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Air

GUIDELINE FOR REPORTING OF DAILY AIR QUALITY - POLLUTANT STANDARDS INDEX (PSI)

Contains Data for Postscript Only.

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Guideline for Reporting of Daily Air Quality - Pollutant Standards Index - (PSI)

This guidance is designed to aid local agencies in reporting the air quality using the PSI as required in Part 58.50 of 40 CFR and according to Appendix G to Part 58 of 40 CFR.

Do I have to report the PSI?

Part 58.50 states that Metropolitan Statistical Areas (MSAs) with a population of more than 350,000 are required to report the PSI daily to the general public. The U.S. Office of Management and Budget (OMB) defines MSAs and according to the 1990 census, Table A-1 in the Appendix lists all the MSAs in the country that have a population of more than 350,000.

How often do I report the PSI?

Appendix G states that MSAs must report the PSI on a daily basis. The appendix further defines daily as at least 5 times each week. This definition allows for days when personnel are not available to provide the PSI report or for equipment failures.

How do I provide the PSI report to the general public?

You may provide the report to the local media (newspapers, radio, television), provide a recorded telephone message, or publish the report on a publicly accessible web-page on the Internet. Other programs, including real-time data reporting and community action programs (e.g., ozone action day programs) that provide timely air quality information to the public, may be used to meet reporting requirements.

What is in my PSI report?

Your PSI report must contain:

- The reporting area(s).
- The reporting period.
- The critical pollutant.
- The PSI
- The category descriptor and, if reported in a color format, the associated color.[1] Use only the following names and colors for the six PSI categories:

[1] A recorded phone message or a radio broadcast cannot show colors but can name a color in the report (e.g. this is a code “red” day).

for this PSI...	Use this descriptor...	and this color
0 to 50	"Good"	Green
51 to 100	"Moderate"	Yellow
101 to 150	"Unhealthy for Sensitive Groups"	Orange
151 to 200	"Unhealthy"	Red
201 to 300	"Very Unhealthy"	Purple
301 and above	"Hazardous"	Maroon

A PSI report may also contain:

- The name and index value for other pollutants, particularly those with an index value greater than 100.
- The index for sub-areas of the reporting area.
- Actual pollutant concentrations.
- Causes for unusual PSI values.
- Health effects and cautionary language.
- Statements that "blend" health effects and cautionary information for more than one pollutant, if there is more than one pollutant with an index value greater than 100.

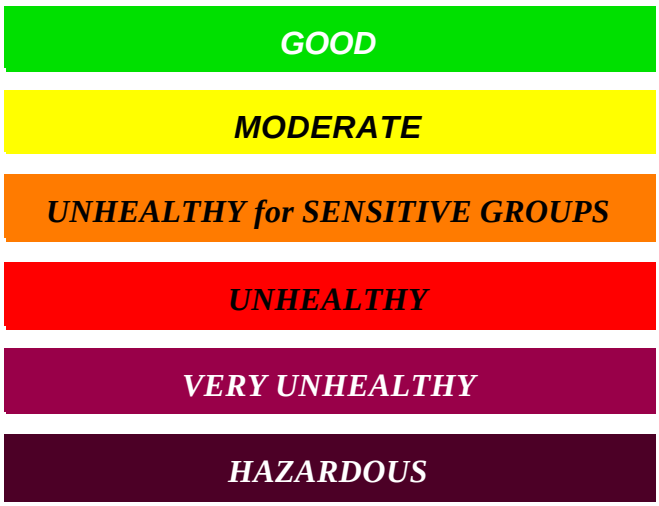
What does a PSI report look like?

The following are examples of PSI reports that you can use in various methods of reporting the PSI.

Example 1. A short form for a newspaper.

The Air Quality in Durham yesterday

The AIR QUALITY in Durham yesterday was Moderate due to ozone. The air quality index was 57. ➡

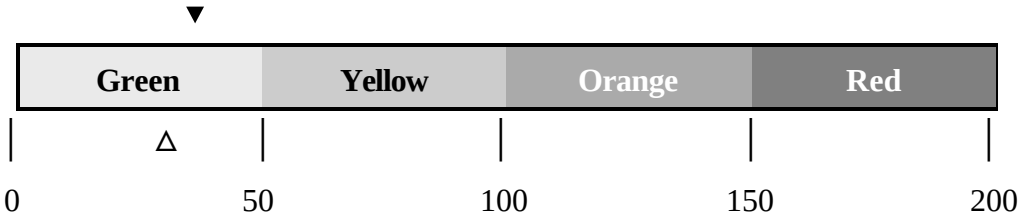


Example 2. A short form for a newspaper in black and white.

