IBIS QUERY SYSTEM WORKBOOK

Office of Public Health Assessment
Utah Department of Health

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Table of Contents

List of Figures

Introduction

Background

An understanding of the health status of a population is necessary to plan, implement, and evaluate public health programs that control and prevent adverse health events. The Utah Indicator-Based Information System for Public Health (IBIS-PH) web site is designed to provide quick and easy access to information to inform public health policy development and decision-making. It provides important information on the population characteristics, health status, health determinants, and health care systems in Utah.

On IBIS-PH, numerous data sets allow public health practitioners to stay informed on population health status and health systems. The IBIS query system allows visitors to access many of these data sets directly. Effective presentation, in the context of a readily understandable public health message, facilitates informed, evidence-based policy development. So IBIS-PH presents public health measures in an understandable context on the Indicator Profile pages.

IBIS-PH is a third generation information system built upon the strengths of previous systems developed at the Utah Department of Health. The Office of Public Health Assessment (OPHA) has taken the lead in the development of this iteration of the system, under the direction of Lois Haggard, Ph.D. A major focus of OPHA is to take a leadership role in analyzing and disseminating Utah health data, ensuring that those data are analyzed appropriately, made accessible to a wide audience, and presented effectively.

Development of the IBIS-PH system was supported in part by the Health Resources and Services Administration (HRSA, MCHB award # 1 U93 MC 00172 01, CFDA # 93.110), and the Centers for Disease Control and Prevention (CDC Assessment Initiative award # U82/CCU822377 02, program announcement #02104).

Overview – Getting Started
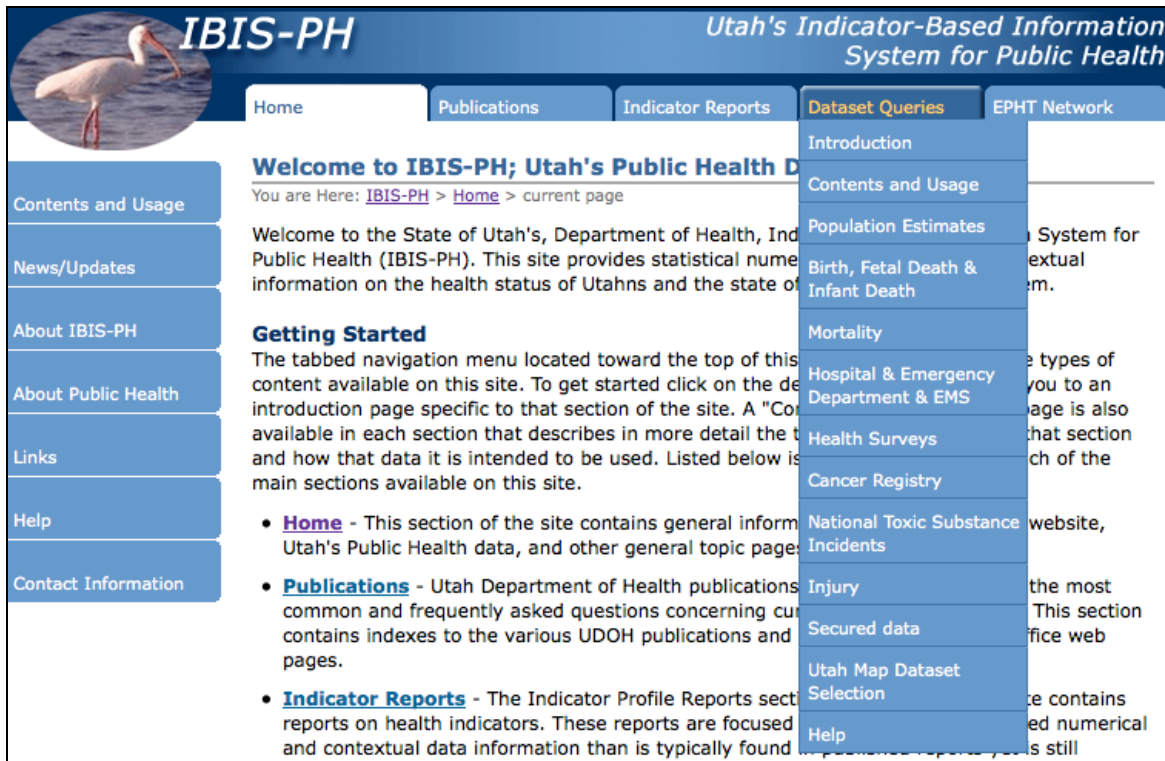
Figure 1: IBIS Query System Main Page

To access the IBIS Query System go to IBIS (http://ibis.health.utah.gov) and select the "Dataset Queries" tab at the top of the screen. By clicking on the Dataset Queries tab you will go to the main Dataset Queries page. In the middle of the main page is a gray box that links to the menu of available tutorials (see Figure 2).
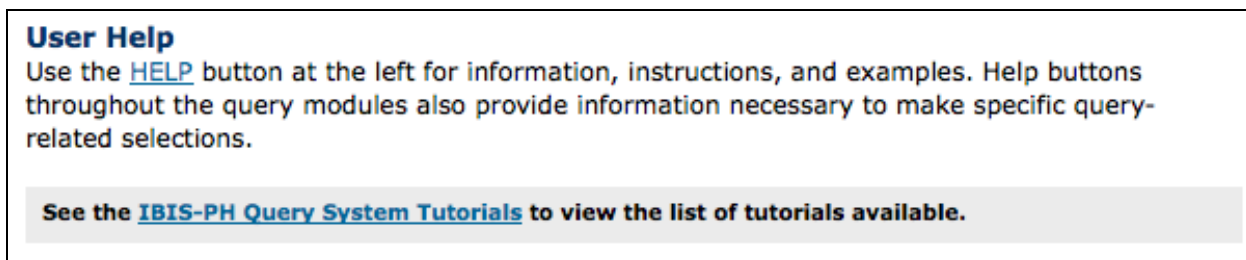
Figure 2: Link to IBIS-PH Query System Tutorials

Starting a Query

To start your query, click on the third button on the left hand side of your screen, Population Estimates. Note that some of the buttons have a second level of selection (see Figure 3).

By selecting one of these left hand side navigation bar buttons or from the Dataset Queries tab at the top of the page the page listing measures available for that data set is shown. At the top of the page is the name of the data set you will be querying. Just below the name is the path. The path lets you know

the sequence of selections that brought you to this page. The page is divided into sections by three blue bars. The Overview section gives a brief explanation of how the page works. The Quick Selection area gives the measures most commonly used. These first two areas are open when the page comes up. You can click on the blue bars to close them. The third bar, which isn't always present, is Advanced Selection. For a list of all available options, including map measures and small areas, click on the Advanced Selection bar (see Figure 4). To open a folder and see its contents, click on the folder icon or the name of the folder. Select the measure you want and click on it to go to the query builder page.
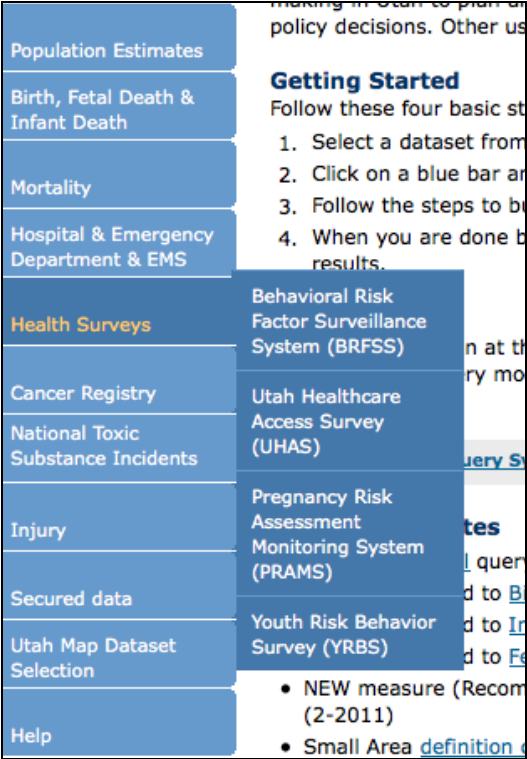
Figure 3: Left Hand Navigation With Second Level Buttons Shown
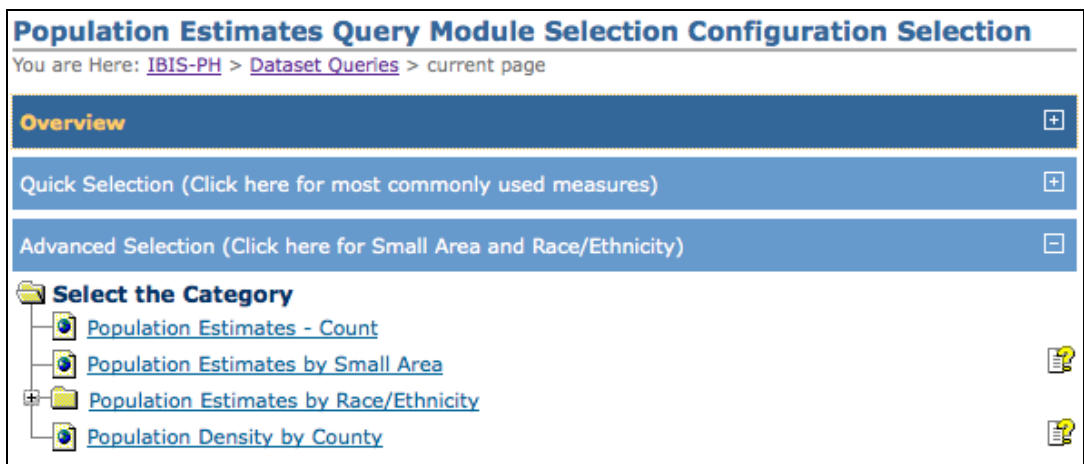
Figure 4: Population Selection Page

Before you can submit for your query for the first time a white window will appear. It contains the Data Use Agreement (see Figure 5). Due to privacy issues each person using the data provided in the query system has to agree to use it appropriately. The data use agreement will appear only once per session (once for each new time you access the query system). Please take a moment to read the agreement once. Clicking okay will take you to the query builder page for the measure you selected.

Utah Department of Health IBIS Query System, Data Use Agreement
The data and information provided through the IBIS-PH Query System are intended to support any individuals or entities engaged in activities designed solely to enhance the well-being of a specific community, which may include the State of Utah. Activities include informing evidence-based decision making in Utah to plan and improve health service delivery, evaluate health care interventions and systems, and inform health policy decisions. Other uses are not permissible.

As an IBIS-PH Query System user, I AGREE TO:
1. Use the data for statistical reporting and analysis only.
2. Avoid any attempt to identify or contact individual(s) represented in the IBIS-PH query system data.
3. Avoid disclosure or use of the identity of any individual(s) discovered inadvertently.
4. Avoid linkage of IBIS-PH query system data with other data that, after linkage, might allow identification of an individual represented in the IBIS-PH query system data.
5. Use appropriate safeguards to prevent the inappropriate use or disclosure of individual(s) represented in the data, including when disclosing IBIS-PH Query System data to others.
6. Report IMMEDIATELY any inadvertent or intentional identity disclosures or violations of this agreement of which I become aware to the Director of the Center for Public Health Data, Utah Department of Health.

I understand that failure to adhere to the above stated agreement items will result in loss of access to UDOH Internet databases, and I may be subject to legal penalties. Any use, release, or publication of health data contrary to the provisions stated is a class B misdemeanor, with subsequent violations being class A misdemeanors punishable by a fine of up to $5,000 per offense (Chapter 23, Title 26, Utah Code Annotated). If I am a Utah state government employee, this may be grounds for immediate dismissal.

[I Agree]

Figure 5: Data Use Agreement Window

The remainder of this workbook will go through exercises using the different types of measures and the different datasets. Step-by-step instructions and solutions are given for each exercise. You can also refer to the help page by selecting help from the left side navigation bar or from the Dataset Queries tab at the top of the page (see Figure 3, the last button on the furthest left hand side).

1. Counts

A count is simply the number of health events which occurred. When communicating with health planning groups or legislators, sometimes the total number of health events may convey an important message. The total number of health events such as death, birth, hospitalization can also convey the magnitude of the prevention effort required, or the health care that may need to be provided.

Exercise: Count of Births

Use the IBIS-Q Birth query module to find the number (count) of births to mothers who were age 35 or over in Utah for 2008–2009. Display the results by year and infant's sex. When you get the results use the drill-down feature to find how many of the 2008 births were in your local health district.

Solution: Count of Births

Click on **Birth & Infant Death – Birth** (second level button) from the left side navigation bar or from the Dataset Queries tab at the top of the page. Birth is a second level button visible when you mouse over Birth & Infant Death.

From the **Quick Selection** click on the folder for **Count, Birth and Fertility Rates** (see Figure 6).

Select **Count** from the measures listed. If this is the first measure you have selected in this instance of using the IBIS Query system you will see the Data Use Agreement. Click on **I Agree** to proceed. (For the Data Use Agreement see Figure 5).
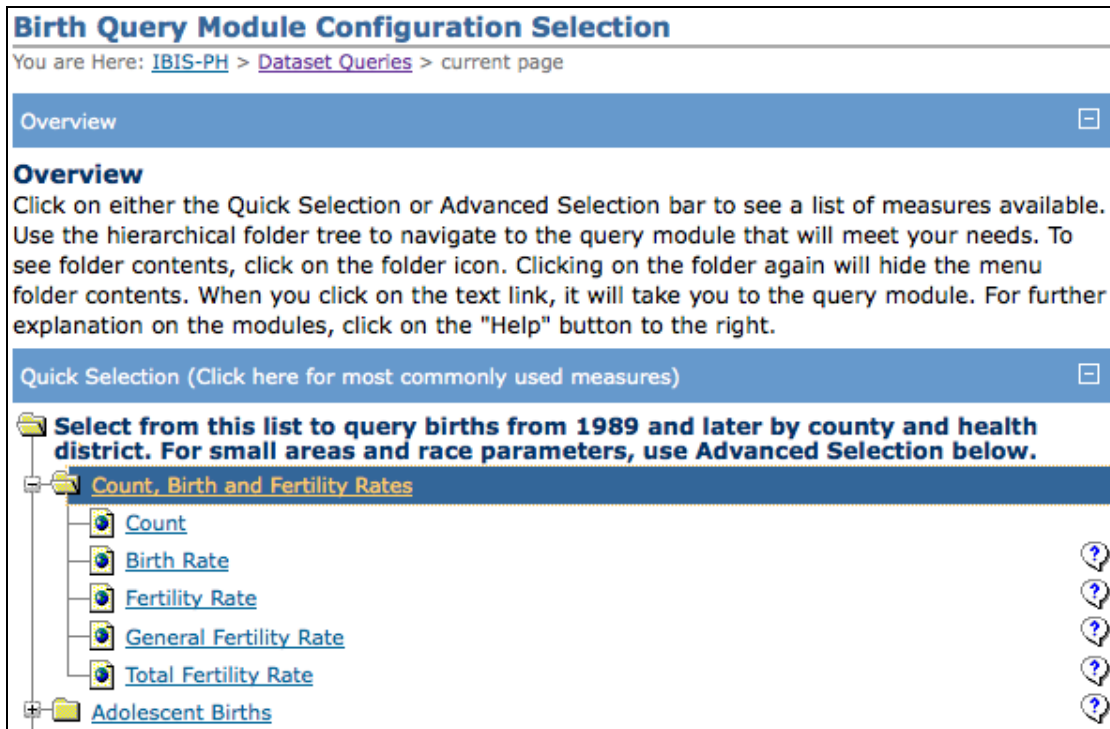
Figure 6: Birth Module Selection Page for Count

The next page you see is the query builder page. Click on **Step 1: Select year** to change the years. You will see different options for years and year groups. The default is "Single years." Use the scrollbar at the right of the box containing the list of years to scroll down until you can see the last year. You will see that it is highlighted. Use the mouse to highlight years **2008** and **2009** by either dragging the mouse across the two years or by clicking on 2008 and then holding the shift or control (ctrl) key down while clicking on 2009 (see Figure 7).

To select the mother's age click on **Step 2: Select mother's age group**. Click on the checkbox for Maternal age groups. Scroll down to the end of the list. Select all the age groups 35 and older. There will be four selections highlighted (**35–39 yrs, 40–44 yrs, 45–49 yrs, 50+ yrs**) (see Figure 7).

Figure 7: Birth Query Builder Page for Count, Year Step and Mother Characteristics Steps

For the following steps the defaults are used so they can be skipped:
- Step 3: Select mother's characteristics (default = all characteristics)
- Step 4: Select infant characteristics (default = all characteristics)
- Step 5: Select health care system characteristics (default = all characteristics)
- Step 6: Select resident or occurent births (default = resident births)
- Step 7: Select mother's geographic area (default = all Local Health Districts).

Click on **Step 8: Select how to display the results** for display options. You will see a 2-dimensional table with drop down boxes for the rows and columns. The rows are set to a default of 'Year' and the columns are set to 'None'. Since we want years we don't need to do anything for the rows. We will use the default. For the columns, click on the down arrow to the right of "None." A list of options will appear. Click on **Infant's Sex** (see Figure 8).

There is also an optional 'Chart Graphic Type' drop down box at the bottom of Step 8. There are several different types of charts that can be created from the results. You can select a graphic type here, which will produce a chart on the results page. For now we will not use this feature. Click on the **Submit** button under 'Finish: Submit the defined query.'
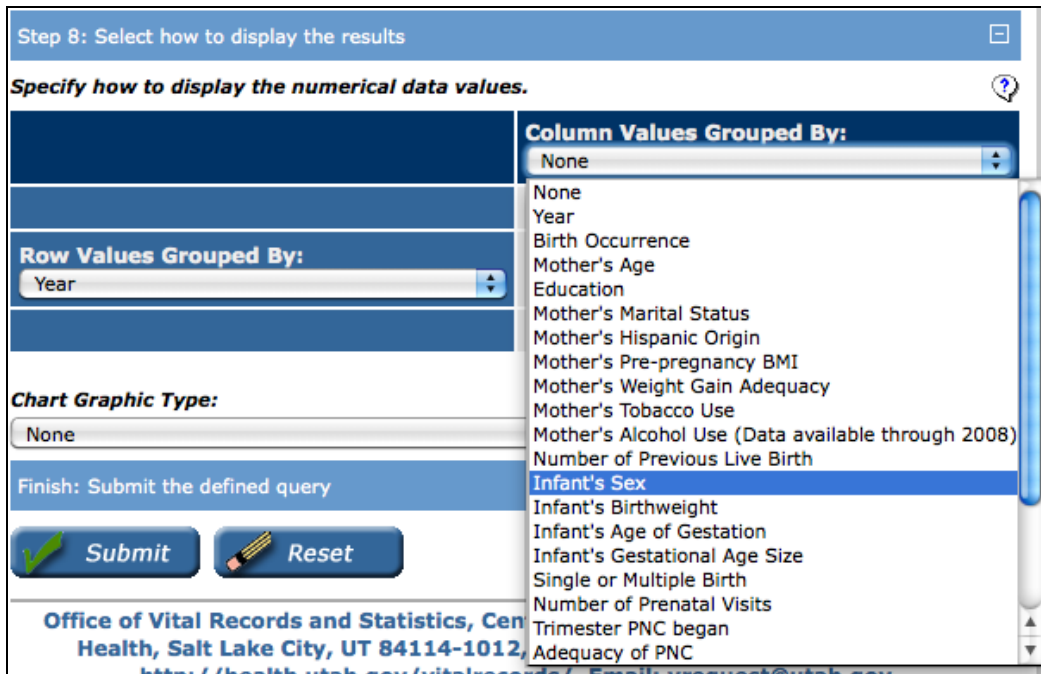
Figure 8: Birth Query Builder Page for Count, Display by Infant's Sex

The query often takes a few moments to run. The time depends on the server load, the size of the database and the complexity of your query. The results page displays as soon as the data is returned. There are several sections on the query results page. We will go through each one.

Query Criteria for the Count Measure

The first section of the results page is the documentation for your query, including the navigation path, the module name, the measure you selected, all the options you chose on the query builder page. The navigation path is the series of clicks/selections you made to arrive at the query builder page used to create the query (see Figure 9).

Figure 9: Birth Query Results Page for Count – Selected Sections (1)

Data Table of Count by Infant's Sex and Year and Data List

Figure 10 shows the 2-dimensional table created from the column and row options you selected in Step 7 on the query builder page.

The Data List is a list of all numeric data returned by the query.

Data Table of Count by Infant's Sex and Year

Year	Infant's Sex		Total
	Male	Female	
2008	2,625	2,588	5,213
2009	2,710	2,606	5,316
Total	5,335	5,194	10,529

Data List

Year	Infant's Sex	Count
Total	Total	10,529
Total	Male	5,335
Total	Female	5,194
2008	Total	5,213
2008	Male	2,625
2008	Female	2,588
2009	Total	5,316
2009	Male	2,710
2009	Female	2,606

Record Count: 9

Figure 10: Birth Query Results Page for Count – Selected Sections (2)

Data Sources, Data Notes, Data Issues

These sections of the results page give you the metadata (data about the data). It lists the source(s) and other information about the data set you are querying, including information about the process of collection, any accuracy issues, and the date and time of the query (see Figure 11).

Data Notes
Count of all live births in a given population and time period.

Data Sources
Utah Birth Certificate Database, Office of Vital Records and Statistics, Utah Department of Health

Data Issues
Birth certificates are filed electronically by hospital birth certificate clerks. The information comes from a variety of sources including a worksheet the mother fills out, the mother's prenatal record, and the delivery record. The Office of Vital Records and Statistics has a Quality Control program where every hospital is audited annually. Births are randomly selected and hospital records are checked to verify the accuracy of the reported information.

Time of Query
These data were queried on: Sun, 13 Feb 2011 21:52:01 MST

Figure 11: Data Notes, Data Sources, Data Issues, and Time of Queryt

2. Crude Rates

Usually, the count alone has little meaning unless the size of the population from which it is derived is known. A rate is a fraction, in which the numerator is the number of people in whom an event occurred during a certain period of time, and the denominator is the total number of people in the population at risk for the same period of time.

Exercise: Crude Rates of Inpatient Hospital Discharge Data

Use the IBIS Query System Inpatient Hospital Discharge data to find the number of hospital discharges for cerebrovascular disease per 10,000 population in your county for 2009. (Hint: Use the "NCHS 50 leading causes" predefined list to select cerebrovascular disease.)

