<b>Contracted Services</b>	Professional Service	50000	50000 F	PED Administration	Special Fund	1
2014 Community Development & Housing	Planning Economic Development	PED Operations	Services	<b>Contracted Services</b>	Skilled Service	0	0	PED Administration	Special Fund	1
2014 Community Development & Housing	Planning Economic Development	PED Operations	Services	<b>Contracted Services</b>	Skilled Service	0	0	PED Administration	Special Fund	1
2014 Community Development & Housing	Planning Economic Development	PED Operations	Services	General Services	Delivery Services	0	0	PED Administration	Special Fund	1
2014 Community Development & Housing	Planning Economic Development	PED Operations	Services	General Services	Data Print Services	0	0	PED Administration	Special Fund	1
2014 Community Development & Housing	Planning Economic Development	PED Operations	Services	General Services	Data Print Services	0	0	PED Administration	Special Fund	1
2014 Community Development & Housing	Planning Economic Development	PED Operations	Services	General Services	Data Print Services	15000	15000 F	PED Administration	Special Fund	1
2014 Community Development & Housing	Planning Economic Development	PED Operations	Services	General Services	Data Print Services	500	500	PED Administration	Special Fund	1
2014 Community Development & Housing	Planning Economic Development	PED Operations	Services	General Services	Delivery Services	0	0	PED Administration	Special Fund	1
2014 Community Development & Housing	Planning Economic Development	PED Operations	Services	General Services	Delivery Services	27500	27500	PED Administration	Special Fund	1

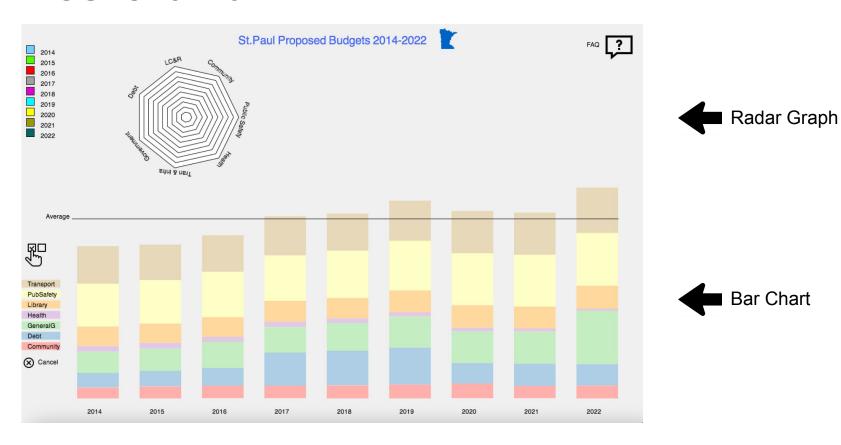


I want to understand the budget, but not from this table.

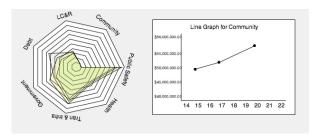
Fig.1 Example of budget data

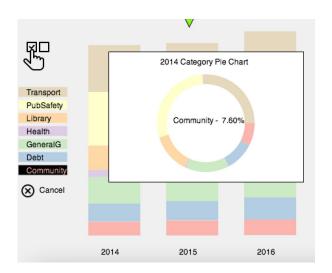
—Tom

### **GUI Overview**

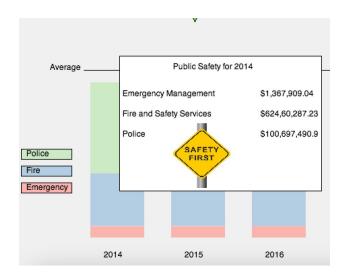


# **Summary**



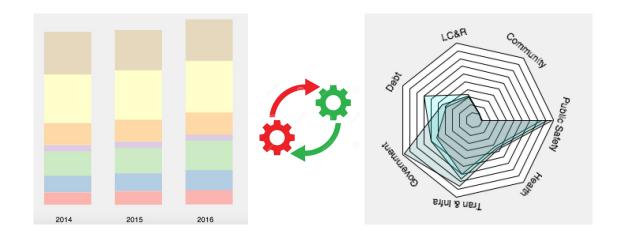






#### **Future Work**

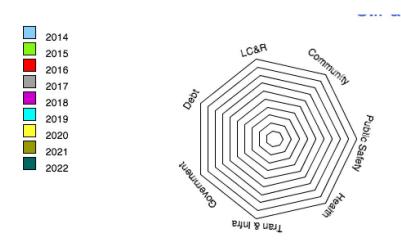
- 1. The software generates radar graph and bar chart based on the input
- 2. More interaction operation between radar graph and bar chart



# Thank You for Watching!



# Radar Graph 1

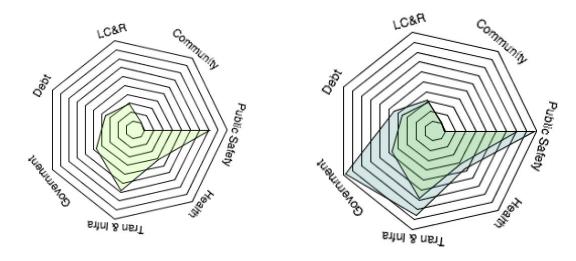


**Original States:** 

The radar graph is empty.

Action 1: You can select the year from legend by left-click on the mouse.