Air Quality for Washington, D.C.

▼ Today's forecast Δ Yesterday

Pollutant Standards Index (PSI)



Yesterday's main offender : **30, ozone**

Color codes:

Green = Good

Yellow = Moderate

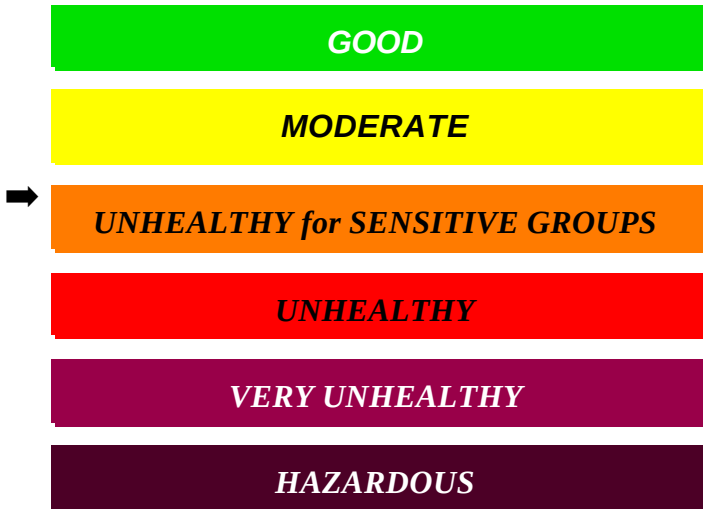
Orange = Unhealthy for Sensitive Groups

Red = Unhealthy

Example 3. A longer form for a newspaper.

The Air Quality in Baltimore yesterday

The AIR QUALITY yesterday in Northeast Baltimore was Unhealthy for Sensitive Groups due to ozone. Groups likely to be sensitive to ozone include active children and adults, and people with respiratory disease such as asthma. The air quality index was 110 resulting from an ozone concentration of 0.088 ppm. Elsewhere in Baltimore, the air quality index was 87 or Moderate. Since today's air quality is expected to be much the same, sensitive groups should consider limiting prolonged outdoor exertion.



The following is a short script that could be used for a television evening news/weather report. Graphics used for the report could be much the same as the graphics used in newspaper reports. You must use the descriptors and, if a color format is used, colors for the categories that are listed above.

Example 4. A short form for television (evening).

"The air quality index today was 156, a code red day. The air stagnation caused a buildup of ozone to unhealthy levels."

Example 5. A short form for television (morning).

"Yesterday the air quality was unhealthy due to ozone, and we expect similar air quality today – in the red range or around an index of 160 which is unhealthy. Active adults and children and people with asthma or other respiratory diseases should avoid prolonged physical exertion outside today. In fact, everyone should consider limiting the time they spend on outdoor exercise or those outside jobs..."

Example 6. A long form for television (evening).

"Air quality today was unhealthy due to ozone, with an index value of 156. The cool front we expected to come through here tomorrow and blow all this ozone away isn't going to make it, so the stagnant air will still be here, making air quality unhealthy. Active children and adults and people with asthma or other respiratory diseases should avoid prolonged exertion outside tomorrow. In fact, everyone should consider limiting the time they spend on outdoor exercise or those outside jobs..."

Recorded telephone messages can be used to give more up-to-date information on the air quality. The following example has been used.

Example 7. A script for telephone
"As of 10:00 AM the air quality index is 45 which is good or code green. The responsible pollutant is ozone."

The newest way to report the PSI is via a public accessible Internet web site. The automation that is available for these reports can make them almost real-time. The Ozone Mapping Project (http://www.epa.gov/airnow) comes very close to real time and uses a much more involved analysis than is required for PSI reporting. Examples of web site reporting are given below.