Solution: Crude Rates of Inpatient Hospital Discharge Data

Click on **Hospital & Emergency Department & EMS – Inpatient Hospital Discharges** (second level) from the left side navigation bar or from the Dataset Queries tab at the top of the page. Under Quick selection, click on the folder for **Hospital Discharges**. Click on **Crude Rates** (see Figure 12).
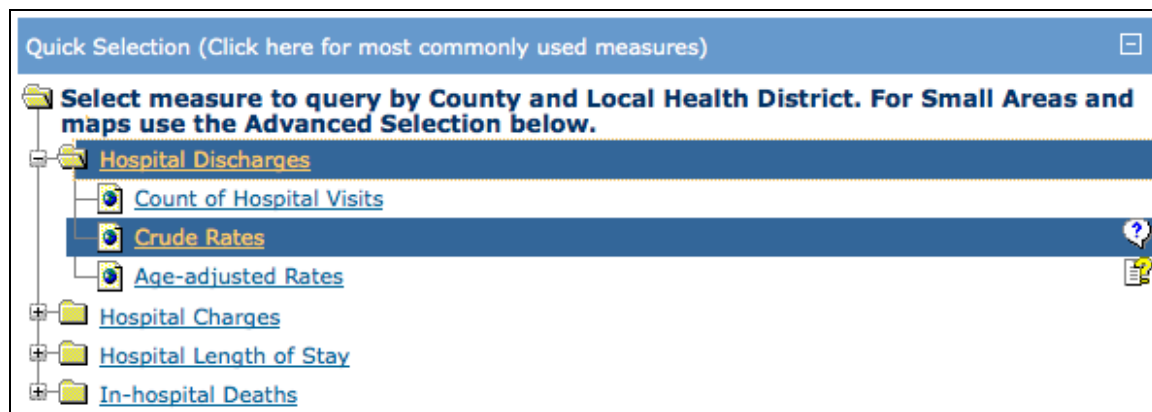
Figure 12: Inpatient Hospital Discharge Data Selection Page for Crude Rates

On the query builder page click on **Step 1: Select year**. Single years. Scroll down until you find 2009 in the list of years. Click on 2009 so that it is highlighted (see Figure 13).

Click on **Step 2: Select diagnosis**. Click on **NCHS 50 leading causes – non-injury causes** and then **Select from list of causes**. Scroll down until you see cerebrovascular diseases. They are listed alphabetically. Click on cerebrovascular diseases (see Figure 13).

Figure 13: Inpatient Hospital Discharge Query Builder Page for Crude Rates, Year Step and Diagnosis Step

For the following steps the defaults are used so they can be skipped:
- Step 3: Select procedure (default = all procedures, CCS)
- Step 4: Select age [default = Age adjustment age groups (less than 1, 1-4, 5-14, 15-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75-84, 85+)]
- Step 5: Select sex (default = both)
- Step 6: Select primary payer (default = all payers).
- Step 7: Select discharge status (default = all statuses)
- Step 8: Select resident status (default = Utah Residence)

Click on **Step 9: Select geographic area**. The Local Health District option will be selected as the default. Click on **County**. Scroll down until you see the name of your county. Click on the name to highlight it (see Figure 14).
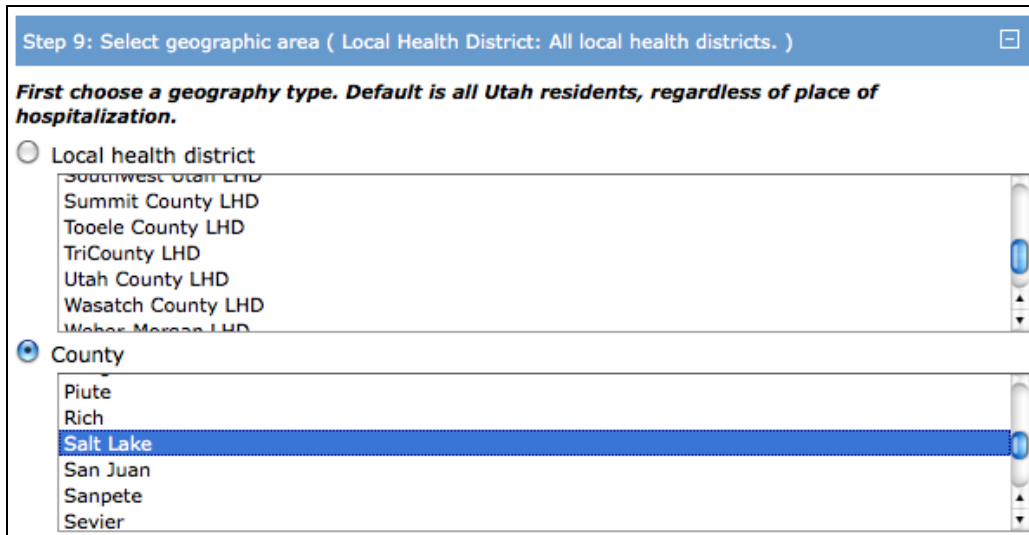
Figure 14: Inpatient Hospital Discharge Query Builder Page for Crude Rates, Geographic Area Step

Step 10: Select how to display the results will use the default settings, so you can skip this step.

Scroll down to the bottom of the page. Click on the **Submit** button. The selections should read as follows:

- Single Years Filter = 2009
- NCHS 50 Leading Causes Filter = cerebrovascular diseases
- Utah Residence Status Filter = Utah Residence
- County Filter = Your county name will appear here (Salt Lake County is used as an example).
- Data grouped by = Single Years
- Data Chart = None

On the results page you will see the selections you made in the **Query Definition** section.

3. Age- and Sex-Specific Rates

An age-specific rate is a fraction in which both the numerator (number of events) and denominator (number in population at risk) are limited to a specific age group. It is calculated by dividing the total number of health events for the specific age group of interest by the total population in that age group. In Figure 15, the age-specific rates for suicide are shown. The example demonstrates that the greatest number of suicides occur in the young (263), whereas the highest rate occurs among men 45-64 years old (41.58). The example in Figure 15 also shows how useful age- and sex-specific rates can be. Not only are the suicide death rates much higher among men, the rate of suicide increases among men with age, but not among women.

Data List

Custom Age Group	Sex	Number of Deaths	Number in the Population	Crude Rates, Deaths Per 100,000 Population	95% CI LL	95%CI UL	Relative Standard Error (Coefficient of Variation %)
Total	Total	**	2,800,089	**	14.38	17.37	4.75
Total	Male	**	1,408,476	**	22.05	27.3	5.38
Total	Female	97	1,391,613	6.97	5.65	8.5	10.15
0-15	Total	4*	777527*	0.51*	0.14*	1.32*	50.0000*
0-15	Male	**	**	**	**	**	**
0-15	Female	**	**	**	**	**	**
16-44	Total	263	1,215,190	21.64	19.11	24.42	6.17
16-44	Male	199	616,396	32.28	27.95	37.1	7.09
16-44	Female	64	598,794	10.69	8.23	13.65	12.50
45-64	Total	144	553,778	26	21.93	30.61	8.33
45-64	Male	115	276,585	41.58	34.33	49.91	9.32
45-64	Female	29	277,193	10.46	7.01	15.03	18.57
65+	Total	**	253,594	**	8.63	17.81	17.68
65+	Male	30	116,500	25.75	17.37	36.76	18.26
65+	Female	**	**	**	**	**	**

Record Count: 15

*Use caution in interpreting, the estimate has a relative standard error greater than 30% and does not meet UDOH standards for reliability. Consider aggregating years to decrease the relative standard error and improve the reliability of the estimate.

**The estimate has been suppressed because 1) The relative standard error is greater than 50% or when the relative standard error can't be determined. Consider aggregating years to decrease the relative standard error and improve the reliability of the estimate. For more information, please go to http://health.utah.gov/opha/IBIShelp/DataSuppression.pdf. 2) the observed number of events is very small and not appropriate for publication, or 3) it could be used to calculate the number in a cell that has been suppressed.

Figure 15: Number of Suicides Per 100,000 Persons by Age and Sex, Utah, 2009

Exercise: Age- and Sex-specific rates for Mortality

Find the rate for suicides in males age 45–64 in 2009.

Solution: Age- and Sex-specific rates for Mortality

Click on **Mortality** on the left side navigation bar or from the Dataset Queries tab at the top of the page. The Mortality selection page will appear showing you all the measures available in the mortality data. Under Quick Selection click on **Crude Rates**. The query builder page will appear.

Click on **Step 1: Select year**. Single years will already be selected as the default. Scroll down in the list of single years until you see **2009**. Click on 2009 to highlight it.

Click on **Step 2: Select cause of death**. Click on **NCHS 113 selected causes of death**. Scroll down in the NCHS injury causes until you see Intentional self-harm. Click on **Intentional self-harm (suicide) by discharge of firearms** and **Intentional self-harm (suicide) by other and unspecified means and their sequelae** so that the categories are highlighted

Click on **Step 3: Select age of decedent** to select the age of the decedent. Click on **Four age groups**, then select the two groups **45–64 years and 65+ years** (see Figure 16).

Figure 16: Mortality Module Query Builder Page for Crude Rates, Cause of Death Step and Age Step

Click on **Step 4: Select sex**. The default is set to both male and female. To choose male only, click on **Male**.

For **Step 5: Select geographic area** (default = all Utah Residents, Local Health Districts) and **Step 6: Select how to display the results**, we will use the defaults so you can skip these steps. Scroll down to the bottom and click on the **Submit** button.

The Query Results page will appear, as seen in Figure 17.

For more information on each of the sections on the results page refer to pages 10-12 and the accompanying figures (see Figures 9–11). To see the results from this query see Figure 17. If your query results do not match those in Figure 17 compare the Query Criteria sections.

Query Criteria for the Crude Rates, Deaths Per 100,000 Population Measure

Single Years Filter:	2009
NCHS 113 Leading Causes Filter:	Intentional self-harm (suicide) by discharge of firearms , Intentional self-harm (suicide) by other and unspecified means and their sequelae
4 Age Groups Filter:	45-64 years, 65+ years
Sex Filter:	Male
Data Grouped By:	Single Years

Data List

Single Years	Number of Deaths	Number in the Population	Crude Rates, Deaths Per 100,000 Population	95% CI LL	95%CI UL	Relative Standard Error (Coefficient of Variation %)
Total	145	376,162	38.55	32.53	45.36	8.30
2009	145	376,162	38.55	32.53	45.36	8.30

Record Count: 2

Data Notes
ICD Stands for International Classification of Diseases. It is a coding system maintained by the World Health Organization and the U.S. National Center for Health Statistics used to classify causes of death on death certificates and diagnoses, injury causes, and medical procedures for hospital and emergency department visits. These codes are updated every decade or so to account for advances in medical technology. The U.S. is currently using the 10th revision (ICD-10) to code causes of death. The 9th revision (ICD-9) is still used for hospital and emergency department visits.

Figure 17: Mortality Query Results Page for Crude Rates

4. Age-Adjusted Rates

An adjusted rate is an overall summary measure that helps control for demographic differences between populations. The most commonly used adjusted rate is the age-adjusted rate, which controls for age differences between two or more populations. When comparing across geographic areas, some method of age adjusting is typically used to control for area-to-area differences in health events that can be explained by differing age distributions of the area populations. For example, an area that has an older population will have higher crude (not age-adjusted) rates for cancer, even though its exposure levels and cancer rates for specific age groups are the same as those of other areas. One might incorrectly attribute the high cancer rates to some characteristic of the area other than age. Age-adjusted rates control for age effects, allowing better comparability of rates across areas. Age-adjustment may also be used to control for age effects when comparing across several years of data, as the age distribution of the population changes over time.

The age-adjusted rate is hypothetical, and is useful only for comparing populations, either over time, by geographic area, by sex or by racial/ethnic subgroups. Although age-adjustment may be used with large age sub-groups of the population, such as adults (e.g., age 18+), it is not meaningful to age-adjust "age-specific" rates (e.g., age 18–24).

Exercise: Age-Adjusted Rates for Cancer Incidence

Find the age-adjusted rate for Leukemia (4 categories in the list of 41 standard sites) for 2003–2007, and compare your Local Health District to others.

Solution: Age-Adjusted Rates for Cancer Incidence

Click on **Cancer Registry** on the left side navigation bar or from the Dataset Queries tab at the top of the page. Under Make Selection, click on the folder **Age-Adjusted Cancer Incidence Rates (Former GOPB 2008 Baseline Estimates 1980-2010)**. Click on **Data table and chart**. The query builder page will be shown.

Click on **Step 1: Select year** to select the years. Click on **5 year groups** and **Select from 5 year groups**. Highlight the group **2006–2010**. You can also select the years from the list of singles years, but for this example we will use the 5 year groups (see Figure 18).

Figure 18: Cancer Registry Query Builder Page for Age-Adjusted Rates, Year Step and Cancer Site Step

Click on **Step 2: Select the cancer site**. The Standard categories (41 sites/types) are already selected as the defaults. Under the **Standard categories** area, scroll down until you see the Leukemia's listed. They are near the bottom. Select all 4 categories of leukemia, **Lymphocytic Leukemia, Myeloid Leukemia, Monocytic Leukemia, and Other Leukemia** (see Figure 18).

For the following steps the defaults are used so they can be skipped:
•   Step 3: Select sex (default = both)
•   Step 4: Select geographic area (default = all local health districts)

For **Step 5: Select how to display the results**, select Geographic Area for the Row Values Grouped by dropdown.

Scroll to the bottom of the page and click on the **Submit** button. Figure 19 shows the results for all Local Health Districts for demonstration purposes. Your results will only display the district you selected. Find your Local Health District and compare your results.

Data List

Local Health District	Number of Cancer Incidents	Number in the Population	Age-adjusted Cancer Incidence Rates, Incidence Per 100,000 Population, GOPB 2008 baseline estimates	95% CI LL	95%CI UL
Total	**	10,952,795	**	5.22	6.26
Bear River LHD	25	641,574	5.11	3.26	7.62
Central Utah LHD	14	297,539	4.75*	2.59	7.99
Davis County LHD	53	1,203,261	6.47	4.75	8.61
Salt Lake County LHD	193	4,117,585	5.89	5.06	6.81
Southeastern Utah LHD	18	216,949	7.94	4.70	12.58
Southwest Utah LHD	44	840,914	4.69	3.39	6.33
Summit County LHD	5	155,602	3.45*	1.08	8.22
Tooele County LHD	9	230,544	4.63*	2.01	9.08
TriCounty LHD	11	185,677	7.24*	3.56	13.08
Utah County LHD	70	2,045,665	5.64	4.29	7.29
Wasatch County LHD	**	89,873	**	0.31	11.90
Weber-Morgan LHD	54	927,612	6.82	5.11	8.92

Record Count: 13

*Use caution in interpreting, the estimate has a relative standard error greater than 30% and does not meet UDOH standards for reliability. Consider aggregating years to decrease the relative standard error and improve the reliability of the estimate.

**The estimate has been suppressed because 1) The relative standard error is greater than 50% or when the relative standard error can't be determined. Consider aggregating years to decrease the relative standard error and improve the reliability of the estimate. 2) the observed number of events is very small and not appropriate for publication, or 3) it could be used to calculate the number in a cell that has been suppressed.

Figure 19: Data List for Cancer Registry Age-adjusted Incidence Rates

5. Small Numbers

A rate calculation may be of limited value when derived from a small population. Rates based on small numbers are statistically more likely to be affected by chance variation and have large variability across time periods. One method of dealing with small numbers is to combine data over time, area, or people. Aggregate space by combining counties into local health departments, aggregate people by combining sex and age groups, or aggregate time by combining the years selected.

Confidentiality criteria are applied to protect the confidentiality of members of the population from which the data derive. One must assume that all information is sensitive information. In the data use agreement (see Figure 5), which everyone must accept before using the query system, users agree not to use the data to try and identify individuals and to notify the director of the Center for Health Data if identity is discovered.

Exercise: Small Numbers in Infant Mortality

Find the rate of Infant Mortality for Wasatch, Washington, Wayne, and Weber counties for 2007–2009. Notice that many of the cells are suppressed. This is because the number of events is considered too small to report without risking identification of an individual.

Solution: Small Numbers in Infant Mortality

Click on **Birth, Fetal Death and Infant Death - Infant Mortality** (second level button) on the left navigation. Under Quick Selection, click on **Infant Mortality Rate (364 days or less)**. This takes you to the query builder page.

Click on **Step 1: Select year**. The default is Single years. Scroll down in the list of years and click on **2007, 2008**, and **2009** to highlight them by either holding down the control (ctrl) key or dragging your mouse over the years while holding down the mouse button.

For **Step 2: Select infant's sex** (default = both) the default value is what we want so we will skip this step.

Click on **Step 3: Select geographic area**. Click on **County** and scroll down to the end of the list of counties. Click on **Wasatch, Washington, Wayne** and **Weber** counties to highlight them.

Click on **Step 4: Select how to display the results**. The row variable default is 'Year'. Change it to 'Geographic Area' by clicking on the down arrow next to year. A drop down box will appear with options. Click on **Geographic Area**.

Click on **Submit**. Figure 20 shows some of the sections from the results page. You will notice a * in some of the cells. At the bottom of the data list there is a note that explains what the * means. It says:

> *"Use caution in interpreting, the estimate has a relative standard error greater than 30% and does not meet UDOH standards for reliability. Consider aggregating years to decrease the relative standard error and improve the reliability of the estimate."*

Figure 20 shows an example of the first condition mentioned. An example of the second suppression condition is if one value in a column is suppressed, then the column total must also be suppressed to

protect the small number in the column. If a cell is suppressed, you will notice a ** in the cell. At the bottom of the data list there is a note that explains what the ** means. It says:

> *"The estimate has been suppressed because 1) The relative standard error is greater than 50% or when the relative standard error can't be determined. Consider aggregating years to decrease the relative standard error and improve the reliability of the estimate. For more information, please go to http://health.utah.gov/opha/IBIShelp/DataSuppression.pdf. 2) the observed number of events is very small and not appropriate for publication, or 3) it could be used to calculate the number in a cell that has been suppressed."*

Query Criteria for the Infant Mortality Rate (age 364 days or less) Measure

Year Filter:	2007, 2008, 2009
County Filter:	Wasatch, Washington, Wayne, Weber
Data Grouped By:	County

Data List

County	Number of Infant Deaths (age 364 days or less)	Number of Live Births	Infant Mortality Rate per 1,000 (age 364 days or less)	95% CI LL	95%CI UL	Relative Standard Error (Coefficient of Variation %)
Total	122	22,141	5.51	4.58	6.58	9.05
Wasatch	8*	1229*	6.51*	2.81*	12.83*	35.3553*
Washington	45	7,951	5.66	4.13	7.57	14.91
Weber	69	12,854	5.37	4.18	6.79	12.04

Record Count: 4

*Use caution in interpreting, the estimate has a relative standard error greater than 30% and does not meet UDOH standards for reliability. Consider aggregating years to decrease the relative standard error and improve the reliability of the estimate.

Figure 20: Infant Mortality Results Page with Small Numbers Reported

6. Confidence Intervals

Observed health statistics, that is, those counts, rates or percentages that are computed or estimated from health surveys, vital statistics registries, or other health surveillance systems are not always an accurate reflection of the true underlying risk in the population. Observed rates can vary from sample to sample or year to year, even when the true underlying risk remains the same. Confidence intervals are used to provide an estimate of the potential discrepancy between the true and observed rates. The confidence interval is a range of values within which the "true" value of the rate is expected to occur. For a 95% confidence interval it is the range of values within which the true value will occur 95% of the time. In general, confidence intervals based on a large number of events are narrower and imply more precision than the wider intervals associated with rates based on a small number of events.

For more information on Confidence Intervals click on help on the left navigation of the IBIS Query System and select Confidence Intervals from the General Public Health Data Topics section.

Exercise: Confidence Intervals in the Utah Healthcare Access Survey

Find the crude rates and confidence intervals for Health Insurance in 2001 using the Utah Healthcare Access Survey.

Solution: Confidence Intervals in the Utah Healthcare Access Survey

Click on **Health Surveys – Utah Healthcare Access Survey (UHAS)** (second level button) on the left navigation. Under Quick Selection click on the folder for **UHAS: Crude rates/percentages**. Several folders will appear. Click on the folder for **Health Insurance Coverage**. You will see help buttons at the right of the screen. Mouse over the help button across from Health Insurance. A grey box with a blue border will appear that says "Health Insurance (question wording)" (see Figure 1). Click on **Health Insurance** to see the query builder page.
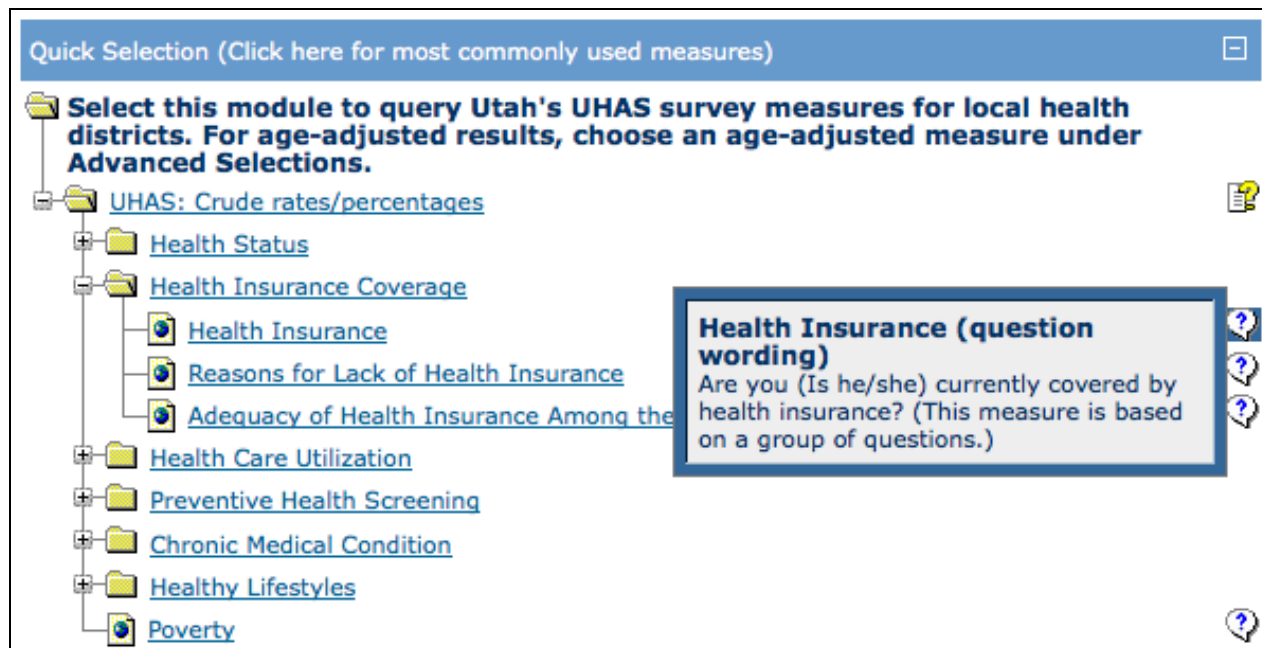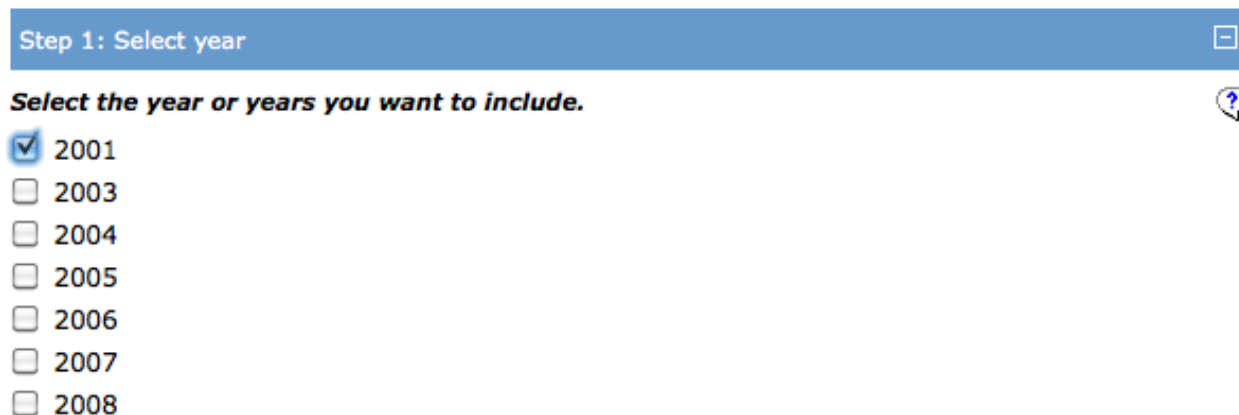
Figure 21: Utah Healthcare Access Survey Measure Selection for Health Insurance

Click on **Step 1: Select year**. Select **2001** from the list of single years. The box will now have a check in it (see Figure 22).

Figure 22: *Utah Healthcare Access Survey Query Builder Page for Health Insurance, Year Step*

For the following steps the defaults are used so they can be skipped:

- Step 2: Select age (default = all ages, five age groups)
- Step 3: Select sex (default = both)
- Step 4: Select other demographic characteristics (default = all characteristics)
- Step 5: Select geographic area (default = all Local Health Districts)
- Step 6: Select how to display the results

Scroll to the bottom of the page and click on the **Submit** button. With Surveys the column value is set to the response categories for the question asked. For the Health Insurance measure the response categories that will show on the results page are (1) Insured (2) Uninsured (see Figure 23). The structure of the display step for surveys will be discussed more thoroughly in the PRAMS example in a later section (see Figure 31).

Data Table of Health Insurance by Year

	Health Insurance		
⬍ Year	⬍ Insured	⬍ Uninsured	⬍ Total
2001	91.33%	8.67%	100.0%

Data List

⬍ Year	⬍ Health Insurance	⬍ Number of Responses	⬍ Health Insurance	⬍ Confidence Bounds – Lower Limit	⬍ Confidence Bounds – Upper Limit	⬍ Relative Standard Error (Coefficient of Variation %)
Total	Total	22,979	100.0%	.	.	.
Total	Insured	20,884	91.33%	90.51%	92.09%	4.65
Total	Uninsured	2,095	8.67%	7.91%	9.49%	4.65
2001	Total	22,979	100.0%	.	.	.
2001	Insured	20,884	91.33%	90.51%	92.09%	4.65
2001	Uninsured	2,095	8.67%	7.91%	9.49%	4.65

Record Count: 6

Data Notes
Are you (Is he/she) currently covered by health insurance? (This measure is based on a group of questions.)

Figure 23: Utah Healthcare Access Survey Results Page for Health Insurance

The results page will have a 2-dimensional table by year and insurance showing the percentages. The confidence intervals are shown in the data list. CI LL is Confidence Interval Lower Limit and CI UL is Confidence Interval Upper Limit.

7. Coefficient of Variation and Data Suppression

Government agencies that collect, store and report data have a responsibility to protect the privacy of individuals and to present reliable results. At the same time, these agencies have a desire to make a broad range of data publicly available in order to inform policy and guide interventions in as timely a manner as possible. Because of this it is necessary to suppress some estimates.

There exist a variety of data suppression methods including those based on cell size, relative standard error (RSE) and width of the confidence interval (CI) among others.

- The margin of error, or confidence interval, describes the range within which one is most likely to find the true value of the statistic (e.g., the true value of a percentage or a mean in a population). For more on confidence intervals, please see section 6.

- The relative standard error (RSE) also known as the coefficient of variation (CV) is a measure of the variability of the estimate compared with the magnitude of the estimate.

The IBIS-PH Query System employs a cell suppression algorithm to minimize the risk that an individual may be identified. There are two sets of criteria, strict and minimum. Each is suggested for a specific type of use or context. The IBIS-PH Query system currently adheres to the minimum criteria. The minimum criteria states that the user should use caution in interpreting estimates which have a relative standard error greater than 30%. If the relative standard error is greater than 50% or when the relative standard error can't be determined, the estimate will be suppressed and not reported.

Please see Figure 20 on page 26 for an example of output where there is a note to interpret estimates with caution. Also see Figure 15 on page 18 where estimates have been suppressed.

For more information on Coefficient of Variation and Data Suppression on IBIS, please go to http://health.utah.gov/opha/IBIShelp/DataSuppression.pdf .

8. Time

By viewing several years of data you can see how rates change over time and determine trends. Due to the changing age distribution of the population it is useful to use age-adjusted rates to compare rates over several years.

Exercise: Time in BRFSS

See how the Overweight or Obese rate changes over time (2005–2009) using the BRFSS Survey data. From the results page select a line graphic to see a visual depiction of the change.

Solution: Time in BRFSS

Click on **Health Surveys – Behavioral Risk Factor Surveillance System (BRFSS)** (second level button) on the left navigation. Under the **Landline Only (2010 and Before)** folder, click on the **Local Health District**, **Crude rates/percentages, Physical Activity and Nutrition** folder. From there click on **Overweight or Obese, data table and chart** to go to the query builder page (see Figure 24).
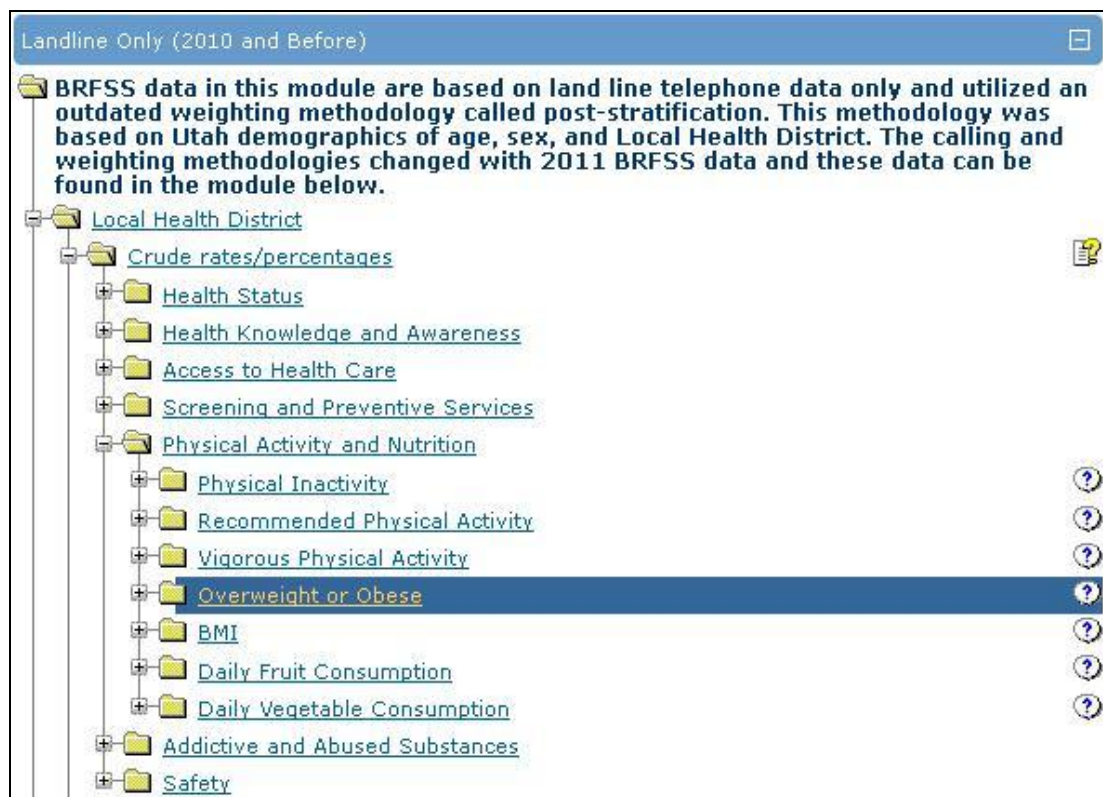
Figure 24: BRFSS Selection Page for Overweight or Obese

Click on **Step 1: Select year** to change the years. Select the years 2005–2009 in the scroll box.

For the following steps the defaults are used so they can be skipped:
• 　　　Step 2: Select age (default = all ages 18 years and older)
• 　　　Step 3: Select sex (default = both)
• 　　　Step 4: Select other demographic characteristics (default = all characteristics)
• 　　　Step 5: Select another BRFSS indicator (default = No BRFSS indicator selected)

- •   Step 6: Select a Local Health District (default = all Local Health Districts)
- •   Step 7: Select how to display the results

Scroll to the bottom of the page and click on **Submit**.
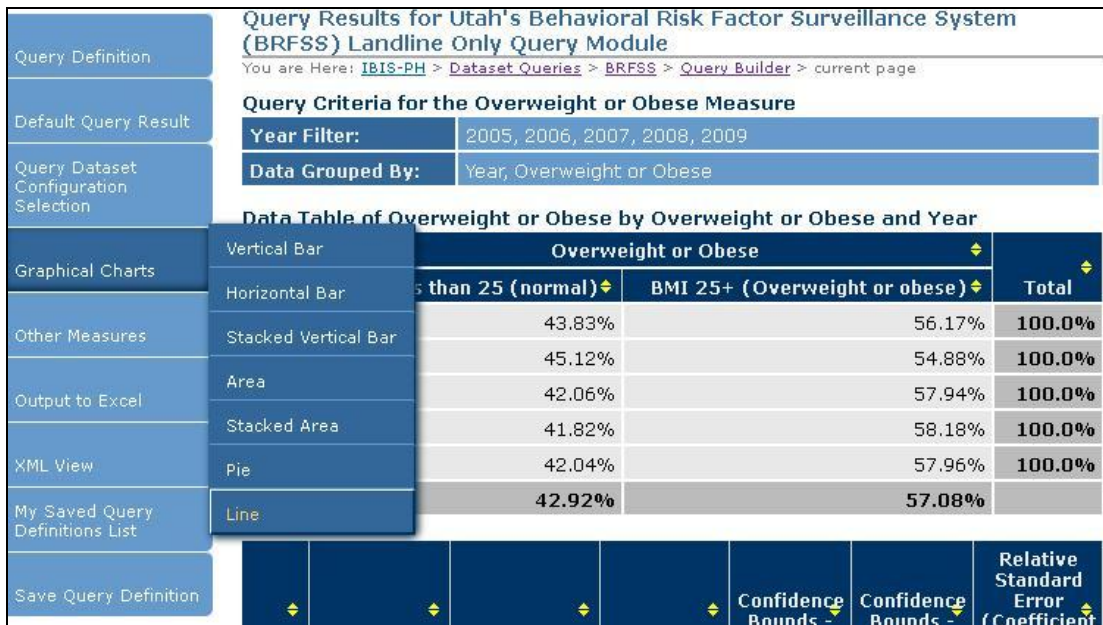
Figure 25: BRFSS Results Page for Overweight or Obese Depicting Line Graph Selection

On the result page, after the Query Criteria section, is the Result Options section. To the left of the results is a left-hand navigation bar. Click on Graphical Charts, then scroll down the second level buttons until you are on Line. Click on **line**, the last one in the list (see Figure 25). When you click on line the results page will refresh and return with a line graph depicting the data from the 2-dimensional table shown in Figure 26.
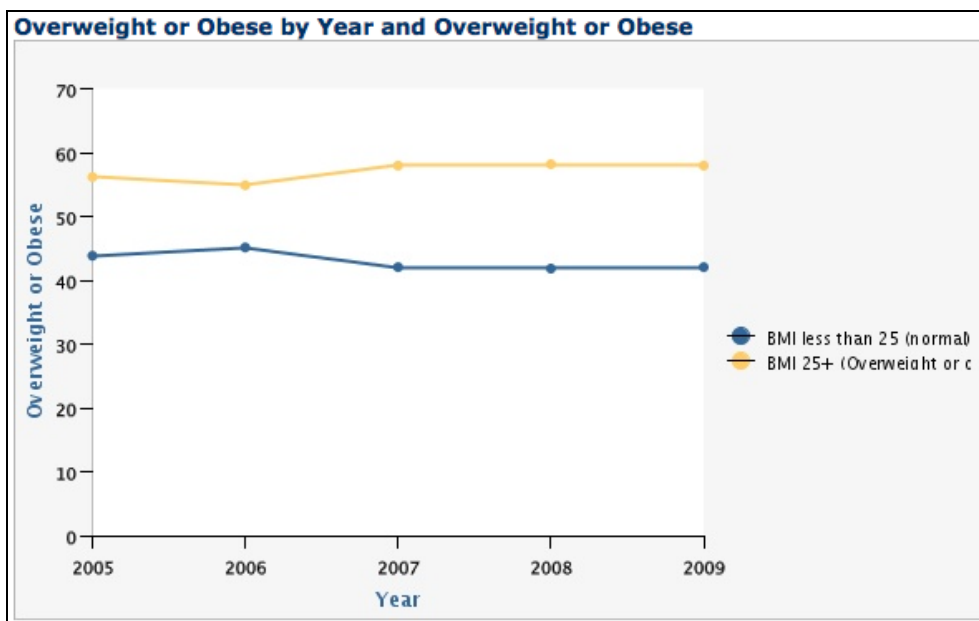
Figure 26: BRFSS Line Graph Mouse Over for Overweight or Obese

9. Place (Geography)

Rates can vary by geography. Urbanized areas can often show different rates than the surrounding rural areas. The IBIS Query System has three different geographic divisions available: County, Local Health District, and Small Area.

County. Utah is composed of 29 counties. You can narrow your query to a county or display by county. See the Crude Rate example on page 17.

Local Health District. There are 12 Local Health Districts in Utah, six single county districts and six multi-county districts. In the IBIS Query System you can narrow your search by Local Health District or display by Local Health Districts. See the Age-Adjusted Rates example on page 23.

**Small Area**. In order to facilitate reporting data at the community level Utah has been divided into small areas (61 small areas for data up through 2008 and 62 small areas for 2009 data and beyond). Areas are determined based on specific criteria, including population size, political boundaries of cities and towns, and economic similarity. The health measures that are reported by small area are those with events occurring with sufficient frequency to be meaningful. The IBIS Query System allows you to query by small area for the Birth Certificate and Infant Mortality databases, the Mortality database, the Hospital Discharge and Emergency Department Visit databases, and the Utah Population Estimates database. The small areas in Utah have population sizes ranging from approximately 20,000 to 80,000 persons. These geographic areas are especially useful for doing public health assessment in communities within Utah's urban counties. Small area population numbers are not available for race, ethnicity, or single year of age.

For more information on Small Areas, please see the following IBIS-PH Help pages: Utah Small Area Boundary Definitions, Utah Small Area Boundaries, and Small Area Methodology Paper.

Exercise: Small Area in ED Data

Find the number of treat and release Emergency Department Encounters in 2007 for your small area. (For the solution Millcreek, Holladay, Cottonwood, Kearns, Taylorsville, and Murray will be used.)

Solution: Small Area in ED Data

Click on **Hospital & Emergency Department & EMS – ED Encounters** (second level button) on the left side navigation bar or from the Dataset Queries tab at the top of the page. The selection page with the available measures comes up. The Small Area measures are under the Advanced Selection. Click on the blue bar for **Advanced Selection**. Click on **Utah's Small Areas, 1999–present**. Under the Utah's Small Areas folder click on the **Treat and Release** folder. Click on the **Hospital ED Encounters** folder. **Click on Count – ED Treat and Release Encounters** to go to the query builder page (see Figure 27).

Click on **Step 1: Select year**. The default of Single years is already selected, and the most recent year of data (2010) is highlighted. Deselect the default of 2010 by clicking on **2007**. 2007 will now be highlighted.
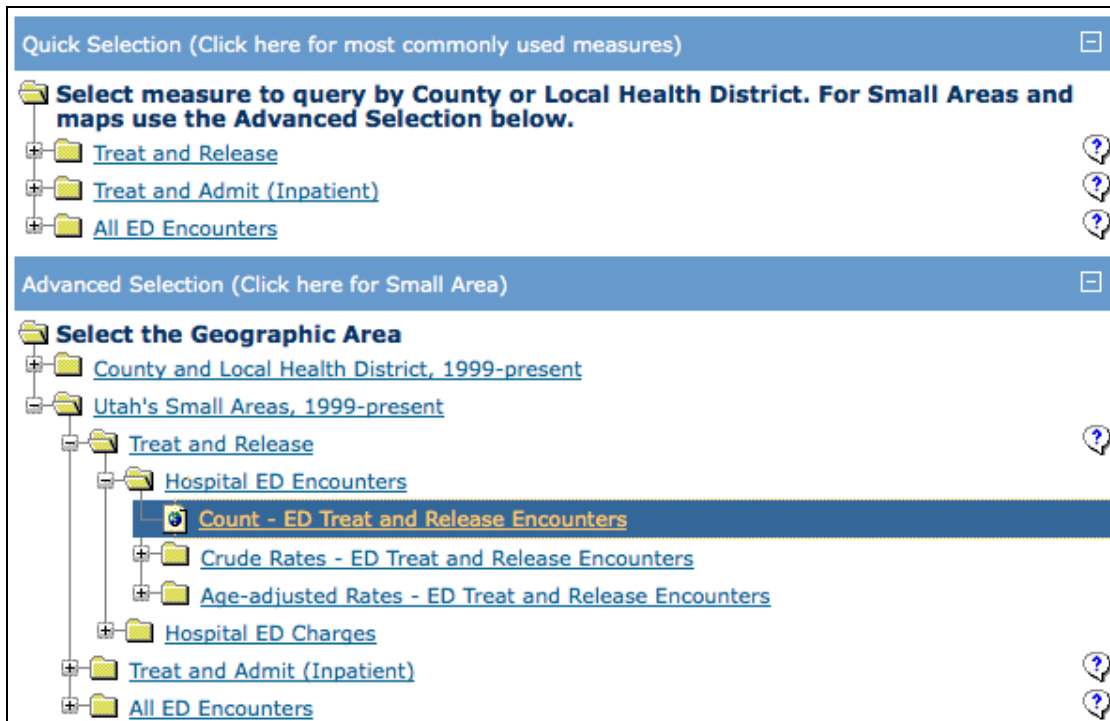
Figure 27: Emergency Department Selection Page for Count

For the following steps the defaults are used so they can be skipped:
- Step 2: Select diagnosis (default = all diagnoses, MDC)
- Step 3: Select procedure (default = all procedures, CCS)
- Step 4: Select age (default = all ages, 14 age groups)
- Step 5: Select sex (default = both)
- Step 6: Select primary payer (default = all payers)
- Step 7: Select discharge status (default = all statuses)

Click on **Step 8: Select small area**. A scroll box will appear with all the small areas listed. Scroll down until you see your small area. Highlight your small area by clicking on it. For this example we clicked on several small areas: **04_26 Millcreek, 04_27 Holladay, 04_28 Cottonwood, 04_29 Kearns, 04_30 Taylorsville**, and **04_31 Murray** (see Figure 28).

Click on **Step 9: Select how to display the results**. For the row variable the default is 'Year'. Change the row variable to 'Utah's Small Area' by clicking on the down arrow on the right side of the row drop down box. Click on **Utah's Small Areas**. In order to see the value for each of the small areas we have selected it is necessary to select small area in the display by step. If you display by another variable it will lump all the small areas we have selected together. If you have only selected one small area you may wish to display by another variable. For this example we will leave the column variable as none (see Figure 28).

Figure 28: Emergency Department Query Builder Page for Count, Select Small Area and Display by Small Area

Scroll to the bottom of the page and click on the **Submit** button.

On the results page in the Data List section you will see a row of data for each Small Area you selected on the query builder page (see Figure 29). Also in Figure 29 you will see the Data Notes section of the results page. For Emergency Department data there are several Data Notes and Data Issues as well as a Data Source. These sections contain information about the data and any issues you should be aware of when using this data.

Data List

⇕ Utah's Small Areas	⇕ Count - ED Treat and Release Encounters
Total	70,710
Millcreek	12,798
Holladay	10,373
Cottonwood	8,171
Kearns	17,986
Taylorsville	11,027
Murray	10,355

Record Count: 7

Data Notes

ICD Stands for International Classification of Diseases. It is a coding system maintained by the World Health Organization and the U.S. National Center for Health Statistics used to classify causes of death on death certificates and diagnoses, injury causes, and medical procedures for hospital and emergency department visits. These codes are updated every decade or so to account for advances in medical technology. The U.S. is currently using the 10th revision (ICD-10) to code causes of death. The 9th revision (ICD-9) is still used for hospital and emergency department visits.

"Small areas" refers to a set of geographic areas in Utah with population sizes ranging from approximately 20,000 to 60,000 persons. These geographic areas are especially useful for doing public health assessment in communities within Utah's urban counties. Small area population numbers are not available for race, ethnicity, or single year of age.

Treat and Release: A patient that visits the ED, but is not admitted to the hospital as an inpatient. The patient does not stay overnight and is not admitted to another department of the hospital.

Data Sources

Utah Emergency Department Encounter Database, Bureau of Emergency Medical Services, Utah Department of Health

Data Issues

The Emergency Department Encounter Database (ED) contains the consolidated information on complete billing, medical codes, personal characteristics describing a patient, services received, and charges billed for each patient emergency department (ED) encounter. The Bureau of Emergency Medical Services/Office of Health Care Statistics receives quarterly Emergency Department Encounter Data form hospitals in various formats and media. The data are converted into a standardized format. The data are validated through a process of automated editing and report verification. Each record is subjected to a series of edits that check for accuracy, consistency, completeness, and conformity with the definitions specified in the Utah Hospital Emergency Patient Encounter Data Submittal Manual. Records failing the edit check are returned to the data supplier for corrections of comment.

Coverage and Validity of Diagnosis Codes: Since the data come from the billing forms, all visits or encounters have a Diagnosis code making coverage great. There is some difference of opinion regarding whether some providers may emphasize Diagnosis codes that yield higher reimbursements. The hospital and ED data are considered /"Administrative Data/" because they were created for use in billing and remittance of payment. As such, they were not constructed for public health surveillance purposes primarily, and are weak in some areas, such as external cause of injury and race or ethnicity. But, in general, they are extremely valuable and reasonably complete and valid.

Figure 29: Emergency Department Results Page for Count

10. Person

Age and sex are important aspects of data analysis by person. Some health data is age related or sex related. Looking at rates and counts for age groups and by sex can provide further information.

Exercise: Person Data in PRAMS

Find the Intendedness of pregnancy for 2006–2007 for ages 20–34 years old using the PRAMS query module. Display by age group and marital status.

Solution: Person Data in PRAMS

Click on **Health Surveys – Pregnancy Risk Assessment Monitoring System (PRAMS)** on the left hand navigation bar or from the Dataset Queries tab at the top of the page. Under Quick Selection, click on the **Before Pregnancy** folder. Click on **Pregnancy intention** to go to the query builder page.

Click on **Step 1: Select year**. Select 2006 and 2007 by clicking on the checkboxes next to them.

Click on **Step 2: Select age**. Scroll down and click on **20–24 years, 25–29 years** and **30–34 years** to highlight them.

For Step 3: Select other demographic characteristics (default = all characteristics) we will use the default.

Click on **Step 4: Select how to display the results**. This is not the standard display step, but the survey display step. Since the column variable is always the response categories of the survey question you only need to select one variable to get a 2-dimensional table. There is also the option to select two variables. This gives a total of 3 variables so there is no 2-dimensional table on the results page. All the data will be in the Data List. We will use this second option since we want age group and marital status.

The defaults are 'Year' for 1st Group by Dimension and 'None' for 3rd Group by Dimension. For the 1st Group by Dimension, click on the drop down to select **Marital Status** to highlight it as shown in Figure 34. For the 3rd Group by Dimension, click on the drop down to select **Age Groups** to highlight it as shown in Figure 30.

Figure 30: PRAMS Query Builder Page for Intendedness of Pregnancy, Display by Marital Status and Age Group

Scroll down to the bottom of the page and click on the **Submit** button.

Query Criteria for the Pregnancy Intention Measure

Year Filter:	2006, 2007
Age Groups Filter:	20-24 years, 25-29 years, 30-34 years
Data Grouped By:	Marital Status, Intendedness of Pregnancy, Age Groups

Data List

Marital Status	Intendedness of Pregnancy	Age Groups	Number of Responses	Pregnancy Intention	Confidence Bounds - Lower Limit	Confidence Bounds - Upper Limit	Relative Standard Error (Coefficient of Variation %)
Total	Intended	Total	2,120	69.3%	67.43%	71.12%	3.07
Total	Intended	20-24 years	633	60.21%	56.77%	63.54%	4.34
Total	Intended	25-29 years	932	73.2%	70.33%	75.89%	5.29
Total	Intended	30-34 years	555	74.16%	70.46%	77.54%	7.00
Total	Not intended	Total	988	30.7%	28.88%	32.57%	3.07
Total	Not intended	20-24 years	434	39.79%	36.46%	43.23%	4.34
Total	Not intended	25-29 years	348	26.8%	24.11%	29.67%	5.29
Total	Not intended	30-34 years	206	25.84%	22.46%	29.54%	7.00
Married	Total	20-24 years	739	100.0%	.	.	.
Married	Total	25-29 years	1,106	100.0%	.	.	.
Married	Total	30-34 years	680	100.0%	.	.	.
Married	Intended	20-24 years	505	69.56%	65.62%	73.22%	6.38
Married	Intended	25-29 years	847	76.5%	73.52%	79.24%	6.21
Married	Intended	30-34 years	512	76.33%	72.52%	79.76%	7.81
Married	Not intended	20-24 years	234	30.44%	26.78%	34.38%	6.38
Married	Not intended	25-29 years	259	23.5%	20.76%	26.48%	6.21

Figure 31: PRAMS Results Page for Intendedness of Pregnancy

The results page has the data returned for your query. Figure 31 shows a portion of the Data List. You will notice that the first and third columns are the grouping variables that you selected in the 'display by' step on the query builder page (see Figure 30). For a detailed explanation of the different sections on the results page see pages 12-14, Figures 9-11.

11. ICD Codes

ICD Stands for "International Classification of Diseases." It is a coding system maintained by the World Health Organization and the U.S. National Center for Health Statistics used to classify causes of death on death certificates and diagnoses, injury causes, and medical procedures for hospital and emergency department visits. These codes are updated approximately every decade to account for advances in medical technology. Beginning in 1999, the U.S. changed over from the 9th revision (ICD-9) to the 10th revision (ICD-10) to record cause of death on death certificates. In the IBIS Query System there are a few clarifications that will help when entering ICD codes (see Figure 32).

Data Set	Version of ICD	Instructions	Example
Mortality (1999 and later)	ICD-10	Enter Alphanumeric codes	P23, P24.1
Mortality (1998 and earlier)	ICD-9	Enter Numeric codes	250, 255.1
Hospital & Emergency Department	ICD-9	Enter Numeric codes	250, 255.1
Injury Mortality (1999 and later)	ICD-10	Enter Alphanumeric codes	W10, Y88.1
Injury Mortality (1998 and earlier)	ICD-9	Enter Injury codes **WITHOUT** the E	880, 881.3
Injury Hospital & Emergency Department	ICD-9	Enter Injury codes **WITH** the E	E880, E881.3

Figure 32: ICD Codes and the IBIS Query System

For more information on ICD codes see the [IBIS-PH ICD Help](#) page. There are also help buttons available in the steps on the query builder page where ICD codes can be entered.

Exercise: ICD Codes in Injury Mortality

Find the Age-Adjusted death rate for 1996–1998 for "Fall on or from stairs or steps" using the ICD-10 codes (under External Injuries on the ICD-10 help page).

Solution: ICD Codes in Injury Mortality

Click on **Injury** then select **Mortality** (second level button) on the left hand navigation bar or from the Dataset Queries tab at the top of the page. Click on the blue bar for **Advanced Selection**. Click on **County and Local Health District, Years 1998 and before (ICD-9 coding system)**. Click on the **Age-Adjusted Rates** folder. Click on **Data table and chart** to go to the query builder page (see Figure 33).
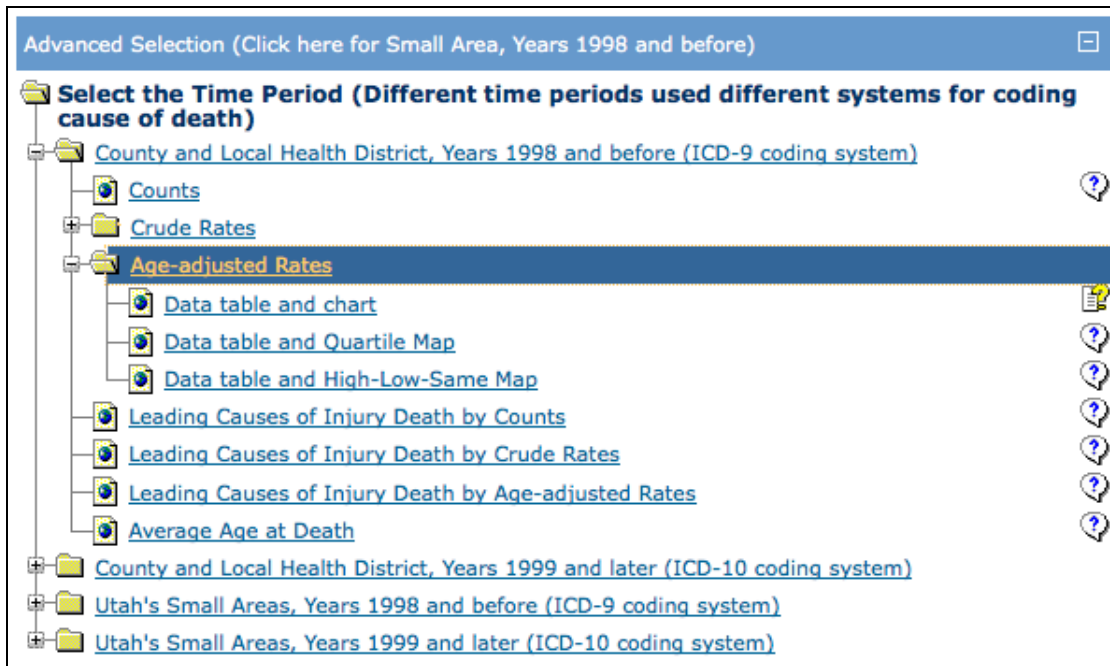
Figure 33: Injury Mortality Selection Page for Age-Adjusted Rates

Click on **Step 1: Select year**. Click on **3-year groups** and scroll down and highlight **1996–1998**.

Click on **Step 2: Select injury cause of death**. Click on **User defined causes**.

To the right of UDOH injury causes are two help buttons. If you need more information about ICD codes, you can use the help buttons on the right hand side of your screen. The help button (which looks like this:) on the top left links to a page describing the ICD-10 codes. The second help button, the one to the furthest right on your screen, brings up a new browser window which contains listings of the ICD-9 codes. The ICD 9 link takes you to a page that lists all the ICD 9 External Injury codes.

The row labeled '3. Fall' lists codes associated with falls (see Figure 34). The third column shows **Unintentional Falls (E880–E886, E888)**. There are also codes under E880 for specific types of fall such as escalators which are not listed on this page. Each specific type of fall is associated with a decimal point number beyond E800. With ICD codes if you use a code without the decimal, E880, it includes all codes underneath that code, E880.0–E880.9. We want all types of Falls so we will use E880.

ICD-9 UDOH External Cause of Injury Matrix						
For use with Injury Mortality, Inpatient Hospital and ED query systems						
		Intent				
MECHANISM	**All Injury**	**Unintentional**	**Suicide**	**Homicide**	**Undetermined**	**Other***
All Injury	E800-E869, E880-E929, E950-E978, E980-E998, **E979, E999**	E800-E869, E880-E929	E950-E959	E960-E969, **E979, E999**	E980-E989	E970-E978, E990-E998
1. **Cut/Pierce**	E920, E956, E966, E986, E974	E920	E956	E966	E986	E974
2. **Drowning/Submersion**	E910, E954, E964, E984	E910	E954	E964	E984	-
3. **Fall**	E880-E886, E888, E957, E968.1, E987	E880-E886, E888	E957	E968.1	E987	-

Figure 34: ICD-9 UDOH Cause of Injury Matrix

Close the browser window with the code listings and return to your query builder page. Under Step 2, locate the box under **User defined causes**. Click on the empty box and type in 880 (see Figure 35). **Remember that Injury Mortality codes are entered without the E** (see Figure 35 for an example of the help button to the right of User defined causes).

Figure 35: Injury Mortality Query Builder Page for Age-Adjusted Rates, Cause of Death Step

For the following steps the defaults are used so they can be skipped:
- Step 3: Select injury intention (default = all intentions)
- Step 4: Select sex (default = both)
- Step 5: Select geographic area (default = all Local Health Districts)
- Step 6: Select how to display the results

Scroll to the bottom of the page and click on the **Submit** button. You will see the following selections on the results page:
- 3 Year Groups Filter = 1996–1998
- User Defined Cause of Death Filter = 880
- Data grouped by = 3-Year Groups
- Data Chart = None

The results page will display the data returned for your query. Figure 36 contains the Query Criteria and Data List sections from the results page. For a detailed explanation of these sections and other sections on the result page see pages 12–14, Figures 9–11.

Query Criteria for the Age-adjusted Rates, Deaths Per 100,000 Population Measure

3-Year Groups Filter:	1996-1998
User Defined Cause of Death Filter:	880
Data Grouped By:	3-Year Groups

Data List

3-Year Groups	Number of Injury Deaths	Number in the Population	Age-adjusted Rates, Injury Deaths Per 100,000 Population	95% CI LL	95%CI UL	Relative Standard Error (Coefficient of Variation %)
Total	39	6,283,912	0.92	0.66	1.27	13.13
1996-1998	39	6,283,912	0.92	0.66	1.27	13.13

Record Count: 2

Figure 36: Injury Mortality Results Page for Age-Adjusted Rates

12. NCHS Leading Causes

NCHS (National Center for Health Statistics) is a part of CDC. They provide lists of leading causes of death. On IBIS you can query using causes from two different lists from NCHS. Both of these lists are available on the help page or from help buttons within the steps that use them.

NCHS 113 – Refer to http://health.utah.gov/opha/IBIShelp/codes/NCHS113.htm for a complete listing.

NCHS 50 – Refer to http://health.utah.gov/opha/IBIShelp/codes/NCHS50.htm for a complete listing.

Exercise: NCHS Leading Causes in Mortality

Find the crude mortality rate for Parkinson's disease for 2007–2009 with four age groups, use NCHS 113, display by age group.

Solution: NCHS Leading Causes in Mortality

Click on **Mortality** on the left hand navigation bar or from the Dataset Queries tab at the top of the page. Under Quick Selection click on **Crude Rates**. This will take you to the query builder page.

Click on **Step 1: Select year**. Single years and Select from list of single years are already selected as the default. Click on **2007, 2008** and **2009** to select these years for your query. (Hold down the mouse button and drag the mouse pointer over the years or hold down the control key and click on each year to highlight them.)

Click on **Step 2: Select cause of death**. Click on **NCHS 113 selected causes of death**. Scroll down the alphabetical list of causes until you see Parkinson's disease. Click on **Parkinson's disease** to highlight it (see Figure 37).

Click on **Step 3: Select age of decedent**. Click on **Four age groups (0–14, 15–44, 45–64, 65**+), then on **All age groups**.

For **Step 4: Select sex** (default = both) and **Step 5: Select geographic area** (default = all Utah Residents, Local Health Districts) the defaults are used so we will skip these steps.

Figure 37: Mortality Query Builder Page for Crude Rates, Cause of Death Step

Click on **Step 6: Select how to display the results**. The row variable is set to 'Year" and the column variable is set to 'None'. Change the row variable by clicking on the down arrow next to 'Year'. A

drop down box will show the available options. Click on **Age group** to select it as the row variable (see Figure 38).

Figure 38: Mortality Query Builder Page for Crude Rates, Display by Age Group

Scroll to the bottom of the page and click on the **Submit** button.

Figure 39 shows selected sections (Query Criteria and Data List) of the query results page for comparison. For the younger ages you will notice that the values are suppressed. For more information on small numbers and suppression see sections 5 (page 25) and 7 (page 30).

Query Criteria for the Crude Rates, Deaths Per 100,000 Population Measure

Single Years Filter:	2007, 2008, 2009
NCHS 113 Leading Causes Filter:	Parkinson's disease
Data Grouped By:	4 Age Groups

Data List

4 Age Groups	Number of Deaths	Number in the Population	Crude Rates, Deaths Per 100,000 Population	95% CI LL	95%CI UL	Relative Standard Error (Coefficient of Variation %)
Total	**	7,984,196	**	5.83	6.95	4.43
15-44 years	**	**	**	**	**	**
45-64 years	18	1,570,058	1.15	0.68	1.81	23.57
65+ years	489	705,475	69.32	63.31	75.74	4.52

Record Count: 4

**The estimate has been suppressed because 1) The relative standard error is greater than 50% or when the relative standard error can't be determined. Consider aggregating years to decrease the relative standard error and improve the reliability of the estimate. 2) the observed number of events is very small and not appropriate for publication, or 3) it could be used to calculate the number in a cell that has been suppressed.*

Data Notes

ICD Stands for International Classification of Diseases. It is a coding system maintained by the World Health Organization and the U.S. National Center for Health Statistics used to classify causes of death on death certificates and diagnoses, injury causes, and medical procedures for hospital and emergency department visits. These codes are updated every decade or so to account for advances in medical technology. The U.S. is currently using the 10th revision (ICD-10) to code causes of death. The 9th revision (ICD-9) is still used for hospital and emergency department visits.

Figure 39: Mortality Query Results Page for Crude Rates

13. Maps

There are several modules that have maps available. All maps are found in the Advanced Selection section of the measure selection page (except in the Cancer Registry where the maps are in the Quick Selection section due to the fact that there is no Advanced Selection section,). There are two types (Quartile and High-Low-Same) of maps available and three geographies (29 Counties, 12 Local Health Districts and Small Areas). For more information on the geographies available see section 9, Geography, page 33. Below are definitions of the two types of maps. Help buttons containing these definitions as well as the definition for Small Areas are available on the selection page (see Figure 40).

A **High-Low-Same map** assigns areas to three groups. Group membership and map color are based on whether each area's rate is significantly different (higher or lower) from the state rate. An area's rate is considered significantly different if it falls outside (above or below) the 95% confidence interval for the overall state rate. Maps such as this one may lack color variation if the overall state rate is based on very few cases and has a wide confidence interval. In other words, just because an area's rate is statistically the same as the state rate doesn't necessarily mean that the rate is not meaningfully high or low.

A **Quartile map** assigns areas to four groups. Each group includes the SAME NUMBER of areas (unless there is are records in the data with the same rate forcing them to be included in the same group). For instance, for local health districts, each group includes three areas. Group membership and map color are based on the rank order of area rates, from the lowest rate to the highest. The first quartile is colored white and consists of areas with the lowest rates. Areas with the darkest color have the highest rates. Percentile maps such as this assign 25% of the areas to the "highest" category, even when area rates are very close. In other words, just because an area is in the "highest" category doesn't necessarily mean that the rate is significantly high.

Exercise: Maps in Injury Inpatient Hospital Discharges

Create a High-Low-Same map for age-adjusted rates of unintentional injuries in the Inpatient Hospital Discharge data for 2008–2009 by county.

Solution: Maps in Injury Inpatient Hospital Discharges

Click on **Injury – Inpatient Hospital Discharges** (second level button) on the left navigation. Click on **Advanced Selection**. Click on **County and Local Health District, 1992 and later**. Click on **Hospital Discharges**. Click on **Age-Adjusted Rates**. Click on **Data table and High-Low-Same Map** (see Figure 40). This will take you to the query builder page.

Click on **Step 1: Select year**. The Single years and Select from list of single years are already selected. Scroll down in the list of years and highlight **2008** and **2009**. (Hold down the mouse button and drag the mouse pointer over the years or hold down the control key and click on each year to highlight them.)

Since we want all unintentional injuries, regardless of the cause, we will skip Step 2: Reason for hospitalization (default = all causes, UDOH injury causes).

Figure 40: Injury Inpatient Hospital Discharge Selection Page for an Age-Adjusted High-Low-Same Map

Click on **Step 3: Select injury intention**. A scroll box will be displayed. Click on the category **Unintentional** to highlight and choose it.

For the following steps the defaults are used so they can be skipped:
- Step 4: Select sex (default = both)
- Step 5: Select primary payer (default = all payers)
- Step 6: Select discharge status (default = all discharge statuses)

Click on **Step 7: Select geographic area**. Click on **County** to select it. You will notice that you do not have the option to select counties. When you are creating a map, all counties (or all Local Health Districts if you choose LHD) are used to create a complete map of the state. There is also not a display by option since by choosing a map you are choosing to display the data by geographic area.

For the following steps the defaults are used so they can be skipped:
- Step 8: Select resident status (default = Utah Residence)
- Step 9: Select how to display the results

Scroll to the bottom of the screen and click on the **Submit** button. This will bring up the results page.

The results page may take a moment to come up. When it does appear you will notice that it starts with the Query Criteria section like all other result pages. Under the Query Criteria section you will see a map section (see Figure 41).

Query Results for Injury Inpatient Hospital Discharge Query Module for Utah Counties and Local Health Districts

You are Here: IBIS-PH > Dataset Queries > Injury Inpatient Hospital Discharges > Query Builder > current page

Query Criteria for the Age-adjusted Injury Hospitalization Rates High-Low-Same Map Measure

Single Years Filter:	2008, 2009
Injury Intention Filter:	Unintentional
Utah Residence Status Filter:	Utah Residence
Data Grouped By:	County
Data Chart:	Map

Figure 41: Injury Inpatient Hospital Discharge Query Criteria Section from the Results Page for a Map
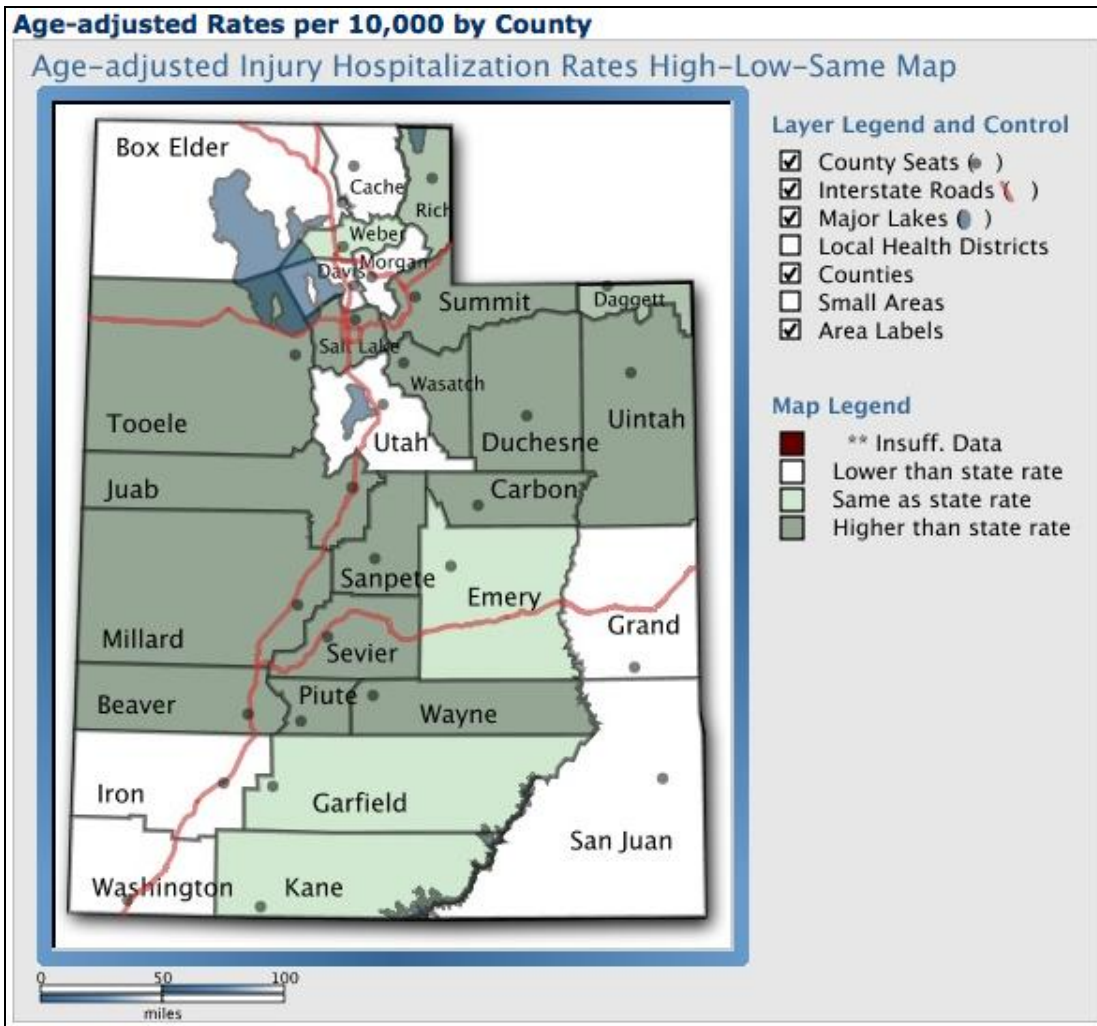

Figure 42: Injury Inpatient Hospital Discharge Results Page for a Map

All the data in the map is also given in the Data List, below the map. There are also all the other sections of the results page. For a detailed explanation of the sections on the result page see pages 12–14, Figures 9–11.

IBIS Query System Use Tips

Selecting consecutive items: To select consecutive items in a scroll box click on the first item and then hold down the shift key and click on the last item. Everything between those two items will be selected. If you click on an item without holding down the shift key that item will be selected and all other items will be unselected.

Selecting non-consecutive items: To select non-consecutive items click on the first item and then hold down the control (ctrl) key to select each additional item. Only those items clicked on will be selected. If you click on an item without holding down the control key that item will be selected and all other items will be unselected.

Return to default selections: To return to default selections for all steps click on the "Reset" button at the bottom of the list of steps (next to the submit button). All steps will be returned to their default selection.

Run a new query: From the results page you can click on "Query Definition", top button on the left hand side, to return to the query builder page with all the default selections. You can then begin a new query for that same measure. If you want a different measure select the left navigation button to reach the selection page and then select the measure you want.

Charts or Graphs: You can optionally select a Chart/Graphic from the standard selection step. For those measures that do not use the standard display step the Chart/Graphic can be selected from the Result Options section of the results page. See page 32, Figure 26.

Maps: Maps are found on the selection pages under the Advanced Selection section. For definitions of the types of maps see page 48.