

Effective Use of Pie Charts

- Purpose** This tool provides guidelines and tips on how to effectively use pie charts to communicate research findings.
- Format** This tool provides guidance on pie charts and their purposes, shows examples of preferred practices and practical tips for pie charts, and provides cautions and examples of misuse and poor use of pie charts and how to make corrections.
- Audience** This tool is designed primarily for researchers from the Model Systems that are funded by the National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR). The tool can be adapted by other NIDILRR-funded grantees and the general public.

The contents of this tool were developed under a grant from the National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR grant number 90DP0012-01-00). The contents of this fact sheet do not necessarily represent the policy of Department of Health and Human Services, and you should not assume endorsement by the Federal Government.

Overview and Organization

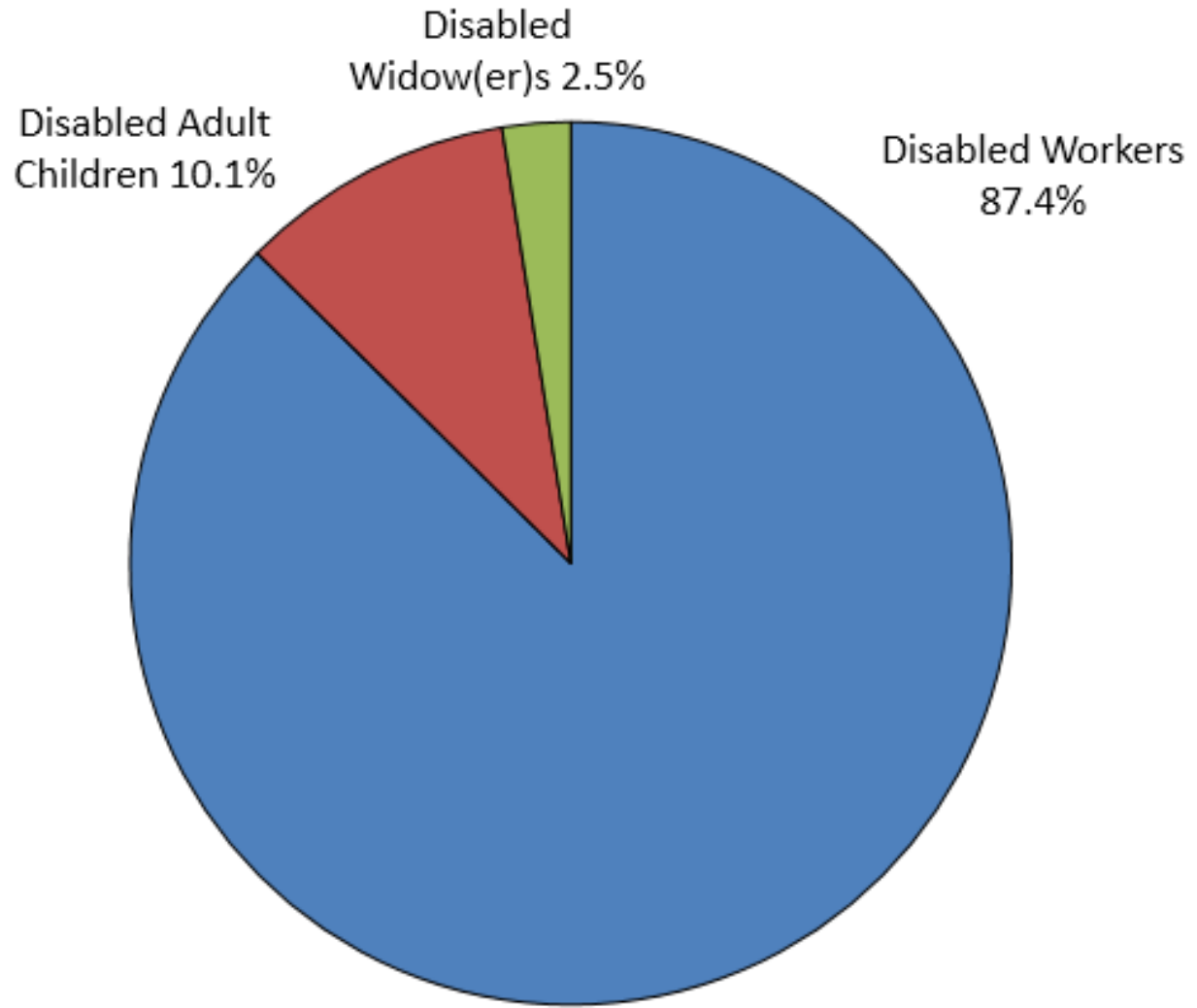
- ▶ [General Use of Pie Charts](#).....3
- ▶ [Exploded Pie Charts](#)12
- ▶ [Pie of Pie Charts](#).....14
- ▶ [Pie Column Charts](#).....16
- ▶ [3-D Pie Charts](#).....17

Pie Charts

- ▶ The primary use of a Pie Chart is to display the proportional relationship of various components to a whole.
- ▶ For example, a pie chart might display the relative proportion of Social Services clients by race-ethnicity group (for client intakes occurring in CY 2014).
- ▶ A pie chart might show the proportional composition of current social security disability beneficiaries by eligibility category.