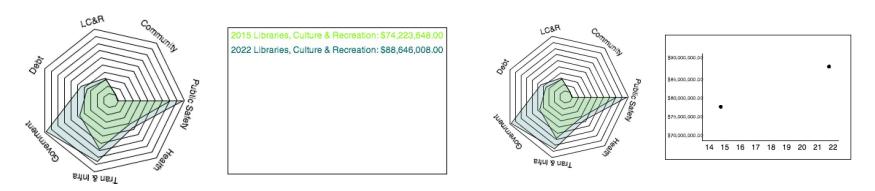
# Radar Graph 2



State: radar graph shows the year of 2015, and 2022

Step2: moving the cursor nearby the categories, you can see the window which contains the detailed information of that category.

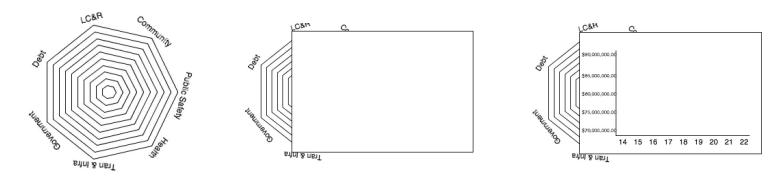
## Radar Graph 3



State: 1. see the amount of budget in list/ plot graph in the category by selected years (2015, 2022) in order.

Action 3: typing keyboard "c" change mode to plot graph (line graph) / list

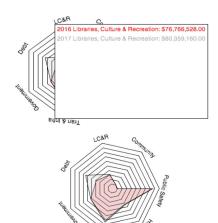
# Radar graph 4



State: Removing the selected years / restart the visualization.

Action 4: By pressing keyboard "r" to reset the visualization.

# Radar graph 5



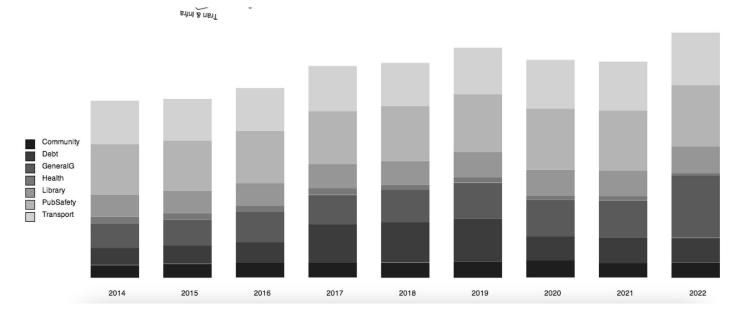




State: Interaction with categories images.

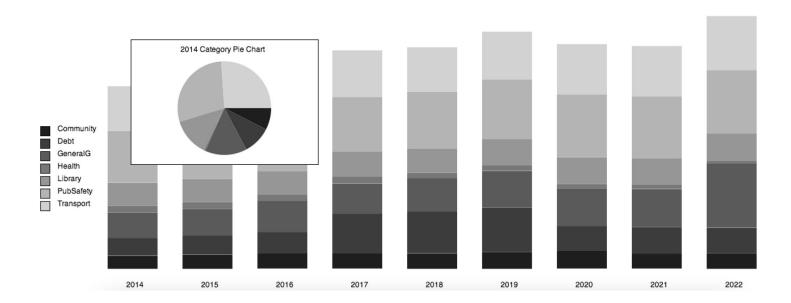
Action 5: When the cursor move to the categories, at the right corner should show the related images for this categories.

#### **Bar Chart 1**



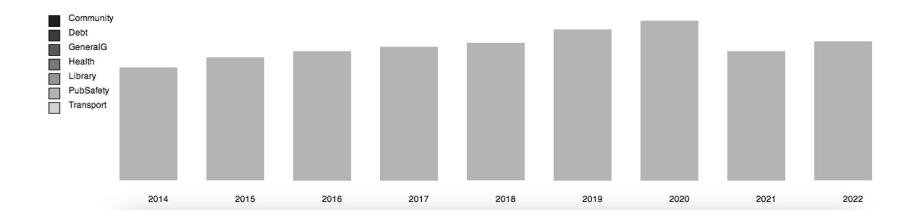
- The bar chart is for the total values. There is 7 categories for each year.
- Different color in the bar can make users have a rough understanding of distribution.
- Current color design is not very easy for users to figure out, but we will balance users experience and beauty in the following work.

#### Bar Chart 1 - User Interaction



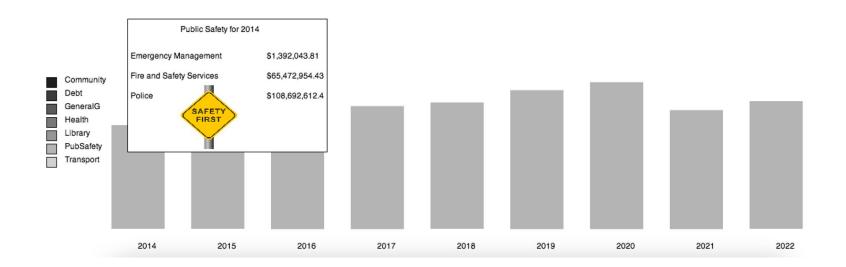
- When the cursor over a bar, it will show the pie chart of all the categories. The color are corresponding to the legend.
- In the following work, we will show the exact percentage of each category in the pie chart.

#### Bar Chart 2 - User Interaction 1



- Use key 'K' to cancel the total value bar chart, then press the corresponding key to show the bar chart for expected category. (the figure shows the 'public safety' category, it needs to press key 'P')
- The color also corresponds to the color in the legend.

#### Bar Chart 2 - User Interaction 2



• When the cursor is over a bar, it will show the detailed data of subcategories, we choose all the subcategories that related to daily life and really care about as a St Paul resident.



Thanks for viewing, and we are open to any suggestions.