

**The Wildlife Habitat Benefits
Estimation Toolkit:
Application Examples**

1) **Residential property premiums associated with wildlife habitat**

Property Premium Estimator Model

Example 1

Benefits provided by existing open space

- 46.7-acre forested open space in Damascus, Montgomery county, MD (suburban DC).
- The open space of concern (indicated by the light green boundary) is privately owned and is not covered by an easement.

Estimate the open space premiums received by residential properties located within a $\frac{1}{2}$ mile radius of the center of the open space.





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Google

ter 39°16'05.54" N 77°10'57.66" W elev 625 ft Streaming ||||| 100%

Eye alt 8



Amascus, MG County, MD

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Property value premium estimator model

[OS property premium model_FINAL](#)

Instructions: Fill in all cells marked "ENTER >". (See accompanying user manual for detailed instructions and documentation.)

STEP 1: Select shape of area of analysis in which property value premiums are analyzed

ENTER > Enter "C" for circular and "R" for rectangular shape of area

STEP 2: Enter the radius (circular area) or length and width (rectangular area) of the area of analysis

ENTER > Radius of area in feet

OUTPUT: **503** Size of study area (acres)

STEP 3: Enter the size of the open space

ENTER > Size in acres of the open space whose property value impact is to be estimated

OUTPUT: **9.3** %OSChange. Percentage of the study area occupied by the open space of interest.
Example: A 20 percent increase in open space in the area of interest is indicated as "20".

STEP 4: Enter the appropriate values for the indicator variables

ENTER > FOR. Enter "1" if the open space is a forest. Otherwise, enter "0".

ENTER > PARK. Enter "1" if the open space is a park. Otherwise, enter "0".

ENTER > AG. Enter "1" if the open space is agricultural land. Otherwise, enter "0".

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ENTER > PRIV. Enter "1" if the open space is privately owned. Otherwise, enter "0".

P_{OS} = % increase in average residential property value from open space of interest

STEP 5: Enter the number of residential properties located in the area

ENTER > Number of properties located in study area. NOTE: Include only single-family homes.

ENTER > Average value of properties (\$)

OUTPUT: **\$0** Estimated total property premium in study area attributable to open space of interest

American Factfinder

http://factfinder.census.gov/home/saff/main.html?_lang=en

U.S. Census Bureau

American FactFinder

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Your source for population, housing, economic, and geographic data

POPULATION FINDER

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city/ town, county, or zip

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POPULATION FINDER

Population Data

Population Finder

Use the [Population Finder](#) to view population trends for your community.

U.S. Population Clock

16:12 GMT (EST)

303,611

more [population](#)

What's New

2007 Population Estimates for states are now available in American FactFinder. [more »](#)

2006 Puerto Rico Community Survey data for Puerto Rico in Spanish. [Sets page.](#)

2006 Annual Survey of Manufactures data are now available in American FactFinder.

2006 American Community Survey (ACS) Race, Ethnic, and Hispanic Origin complete the release of the Community Survey (ACS) Summary Files (SF), People, and Housing Units. [more »](#)

Updates to American FactFinder released August 28, 2007. [more »](#)

110th Congressional District Summary Files (Sample and 100-Percent) Data from the Census 2000 Summary Files 1 and 3 retableted for the newly defined Congressional District boundaries. [more »](#)

Census 2000 State Legislative Summary Files (Sample and 100-Percent) Data from the Census 2000 Summary Files 1 and 3 retableted for the newly defined State Legislative District boundaries. [more »](#)

ABOUT THE DATA

DATA SETS

DOWNLOAD CENTER

MAPS

TOOLS AND REFERENCES

Address Search...

Enter a [street address](#) to find Census 2000 data

- Browser Notes
- Confidentiality
- Citing FactFinder

Getting Detailed Data

Decennial Censuses - taken every 10 years to collect information about the people and housing of the United States. [learn more](#) | [get data](#)

See the [Count Question Resolution Program](#) for information on Census 2000 count corrections.

American Community Survey - an ongoing survey that provides data about your community every year. [learn more](#) | [get data](#)

Puerto Rico Community Survey - the equivalent of the American Community Survey for Puerto Rico. [learn more](#) | [get data](#) | [en español](#)

Population Estimates Program - population numbers between censuses. [learn more](#) | [get data](#)

Economic Census - profiles the U.S. economy every 5 years. [learn more](#) | [get data](#)

Annual Economic Surveys - data from the Annual Survey of Manufactures, County Business Patterns and Nonemployer Statistics. [learn more](#) | [get data](#)

Special Interest

La Encuesta sobre la Comunidad de Puerto Rico y Censo 2000 Puerto Rico [en español](#)

American Indian and Alaska Native data and links

FastFacts for Congress - Demographic and economic data for Congressional Districts

Kids' Corner - Learn fun facts about your state and take a quiz

Information on [Religion](#) and [Genealogy](#)

Census Bureau Links: [Home](#) · [Search](#) · [Subjects A-Z](#) · [FAQs](#) · [Data Tools](#) · [Catalog](#) · [Census 2010 Privacy Policy](#) · [Contact Us](#)

U S C E N S U S B U R E A U

Helping You Make Informed Decisions



DECENNIAL

Load Query | Clear all selections

2000

Census 2000 Summary File 1 (SF 1) 100-Percent Data

Summary File 1 presents counts and information [age, sex, race, Hispanic/Latino origin, household relationship, whether residence is owned or rented] collected from all people and housing units.