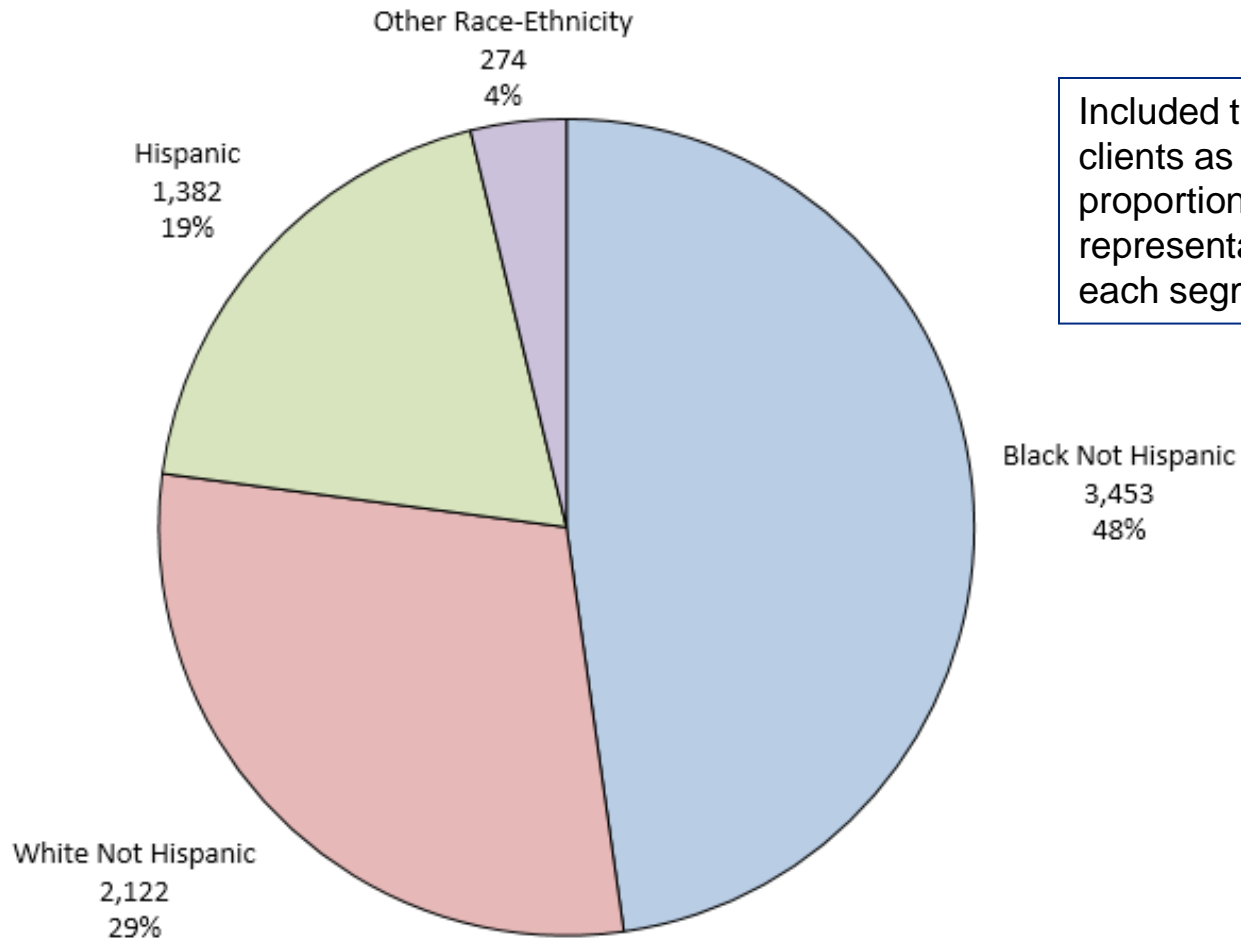
Pie Charts

Social Security Disabled Beneficiaries – By Eligibility Category – December 2013



Pie Charts

Chatham Food Pantry Clients – By Race-Ethnicity Group – December 2014

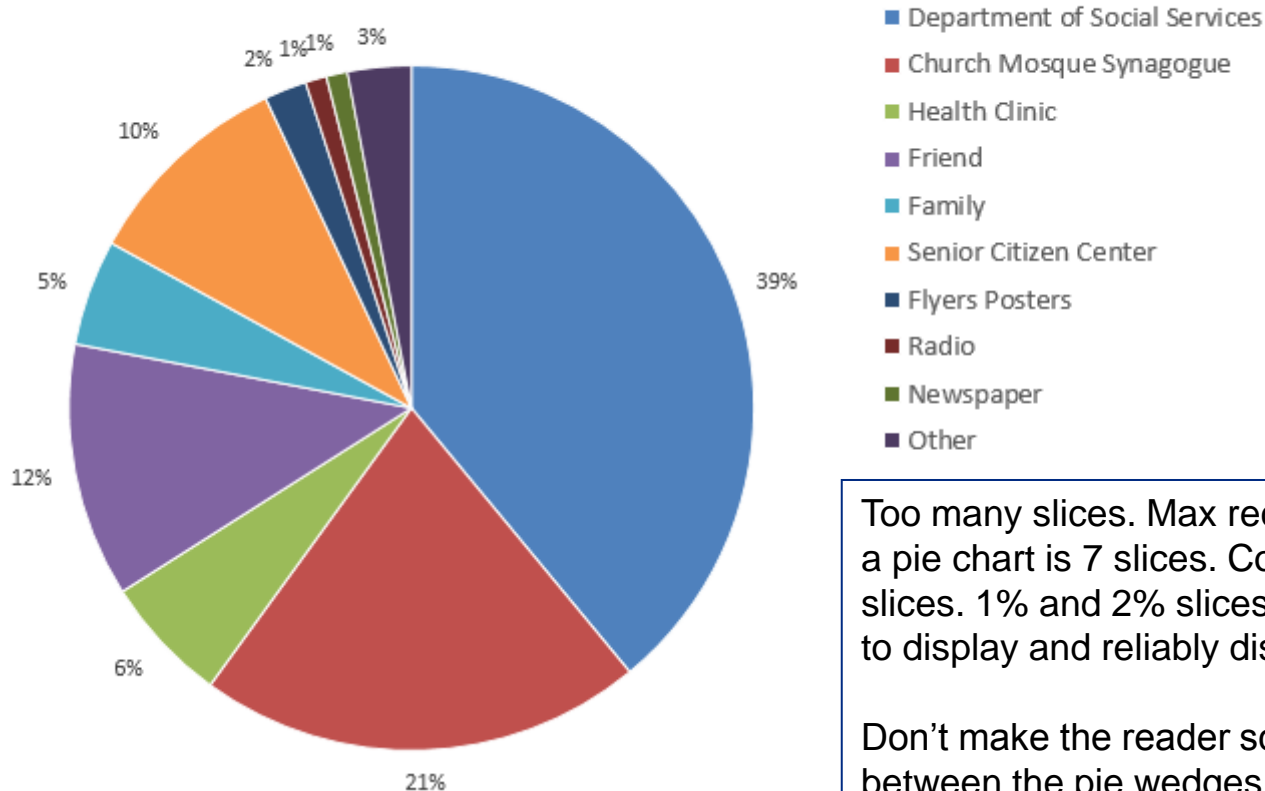


Included the number of clients as well as the proportional representation in each segment label

Pie Charts

Cautions, Misuse, and Poor Use

Referral Source for First-Time Chatham Food Bank Clients
December 2014



The slices are unsorted by magnitude. Generally best to sort slices in descending order to communicate slice rank. The "Other" slice is usually displayed last.

