Data: Evidence for Outcomes in Long-term Services and Supports

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1:15-3:15pm

Learning Objectives

1. Introductory understanding of data and how they may (or may not) provide evidence for outcomes
2. Basic competence in how data are collected and can be used in LTSS contexts
3. Introductory understanding of multiple ways to present data for the purposes of describing or explaining LTSS programming

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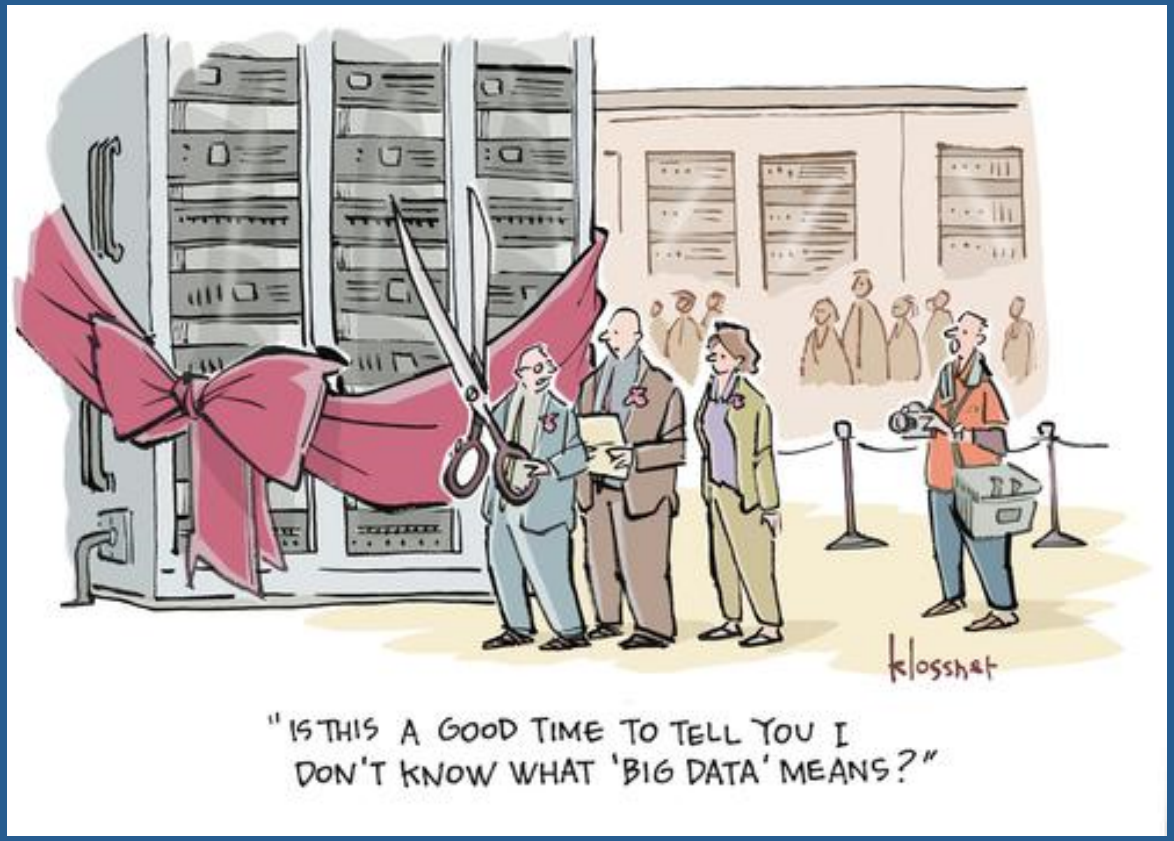
The Big Picture

Goal: Support Colorado in designing a high-quality, cost effective and person-centered LTSS system

www.emaze.com

Why Do We Care about Data?

……And by the way, what is it?



--facts about something that can be used in calculating, reasoning, or planning….

Merriam-Webster

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The Potential Of Data

Describe:

What we do…..

Who we serve…..

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The Potential Of Data

Explain:

How we make a difference…..

In what ways we are effective…..

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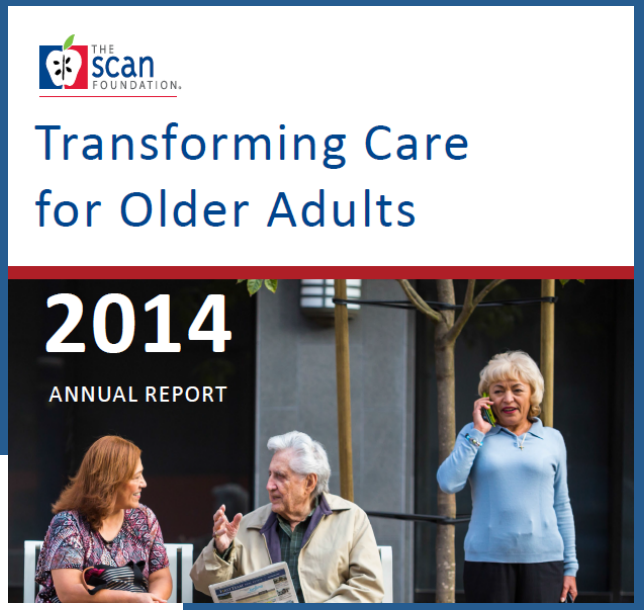
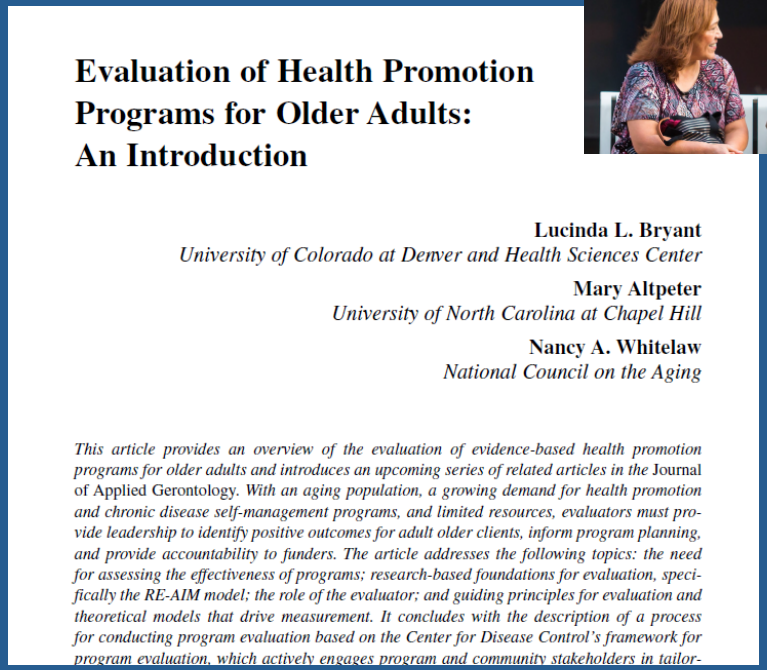
Primary Uses

Report

- Describe
- Evaluate





Evaluation of Health Promotion Programs for Older Adults: An Introduction

Lucinda L. Bryant
University of Colorado at Denver and Health Sciences Center
Mary Altpeter
University of North Carolina at Chapel Hill
Nancy A. Whitelaw
National Council on the Aging

This article provides an overview of the evaluation of evidence-based health promotion programs for older adults and introduces an upcoming series of related articles in the Journal of Applied Gerontology. *With an aging population, a growing demand for health promotion and chronic disease self-management programs, and limited resources, evaluators must provide leadership to identify positive outcomes for adult older clients, inform program planning, and provide accountability to funders. The article addresses the following topics: the need for assessing the effectiveness of programs; research-based foundations for evaluation, specifically the RE-AIM model; the role of the evaluator; and guiding principles for evaluation and theoretical models that drive measurement. It concludes with the description of a process for conducting program evaluation based on the Center for Disease Control's framework for program evaluation, which actively engages program and community stakeholders in tailor-*

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What is Evaluation Research?

The systematic use of research methods to present evidence in order to make judgements about the effectiveness and the overall merit, worth, or value of a practice or program.

Program evaluation *is defined as "the systematic collection of information about the activities, characteristics, and outcomes of programs to make judgments about the program, improve program effectiveness, and/or inform decisions about future programs" (U. S. Department of Health & Human Services, 2005, p. 1)*

Reasons for Evaluation

- Provide Justification for a Program
- Validate and Continue a Program
- Respond to Inquiries about a Program
- Justify Planned Program Changes
- Determine Program Life Span
- Funding Accountability/ Reimbursement
- Beyond Organizational Boundaries- Broad Application of Evaluation on a Macro Level:
  - e.g. Asset Mapping- Regional resource inventory

Steps of Evaluation Process

1. Identify Objectives
2. Formulate Questions Based on Those Objectives
3. Decide on Evaluation Method
   a) Operationalize Concepts to Measure Questions
   b) Decide on Sampling Technique & Select sample
   c) Select Data Collection Technique & Collect Data
4. Manage, Analyze, and Interpret the Data
5. Communicate and Use Findings

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Identify Objectives & Formulating Questions

Small Group Activity

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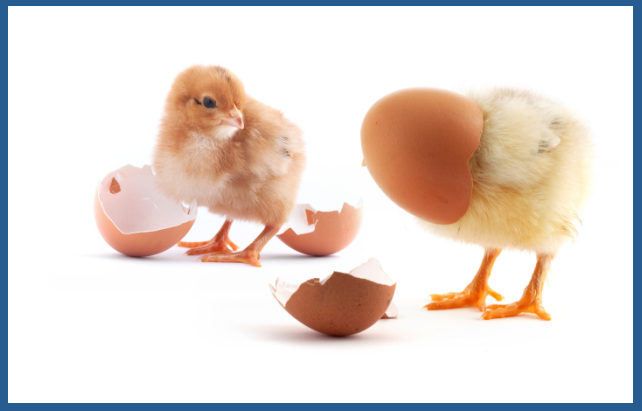