Census 2000 Summary File 2 (SF 2) 100-Percent Data

Population and housing characteristics iterated for many detailed race and Hispanic or Latino categories, and American Indian and Alaska Native tribes.

SF 2 Thresholds

Census 2000 Summary File 4 (SF 4) - Sample Data

Summary File 4 contains tabulations of population and housing data collected from a sample of the population. The data are shown down to the census tract level for 336 race, Hispanic or Latino, American Indian and Alaska Native, and ancestry categories.

SF 4 Thresholds

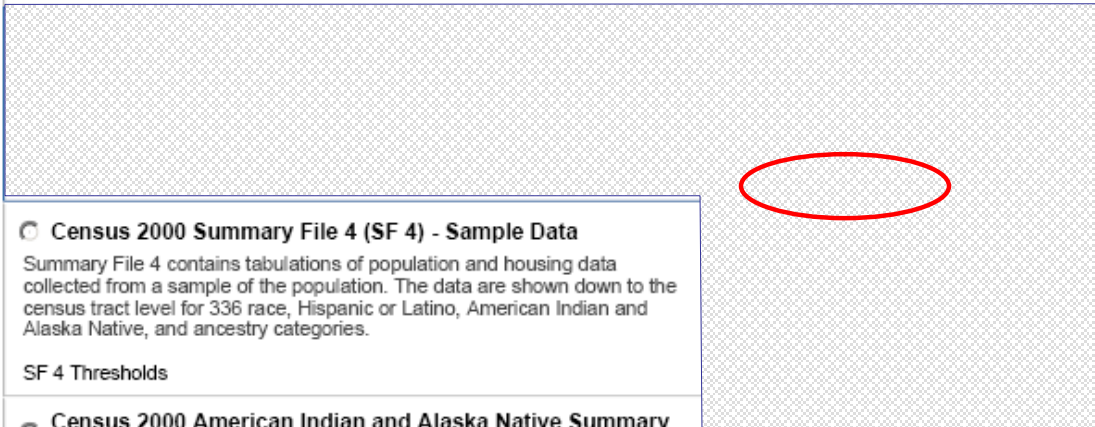
Census 2000 American Indian and Alaska Native Summary File (AIANSF) - Sample Data

The American Indian and Alaska Native Summary File contains tabulations of population and housing data collected from a sample of the population. The data are shown for the U.S., regions, divisions, states, and selected metropolitan areas for many specified American Indian and Alaska Native tribes.

110th Congressional District Summary File (Sample)

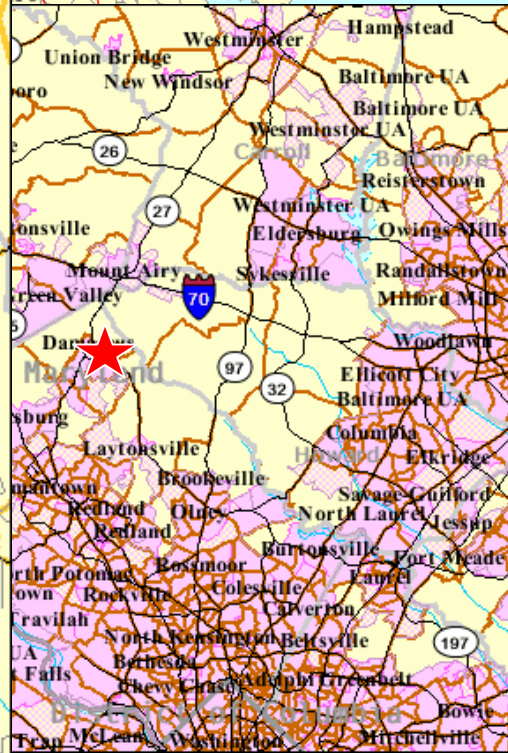
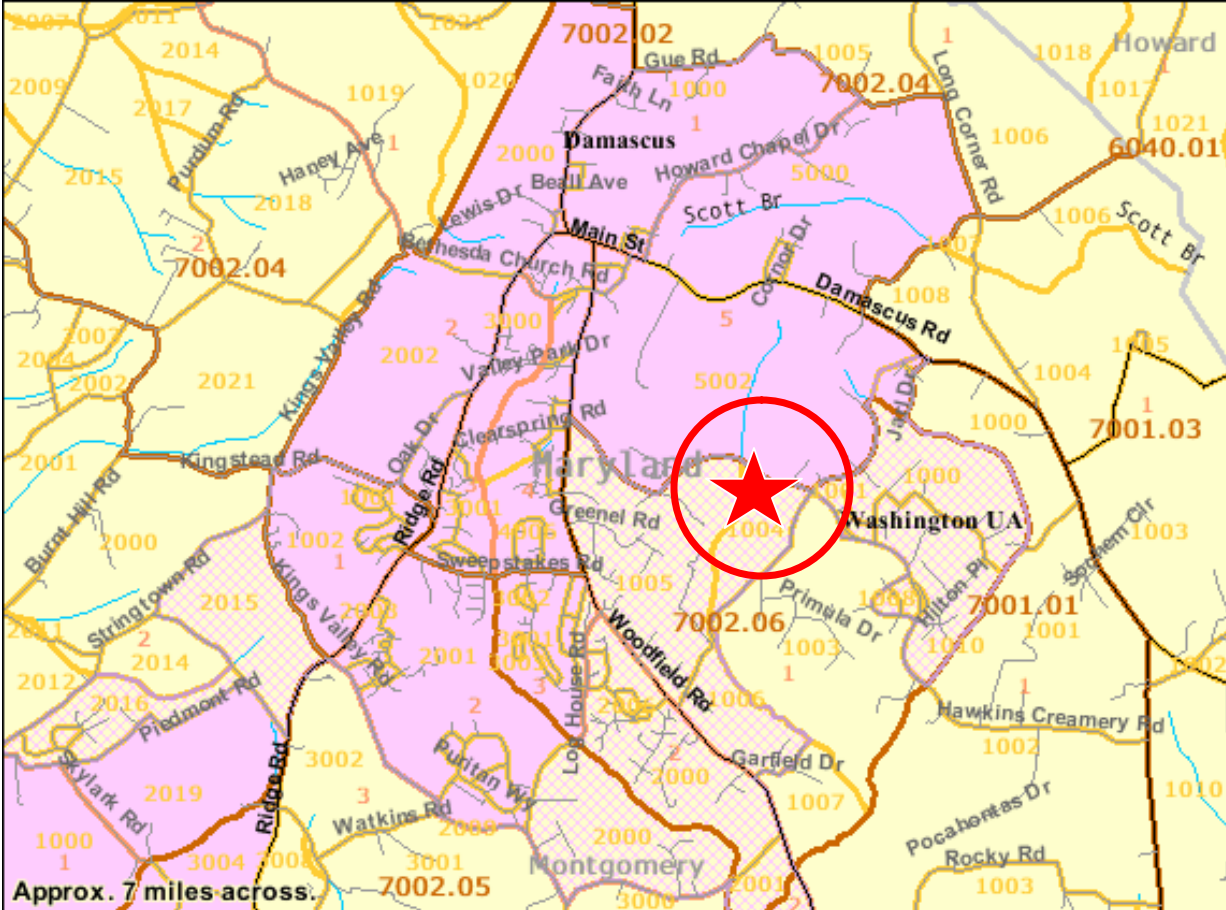
Data from the Census 2000 Summary File 3 have been retabulated for the newly drawn 110th Congressional District boundaries.