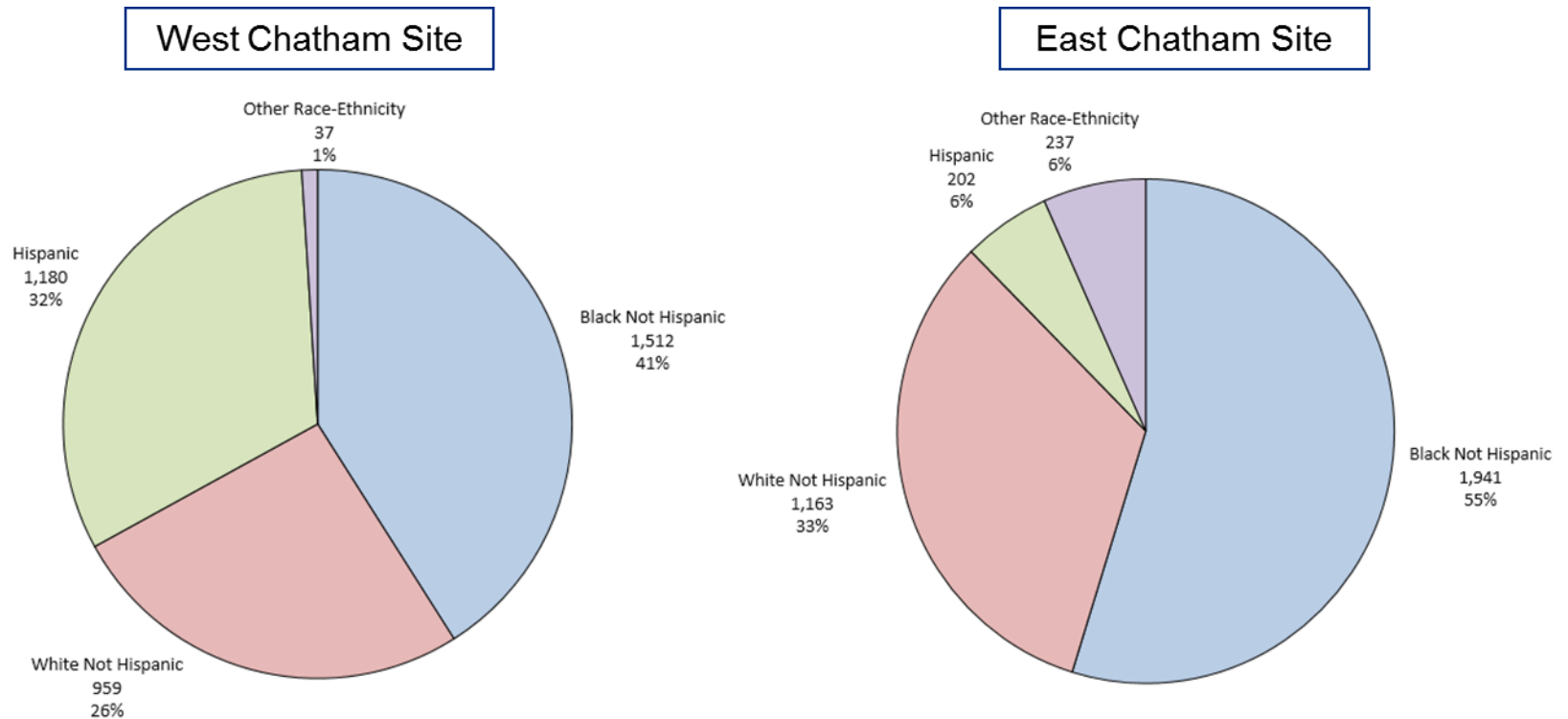
Too many slices. Max recommended wedges for a pie chart is 7 slices. Consider combining minor slices. 1% and 2% slices are generally too small to display and reliably discern on a pie chart.

Don't make the reader scan back and forth between the pie wedges and the legend. Where possible, incorporate the slice names and the proportions in the slice label itself.

Pie Charts

Cautions, Misuse, and Poor Use

Chatham Food Pantry Clients – By Race-Ethnicity Group – December 2014

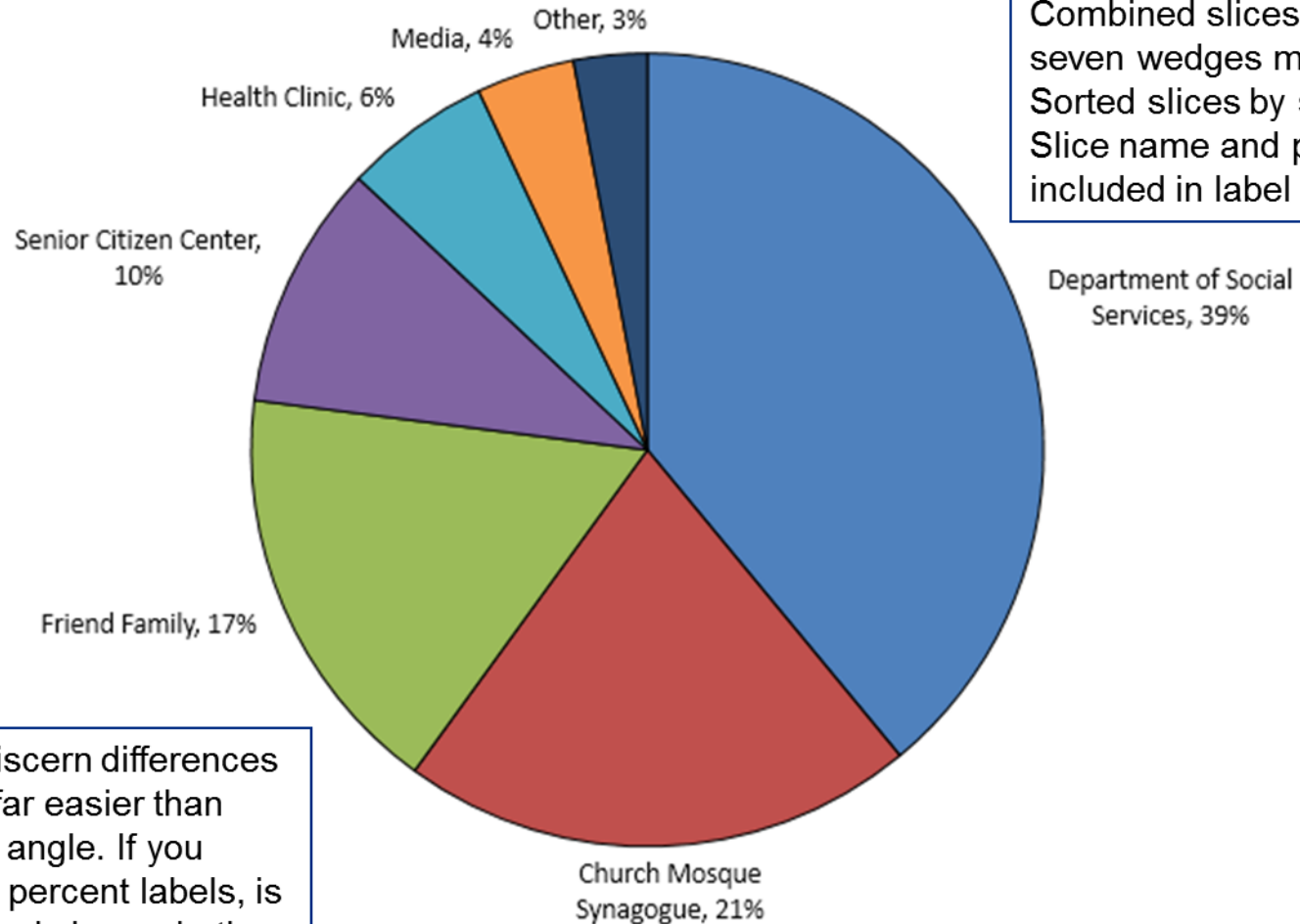


Multiple pie charts are inefficient and use too much space [pixels].
Somewhat difficult to compare the race-ethnicity slices across the two pies.