Example 8. A short form for a Web site

Air Quality Index for St. Louis, MO for July 19,1999

Time of this report:	1:00PM	**PSI:**	110	**Code:**	Orange
Responsible pollutant:	Ozone	**Category:**	Unhealthy for Sensitive Groups		

Example 9. A long form for a Web site

Air Quality Index for Chicago, IL for August 1, 1999

Report as of:	2:00PM	**PSI:**	162	**Responsible pollutant:**	Ozone
Code:	Red	**Category:**	Unhealthy		
Sensitive groups:	Children and adults who are active outdoors, and people with respiratory disease such as asthma.				
Health effects:	Greater likelihood of respiratory symptoms and breathing difficulty in sensitive groups, possible respiratory effects in the general population.				
HEALTH ADVISORY	Children and adults who are active outdoors, and people with respiratory disease, such as asthma should avoid moderate exertion outdoors, everyone else (especially children) should limit prolonged outdoor exertion				
Air Quality in South Chicago - Gary, IL		PSI:	122	(Unhealthy for Sensitive Groups)	
Tomorrow's air quality in Chicago is predicted to be:	Unhealthy for Sensitive Groups	Code:	Orange		

What colors do I use in my PSI report?

If you report the air quality index in a color format, the colors you use are specified in appendix G as:

For this category ...	... use this color
Good	Green
Moderate	Yellow
Unhealthy for Sensitive Groups	Orange
Unhealthy	Red
Very Unhealthy	Purple
Hazardous	Maroon

Specific colors are defined in the table below for red, green, blue (RGB) and cyan, magenta, yellow, and black (CMYK) color formulas:[1]

Color[2]	R	G	B	C	M	Y	K
Green	0	228	0	224	0	224	30
Yellow	255	255	0	0	0	255	0
Orange	255	126	0	0	132	255	0
Red	255	0	0	255	255	0	0
Purple	153	0	76	0	153	80	102
Maroon	76	0	38	0	76	38	179

[1] The RGB model is traditionally used for screen colors while CMYK is traditionally used for printing processes.
[2] The color models are based on a 0 - 255 scale (e.g. 50% is 126).

What health effects and cautionary statements should I use in my report?

The most recent health effect information used with the PSI is pollutant-specific. The following table lists the different health effects messages, sensitive groups, and cautionary statements for each pollutant in the PSI.

Pollutant-Specific Health Effects Statements for the PSI

Proposed Categories (Index Values)	Ozone (ppm) [8-hour]	Ozone (ppm) [1-hour]	Particulate Matter (µg/m³) $PM_{2.5}$ [24-hour]	Particulate Matter (µg/m³) PM_{10} [24-hour]	Carbon Monoxide (ppm) [8-hour]	Sulfur Dioxide (ppm) [24-hour]
Good	None		None	None	None	None
Moderate	Unusually sensitive individuals may experience respiratory symptoms.		Possibility of aggravation of heart or lung disease among persons with cardiopulmonary disease and the elderly.	None	None	None
Unhealthy for Sensitive Groups	Increasing likelihood of respiratory symptoms and breathing discomfort in sensitive groups.	Increasing likelihood of respiratory symptoms and breathing discomfort in sensitive groups.	Increasing likelihood of increased respiratory symptoms in children and adults, aggravation of heart or lung disease and premature mortality in persons with cardiopulmonary disease and the elderly.	Increasing likelihood of respiratory symptoms and aggravation of lung disease.	Increasing likelihood of reduced exercise tolerance due to increased cardiovascular symptoms, such as chest pain, in people with cardiovascular disease.	Increasing likelihood of respiratory symptoms, such as chest tightness and wheezing, in people with asthma.
Unhealthy	Greater likelihood of respiratory symptoms and breathing difficulty in sensitive groups; possible respiratory effects in general population.	Greater likelihood of respiratory symptoms and breathing difficulty in sensitive groups; possible respiratory effects in general population.	Increased respiratory symptoms in children and adults, aggravation of heart or lung disease and premature mortality in persons with cardiopulmonary disease and the elderly.	Increased respiratory symptoms and aggravation of lung disease.	Reduced exercise tolerance due to increased cardiovascular symptoms, such as chest pain, in people with cardiovascular disease.	Increased respiratory symptoms, such as chest tightness and wheezing, in people with asthma; possible aggravation of heart or lung disease.