110th Congressional District Summary File (100-Percent)

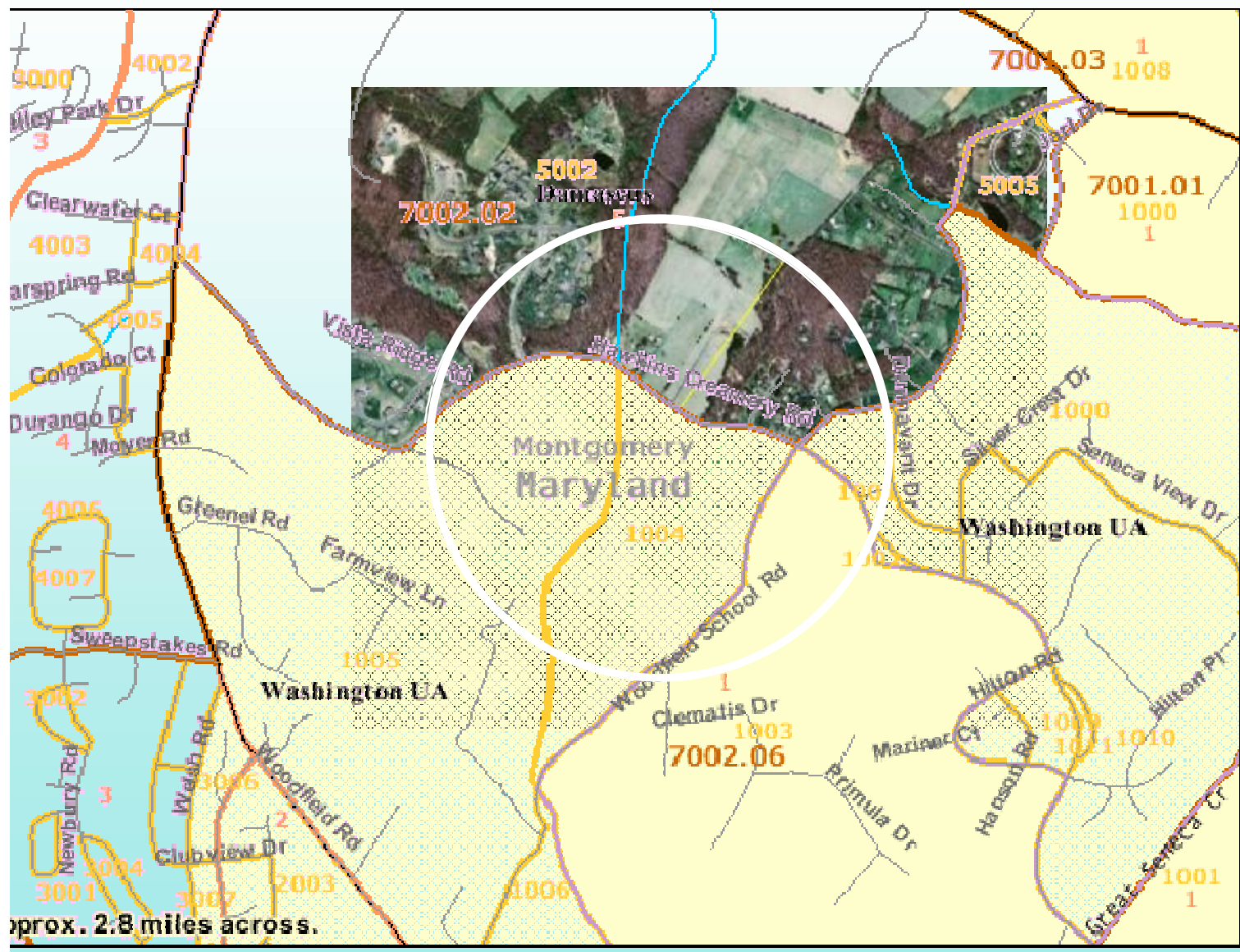


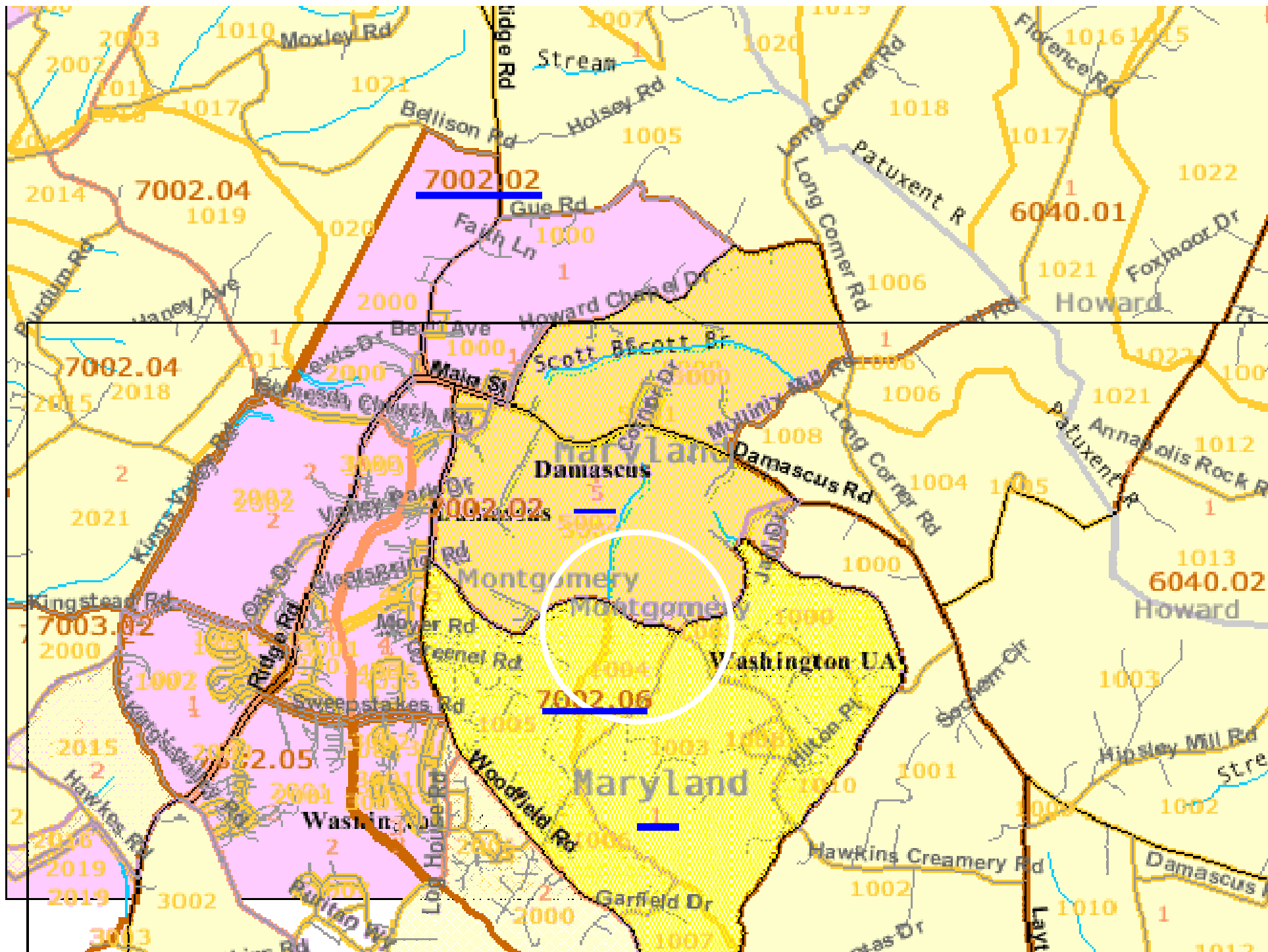
[Reference Maps - American FactFinder](#)

U.S. Census reference maps



Overlay of satellite image and Census tract reference maps