Pie Charts

Principles, Tips, Preferred Practices

Referral Source for First-Time Chatham Food Bank Clients - December 2014



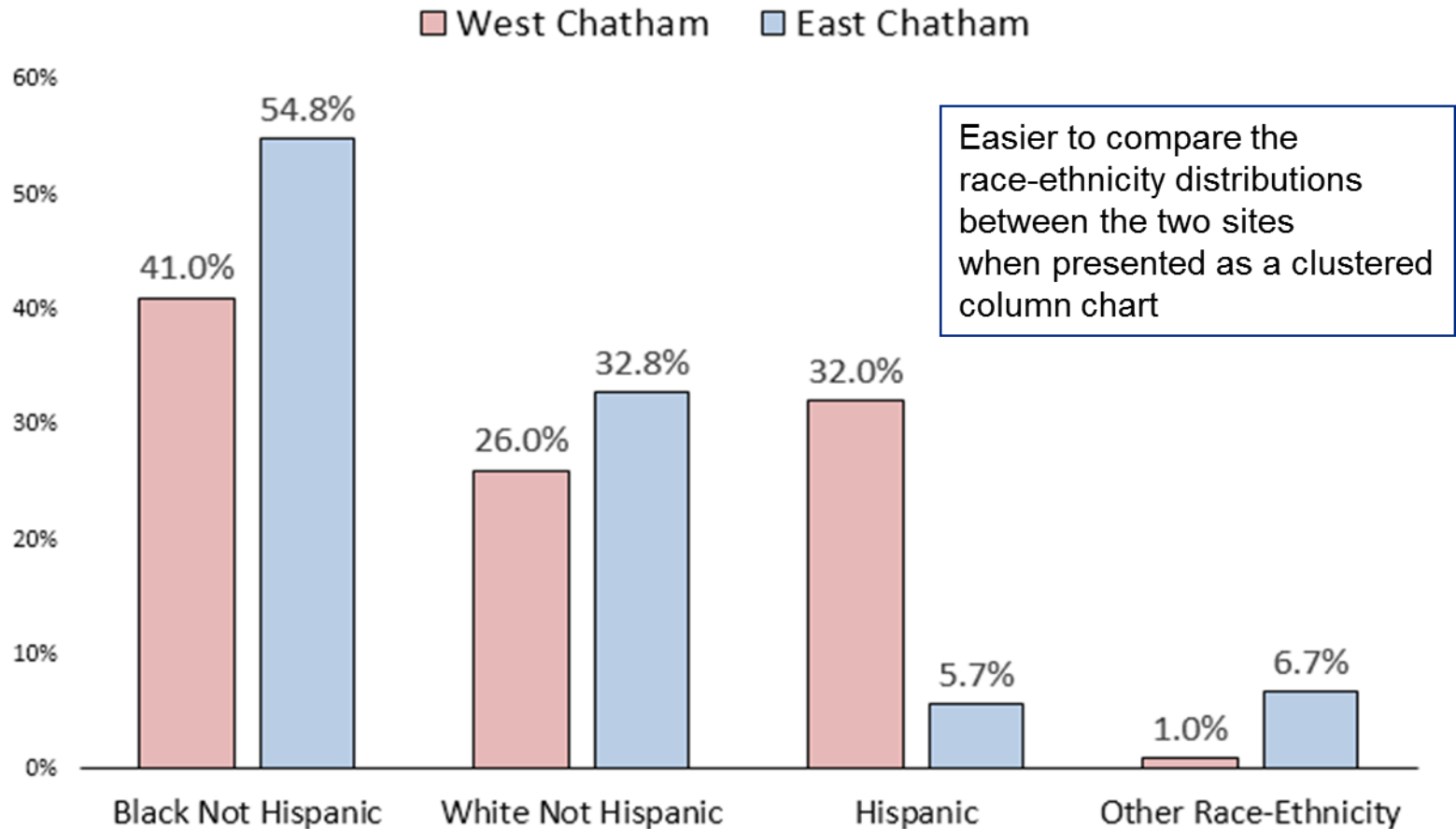
Combined slices to yield seven wedges max. Sorted slices by size. Slice name and proportion included in label names.

People can discern differences in bar length far easier than differences in angle. If you didn't see the percent labels, is it immediately obvious whether (and by how much) the red or green slice is larger?