Proposed Categories (Index Values)	Ozone (ppm)		Particulate Matter (µg/m³)		Carbon Monoxide (ppm)	Sulfur Dioxide (ppm)
	[8-hour]	[1-hour]	$PM_{2.5}$ [24-hour]	PM_{10} [24-hour]	[8-hour]	[24-hour]
Very Unhealthy	Increasingly severe symptoms and impaired breathing likely in sensitive groups; increasing likelihood of respiratory effects in general population.	Increasingly severe symptoms and impaired breathing likely in sensitive groups; increasing likelihood of respiratory effects in general population.	Significant increase in respiratory symptoms in children and adults, aggravation of heart or lung disease and premature mortality in persons with cardiopulmonary disease and the elderly.	Significant increase in respiratory symptoms and aggravation of lung disease.	Significant aggravation of cardiovascular symptoms, such as chest pain, in people with cardiovascular disease.	Significant increase in respiratory symptoms, such as wheezing and shortness of breath, in people with asthma; aggravation of heart or lung disease.
Hazardous	Severe respiratory effects and impaired breathing likely in sensitive groups; increasingly severe respiratory effects likely in general population.	Severe respiratory effects and impaired breathing likely in sensitive groups; increasingly severe respiratory effects likely in general population.	Serious risk of respiratory symptoms in children and adults, aggravation of heart or lung disease and premature mortality in persons with cardiopulmonary disease and the elderly.	Serious risk of respiratory symptoms and aggravation of lung disease.	Serious aggravation of cardiovascular symptoms, such as chest pain, in people with cardiovascular disease.	Severe respiratory symptoms, such as shortness of breath, in people with asthma; serious risk of aggravation of heart or lung disease.

Pollutant-Specific Cautionary Statements Proposed Revisions to the PSI

Proposed Categories	Ozone (ppm)		Particulate Matter (µg/m^3)		Carbon Monoxide (ppm)	Sulfur Dioxide (ppm)
	[8-hour]	[1-hour]	$PM_{2.5}$ [24-hour]	PM_{10} [24-hour]	[8-hour]	[24-hour]
Good	None		None	None	None	None
Moderate	Unusually sensitive people should consider limiting prolonged outdoor exertion.		None	None	None	None
Unhealthy for Sensitive Groups	Active children and adults, and people with respiratory disease, such as asthma, should limit prolonged outdoor exertion.	Active children and adults, and people with respiratory disease, such as asthma, should limit heavy outdoor exertion.	People with respiratory and heart disease and the elderly should limit prolonged exertion.	People with respiratory disease, such as asthma, should limit moderate or heavy exertion.	People with cardiovascular disease, such as angina, should limit heavy exertion and avoid sources of CO, such as heavy traffic.	Asthmatic children and adults should consider limiting outdoor exertion.
Unhealthy	Active children and adults, and people with respiratory disease, such as asthma, should avoid prolonged outdoor exertion; everyone else, especially children, should limit prolonged outdoor exertion.	Active children and adults, and people with respiratory disease, such as asthma, should avoid heavy outdoor exertion; everyone else, especially children, should limit heavy outdoor exertion.	People with respiratory and heart disease and the elderly should avoid prolonged exertion; everyone else, especially children, should limit prolonged exertion.	People with respiratory disease, such as asthma, should avoid moderate or heavy exertion; everyone else, especially children and the elderly, should limit prolonged exertion	People with cardiovascular disease, such as angina, should limit moderate exertion and avoid sources of CO, such as heavy traffic.	People with asthma, bronchitis, and heart disease, and children should limit outdoor exertion.
Very Unhealthy	Active children and adults, and people with respiratory disease, such as asthma, should avoid all outdoor exertion; everyone else, especially children, should limit outdoor exertion.	Active children and adults, and people with respiratory disease, such as asthma, should avoid all outdoor exertion; everyone else, especially children, should limit outdoor exertion.	People with respiratory and heart disease and the elderly should avoid any outdoor activity; everyone else, especially children, should avoid prolonged exertion.	People with respiratory disease should avoid any outdoor activity; everyone else, especially children and the elderly, should avoid moderate or heavy exertion.	People with cardiovascular disease, such as angina, should avoid exertion and sources of CO, such as heavy traffic.	People with asthma, bronchitis, and heart disease, and children should avoid outdoor exertion.

Proposed Categories	Ozone (ppm)		Particulate Matter (µg/m^3)		Carbon Monoxide (ppm)	Sulfur Dioxide (ppm)
	[8-hour]	[1-hour]	$PM_{2.5}$ [24-hour]	PM_{10} [24-hour]	[8-hour]	[24-hour]
Hazardous	Everyone should avoid all outdoor exertion.	Everyone should avoid all outdoor exertion.	Everyone should avoid any outdoor exertion; people with respiratory and heart disease, the elderly, and children should remain indoors.	Everyone should avoid any outdoor exertion; people with respiratory disease, such as asthma, the elderly and children should remain indoors.	People with cardiovascular disease, such as angina, should avoid exertion and sources of CO, such as heavy traffic; everyone else should limit heavy exertion.	Everyone should avoid any outdoor exertion.