DECENNIAL

Load Query | Clear all selections

[American FactFinder](#)

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SF 4 Thresholds

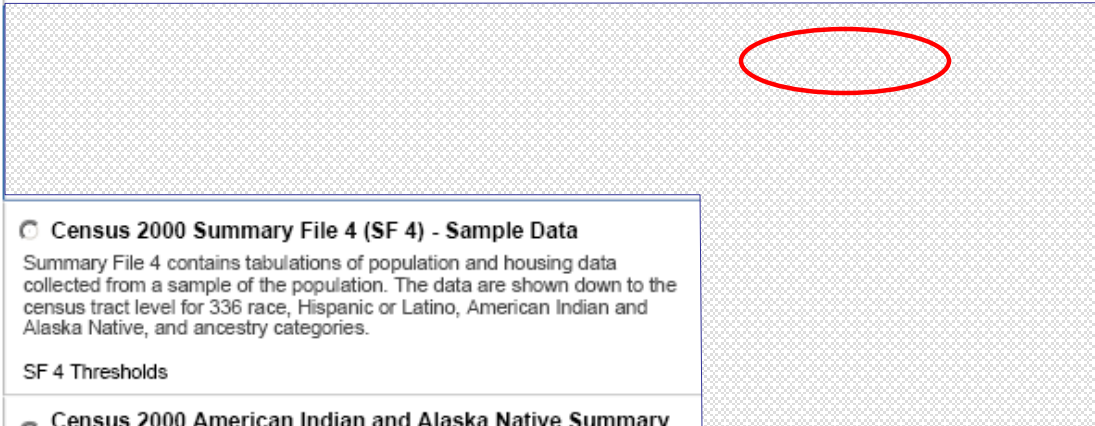
Census 2000 American Indian and Alaska Native Summary File (AIANSF) - Sample Data