Pie Charts

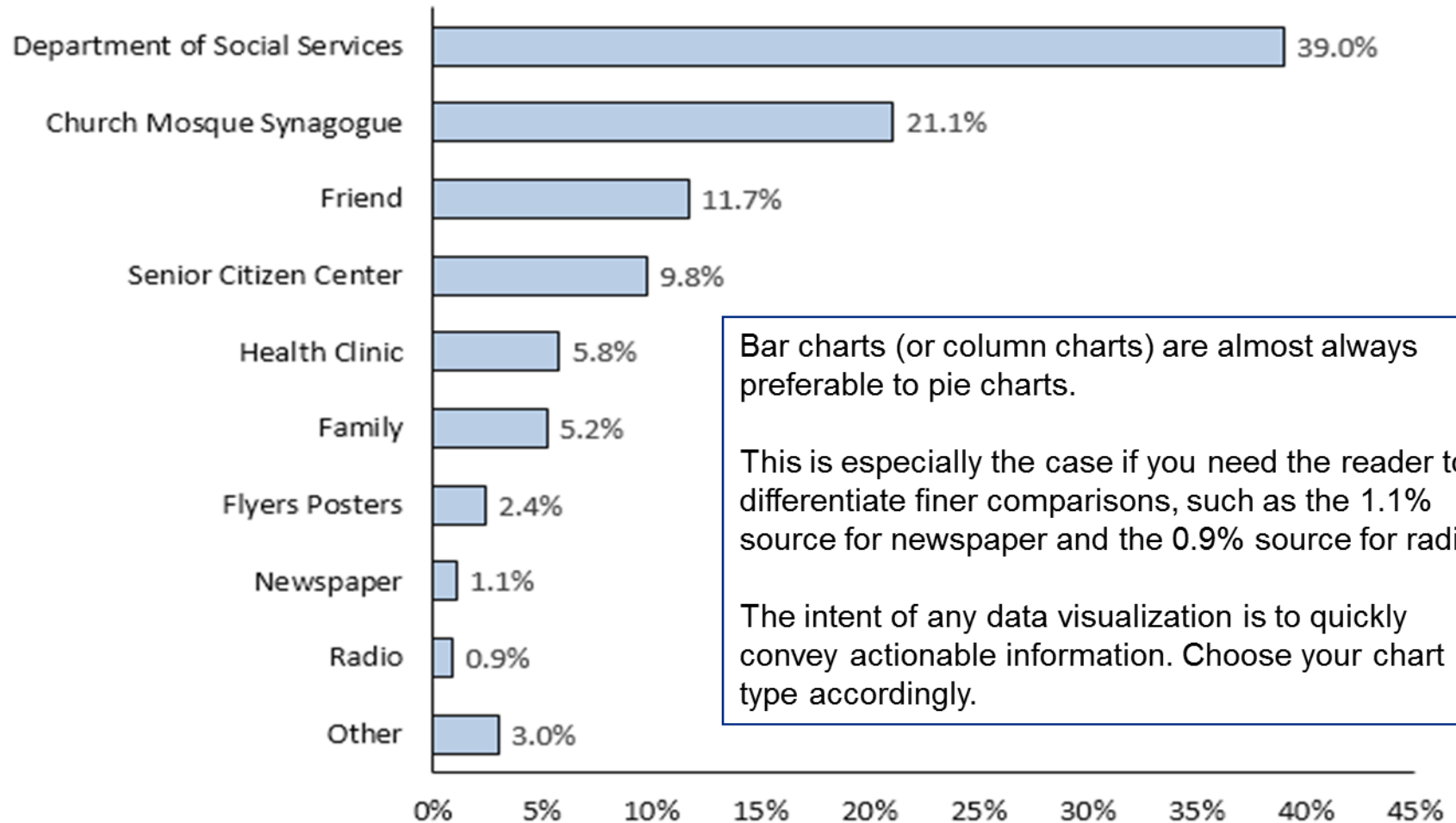
Preferred Practices

Chatham Food Pantry Clients – By Race-Ethnicity Group
By Site – December 2014



Alternative to Pie Charts

Referral Source for First-Time Chatham Food Bank Clients
December 2014



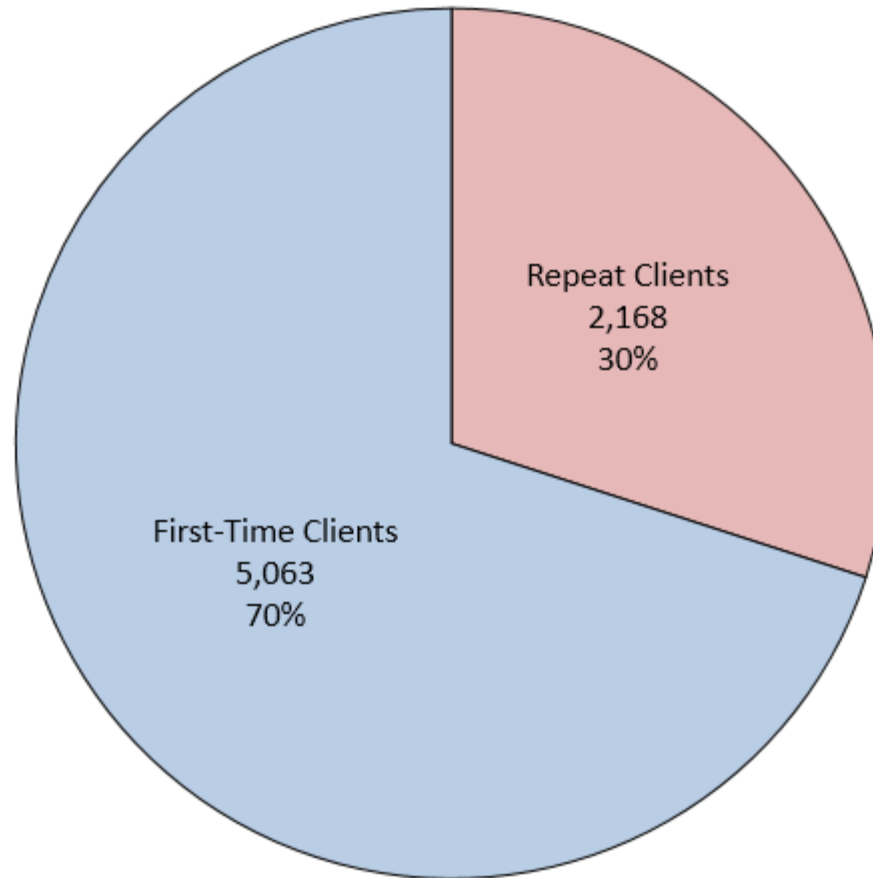
Bar charts (or column charts) are almost always preferable to pie charts.

This is especially the case if you need the reader to differentiate finer comparisons, such as the 1.1% source for newspaper and the 0.9% source for radio.

The intent of any data visualization is to quickly convey actionable information. Choose your chart type accordingly.