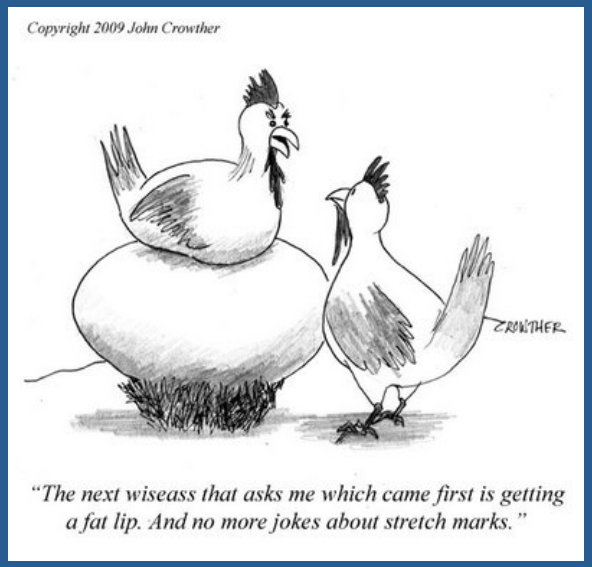

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Data Sources

- Direct Observations
- Confidential Interviews
- Program Records
- Social Indicators
- Key Informants
- Focus Groups
- Community Forums
- Surveys

Data Collection/Acquisition

Qualitative

Depth

Data:

- Individual Interviews
- Focus Groups
- Documents
- Artifacts

Quantitative

Breadth

Data:

- Survey responses
- Validated Instruments
- Quantifiable Information

There are also Mixed Methods!

Data Collection/Acquisition

Primary Data

Data you collect for the purpose of evaluation

Secondary Internal Data

Data you already collect as an organization

Secondary External Data

Data someone else is collecting

Public Use Data

Data collected by someone else with the intent that others will use it

Primary Data

Collected for the purpose of evaluation:

- Surveys
- Instruments
  - Self-Report
  - Clinician Report
- Tracking Methods
- Qualitative Options (e.g. Interviews, Focus Groups)

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Secondary Internal Data

- Administrative records/ Electronic Health Records
  - Case notes, encounters, services delivered
  - Diagnoses
  - Demographics
  - Assessments
- Financial records
- Health plan claims
- Healthcare provider charts

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Secondary External Data

http://www.aarp.org/content/dam/aarp/research/public_policy_institute/ltc/2014/raising-expectations-2014-AARP-ppi-ltc.pdf

List of 26 Indicators in State Scorecard on Long-Term Services and Supports

Indicator	Most Recent Data				Baseline Data			
	Data Year	Median Value	Bottom Value	Top Value	Data Year	Median Value	Bottom Value	Top Value
Affordability and Access								
Median annual nursing home private pay cost as a percentage of median household income age 65+	2013	234%	456%	168%	2010	224%	444%	166%
Median annual home care private pay cost as a percentage of median household income age 65+	2013	84%	111%	47%	2010	89%	125%	55%
Private long-term care insurance policies in effect per 1,000 population age 40+	2011	44	26	130	2009	41	28	300
Percent of adults age 21+ with ADL disability at or below 250% of poverty receiving Medicaid or other government assistance health insurance	2011-12	51.4%	42.3%	78.1%	2008-09	49.9%	38.7%	63.6%
Medicaid LTSS participant years per 100 adults age 21+ with ADL disability in nursing homes or at/below 250% poverty in the community	2009	42.3	16.3	85.2	2007	36.6	15.9	74.6
Aging and Disability Resource Center functions (composite indicator, scale 0-70)	2012	54	14	67	2010	***	***	***
Choice of Setting and Provider								
Percent of Medicaid and state-funded LTSS spending going to HCBS for older people and adults with physical disabilities	2011	31.4%	14.5%	65.4%	2009	29.8%	10.7%	64.6%
Percent of new Medicaid aged/disabled LTSS users first receiving services in the community	2009	50.7%	21.6%	81.9%	2007	49.8%	21.8%	83.3%
Number of people participant-directing services per 1,000 adults age 18+ with disabilities	2013	8.8	0.03	127.3	*	*	*	*
Home health and personal care aides per 1,000 population age 65+	2010-12	33	13	76	2007-09	29	16	80
Assisted living and residential care units per 1,000 population age 65+	2012-13	27	11	125	2010	28	7	78
Quality of Life and Quality of Care								
Percent of adults age 18+ with disabilities in the community usually or always getting needed support	2010	71.8%	66.6%	79.1%	2009	68.5%	61.3%	78.2%
Percent of adults age 18+ with disabilities in the community satisfied or very satisfied with life	2010	86.7%	82.5%	92.1%	2009	85.0%	80.2%	92.4%
Rate of employment for adults with ADL disability ages 18–64 relative to rate of employment for adults without ADL disability ages 18–64	2011-12	23.4%	13.8%	37.2%	2009-10	24.2%	16.7%	44.4%
Percent of high-risk nursing home residents with pressure sores	2013	5.9%	9.0%	3.0%	*	*	*	*
Nursing home staffing turnover: ratio of employee terminations to the average number of active employees	2010	38.1%	72.0%	15.4%	2008	46.9%	76.9%	18.7%
Percent of long-stay nursing home residents who are receiving an antipsychotic medication	2013	20.2%	27.6%	11.9%	**	**	**	**
Support for Family Caregivers								
Legal and system supports for family caregivers (composite indicator, scale 0-14.5)	2012-13	3.00	0.50	8.00	2008-10	***	***	***
Number of health maintenance tasks able to be delegated to LTSS	2013	9.5	0	16	2011	7.5	0	16

"This State Long-Term Services and Supports (LTSS) Scorecard is a multidimensional approach to measure state-level performance of LTSS systems that assist older people, adults with disabilities, and their family caregivers. This second edition of the State LTSS Scorecard measures LTSS system performance across five key dimensions: (1) affordability and access, (2) choice of setting and provider, (3) quality of life and quality of care, (4) support for family caregivers, and (5) effective transitions."

RAISING EXPECTATIONS 2014 (2nd Ed)
AARP
The Commonwealth Fund
The SCAN Foundation

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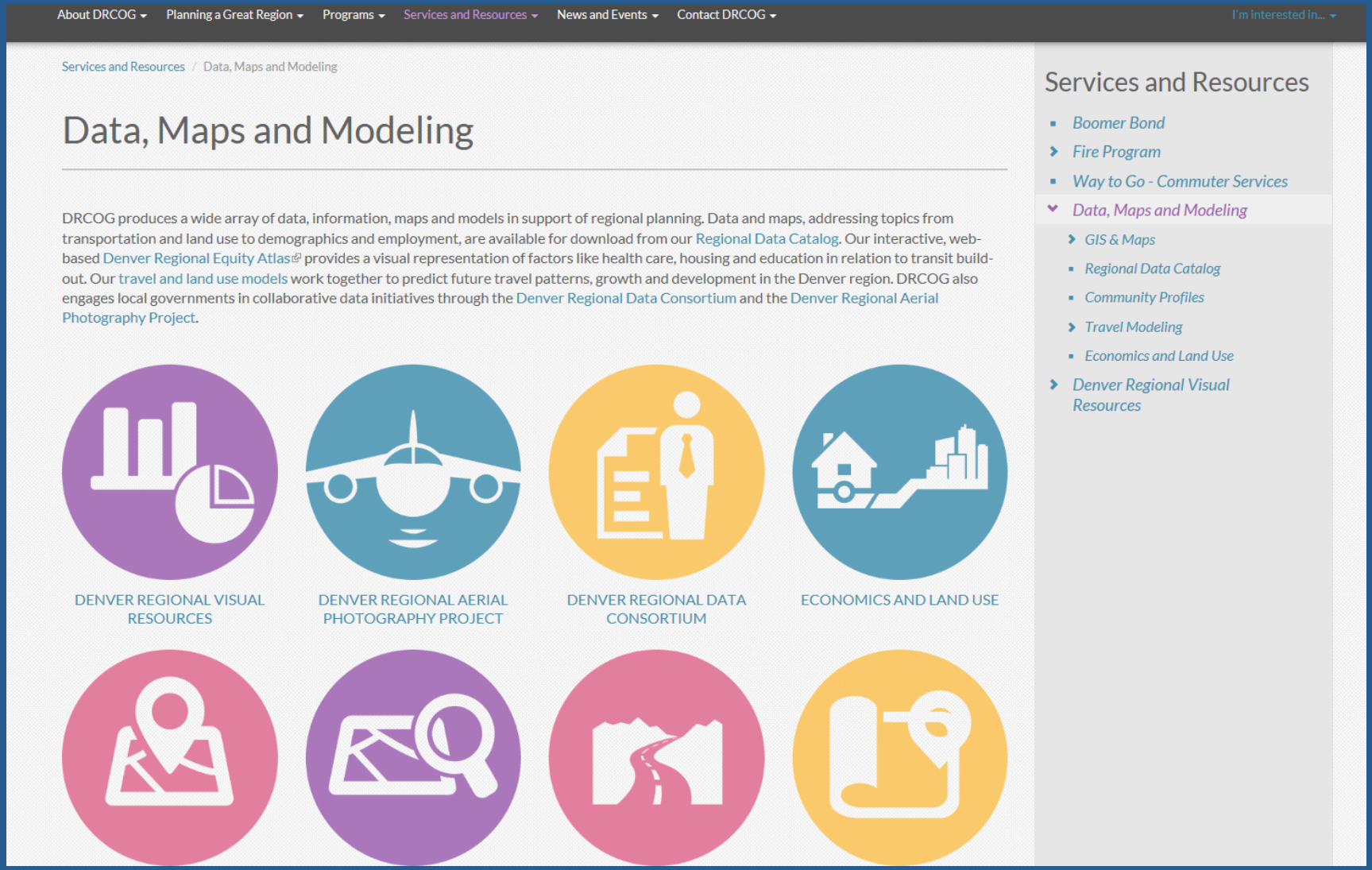
Public Use Data