The American Indian and Alaska Native Summary File contains tabulations of population and housing data collected from a sample of the population. The data are shown for the U.S., regions, divisions, states, and selected metropolitan areas for many specified American Indian and Alaska Native tribes.

110th Congressional District Summary File (Sample)

Data from the Census 2000 Summary File 3 have been retabulated for the newly drawn 110th Congressional District boundaries.

110th Congressional District Summary File (100-Percent)





Select Geography

You are here: [Main](#) ▶ [Data Sets](#) ▶ [Data Sets with Detailed Tables](#) ▶ [Geography](#) ▶ Tables ▶ Results
Census 2000 Summary File 3 (SF 3) - Sample Data, Detailed Tables

Choose a selection method

- [list](#)
- [name search](#)
- [address search](#)
- [map](#)
- [geo within geo](#)

[Show all geography types](#) | [Explain Census Geography](#)

Select a [geographic type](#)

..... Block Group

Select a state

Maryland

Select a county

Montgomery County

Select a census tract

Census Tract 7002.02

Select one or more geographic areas and click 'Add'

- All Block Groups
- Block Group 1
- Block Group 2
- Block Group 3
- Block Group 4
- Block Group 5

Map It

Add ▼

Current geography selections:

```

===== Block Group =====
Block Group 5, Census Tract 7002.02, Montgomery County, Maryland
Block Group 1, Census Tract 7002.06, Montgomery County, Maryland

```

Download data for more than 7,000 geographic areas using the [Download Center](#).

Remove

Show Result ▶



Select Tables

You are here: [Main](#) ▶ [Data Sets](#) ▶ [Data Sets with Detailed Tables](#) ▶ [Geography](#) ▶ [Tables](#) ▶ Results

Census 2000 Summary File 3 (SF 3) - Sample Data, Detailed Tables

Choose a table selection method

by subject

by keyword

show all tables

■ Select one or more tables and click 'Add'

- H76. Median Value (Dollars) for Specified Owner-Occupied Housing Units
- H77. Upper Value Quartile (Dollars) for Specified Owner-Occupied Housing Units
- H78. Aggregate Value (Dollars) for Specified Owner-Occupied Housing Units by Age of Householder
- H79. Aggregate Value (Dollars) for all Owner-Occupied Housing Units by Units in Structure
- H80. Mortgage Status
- H81. Aggregate Value (Dollars) for Specified Owner-Occupied Housing Units by Mortgage Status
- H82. Median Value (Dollars) for Mobile Homes
- H83. Aggregate Value (Dollars) for Mobile Homes by Mortgage Status
- H84. Value for All Owner-Occupied Housing Units
- H85. Median Value (Dollars) for All Owner-Occupied Housing Units**

Add ▼

Current table selections:



Select Tables

You are here: [Main](#) ▶ [Data Sets](#) ▶ [Data Sets with Detailed Tables](#) ▶ [Geography](#) ▶ [Tables](#) ▶ Results
Census 2000 Summary File 3 (SF 3) - Sample Data, Detailed Tables

Choose a table selection method

[by subject](#) [by keyword](#) [show all tables](#)

■ Select one or more tables and click 'Add'

H76. Median Value (Dollars) for Specified Owner-Occupied Housing Units
H77. Upper Value Quartile (Dollars) for Specified Owner-Occupied Housing Units
H78. Aggregate Value (Dollars) for Specified Owner-Occupied Housing Units by Age of Householder
H79. Aggregate Value (Dollars) for all Owner-Occupied Housing Units by Units in Structure
H80. Mortgage Status
H81. Aggregate Value (Dollars) for Specified Owner-Occupied Housing Units by Mortgage Status
H82. Median Value (Dollars) for Mobile Homes
H83. Aggregate Value (Dollars) for Mobile Homes by Mortgage Status
H84. Value for All Owner-Occupied Housing Units
H85. Median Value (Dollars) for All Owner-Occupied Housing Units

Add ▼

Current table selections:

H85. Median Value (Dollars) for All Owner-Occupied Housing Units

Remove

Show Result ▶



[H85. MEDIAN VALUE \(DOLLARS\) FOR ALL OWNER-OCCUPIED HOUSING UNITS \[1\] - Universe:](#)

[Owner-occupied housing units](#)

Data Set: [Census 2000 Summary File 3 \(SF 3\) - Sample Data](#)

NOTE: Data based on a sample except in P3, P4, H3, and H4. For information on confidentiality protection, sampling error, nonsampling error, def count corrections see <http://factfinder.census.gov/home/en/datanotes/expsf3.htm>.