How do I calculate the PSI from pollutant concentration data?

You calculate the PSI by using your pollutant concentration data, the following table, and the following equation (linear interpolation):

Equation 1

$$I_p = \frac{I_{Hi} - I_{Lo}}{BP_{HI} - BP_{Lo}}(C_p - BP_{Lo}) + I_{Lo}.$$

Where I_p = the index for pollutant $_p$

C_p = the rounded concentration of pollutant $_p$

BP_{Hi} = the breakpoint that is greater than or equal to C_p

BP_{Lo} = the breakpoint that is less than or equal to C_p

I_{Hi} = the PSI value corresponding to BP_{Hi}

I_{lo} = the PSI value corresponding to BP_{Lo}.

Table 2. Breakpoints for the PSI

These Breakpoints						equal these PSIs...		Category
O_3 (ppm) 8-hour	O_3 (ppm) 1-hour[1]	PM_{10} (µg/m^3)	$PM_{2.5}$ (µg/m^3)	CO (ppm)	SO_2 (ppm)	NO_2 (ppm)	PSI	
0.000 - 0.069	-	0 - 54	0.0 - 15.4	0.0 - 4.4	0.000 - 0.034	([2])	0 - 50	Good
0.070 - 0.084	-	55 - 154	15.5 - 65.4	4.5 - 9.4	0.035 - 0.144	([2])	51 - 100	Moderate
0.085 - 0.104	0.125 - 0.164	155 - 254	65.5 - 100.4	9.5 - 12.4	0.145 - 0.224	([2])	101 - 150	Unhealthy for Sensitive Groups
0.105 - 0.124	0.165 - 0.204	255 - 354	100.5 - 150.4	12.5 - 15.4	0.225 - 0.304	([2])	151 - 200	Unhealthy
0.125 - 0.374 (0.155 - 0.404)[4]	0.205 - 0.404	355 - 424	150.5 - 250.4	15.5 - 30.4	0.305 - 0.604	0.65 - 1.24	201 - 300	Very unhealthy
([3])	0.405 - 0.504	425 - 504	250.5 - 350.4	30.5 - 40.4	0.605 - 0.804	1.25 - 1.64	301 - 400	Hazardous
([3])	0.505 - 0.604	505 - 604	350.5 - 500.4	40.5 - 50.4	0.805 - 1.004	1.65 - 2.04	401 - 500	

[1] Areas are required to report the PSI based on 8-hour ozone values. However, there are areas where a PSI based on 1-hour ozone values would be more protective. In these cases the index for both the 8-hour and the 1-hour ozone values may be calculated and the maximum PSI reported.

[2] NO_2 has no short-term NAAQS and can generate a PSI only above a PSI value of 200.

[3] 8-hour O_3 values do not define higher PSI values ($\geq$ 301). PSI values of 301 or higher are calculated with 1-hour O_3 concentrations.

[4] The numbers in parentheses are associated 1-hour values to be used in this overlapping category only.

How do I use the table and the equation and my concentration data to calculate the PSI?

Suppose you have an 8-hour ozone value of 0.08753333. First you truncate the value to 0.087. The you look in the table under 8-hour ozone for values that fall above and below this value (0.085 - 0.104). These values in the table for 8-hour ozone correspond to index values of 101 to 150. Now you have all the numbers needed to use the equation:

$$\frac{(101-150)}{(.104-.085)}(.087-.085)+101=\frac{49}{.019}.002+101=106.157=106$$

So an 8-hour value of 0.08753333 corresponds to an index value of 106.

What if I have values for more pollutants?

Suppose you have an 8-hour ozone value of 0.077 ppm, a $PM_{2.5}$ value of 54.4µg/m^3, and a CO value of 8.4ppm. You apply the equation 3-times:

$$O_3: \quad \frac{(100-51)}{(.084-.070)}(.077-.070)+51=76$$

$$PM: \quad \frac{(100-51)}{(65.4-15.5)}(54.4-15.5)+51=89$$

$$CO: \quad \frac{(100-51)}{(9.4-4.5)}(8.4-4.5)+51=90$$

the PSI is 90 with CO as the responsible pollutant.

How do I use both ozone 1-hour and 8-hour values?

Suppose you had a 1-hour value of 0.162ppm and an 8-hour value of 14.13333,
Then you apply the equation twice:

In this case, the index is 207 (the maximum of 204 and 207) and the responsible pollutant is ozone.

$$\frac{(150-101)}{(.104-.085)}(.087-.085)+101=106.15789$$

What do I do with concentrations for pollutants that have blank places in Table 2?

You disregard those numbers. Suppose you had a 1-hour ozone value of 0.104ppm, an 8-hour ozone value of 0.087ppm and an NO_2 value of 0.54ppm. First you disregard the 1-hour ozone value because it is less than 0.125ppm and the NO_2 value because it is less than 0.65ppm. Then you calculate the index for the 8-hour ozone value as before:

which rounds to 106.

Are there exceptions to these reporting requirements?

Yes. When you have low index values that meet the following criteria, you do not have to meet all the requirements:

- If the index for a specific pollutant remains below 50 for an extended period of time (for example a season or a year) then you are not required to include this pollutant in the calculation of the PSI.

- If your calculated PSI remains below 50 for more than a year, then you are not required to report the PSI.

$$1-hr:\quad \frac{(300-201)}{(.404-.155)}(.162-.155)+201=204$$

$$8-hr:\quad \frac{(300-201)}{(.374-.125)}(.141-.125)+201=207$$

Is there anything else I should know about reporting the PSI?

There are several publications, guidance documents, and a computer program to help you report the PSI.

- Ozone health effects booklet and pamphlet
- PSI brochure
- PSI calculator program
- Forecasting guidance

Do I have to forecast pollutant concentrations for the PSI report?

You are not required to forecast, but you are encouraged to forecast values at least 24-hours in advance. The PSI is designed to inform the general public so that members of the general public may choose to avoid exposure to certain levels and types of air pollution. This choice is unavailable to the general public if the information is not timely. Forecasting insures that the information is timely. However, good forecasts may require data, computational resources and expertise that are unavailable to you. The EPA provides guidance if you are interested in starting a forecasting program for your MSA PSI reporting.

Since ozone is a dominant pollutant in PSI reporting and the form of the ozone standard is an 8-hour average, the timing of how the public is informed is an important issue even if you have decided not to forecast 24-hours in advance. In order for affected people to take advantage of this information, it is necessary to consider at least a short term forecast or prediction of 8-hour ozone levels for the purposes of reporting the PSI. You can do this with very little additional resources. The method you can use relies on the high correlation between daily maxes of 8-hour ozone values and 1-hour ozone values. A simple linear regression can be calculated on daily max data at any site. From this regression, you can predict that the 8-hour ozone maximum for a day will be at least the corresponding maximum 8-hour value given the present 1-hour value. From this information you can predict how high the PSI will be hours earlier than if you wait for the full 8-hour maximum to be observed.

What if the correlation at my site is low?

The lowest observed correlation at any site reporting to AIRS data was 0.86 which is adequate to predict the maximum 8-hour values from the maximum 1-hour for reporting the PSI. However, if you feel uncomfortable from either a public health viewpoint or from a cost viewpoint, you may want to use a confidence interval for the decision you may want to make based on the predicted 8-hour maximum. For example, if your ozone action day is declared when you reach the unhealthy category and you predict an unhealthy day but are unsure whether or not you should call an “ozone action day” based on this prediction, you can use the confidence interval of the predicted value to trigger your decision. If your are concerned about public health, you might consider calling an “ozone action day” as soon as the upper bound of the confidence interval is greater than the PSI cut-point for the unhealthy category. If

you are concerned with the cost of calling an "ozone action day" unnecessarily, then you might consider calling an ozone action day only when the lower bound of the confidence interval is above the cut-point for the unhealthy category.

How do I calculate the upper an lower bounds for the confidence interval for the predicted maximum 8-hour ozone value?

Most computer regression programs include the error variance or the residual variance or the variance of "Y given X" as part of the output. Call this S_e^2. Then you calculate the upper an lower bounds of the predicted value as:

Where:

$\hat{Y}$ is the predicted 8-hour ozone maximum,
$t_{1-\alpha/2,n-2}$ is a tabulated Student's-T value corresponding to a two sided (1- α)100% confidence interval with n-2 degrees of freedom,
S_e^2 is the error variance described above,
x' is the 1-hour value used to predict the 8-hour value,
$\bar{x}$ is the average of the 1-hour values, and
S_x^2 is the variance of the 1-hour values.

The value α is arbitrary, but conventionally it is usually set to 0.05 corresponding to a 95% confidence interval.

$$upper: \quad \hat{Y} + t_{1-\alpha/2,n-2}\sqrt{S_e^2\left(1+\frac{1}{n}+\frac{(x'-\bar{x})^2}{(n-1)S_x^2}\right)}$$

$$lower: \quad \hat{Y} - t_{1-\alpha/2,n-2}\sqrt{S_e^2\left(1+\frac{1}{n}+\frac{(x'-\bar{x})^2}{(n-1)S_x^2}\right)}$$

APPENDIX

Table A-1. Metropolitan Statistical Areas with over 350,000 population (1990 Census)

MSA	NAME	POPULATION
80	AKRON, OH	657,575
160	ALBANY-SCHENECTADY-TROY, NY	861,424
200	ALBUQUERQUE, NM	589,131
240	ALLENTOWN-BETHLEHEM-EASTON, PA	595,081
440	ANN ARBOR, MI	490,058
520	ATLANTA, GA	2,959,950
600	AUGUSTA-AIKEN, GA-SC	415,184
620	AURORA-ELGIN, IL	356,884
640	AUSTIN-SAN MARCOS, TX	846,227
680	BAKERSFIELD, CA	543,477
720	BALTIMORE, MD	2,382,172
760	BATON ROUGE, LA	528,264
840	BEAUMONT-PORT ARTHUR, TX	361,226
875	BERGEN-PASSAIC, NJ	1,278,440
1000	BIRMINGHAM, AL	840,140
1120	BOSTON, MA-NH	3,227,707
1160	BRIDGEPORT, CT	443,722
1280	BUFFALO-NIAGARA FALLS, NY	1,189,288
1320	CANTON-MASSILLON, OH	394,106
1440	CHARLESTON-NORTH CHARLESTON, SC	506,875
1520	CHARLOTTE-GASTONIA-ROCK HILL, NC-SC	1,162,093
1560	CHATTANOOGA, TN-GA	424,347
1600	CHICAGO, IL	7,410,858

MSA	NAME	POPULATION
1640	CINCINNATI, OH-KY-IN	1,526,092
1680	CLEVELAND-LORAIN-ELYRIA, OH	2,202,069
1720	COLORADO SPRINGS, CO	397,014
1760	COLUMBIA, SC	453,331
1840	COLUMBUS, OH	1,345,450
1920	DALLAS, TX	2,676,248
1960	DAVENPORT-MOLINE-ROCK ISLAND, IA-IL	350,861
2000	DAYTON-SPRINGFIELD, OH	951,270
2020	DAYTONA BEACH, FL	399,413
2080	DENVER, CO	1,622,980
2120	DES MOINES, IA	392,928
2160	DETROIT, MI	4,266,654
2320	EL PASO, TX	591,610
2640	FLINT, MI	430,459
2680	FORT LAUDERDALE, FL	1,255,488
2760	FORT WAYNE, IN	456,281
2800	FORT WORTH-ARLINGTON, TX	1,361,034
2840	FRESNO, CA	755,580
2960	GARY, IN	604,526
3000	GRAND RAPIDS-MUSKEGON-HOLLAND, MI	937,891
3120	GREENSBORO--WINSTON-SALEM--HIGH POINT, NC	1,050,304
3160	GREENVILLE-SPARTANBURG-ANDERSON, SC	830,563
3240	HARRISBURG-LEBANON-CARLISLE, PA	587,986
3280	HARTFORD, CT	1,157,585
3320	HONOLULU, HI	836,231
3360	HOUSTON, TX	3,322,025