Dataset	Types of information	URL
U.S. Census	Demographics: over 65, income	www.census.gov/geography.html
National Long-Term Care Survey	Topics: activities of daily living, aging, caregivers, diet, family relations, health care services, health services utilization	http://www.nltcs.aas.duke.edu/
Colorado Health Information Dataset (CoHID)	Topics: Demographics, Health Indicators, Population Focused Health Data, Income, Education, Race, by County	http://www.chd.dphe.state.co.us/cohid/
The Piton Foundation: Community Facts	Demographic and Environmental Indicators	http://denvermetrodata.org/

Colorado Data Sources



https://drcog.org/services-and-resources/data-maps-and-modeling

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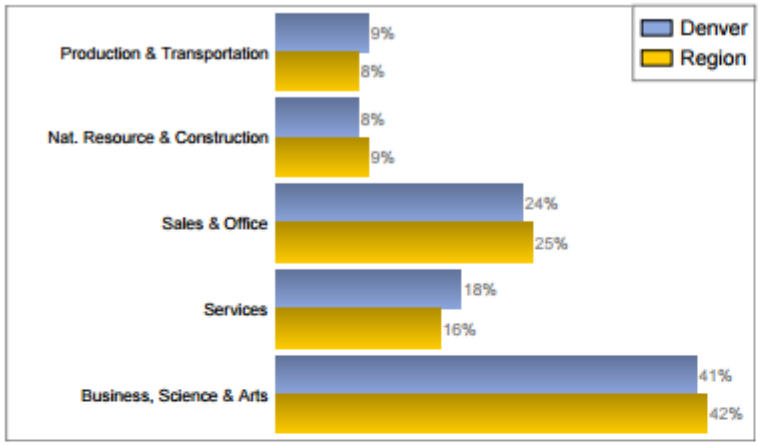
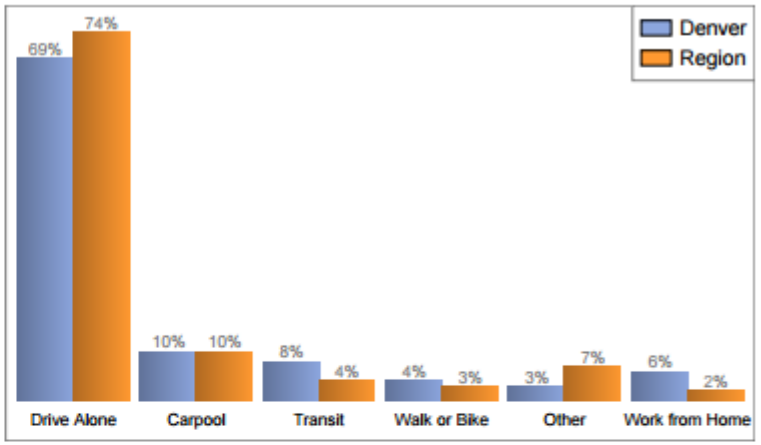
Colorado Data Tools

Denver Community Profile

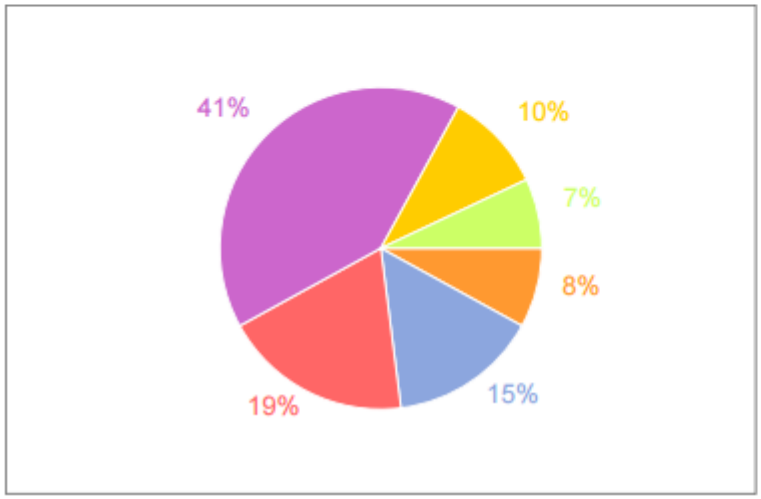
Occupation by Industry[1]



Means of Transportation to Work[1]



Household Types[1]



Metro Vision 2035 Metrics

	Denver	Region
Total Land Area (SqMi)[5]	154	5,288
Recreation, Parks and Open Space Acres per Capita[5]	0.01	0.42
2035 Urban Growth Boundary (SqMi)[5]	113	980
2010 Employment in Urban Centers[5]	242,070	567,805
2010 Households in Urban Centers[5]	50,233	112,667
Vehicle Miles Traveled		

https://drcog.org/services-and-resources/data-maps-and-modeling

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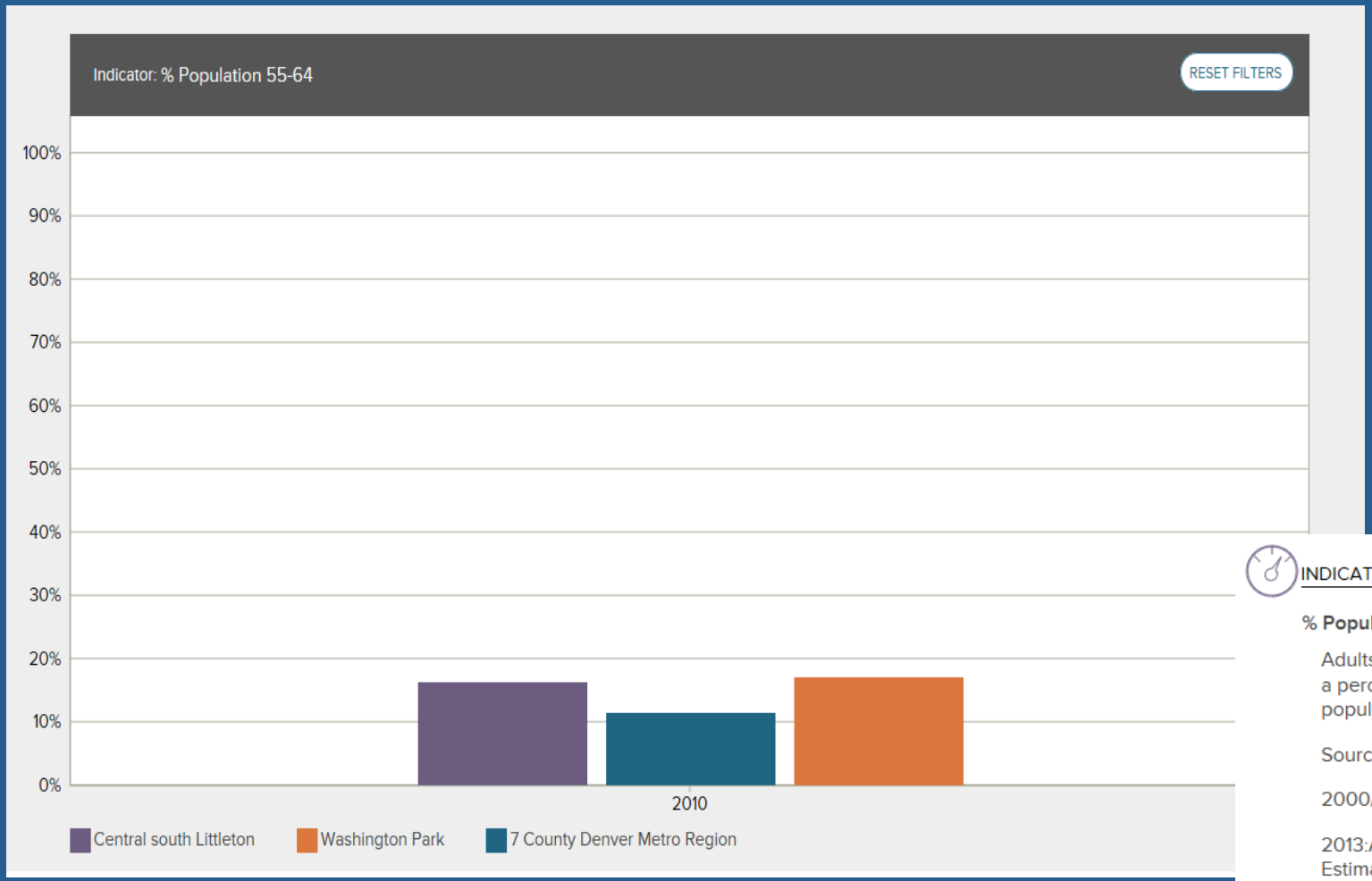

INDICATOR DETAILS

% Population 55-64

Adults age 55 through 64 as a percentage of the total population

Source: U.S. Census Bureau

2000/2010:Census SF1

2013:ACS 2009-2013 5-Year Estimates

The Piton Foundation: Community Facts
http://denvermetrodata.org/

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How do I know which Data Sources?

Some factors to consider in selecting data sources:

- Goodness of Fit with your Objectives
- Accessibility
- Validity
- Timeliness
- Completeness

Timing of Data Collection

Consider…

- Timing of participation in program/service
- Expected time lapse for measurable change to occur
- Contract periods and reporting deadlines
- Lag time for needed data / analyses to be available

Evaluation of Outcomes

- Client Outcomes are determined using data as a result of measures
- HOWEVER not all data qualify as outcomes….

Client Outcomes vs. Process Outcomes

- What is the difference between **Process** and **Outcome**?
- **Process:**
  - How services or care is provided
  - How the system works
- **Outcome:**
  - Health status
  - Answers: Did our service make a difference?

http://patientsafetyed.duhs.duke.edu/module_a/measurement/defining_process.html

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Client Outcomes vs. Process Outcomes

- *77% of our clients were satisfied with the services they received.*
- *Number of our patients with ED visits this year.*
- *What percentages of clients have received their flu shot?*
- *Are there enough Medicaid SNF beds to meet the community's need?*
- *How many of our clients utilize our senior companion program this year?*

http://patientsafetyed.duhs.duke.edu/module_a/measurement/defining_process.html

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Client Health Outcomes or Not?

"The Healthy Aging Program successfully served 2,846 clients through their senior support services between January 1, 2013- December 31, 2013."

"Of 3,012 clients who were referred, 2,846 clients successfully completed our Healthy Aging Program between January 1, 2013- December 31, 2013."

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Client Health Outcomes or Not?

"Clients served in the Healthy Aging Program over the six-month intervention period experienced improvements in anxiety (p values < .05), depression (p values < .05), and overall psychological well-being (p values < .01) relative to those who did not. "

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Data & Outcomes

Small Group Activity

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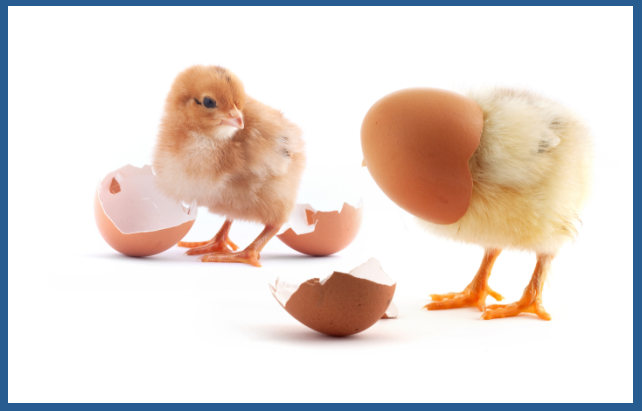

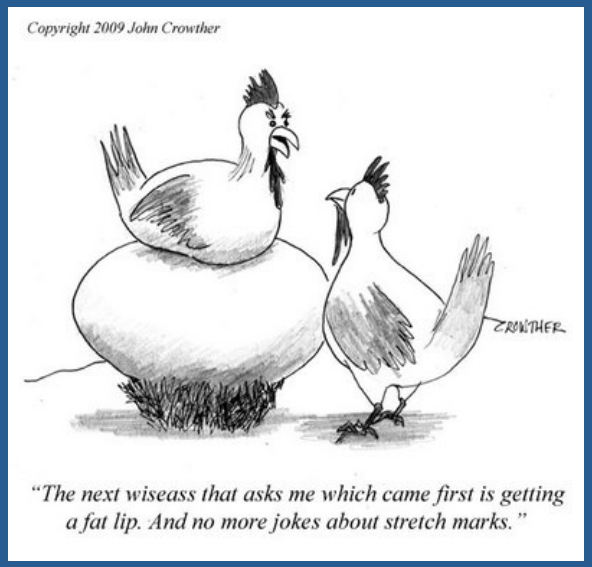

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Evaluation Designs

- To test an Intervention: Group Designs
  - Experiments (Randomized Controlled Trials)
  - Quasi-experiments
- Descriptive
- Single-case
- Surveys

Comparison Groups

- Experiments
- Quasi-experiments
- Goal: Include a group exposed to either no intervention, the existing standard of care, or an alternate intervention.
  - Randomized
  - Non-randomized

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Notations and Symbolic Representation

- Common notations and their meanings
  - "R" – randomization – subjects are assigned to groups in a random way
  - "X" – intervention – manipulation of the variable of interest
  - "O" – pre/post test observation

Pre-test post test control group

O1 X O2

R

O3 O4

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Post-Test only control group

X O1

R

O2

Solomon 4 Group Design

	O1	X	O2
	O3		O4
R			
		X	O5
			O6

Quasi-Experimental Designs

- Nonequivalent Control Group Design – What is the difference between this and an experimental design? Examples?

O1 X O2
O3 O4

- Time Series Design – How might this be useful? (Trend analysis/Longitudinal/Directionality)

O1 O2 O 3 X O4 O5 O6

- Multiple Time Series Design – What are the additional benefits? Examples?

O1 O2 O 3 X O4 O5 O6
O1 O2 O 3 O4 O5 O6

Common Evaluation Designs

- **Pre-post**
  - Change from the time that intervention (or intervention exposure) begins to one or more follow-up time-points
- **Time series**
  - Trajectory of change before, during, and after program implementation

Common Weaknesses

- **Small sample** size
- **Reversion to the mean**
- **Selection** bias
- Lack of appropriate **comparison group**

What if I don't have the resources to collect data on a comparison group?

- Partner with other organizations
- Think about secondary and public use data
  - Examples
- Compare your program membership to outcomes among a similar group and time period

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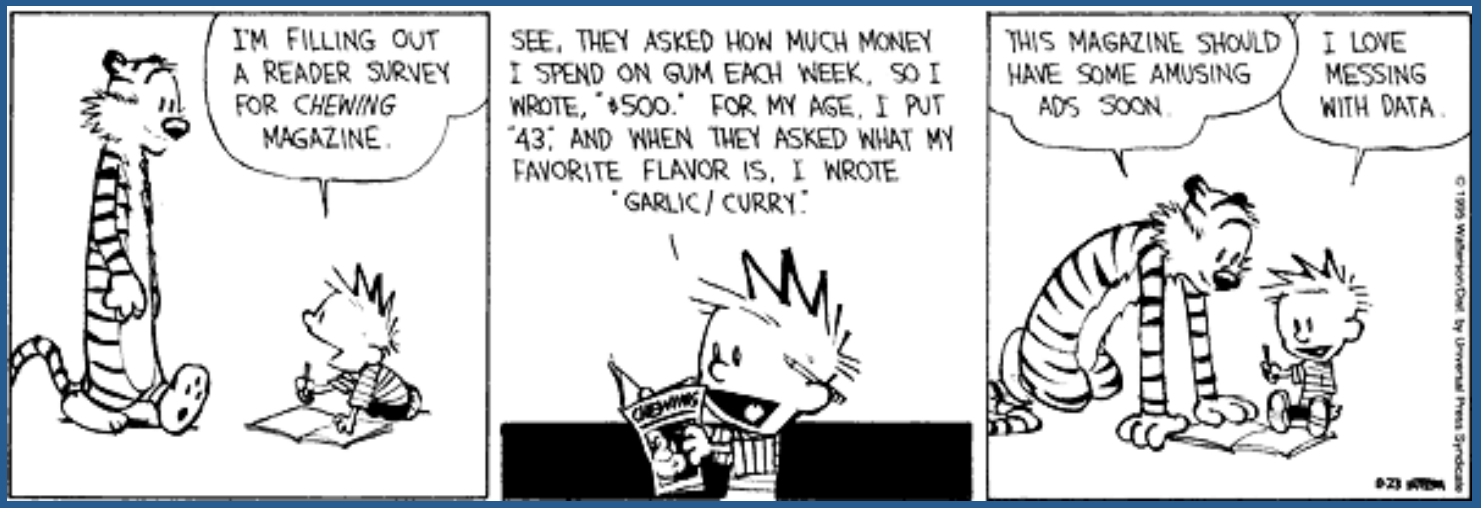
Data Measurement



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Reliability & Validity

- Reliability is the degree of consistency in measurement.
- Validity is the extent to which our measure reflects the real world.
- Are you measuring what you think you are measuring?

How does this apply to our data?

How was the data/will the data be **measured**?

- Validated Measures
  - Population Focused (Older Adults, Latino)
  - Health/Well-being Focused (Social Emotional, Psych- Anxiety, Depression, PTSD)
- Instrument Focus
  - Health Status or Symptoms (e.g., Depression)
  - Knowledge
  - Attitudes, Beliefs, Opinions

Sample & Measurement Strategies

Small Group Activity

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Data Management

Now that we have all this data…

- How do we store it?
- How do we organize it?
- How do we protect it?
- What kind of sharing arrangements will we need?
- What are the protection policies for different types of data?

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What Is Data Analysis?

Describe: describe who you serve, what you have, or what happened, etc..

Analyze and Infer: Estimate whether your outcomes could have happened as a result of your intervention or by chance

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Interpreting Results

- Did our service make a difference?
  - Health status
  - Quality of Life
  - Maintaining Independence
  - Utilization of Services
  - Prevention of Decline

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Causality of Program Effect Is Extremely Difficult to Prove

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Attribution vs. Contribution

- Attribution: Our program caused this outcome
- Contribution: Our program contributed to X part of the outcome, in the context of other factors Y and Z

Tips To Remember When Interpreting Your Findings

- Interpret evaluation results with the goals of your program in mind.
- Keep your audience in mind when preparing the report. What do they need and want to know?
- Consider the limitations of the evaluation:
  - Possible biases
  - Validity of results
  - Reliability of results
- Are there alternative explanations for your results?
- How do your results compare with those of similar programs?
- Have the different data collection methods used to measure your progress shown similar results?
- Are your results consistent with theories supported by previous research?
- Are your results similar to what you expected? If not, why do you think they may be different?

Source: US Department of Health and Human Services. Introduction to program evaluation for comprehensive tobacco control programs. Atlanta, GA: US Department of Health and Human Services, Centers for Disease Control and Prevention, Office on Smoking and Health, November 2001.

http://www.cdc.gov/eval/guide/cdcevalmanual.pdf

More on Interpretation

Proper interpretation includes:

- The likelihood that your findings could have occurred by chance
- The confidence with which you can attribute your findings to your intervention
- The other factors you have accounted for as possible alternative explanations
- A description of the comparison group

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Use of Findings

- Communicate successes of program
- Improve services
- Demonstrate service value to stakeholders
- Inform policy and practice

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Strong Evidence for Program Effect On Outcomes is the Goal

Review of Examples & Activity

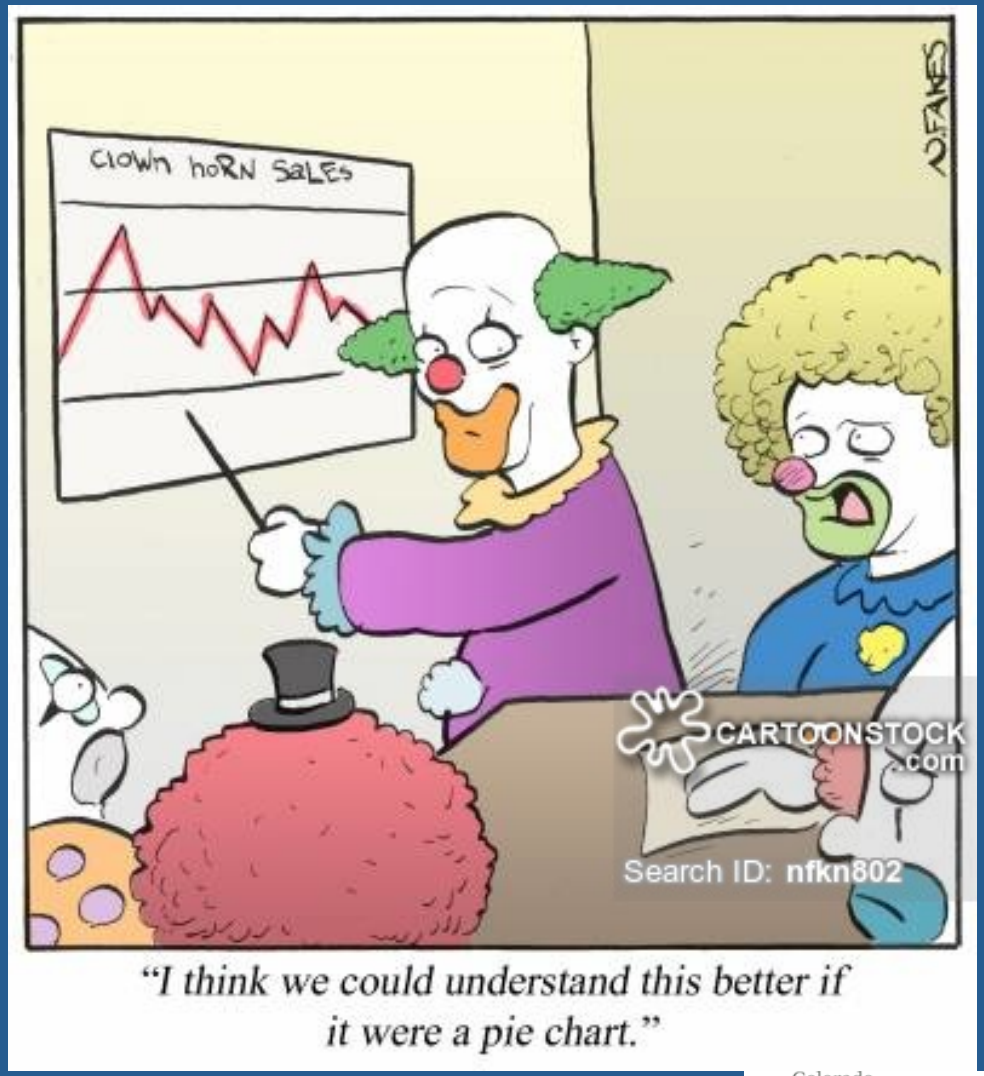
Managing Unexpected or Negative Results

Data Representation

- Proper Display is Important
  - Effective Summarization
  - Powerful Messaging
  - Complete Information

Graphic Presentation of Data

Purpose: Relay complex information in a very brief and concise way.



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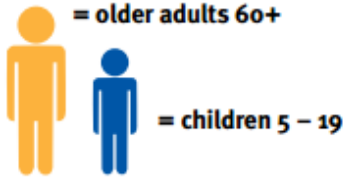
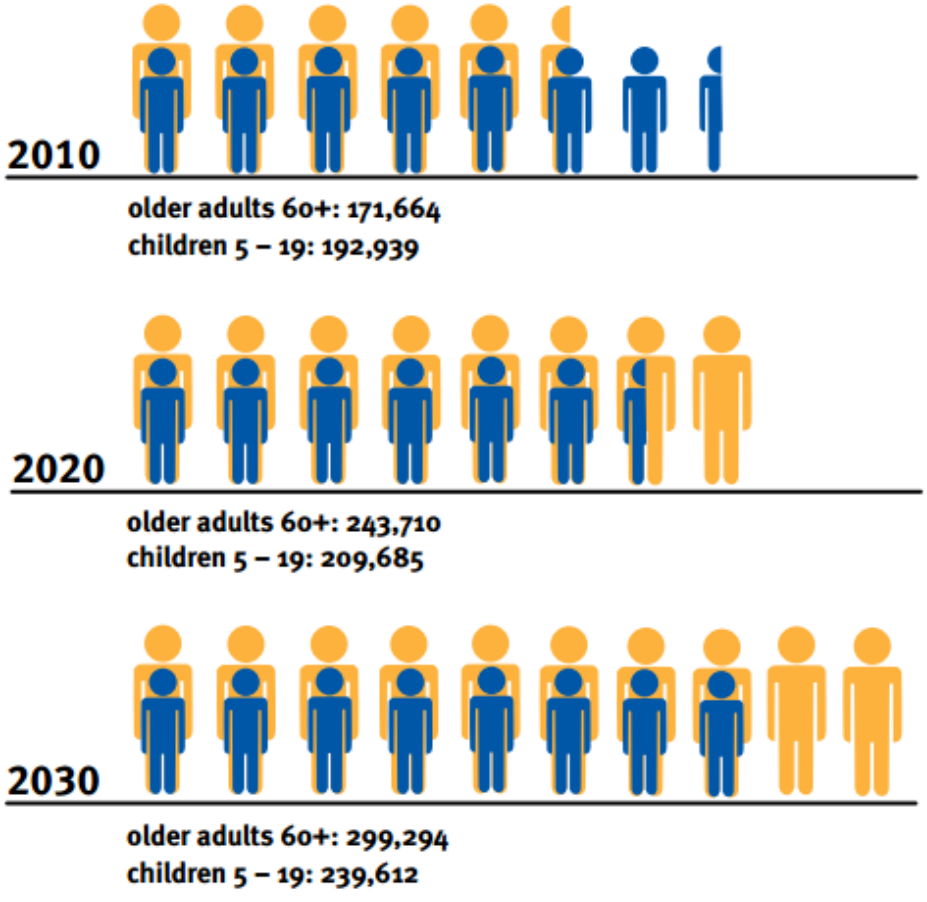
POPULATION PROJECTIONS

Richmond Regional Planning District



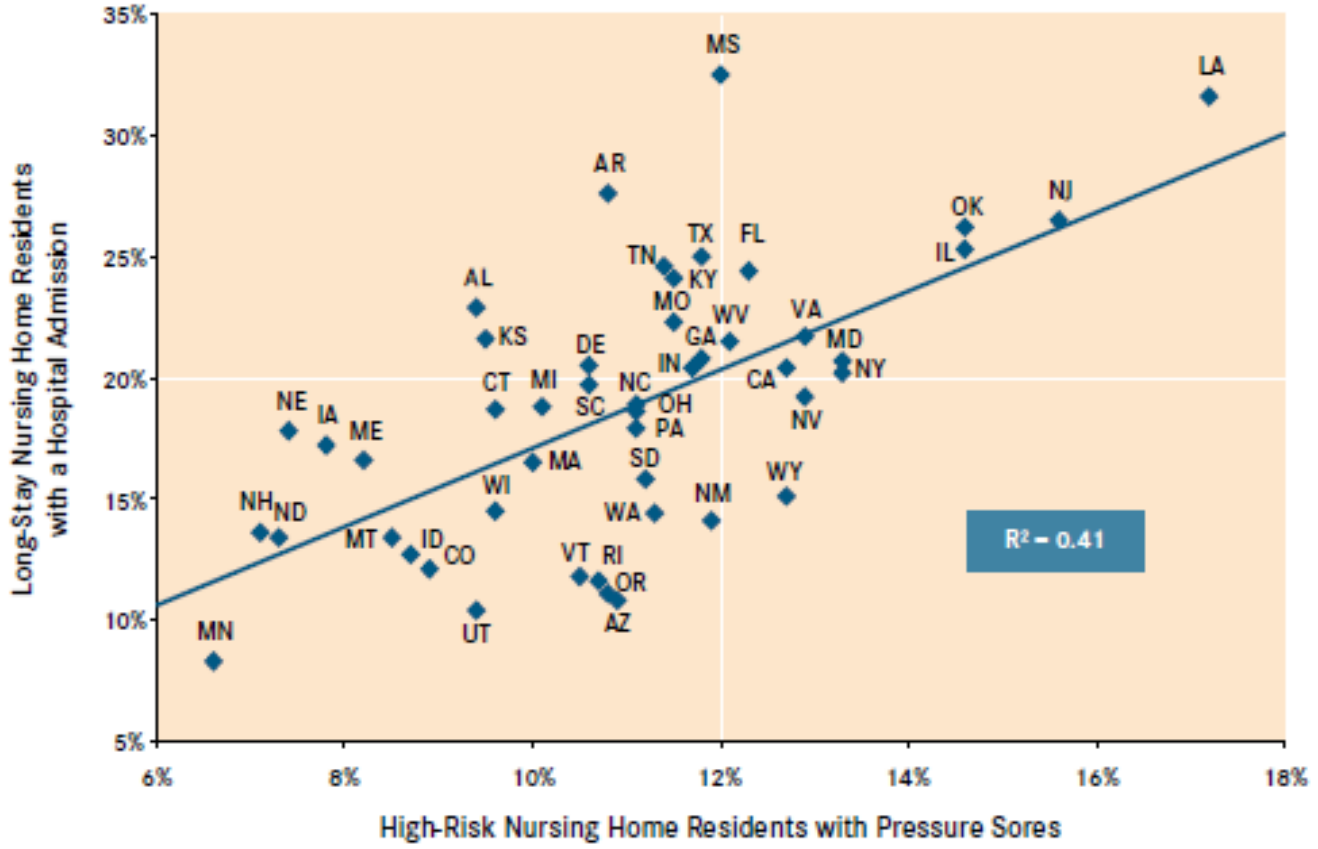


source: Virginia Employment Commission, 2010

QUALITY OF LIFE AND QUALITY OF CARE

Exhibit 15

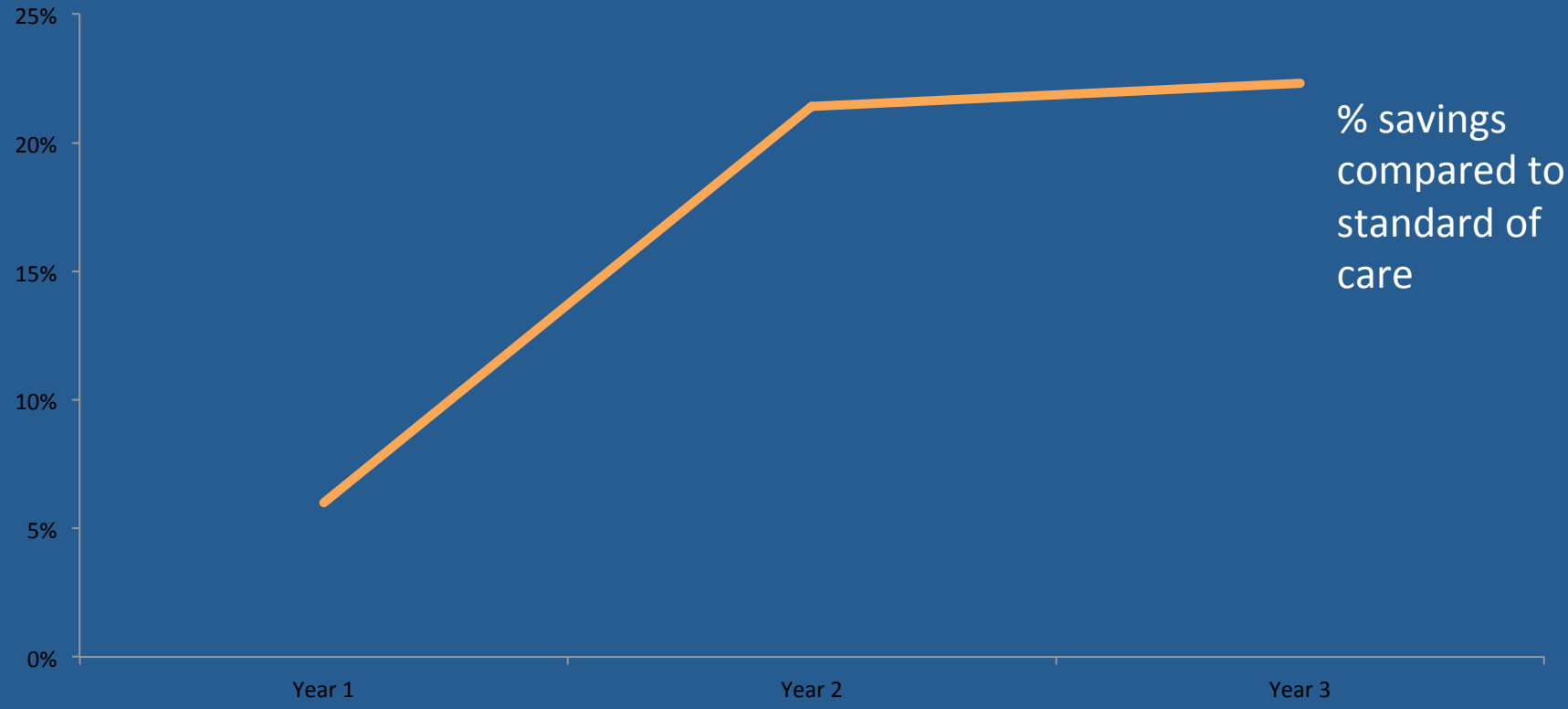
Pressure Sores and Hospital Admissions from Nursing Homes



Data: Nursing home residents with a hospital admission–2008 Medicare enrollment data and MEDPAR file; Nursing home residents with pressure sores–2009 AHRQ National Healthcare Quality and Disparities Reports.
Source: State Long-Term Services and Supports Scorecard, 2011.

Line Graphs: Trends

The Community Health Worker Program Saved Medicaid Dollars Every Year



Adapted from: Felix, HC, Mays GP, Stewart MK, Cottoms N, Olson M. (2011). THE CARE SPAN: Medicaid savings resulted when community health workers matched those with needs to home and community care. *Health Affairs, 30*(7):1366-1374.

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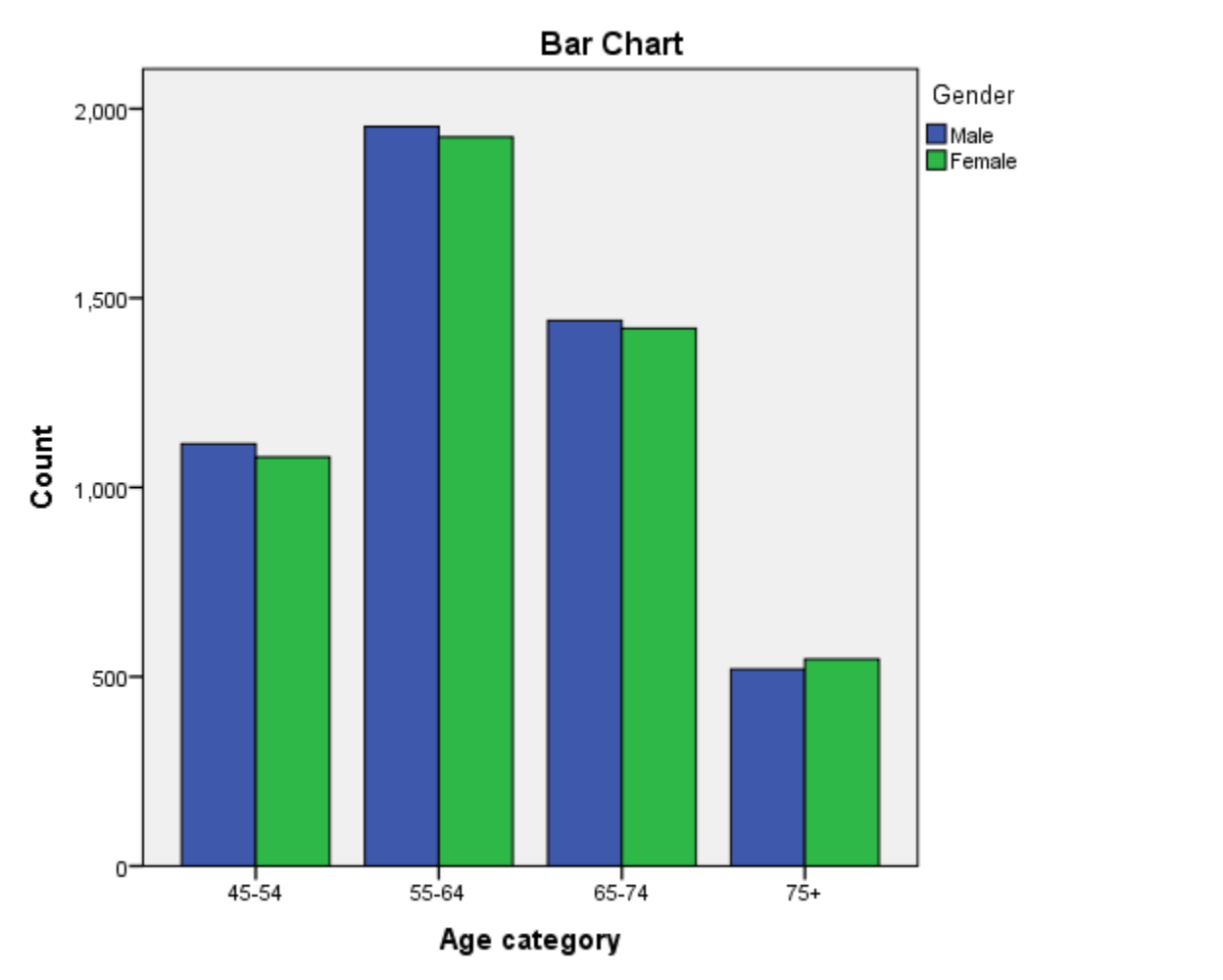
Bar Graphs



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Pie Charts

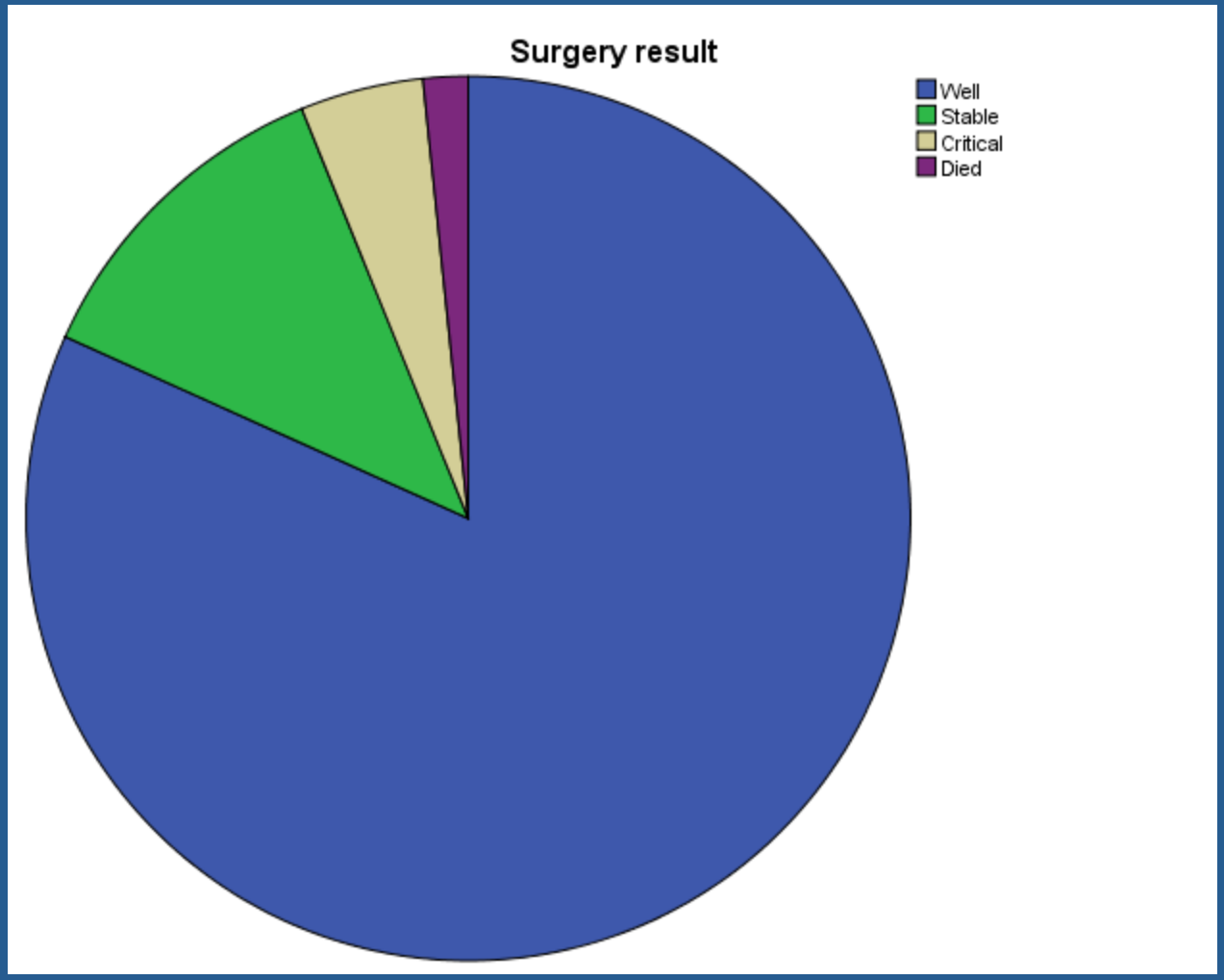

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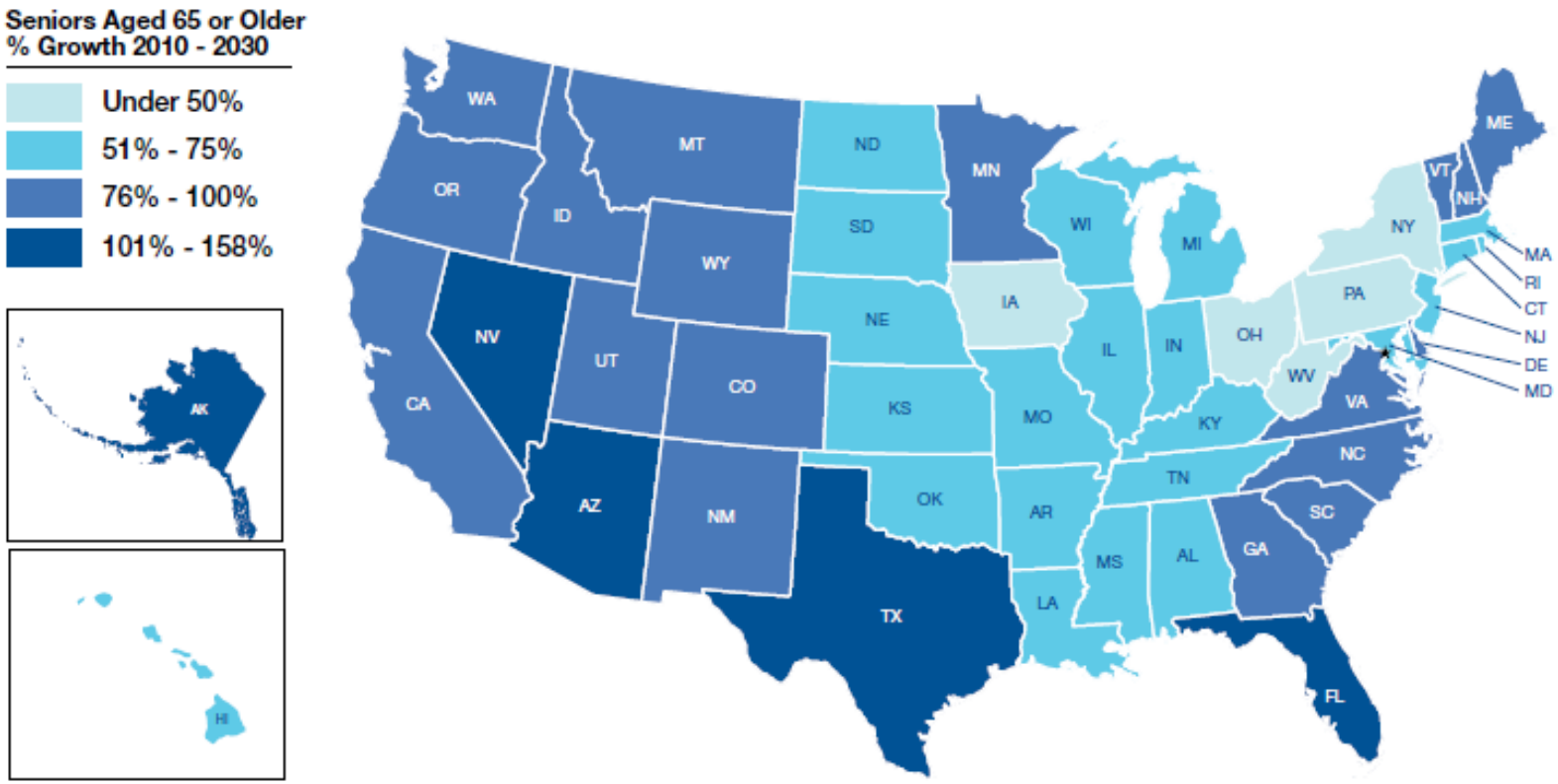
Figure 1: Projected Growth of Seniors Age 65 or Older, 2010-2030[8]



7 Op. cit. 1

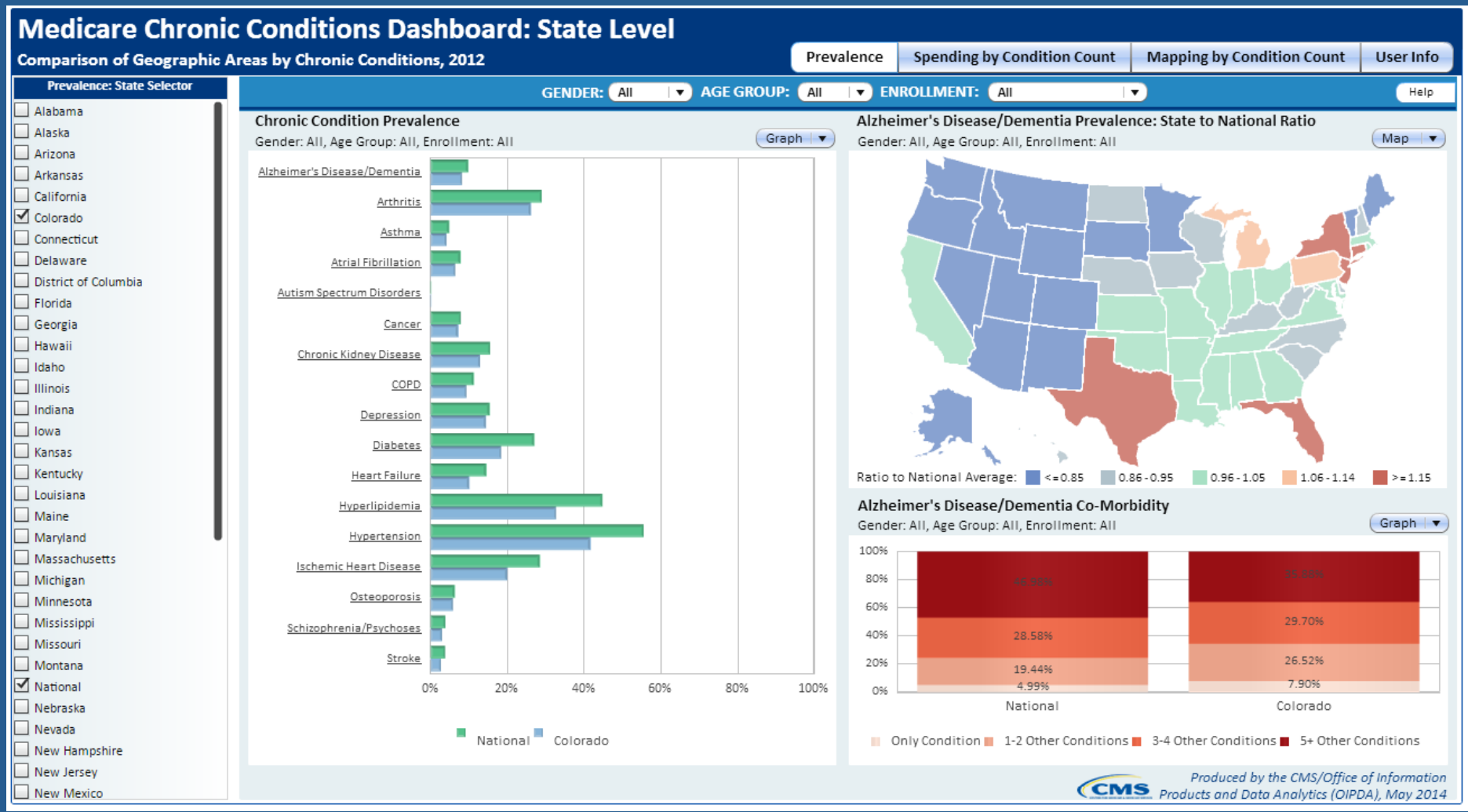
8 Op. cit. 5

9 U.S. Administration on Aging, "A Profile of Older Americans: 2010" Available at http://www.aoa.gov/aoaroot/aging_statistics/Profile/index.aspx

10 Op. cit. 5

11 Ibid.

Dashboard


Medicare Chronic Conditions Dashboard: State Level
Comparison of Geographic Areas by Chronic Conditions, 2012
Prevalence
Spending by Condition Count
Mapping by Condition Count
User Info
Prevalence: State Selector
Alabama
Alaska
Arizona
Arkansas
California
Colorado
Connecticut
Delaware
District of Columbia
Florida
Georgia
Hawaii
Idaho
Illinois
Indiana
Iowa
Kansas
Kentucky
Louisiana
Maine
Maryland
Massachusetts
Michigan
Minnesota
Mississippi
Missouri
Montana
National
Nebraska
Nevada
New Hampshire
New Jersey
New Mexico
GENDER: All
AGE GROUP: All
ENROLLMENT: All
Help
Chronic Condition Prevalence
Gender: All, Age Group: All, Enrollment: All
Graph
Alzheimer's Disease/Dementia
Arthritis
Asthma
Atrial Fibrillation
Autism Spectrum Disorders
Cancer
Chronic Kidney Disease
COPD
Depression
Diabetes
Heart Failure
Hyperlipidemia
Hypertension
Ischemic Heart Disease
Osteoporosis
Schizophrenia/Psychoses
Stroke
0%
20%
40%
60%
80%
100%
National
Colorado
Alzheimer's Disease/Dementia Prevalence: State to National Ratio
Gender: All, Age Group: All, Enrollment: All
Map
Ratio to National Average:
<=0.85
0.86 - 0.95
0.96 - 1.05
1.06 - 1.14
>=1.15
Alzheimer's Disease/Dementia Co-Morbidity
Gender: All, Age Group: All, Enrollment: All
Graph
100%
80%
60%
40%
20%
0%
28.58%
19.44%
4.99%
29.70%
26.52%
7.90%
National
Colorado
Only Condition
1-2 Other Conditions
3-4 Other Conditions
5+ Other Conditions
CMS
Produced by the CMS/Office of Information Products and Data Analytics (OIPDA), May 2014

Ethics in Communicating Results
Graphs and charts can be misleading….

http://www.khanacademy.org/video/misleading-line-graphs

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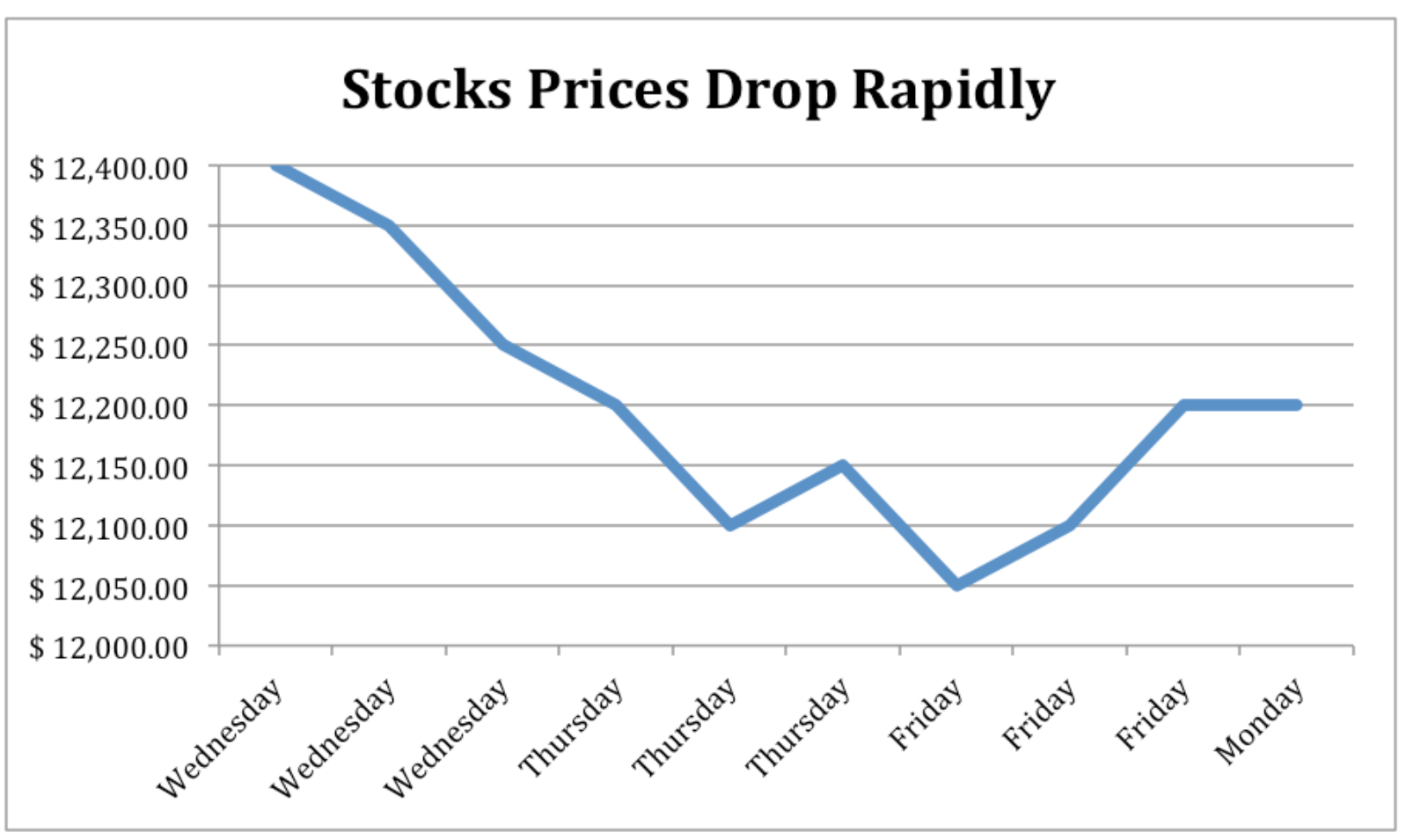
A Gee-Whiz Graph is a graph that shows a major difference, or change in it's subject. Any graph can be a "Gee-Whiz" graph, it just needs a little wow factor. Lets look at the first example graph below.

http://www.calvin.edu/academic/economics/faculty/bios/HaneyDocs/page-59838668.html

This graph shows the stock prices on a four day range. At first glance one could say that there is no change. In the advertising world that first glance is everything. You need to wow your audience. This can simply be done my changing the values of the axis (not the actual data). Doing some will add some wow-factor. The graph below is a great example of this.



http://www.calvin.edu/academic/economics/faculty/bios/HaneyDocs/page-59838668.html

Challenges in Measuring Outcomes

- Other organizations hold the data you need
- Lag time for data you need to be available
- Tying observed outcomes to a specific program or service (establishing causality)
- Limited resources
- Evaluation can sometimes be unpopular, cause discomfort/ resistance

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Thank You!

- References in Handout