	Block Group 5, Census Tract 7002.02, Montgomery County, Maryland	Block Group 1, Census Tract 7002.06, Montgomery County, Maryland
Median value	196,800	258,300

U.S. Census Bureau
Census 2000

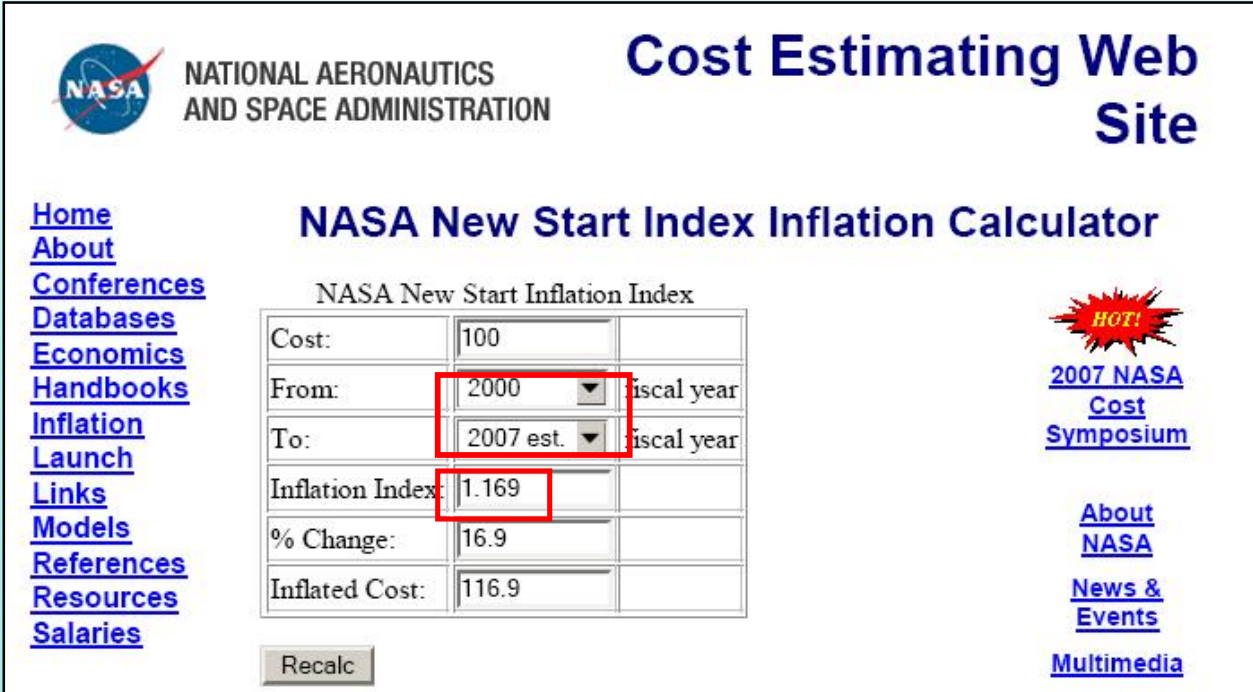
Standard Error/Variance documentation for this dataset:

[Accuracy of the Data: Census 2000 Summary File 3 \(SF 3\) - Sample Data \(PDF 141.5KB\)](#)

Need to adjust Census 2000 median home value data to current (2007) price level (2007\$)!!

- 1) Adjustment for inflation
- 2) Adjustment for change in real estate market values (preferable)

- 1) Inflation adjustment: 2000-2007 cumulative GDP inflator: 1.169
<http://cost.jsc.nasa.gov/inflation/nasa/inflateNASA.html>



The screenshot shows the NASA Cost Estimating Web Site's Inflation Calculator. The NASA logo and name are in the top left. The title "Cost Estimating Web Site" is in the top right. A navigation menu on the left includes links for Home, About, Conferences, Databases, Economics, Handbooks, Inflation, Launch, Links, Models, References, Resources, and Salaries. The main heading is "NASA New Start Index Inflation Calculator". Below it is a form titled "NASA New Start Inflation Index" with the following fields:

Cost:	100	
From:	2000	fiscal year
To:	2007 est.	fiscal year
Inflation Index:	1.169	
% Change:	16.9	
Inflated Cost:	116.9	

A "Recalc" button is located below the form. On the right side, there is a "HOT!" starburst graphic and a link to the "2007 NASA Cost Symposium". At the bottom right, there are links for "About NASA", "News & Events", and "Multimedia".

2) Market value adjustment (**preferred**):

- In suburban Montgomery County, median home sale prices of existing (as opposed to new) single-family homes increased by **100 percent** from 2000 to 2007

Research & Technology Center
Montgomery County Planning Department

Housing Market Update

Montgomery County, Maryland

Sharon Suarez, AICP
Housing Coordinator
September 25, 2007

http://www.mc-mncppc.org/research/documents/HousingBulletin091907_003.pdf

Median home values, owner-occupied single-family homes, 2007 (Census data)

Census location	2000 Census data, unadjusted, 2000\$...inflation adjusted, 2007\$..market value adjusted 2007\$
CT 7002.02, BG 5:	196,800	230,059	393,600
CT 7002.06, BG 1:	258,300	301,953	516,600

Number of homes in our study area that are located in

CT 7002.02, BG5: **60** (44% of total of 137 units)

CT 7002.06, BG1: **77** (56%)

Weighted median value of all units in study area:

- \$270,466 (inflation adjusted)

- **\$462,731 (market value adjusted)**

Property value premium estimator model

[OS property premium model_FINAL](#)

Instructions: Fill in all cells marked "ENTER >". (See accompanying user manual for detailed instructions and documentation.)

