GDHR/DPH Standards for Map Presentation

1. Data Class Breaks range shall not exceed the range of data presented.
   I.e. If the data range from 44 – 354, then the first data class shall start with 44, not 0 (zero).

   1.1 Never have a data class break that ends with the same number that the next class break begins with. Example: 22-45, 45-77 should read 22-45, 46-77.

   1.2. Zeros or No Data: If the first data class break includes zeros, such as 0-3694 for a count-of-population variable, then consider why zeros are included, and how they should be handled. An alternative is to use a histogram to find out the distribution of values. The presentation result could be: □=0, and then the first valid value should start the first class break (e.g. ◩=355-3,694 instead of ◩= 0-3,694).

   1.3. Optional: If only 1 geographic unit exhibits a value within a data range, do not show the range in the legend. Instead, show the unique value in the legend.

2. Always include the Data class breaks method used
   State the method used to classify data, e.g. quintiles, Jenks natural breaks.

3. Always include the Projection used
   e.g. Georgia Statewide Lambert Conformal Conic.

   Prior to mapping, the GIS environment should be set to the appropriate projection according to the geographic extent of the study.

   For mapping the entire state, the Georgia Statewide Lambert Conformal Conic is suitable. The custom parameters are listed below:

   Georgia Lambert Conformal Conic
   - Map Projection: Lambert Conformal Conic
   - Ellipsoid: Geodetic Reference System of 1980 (GRS 80)
   - Datum: North American Datum of 1983 (NAD 83)
   - Longitude of Origin: Central Meridian
   - Latitude of Origin: 0 Degrees
   - Standard Parallel 1: 31 Degrees, 25 Minutes North (31.46666667)
   - Standard Parallel 2: 34 Degrees, 17 Minutes North (34.28333333)
   - Central Meridian: 83 Degrees, 30 Minutes West (- 83.5)
   - False Easting: None
   - False Northing: None
   - Unit of Measurement: Feet

   "Unprojected" maps are unsuitable for mapping, particularly when distance measurements are critical.

   These guidelines are in accordance with the GIS Standards and Guidelines of the Base-Map Technical Working Group for the GIS Advisory Committee of the State of Georgia's Information Technology Policy Council (http://gis.state.ga.us/edocs/giscc/gisstand.html).

4. Always include Author
   e.g. Georgia Department of Human Resources, Division of Public Health, Office of Health Information & Policy

5. Always include the Date Map was Created

6. Always include the Date of the Data displayed.

7. Always include the Data Source(s)

8. Always include a Scale

9. Always include a North Arrow

10. Always make Note if originally printed in color. (Subsequent copies in black and white will benefit from said note.)

11. Color schemes in data class break legends shall flow from light to dark (or dark to light), using one of the following sequences:

Consistent gray scale
Single sequence, single-hue scale (similar to consistent gray, except using one color)
Single sequence, part spectral scale (e.g. light yellow-brown-black, or yellow-orange-red)

Through the use of the online products ColorBrewer (http://www.colorbrewer.org) developed by Cynthia A. Brewer, PhD and Mark A. Harrower at Pennsylvania State University, and The RGB Color Calculator (http://www.drpeterjones.com/colorcalc/index.html), the Office of Health Information and Policy (OHIP) has developed a standard set of color palette scales (otherwise known as sequential color schemes) for the use in the creation of maps and mapping products produced with a GIS.

A series of color palette scale value codes are presented for the four most common industry standard color value schemas: Red-Green-Blue (RGB), Hexadecimal (HEX), Cyan-Magenta-Yellow-black (CMYK), and Hue-Saturation-Value (HSV).

For each of these standards we have provided the appropriate color value codes for the creation of five separate scales: 1) a Green Scale; 2) a Yellow-to-Brown Scale; 3) a Brown Scale; 4) a Yellow-to-Green Scale; and 5) a Red Scale. Each of these scales was tested with a test subject who was Red-Green Color Blind and it was found that each of the values could be clearly distinguished.

The color palette values are presented for each of the five color scales for 5-, 4-, 3-, and 2-Class Breaks in Appendix A.

12. (Optional) Present a Histogram of data presented.

13. Titles and Legends shall be complementary and unambiguous, and preferably in a sans serif font.

13.1 Every feature (layer) in a map should be represented in the legend.

14. (Optional) Neatline (a.k.a. Borders)

2 borders such that an outer border outlines the entire map, titles, and legends, and an inner border around the map proper.

15. The "n" (number of events) for the total geography (e.g. the state) should be displayed if a map consists of only rates.

16. The number of data classes should take into account the range of data values: a very small range of rates (e.g. range of percentages from 1.1% to 2.3%) most likely should not have more than 2 data classes, and in fact may not be suitable for mapping because there may be little statistical or practical significance between 1.1% and 2.3%.

Prepared by G. Freymann, R. Roberts, E. Hallisey. Color standards updated by C. Smith, J. Tobias
Information from *Monmonier, M (1996) How to Lie with Maps (2nd ed.). University of Chicago Press*
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Appendix A

Red-Green-Blue (RGB).

RGB	FIVE CLASS BREAKS				FOUR CLASS BREAKS				THREE CLASS BREAKS				TWO CLASS BREAKS			
GREEN SCALE		**R**	**G**	**B**		**R**	**G**	**B**		**R**	**G**	**B**		**R**	**G**	**B**
	1st - light (2)	199	233	192	1st - light (2)	199	233	192	1st - light (2)	199	233	192	1st - middle (3)	161	217	155
	2nd -pale (3)	161	217	155	2nd - middle (4)	116	196	118	2nd - middle (4)	116	196	118	2nd - darker (5)	49	163	84
	3rd - middle (4)	116	196	118	3rd - darker (5)	49	163	84	3rd - darkest (6)	0	109	44				
	4th - darker (5)	49	163	84	4th - darkest (6)	0	109	44								
	5th - darkest (6)	0	109	44												
YELLOW/BROWN		**R**	**G**	**B**		**R**	**G**	**B**		**R**	**G**	**B**		**R**	**G**	**B**
	1st - light (2)	254	227	145	1st - light (2)	254	227	145	1st - light (2)	254	227	145	1st - middle (3)	254	196	79
	2nd - pale (3)	254	196	79	2nd - middle (4)	254	153	41	2nd - middle (4)	254	153	41	2nd - darker (5)	217	95	14
	3rd - middle (4)	254	153	41	3rd - darker (5)	217	95	14	3rd - darkest (6)	153	52	4				
	4th - darker (5)	217	95	14	4th - darkest (6)	153	52	4								
	5th - darkest (6)	153	52	4												
BROWN SCALE		**R**	**G**	**B**		**R**	**G**	**B**		**R**	**G**	**B**		**R**	**G**	**B**
	1st - light (2)	253	208	162	1st - light (2)	253	208	162	1st - light (2)	253	208	162	1st - middle (3)	253	174	107
	2nd -pale (3)	253	174	107	2nd - middle (4)	253	141	60	2nd - middle (4)	253	141	60	2nd - darker (5)	230	85	13
	3rd - middle (4)	253	141	60	3rd - darker (5)	230	85	13	3rd - darkest (6)	166	54	3				
	4th - darker (5)	230	85	13	4th - darkest (6)	166	54	3								
	5th - darkest (6)	166	54	3												
YELLOW/GREEN		**R**	**G**	**B**		**R**	**G**	**B**		**R**	**G**	**B**		**R**	**G**	**B**
	1st - light (2)	217	240	163	1st - light (2)	217	240	163	1st - light (2)	217	240	163	1st - middle (3)	173	221	142
	2nd -pale (3)	173	221	142	2nd - middle (4)	120	198	121	2nd - middle (4)	120	198	121	2nd - darker (5)	49	163	84
	3rd - middle (4)	120	198	121	3rd - darker (5)	49	163	84	3rd - darkest (6)	0	104	55				
	4th - darker (5)	49	163	84	4th - darkest (6)	0	104	55								
	5th - darkest (6)	0	104	55												
RED SCALE		**R**	**G**	**B**		**R**	**G**	**B**		**R**	**G**	**B**		**R**	**G**	**B**
	1st - light (2)	252	187	161	1st - light (2)	252	187	161	1st - light (2)	252	187	161	1st - middle (3)	252	146	114
	2nd -pale (3)	252	146	114	2nd - middle (4)	251	106	74	2nd - middle (4)	251	106	74	2nd - darker (5)	222	45	38
	3rd - middle (4)	251	106	74	3rd - darker (5)	222	45	38	3rd - darkest (6)	165	15	21				
	4th - darker (5)	222	45	38	4th - darkest (6)	165	15	21								
	5th - darkest (6)	165	15	21												

Hexadecimal (HEX).

HEX	FIVE CLASS BREAKS		FOUR CLASS BREAKS		THREE CLASS BREAKS		TWO CLASS BREAKS	
GREEN SCALE		**HEX**		**HEX**		**HEX**		**HEX**
	1st - light (2)	0xc7e9c0	1st - light (2)	0xc7e9c0	1st - light (2)	0xc7e9c0	1st - middle (3)	0xa1d99b
	2nd -pale (3)	0xa1d99b	2nd - middle (4)	0x74c476	2nd - middle (4)	0x74c476	2nd - darker (5)	0x31a354
	3rd - middle (4)	0x74c476	3rd - darker (5)	0x31a354	3rd - darkest (6)	0x6d2c		
	4th - darker (5)	0x31a354	4th - darkest (6)	0x6d2c				
	5th - darkest (6)	0x6d2c						
YELLOW/BROWN		**HEX**		**HEX**		**HEX**		**HEX**
	1st - light (2)	0xfee391	1st - light (2)	0xfee391	1st - light (2)	0xfee391	1st - middle (3)	0xfec44f
	2nd - pale (3)	0xfec44f	2nd - middle (4)	0xfe9929	2nd - middle (4)	0xfe9929	2nd - darker (5)	0xd95f0e
	3rd - middle (4)	0xfe9929	3rd - darker (5)	0xd95f0e	3rd - darkest (6)	0x993404		
	4th - darker (5)	0xd95f0e	4th - darkest (6)	0x993404				
	5th - darkest (6)	0x993404						
BROWN SCALE		**HEX**		**HEX**		**HEX**		**HEX**
	1st - light (2)	0xfdd0a2	1st - light (2)	0xfdd0a2	1st - light (2)	0xfdd0a2	1st - middle (3)	0xfdae6b
	2nd -pale (3)	0xfdae6b	2nd - middle (4)	0xfd8d3c	2nd - middle (4)	0xfd8d3c	2nd - darker (5)	0xe6550d
	3rd - middle(4)	0xfd8d3c	3rd - darker (5)	0xe6550d	3rd - darkest (6)	0xa63603		
	4th - darker (5)	0xe6550d	4th - darkest (6)	0xa63603				
	5th - darkest (6)	0xa63603						
YELLOW/GREEN		**HEX**		**HEX**		**HEX**		**HEX**
	1st - light (2)	0xd9f0a3	1st - light (2)	0xd9f0a3	1st - light (2)	0xd9f0a3	1st - middle (3)	0xaddd8e
	2nd -pale (3)	0xaddd8e	2nd - middle (4)	0x78c679	2nd - middle (4)	0x78c679	2nd - darker (5)	0x31a354
	3rd - middle (4)	0x78c679	3rd - darker (5)	0x31a354	3rd - darkest (6)	0x6837		
	4th - darker (5)	0x31a354	4th - darkest (6)	0x6837				
	5th - darkest (6)	0x6837						
RED SCALE		**HEX**		**HEX**		**HEX**		**HEX**
	1st - light (2)	0xfcbba1	1st - light (2)	0xfcbba1	1st - light (2)	0xfcbba1	1st - middle (3)	0xfc9272
	2nd -pale (3)	0xfc9272	2nd - middle (4)	0xfb6a4a	2nd - middle (4)	0xfb6a4a	2nd - darker (5)	0xde2d26
	3rd - middle (4)	0xfb6a4a	3rd - darker (5)	0xde2d26	3rd - darkest (6)	0xa50f15		
	4th - darker (5)	0xde2d26	4th - darkest (6)	0xa50f15				
	5th - darkest (6)	0xa50f15						

Cyan-Magenta-Yellow-black (CMYK).

CMYK	FIVE CLASS BREAKS					FOUR CLASS BREAKS					THREE CLASS BREAKS					TWO CLASS BREAKS				
GREEN SCALE		**C**	**M**	**Y**	**K**		**C**	**M**	**Y**	**K**		**C**	**M**	**Y**	**K**		**C**	**M**	**Y**	**K**
	1st - light (2)	22	0	22	0	1st - light (2)	22	0	22	0	1st - light (2)	22	0	22	0	1st - middle (3)	37	0	37	0
	2nd -pale (3)	37	0	37	0	2nd - middle (4)	55	0	55	0	2nd - middle (4)	55	0	55	0	2nd - darker (5)	81	0	76	0
	3rd - middle (4)	55	0	55	0	3rd - darker (5)	81	0	76	0	3rd - darkest (6)	100	20	100	0					
	4th - darker (5)	81	0	76	0	4th - darkest (6)	100	20	100	0										
	5th - darkest (6)	100	20	100	0															
YELLOW/BROWN		**C**	**M**	**Y**	**K**		**C**	**M**	**Y**	**K**		**C**	**M**	**Y**	**K**		**C**	**M**	**Y**	**K**
	1st - light (2)	0	11	40	0	1st - light (2)	0	11	40	0	1st - light (2)	0	11	40	0	1st - middle (3)	0	23	65	0
	2nd - pale (3)	0	23	65	0	2nd - middle (4)	0	40	80	0	2nd - middle (4)	0	40	80	0	2nd - darker (5)	15	60	95	0
	3rd - middle (4)	0	40	80	0	3rd - darker (5)	15	60	95	0	3rd - darkest (6)	40	75	100	0					
	4th - darker (5)	15	60	95	0	4th - darkest (6)	40	75	100	0										
	5th - darkest (6)	40	75	100	0															
BROWN SCALE		**C**	**M**	**Y**	**K**		**C**	**M**	**Y**	**K**		**C**	**M**	**Y**	**K**		**C**	**M**	**Y**	**K**
	1st - light (2)	0	19	30	0	1st - light (2)	0	19	30	0	1st - light (2)	0	19	30	0	1st - middle (3)	0	32	50	0
	2nd -pale (3)	0	32	50	0	2nd - middle (4)	0	45	70	0	2nd - middle (4)	0	45	70	0	2nd - darker (5)	10	65	95	0
	3rd - middle (4)	0	45	70	0	3rd - darker (5)	10	65	95	0	3rd - darkest (6)	35	75	100	0					
	4th - darker (5)	10	65	95	0	4th - darkest (6)	35	75	100	0										
	5th - darkest (6)	35	75	100	0															
YELLOW/GREEN		**C**	**M**	**Y**	**K**		**C**	**M**	**Y**	**K**		**C**	**M**	**Y**	**K**		**C**	**M**	**Y**	**K**
	1st - light (2)	15	0	35	0	1st - light (2)	15	0	35	0	1st - light (2)	15	0	35	0	1st - middle (3)	32	0	43	0
	2nd -pale (3)	32	0	43	0	2nd - middle (4)	53	0	53	0	2nd - middle (4)	53	0	53	0	2nd - darker (5)	81	0	76	0
	3rd - middle (4)	53	0	53	0	3rd - darker (5)	81	0	76	0	3rd - darkest (6)	100	25	90	0					
	4th - darker (5)	81	0	76	0	4th - darkest (6)	100	25	90	0										
	5th - darkest (6)	100	25	90	0															
RED SCALE		**C**	**M**	**Y**	**K**		**C**	**M**	**Y**	**K**		**C**	**M**	**Y**	**K**		**C**	**M**	**Y**	**K**
	1st - light (2)	0	27	27	0	1st - light (2)	0	27	27	0	1st - light (2)	0	27	27	0	1st - middle (3)	0	43	43	0
	2nd -pale (3)	0	43	43	0	2nd - middle (4)	0	59	59	0	2nd - middle (4)	0	59	59	0	2nd - darker (5)	12	82	75	0
	3rd - middle (4)	0	59	59	0	3rd - darker (5)	12	82	75	0	3rd - darkest (6)	35	95	85	0					
	4th - darker (5)	12	82	75	0	4th - darkest (6)	35	95	85	0										
	5th - darkest (6)	35	95	85	0															

Hue-Saturation-Value (HSV).

HSV	FIVE CLASS BREAKS				FOUR CLASS BREAKS				THREE CLASS BREAKS				TWO CLASS BREAKS			
GREEN SCALE		**H**	**S**	**V**		**H**	**S**	**V**		**H**	**S**	**V**		**H**	**S**	**V**
	1st - light (2)	78	45	233	1st - light (2)	78	45	233	1st - light (2)	78	45	233	1st - middle (3)	81	73	217
	2nd -pale (3)	81	73	217	2nd - middle (4)	86	104	196	2nd - middle (4)	86	104	196	2nd - darker (5)	98	178	163
	3rd - middle (4)	86	104	196	3rd - darker (5)	98	178	163	3rd - darkest (6)	102	255	109				
	4th - darker (5)	98	178	163	4th - darkest (6)	102	255	109								
	5th - darkest (6)	102	255	109												
YELLOW/BROWN		**H**	**S**	**V**		**H**	**S**	**V**		**H**	**S**	**V**		**H**	**S**	**V**
	1st - light (2)	32	109	254	1st - light (2)	32	109	254	1st - light (2)	32	109	254	1st - middle (3)	28	176	254
	2nd - pale (3)	28	176	254	2nd - middle (4)	22	214	254	2nd - middle (4)	22	214	254	2nd - darker (5)	17	239	217
	3rd - middle (4)	22	214	254	3rd - darker (5)	17	239	217	3rd - darkest (6)	14	248	153				
	4th - darker (5)	17	239	217	4th - darkest (6)	14	248	153								
	5th - darkest (6)	14	248	153												
BROWN SCALE		**H**	**S**	**V**		**H**	**S**	**V**		**H**	**S**	**V**		**H**	**S**	**V**
	1st - light (2)	22	92	253	1st - light (2)	22	92	253	1st - light (2)	22	92	253	1st - middle (3)	20	147	253
	2nd -pale (3)	20	147	253	2nd - middle (4)	18	195	253	2nd - middle (4)	18	195	253	2nd - darker (5)	14	241	230
	3rd - middle (4)	18	195	253	3rd - darker (5)	14	241	230	3rd - darkest (6)	13	250	166				
	4th - darker (5)	14	241	230	4th - darkest (6)	13	250	166								
	5th - darkest (6)	13	250	166												
YELLOW/GREEN		**H**	**S**	**V**		**H**	**S**	**V**		**H**	**S**	**V**		**H**	**S**	**V**
	1st - light (2)	55	82	240	1st - light (2)	55	82	240	1st - light (2)	55	82	240	1st - middle (3)	68	91	221
	2nd -pale (3)	68	91	221	2nd - middle (4)	86	100	198	2nd - middle (4)	86	100	198	2nd - darker (5)	98	178	163
	3rd - middle (4)	86	100	198	3rd - darker (5)	98	178	163	3rd - darkest (6)	108	255	104				
	4th - darker (5)	98	178	163	4th - darkest (6)	108	255	104								
	5th - darkest (6)	108	255	104												
RED SCALE		**H**	**S**	**V**		**H**	**S**	**V**		**H**	**S**	**V**		**H**	**S**	**V**
	1st - light (2)	12	92	252	1st - light (2)	12	92	252	1st - light (2)	12	92	252	1st - middle (3)	10	140	252
	2nd -pale (3)	10	140	252	2nd - middle (4)	8	180	251	2nd - middle (4)	8	180	251	2nd - darker (5)	2	211	222
	3rd - middle (4)	8	180	251	3rd - darker (5)	2	211	222	3rd - darkest (6)	253	232	165				
	4th - darker (5)	2	211	222	4th - darkest (6)	253	232	165								
	5th - darkest (6)	253	232	165												