Pie Charts

Chatham Food Pantry Clients – New vs Repeat Clients December 2014

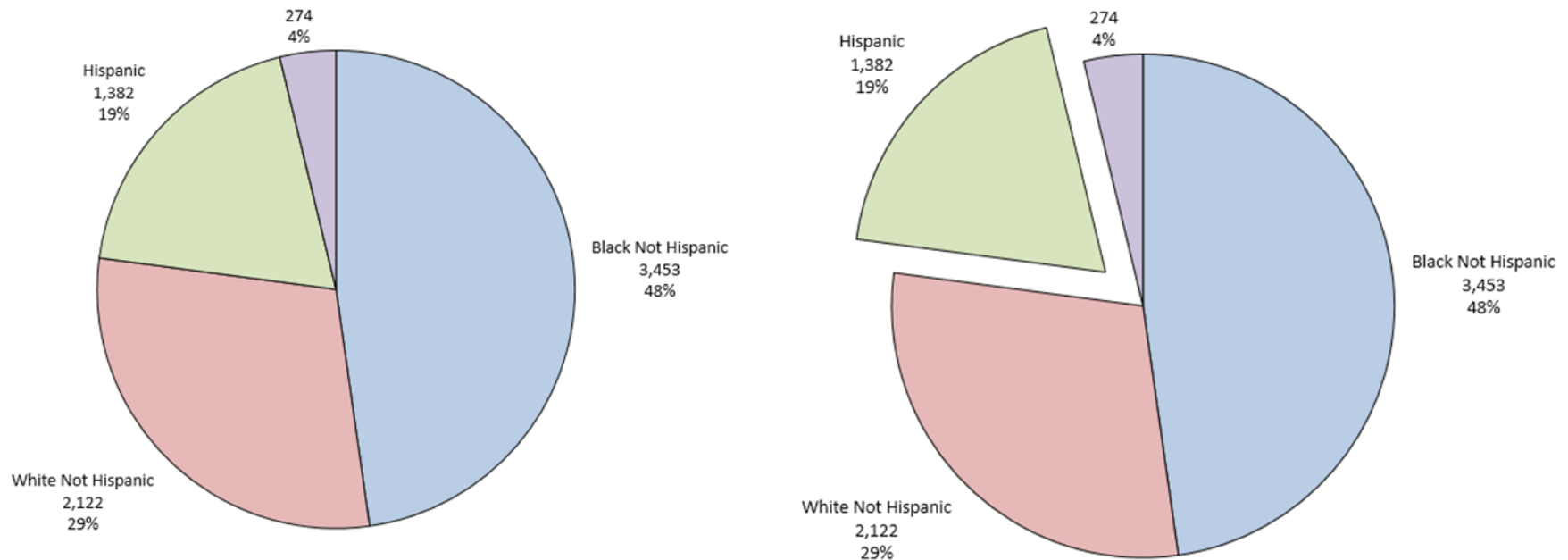


Sometimes, if all you wish to convey is a simple single high-interest proportion, then a pie chart can be effective

Pie Charts – Exploded Pie

Cautions, Misuse, and Poor Use

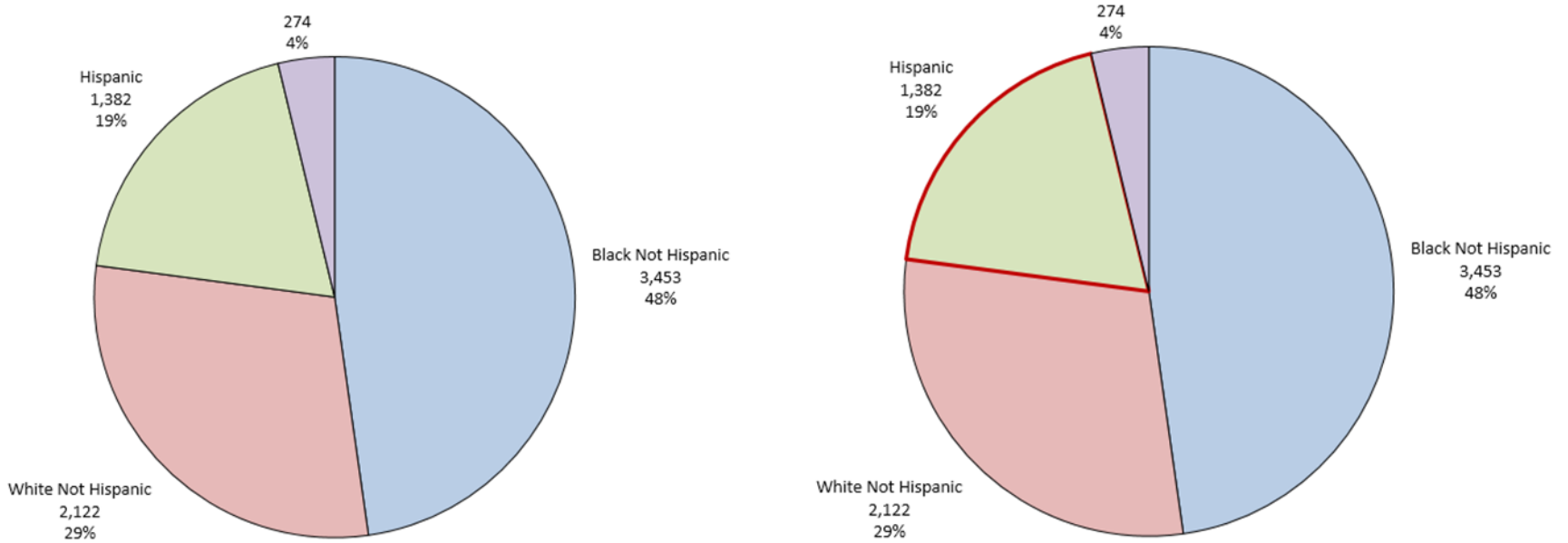
Chatham Food Pantry Clients – By Race-Ethnicity Group – December 2014



Exploded pie wedges are often used to draw attention to a particular slice (here, the Hispanic client segment). However, exploded pie wedges tend to appear differently-sized than the unexploded version – creating unintentional visual bias. Generally avoid exploded pies.