STEP 1: Select shape of area of analysis in which property value premiums are analyzed

ENTER > Enter "C" for circular and "R" for rectangular shape of area

STEP 2: Enter the radius (circular area) or length and width (rectangular area) of the area of analysis

ENTER > Radius of area in feet

OUTPUT: **503** Size of study area (acres)

STEP 3: Enter the size of the open space

ENTER > Size in acres of the open space whose property value impact is to be estimated

OUTPUT: **9.3** %OSChange. Percentage of the study area occupied by the open space of interest.
Example: A 20 percent increase in open space in the area of interest is indicated as "20".

STEP 4: Enter the appropriate values for the indicator variables

ENTER > FOR. Enter "1" if the open space is a forest. Otherwise, enter "0".

ENTER > PARK. Enter "1" if the open space is a park. Otherwise, enter "0".

ENTER > AG. Enter "1" if the open space is agricultural land. Otherwise, enter "0".

ENTER > PROT. Enter "1" if the open space is protected. Otherwise, enter "0". Protection is defined as the absence of the possibility of development (i.e., easement, public ownership).

ENTER > PRIV. Enter "1" if the open space is privately owned. Otherwise, enter "0".

P_{OS} = % increase in average residential property value from open space of interest

STEP 5: Enter the number of residential properties located in the area

ENTER > Number of properties located in study area. NOTE: Include only single-family homes.

ENTER > Average value of properties (\$)

OUTPUT: **\$3,070,997** Estimated total property premium in study area attributable to open space of interest

- The total open space premium captured by residential properties within 0.5 mile of the center of the forested open space is an estimated \$3.1 million.

Example 2

Placement of easement on forested open space shown in example 1.

Property value premium estimator model

Instructions: Fill in all cells marked "ENTER >". (See accompanying user manual for detailed instructions and documentation.)

[OS property premium model_FINAL](#)

STEP 1: Select shape of area of analysis in which property value premiums are analyzed

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STEP 3: Enter the size of the open space

ENTER > Size in acres of the open space whose property value impact is to be estimated

OUTPUT: **9.3** %OSChange. Percentage of the study area occupied by the open space of interest.
Example: A 20 percent increase in open space in the area of interest is indicated as "20".

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P_{OS} = % increase in average residential property value from open space of interest

STEP 5: Enter the number of residential properties located in the area

ENTER > Number of properties located in study area. NOTE: Include only single-family homes.

ENTER > Average value of properties (\$)

OUTPUT: **\$5,294,039** Estimated total property premium in study area attributable to open space of interest

- Total value of OS premiums increases to \$5.3 million (2000 Census home values adjusted for 2000-2007 market increase), compared to \$3.1 million for unprotected forested area (base case, Example 1).
- Placing the easement on the OS thus increases property values in the 0.5-mile radius by a total of \$2.2 million.

Example 3

Conversion of adjacent privately-owned agricultural open space to forest under easement

- 23.7 acres
- Currently in agricultural use (pasture)

Q: How are property values in the 1/2 mile radius (example 1) affected



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Google

ter 39°16'05.54" N 77°10'57.66" W elev 625 ft Streaming ||||| 100%

Eye alt 8

- 1) Estimate current open space premiums (without easement and conversion to forest)
- 2) Estimate premiums for forest under easement
- 3) Subtract 1) from 2) to obtain the increase in premiums attributable to easement and conversion

Property value premium estimator model

Instructions: Fill in all cells marked "ENTER >". (See accompanying user manual for detailed instructions and documentation.)

[Property premium model](#)

STEP 1: Select shape of area of analysis in which property value premiums are analyzed

ENTER > Enter "C" for circular and "R" for rectangular shape of area

STEP 2: Enter the radius (circular area) or length and width (rectangular area) of the area of analysis

ENTER > Radius of area in feet

OUTPUT: **503** Size of study area (acres)

STEP 3: Enter the size of the open space

ENTER > Size in acres of the open space whose property value impact is to be estimated

OUTPUT: **4.7** **%OSChange.** Percentage of the study area occupied by the open space of interest.
Example: A 20 percent increase in open space in the area of interest is indicated as "20".

STEP 4: Enter the appropriate values for the indicator variables

ENTER > FOR. Enter "1" if the open space is a forest. Otherwise, enter "0".

ENTER > PARK. Enter "1" if the open space is a park. Otherwise, enter "0".

ENTER > AG. Enter "1" if the open space is agricultural land. Otherwise, enter "0".

ENTER > PROT. Enter "1" if the open space is protected. Otherwise, enter "0". Protection is defined as the absence of the possibility of development (i.e., easement, public ownership).

ENTER > PRIV. Enter "1" if the open space is privately owned. Otherwise, enter "0".

P_{OS} = **% increase in average residential property value from open space of interest**

STEP 5: Enter the number of residential properties located in the area

ENTER > Number of properties located in study area. NOTE: Include only single-family homes.

ENTER > Average value of properties (\$)

OUTPUT: **-\$1,361,590** **Estimated total property premium in study area attributable to open space of interest**

Property value premium estimator model

Instructions: Fill in all cells marked "ENTER >". (See accompanying user manual for detailed instructions and documentation.)

[Property premium model](#)

STEP 1: Select shape of area of analysis in which property value premiums are analyzed

ENTER > Enter "C" for circular and "R" for rectangular shape of area

STEP 2: Enter the radius (circular area) or length and width (rectangular area) of the area of analysis

ENTER > Radius of area in feet

OUTPUT: **503** Size of study area (acres)

STEP 3: Enter the size of the open space

ENTER > Size in acres of the open space whose property value impact is to be estimated

OUTPUT: **4.7** %OSChange. Percentage of the study area occupied by the open space of interest.
Example: A 20 percent increase in open space in the area of interest is indicated as "20".