MSA	NAME	POPULATION
3480	INDIANAPOLIS, IN	1,380,491
3560	JACKSON, MS	395,396
3600	JACKSONVILLE, FL	906,727
3640	JERSEY CITY, NJ	553,099
3660	JOHNSON CITY-KINGSPORT-BRISTOL, TN-VA	436,047
3720	KALAMAZOO-BATTLE CREEK, MI	429,453
3760	KANSAS CITY, MO-KS	1,582,875
3840	KNOXVILLE, TN	585,960
3980	LAKELAND-WINTER HAVEN, FL	405,382
4000	LANCASTER, PA	422,822
4040	LANSING-EAST LANSING, MI	432,674
4120	LAS VEGAS, NV-AZ	852,737
4160	LAWRENCE, MA-NH	353,232
4280	LEXINGTON, KY	405,936
4400	LITTLE ROCK-NORTH LITTLE ROCK, AR	513,117
4480	LOS ANGELES-LONG BEACH, CA	8,863,164
4520	LOUISVILLE, KY-IN	948,829
4720	MADISON, WI	367,085
4880	MCALLEN-EDINBURG-MISSION, TX	383,545
4900	MELBOURNE-TITUSVILLE-PALM BAY, FL	398,978
4920	MEMPHIS, TN-AR-MS	1,007,306
5000	MIAMI, FL	1,937,094
5015	MIDDLESEX-SOMERSET-HUNTERDON, NJ	1,019,835
5080	MILWAUKEE-WAUKESHA, WI	1,432,149
5120	MINNEAPOLIS-ST. PAUL, MN-WI	2,538,834
5160	MOBILE, AL	476,923

MSA	NAME	POPULATION
5170	MODESTO, CA	370,522
5190	MONMOUTH-OCEAN, NJ	986,327
5360	NASHVILLE, TN	985,026
5380	NASSAU-SUFFOLK, NY	2,609,212
5480	NEW HAVEN-MERIDEN, CT	530,180
5560	NEW ORLEANS, LA	1,285,270
5600	NEW YORK, NY	8,546,846
5640	NEWARK, NJ	1,915,928
5720	NORFOLK-VIRGINIA BEACH-NEWPORT NEWS,VA-NC	1,443,244
5775	OAKLAND, CA	2,082,914
5880	OKLAHOMA CITY, OK	958,839
5920	OMAHA, NE-IA	639,580
5945	ORANGE COUNTY, CA	2,410,556
5960	ORLANDO, FL	1,224,852
6160	PHILADELPHIA, PA-NJ	4,922,175
6200	PHOENIX-MESA, AZ	2,238,480
6280	PITTSBURGH, PA	2,384,811
6360	PONCE, PR	3,442,660
6440	PORTLAND-VANCOUVER, OR-WA	1,515,452
6480	PROVIDENCE-FALL RIVER-WARWICK, RI-MA	1,134,350
6640	RALEIGH-DURHAM-CHAPEL HILL, NC	855,545
6760	RICHMOND-PETERSBURG, VA	865,640
6780	RIVERSIDE-SAN BERNARDINO, CA	2,588,793
6840	ROCHESTER, NY	1,062,470
6920	SACRAMENTO, CA	1,340,010
6960	SAGINAW-BAY CITY-MIDLAND, MI	399,320

MSA	NAME	POPULATION
7040	ST. LOUIS, MO-IL	1,836,302
7120	SALINAS, CA	355,660
7160	SALT LAKE CITY-OGDEN, UT	1,072,227
7240	SAN ANTONIO, TX	1,324,749
7320	SAN DIEGO, CA	2,498,016
7360	SAN FRANCISCO, CA	1,603,678
7400	SAN JOSE, CA	1,497,577
7440	SAN JUAN-BAYAMON, PR	1,836,302
7480	SANTA BARBARA-SANTA MARIA-LOMPOC, CA	369,608
7500	SANTA ROSA, CA	388,222
7510	SARASOTA-BRADENTON, FL	489,483
7560	SCRANTON--WILKES-BARRE--HAZLETON, PA	638,466
7600	SEATTLE-BELLEVUE-EVERETT, WA	2,033,156
7680	SHREVEPORT-BOSSIER CITY, LA	376,330
7840	SPOKANE, WA	361,364
8000	SPRINGFIELD, MA	587,884
8120	STOCKTON-LODI, CA	480,628
8160	SYRACUSE, NY	742,177
8200	TACOMA, WA	586,203
8280	TAMPA-ST. PETERSBURG-CLEARWATER, FL	2,067,959
8400	TOLEDO, OH	614,128
8520	TUSCON, AZ	666,880
8560	TULSA, OK	708,954
8720	VALLEJO-FAIRFIELD-NAPA, CA	451,186
8735	VENTURA, CA	669,016
8840	WASHINGTON, DC-MD-VA-WV	4,223,485

MSA	NAME	POPULATION
8960	WEST PALM BEACH-BOCA RATON, FL	863,518
9040	WICHITA, KS	485,270
9160	WILMINGTON-NEWARK, DE-MD	513,293
9240	WORCESTER, MA-CT	478,384
9320	YOUNGSTOWN-WARREN, OH	600,859