Pie Charts – Exploded Pie Preferred Practices

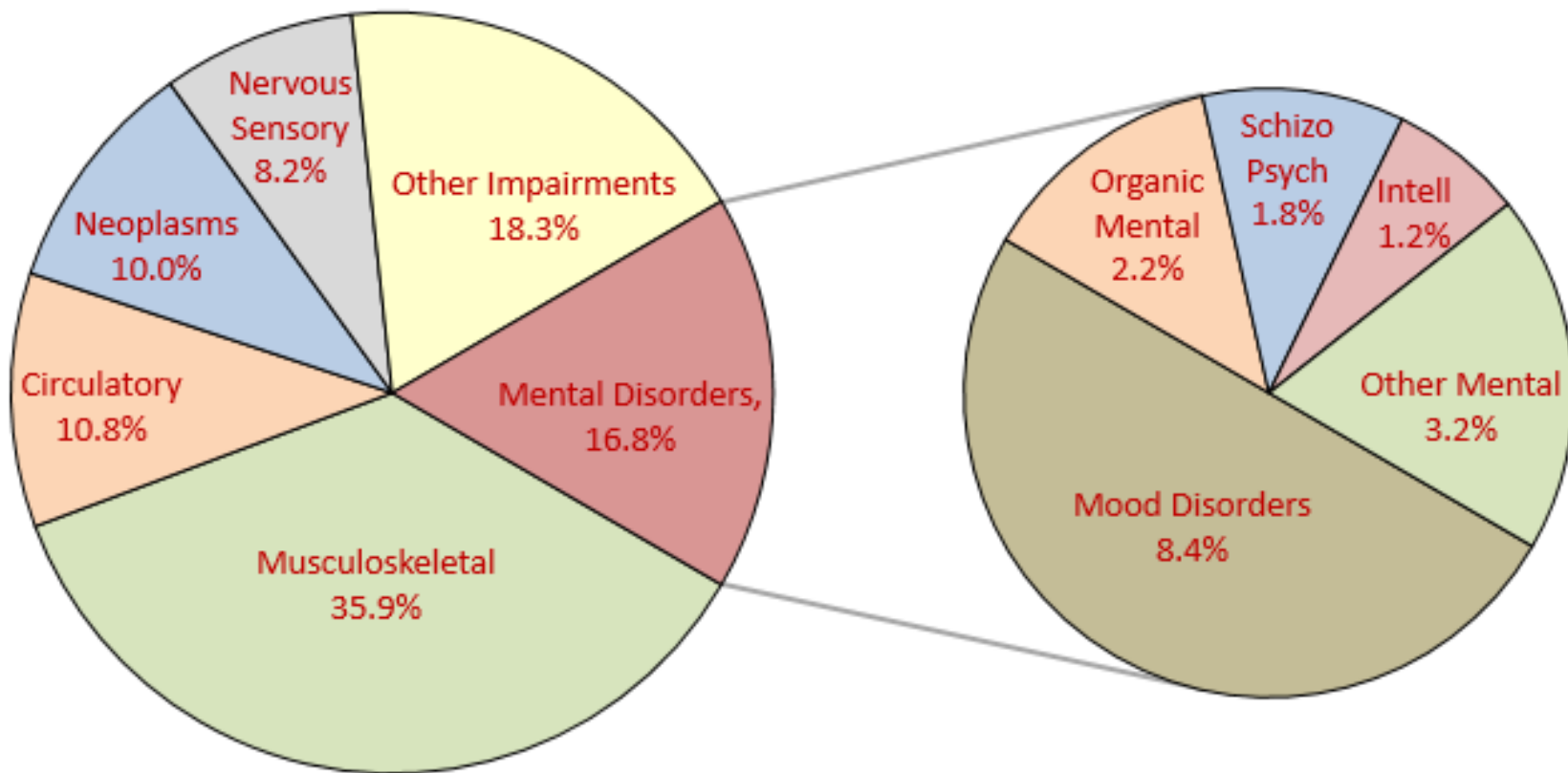
Chatham Food Pantry Clients – By Race-Ethnicity Group – December 2014



If you want to draw attention to a particular slice, leave the pie wedge unexploded but change the wedge color or the colors of the wedge border outline so as to draw additional attention to the slice.

Pie of Pie Charts

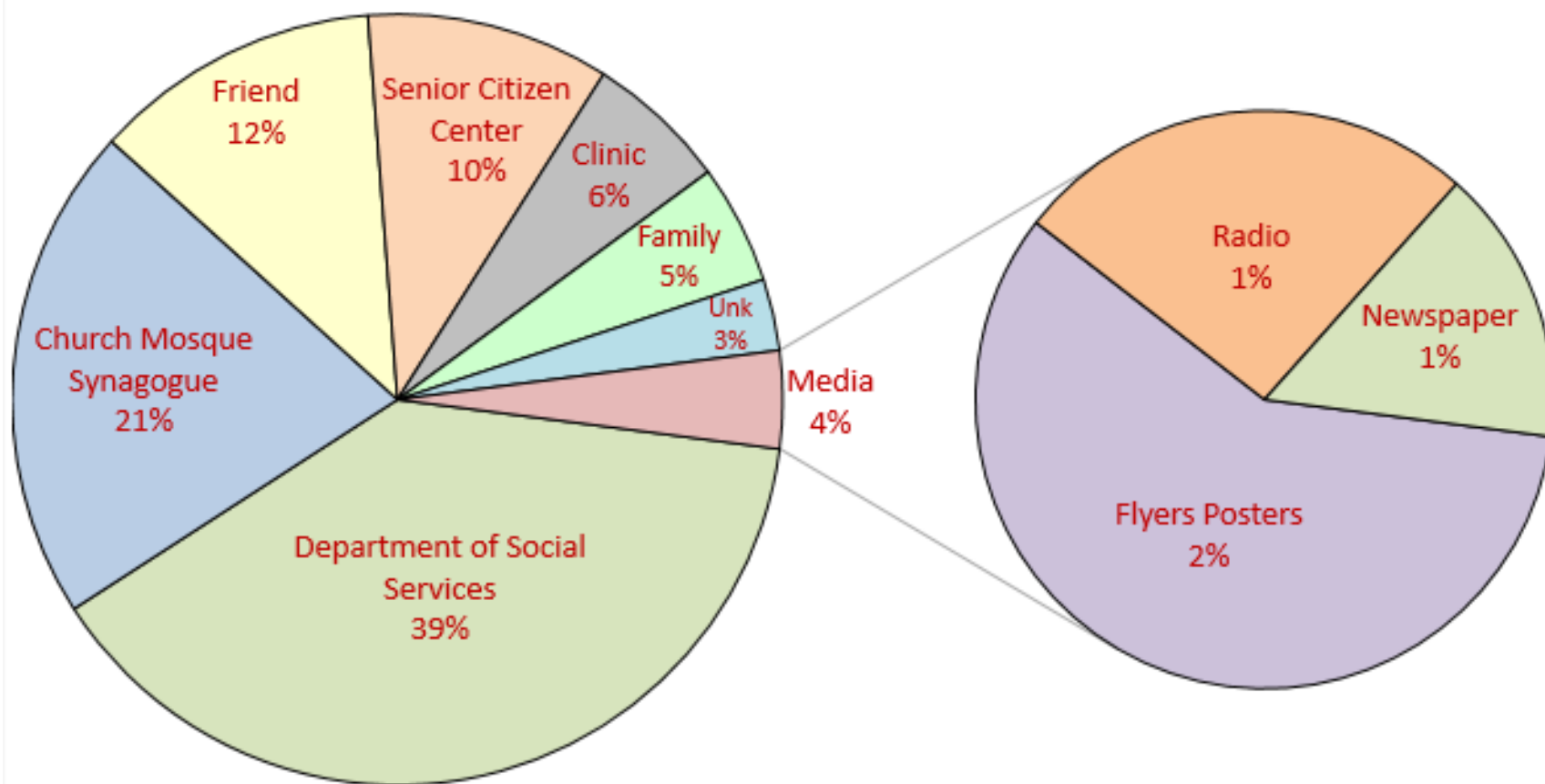
Social Security Disabled Workers By Diagnostic Group
United States - CY 2013



Pie of Pie Charts often used to break out detail in a segment of interest.

Pie of Pie Charts

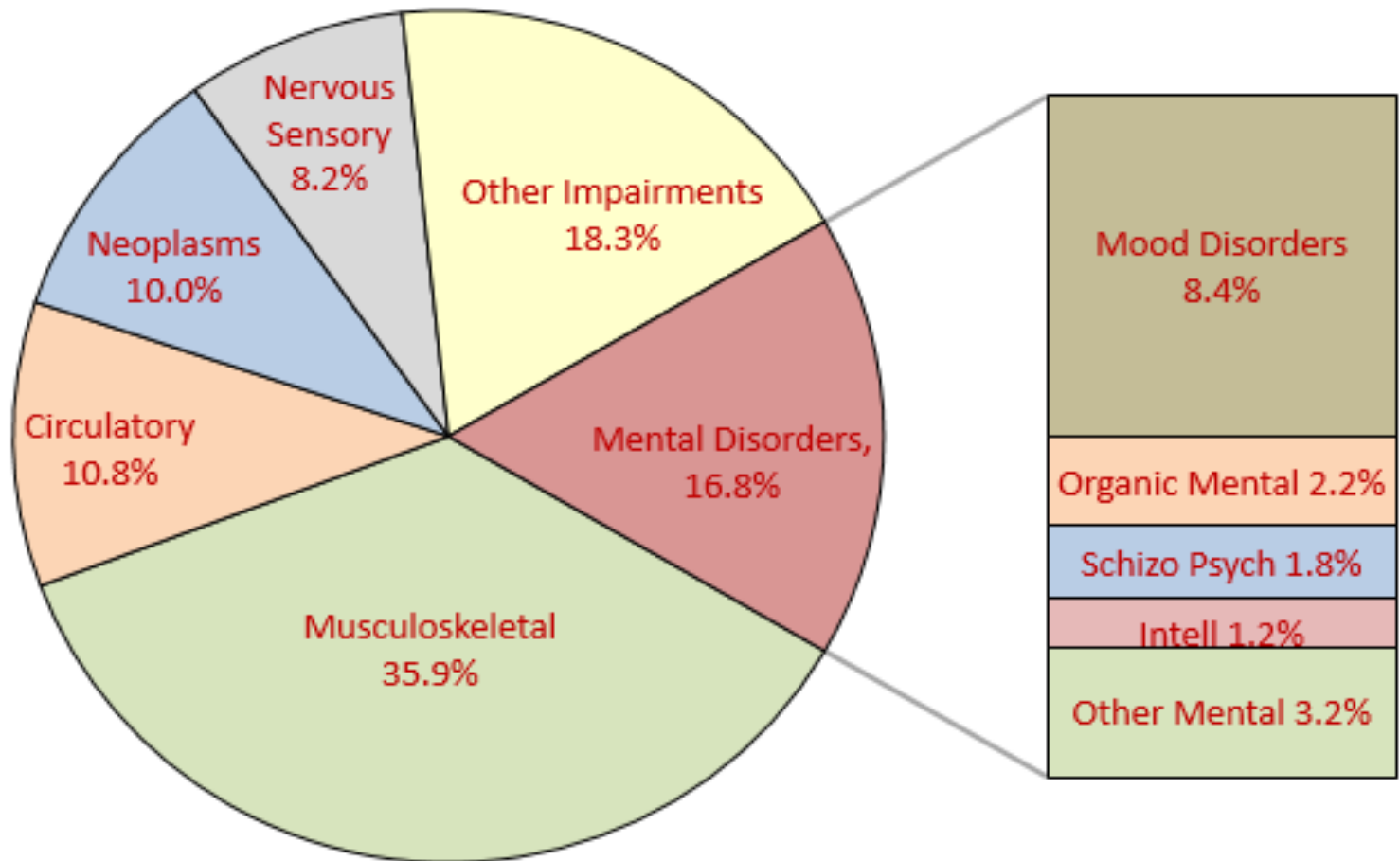
Referral Source for First-Time Chatham Food Bank Clients - December 2014



Pie of Pie charts also used to split out finer detail when slice percentages are below 5% (such as the "Media" slice in this example)

Pie Column Charts

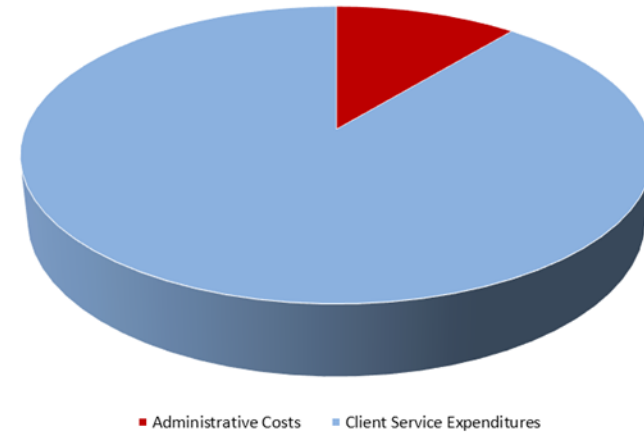
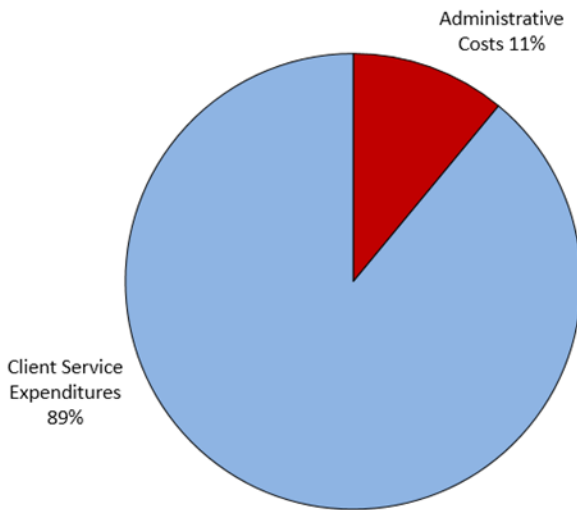
Social Security Disabled Workers By Diagnostic Group
United States - CY 2013



Can also display the secondary detail data as a stacked column

3-D Pie Charts

Cautions, Misuse, and Poor Use



The administrative costs for the Chatham Food Bank for CY 2014 was 11%, as best illustrated in the 2D Pie Chart.

3D Pie charts can distort and mislead. In the top right version, the administrative costs appear even lower.

In the bottom right version, the admin costs appear much higher. Parallax effect. Rotating the slice to the fore creates more red pixels with the vertical edge.

Avoid 3D pie charts.