STEP 4: Enter the appropriate values for the indicator variables

ENTER > FOR. Enter "1" if the open space is a forest. Otherwise, enter "0".

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P_{OS} = % increase in average residential property value from open space of interest

STEP 5: Enter the number of residential properties located in the area

ENTER > Number of properties located in study area. NOTE: Include only single-family homes.

ENTER > Average value of properties (\$)

OUTPUT: **\$4,347,243** Estimated total property premium in study area attributable to open space of interest

Property value premiums generated by conversion:

- 1) Total current premiums: -1.36 million
- 2) Total premiums after conversion: \$4.35 million
- 3) Increase in total premiums:
 $\$4.35 \text{ million} - (-1.36 \text{ million}) = \5.71 million

**2) Recreation benefits associated
with wildlife habitat**

Example 1

Estimating visitation and benefits of establishing a New National Wildlife Refuge or Wildlife Management Area involving wetlands and waterfowl hunting.

- Objective: Estimate the gain in migratory bird hunting days and associated annual economic value from creating a new 500-acre USFWS National Wildlife Refuge or State Wildlife Management Area in the Intermountain West.

▶ Additional visitation/user days (bird hunting)	Refuge Migratory Bird Hunting Visitor Use Estimating Model	
		417
▶ Economic value of bird hunting days		×
▶ Tabular value..... Hunting Value Table	\$ 51.77	= \$ 21,588
▶ Function-based value..... Hunting Value Per Day META Function	\$ 38.19	= \$ 15,925

Example 2

Estimating the change in State-level visitor use and benefits of wildlife viewing with conversion of 10,000 acres of private forest land to urban uses in Virginia.

▶ Estimate change in visitor use	State Level Wildlife Viewing Visitor Use Estimating Model	- 1,350 days/yr
▶ Estimate the value of that change		×
▶ Tabular value	Wildlife Viewing Value Table	\$ 42.89/day
		<hr/>
		= -\$57,901/yr

Example 2 – extra credit

The loss of 10,000 acres of Private Forest Land is also expected to reduce hunting use in Virginia.

Repeat the preceding steps to estimate the loss in Hunter Days using the State-Level Total Hunting Visitor Use Estimating Models, and use the table of values to look up the economic value of hunting in the Southeast region to quantify the loss of hunting days.

► Estimate change in hunting use

+1,532 days/yr

[State Level Total Hunting Visitor Use Estimating Model](#)

Example 3

Using The Wetland Meta Analysis To Determine Which Wetland To Acquire By Comparing The Economic Value Of Ecosystem Services Provided By Wetlands

- Objective: Your agency has \$1 million to acquire one of two wetlands in your state (Oregon). The purpose of this analysis is to determine which of the two wetlands of equal size (200 acres) and cost has the higher economic value, based on the economic value of the different ecosystem services provided.

Wetland A - an inland wetland that provides the following ecosystem services according to your state biologist: Flood prevention, Water Quality, and Recreational Fishing.

Wetland B - a coastal wetland that provides the following ecosystem services according to your state biologist: Commercial fishing, bird watching, and wildlife habitat.

Wetland A (200 acres):

Location: Inland

Uses: Flood prevention, water quality,
recreational fishing

[Wetland Value per acre Meta
Function 1a rev 3-13-08.xls](#)

\$ 2,900/acre

× 200 acres = \$ 580,000

Wetland B (200 acres):

Location: Coastal

Uses: Commercial fishing, bird watching,
and wildlife habitat

[Wetland Value per acre Meta
Function 1a rev 3-13-08.xls](#)

\$ 5,074/acre

× 200 acres = \$ 1,014,807

Example 4

The New Mexico Department of Game and Fish (NM DGF) is considering taking out an easement on 7,000 acres of private land and managing the land like a wildlife management area. The land is located just east of Taos and contains stretches of a river that provides habitat for trout and several other game fish. The private landowner currently does not permit public access to his property, but the easement terms would allow access for anglers and other recreationists.

Estimate the value of the additional fishing, hunting and wildlife viewing that would be expected to take place if the easement were purchased.

- **NOTES:** use Census Bureau (American FactFinder) county or county subdivision data to estimate the population in the 60-mile radius needed for the Refuge/State wildlife management area visitation model. Use BEA personal income data for per-capita income estimates needed in visitation model.
- 60-mile radius includes: Taos county and portions of Santa Fe, Rio Arriba, Colfax, San Miguel and Mora counties (include all counties overlapping 60-mi radius).

	Taos	Santa Fe	Rio Arriba	Colfax	San Miguel	Mora
Pop (2000)	29,979	129,292	41,190	14,189	30,126	5,180
total			249,956			
Per cap. pers. inc. (2005)	\$25,817	\$37,934	\$23,203	\$24,584	\$22,074	\$17,557
avg.			\$25,195			

Fishing:

Taos Co. only: 339 angler days/yr

@ \$56.11/day (meta model) = \$19,021/yr

@ \$62.54/day (value tables) = \$21,201/yr

[Fishing Value Per Day META Function](#)

[Fishing Value Table](#)

All counties: 1,495 days/yr

@ \$56.11/day (meta model) = \$83,884/yr

@ \$62.54/day (value tables) = \$93,497/yr

Hunting:

Wildlife Viewing: