

—Readme—

**Surveillance Optimization Project for Chronic Wasting Disease dataset for Indiana, US,  
2017-2021**

**Open Data from the Indiana Department of Natural Resources**

Cornell Wildlife Health Lab  
Animal Health Diagnostic Center  
College of Veterinary Medicine  
Cornell University  
Ithaca, New York, USA

**Name of the Data:**

Surveillance Optimization Project for Chronic Wasting Disease dataset for Indiana, US, 2017-2021

**Source Facility of the Data:**

Indiana Department of Natural Resources  
402 West Washington Street  
Indianapolis, IN, USA 46204  
(317) 232-4200  
<https://www.in.gov/dnr>

**Co-Authors at Source Facility:**

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**Name of the Project at Cornell University:**

Surveillance Optimization Project for Chronic Wasting Disease (SOP4CWD), 2019-

**Location of the Project at Cornell University:**

Wildlife Health Lab  
Animal Health Diagnostic Center  
College of Veterinary Medicine  
240 Farrier Road  
Ithaca, New York, USA 14850  
(607) 253-3900  
<https://cwhl.vet.cornell.edu/>

**Species Described by the Data:**

White-tailed deer (*Odocoileus virginianus*)

**Dates Contained in the Data:**

2017-2021

**Overview of the Data:**

This dataset contains two files containing data from the Indiana Department of Natural Resources shared with the Cornell Wildlife Health Lab (CWHL) at Cornell University for the purpose of the Surveillance Optimization Project for Chronic Wasting Disease (SOP4CWD). Professionals at the source facility have provided written permission for professionals at the CWHL to post this open data to this persistent eCommons repository.

**INDNR\_WTD\_surveillance\_2021.csv**

This datafile constitutes records in standardized form depicting the results of chronic wasting disease (CWD) testing of white-tailed deer (*Odocoileus virginianus*) in Indiana, US for hunting seasons from 2017-18 to 2020-21, as completed by wildlife health diagnosticians at (or in partnership with) the Indiana Department of Natural Resources.

**INDNR\_processors\_2019.csv**

This datafile constitutes the total number wild cervid meat processors and taxidermists by county in Indiana, US for the year 2019, as recorded by the Indiana Department of Natural Resources.

**Acknowledgements:**

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**Technical Details of the Data:**

The data are on comma separated variable (CSV) spreadsheets from Microsoft Excel for Microsoft 365 MSO (16.0.13530.20368) 64-bit.

**License:**

This dataset is shared under a Creative Commons Attribution 4.0 International license (CC BY 4.0, <https://creativecommons.org/licenses/by/4.0/>); the data are openly available to share and adapt, but appropriate credit to the original data creators is required upon reuse. The data herein was transferred to Cornell from the source facility. All inquiries regarding records should be directed to the source facility.

**Suggested Citation for the Re-Use of this Data:**

Indiana Department of Natural Resources Division of Fish and Wildlife [INDNR]. 2023. Surveillance Optimization Project for Chronic Wasting Disease dataset for Indiana, US, 2017-2021. Indianapolis, Indiana, US [Dataset]. Cornell University Library eCommons Repository. <https://doi.org/10.7298/phvc-mc04>

**Abbreviations Used in the Data:****INDNR\_WTD\_surveillance\_2021.csv:**

Variable Name	Description	Format	Values
State_id	Unique identifier for each sample.	Text	(Varies) No data: unknown or unrecorded
Species	Cervid species.	Text	white-tailed deer
Species_numeric	Cervid species.	Categorical	1: white-tailed deer
Age_group	Age of deer when harvested.	Text	No Age: unknown or unrecorded Fawn: age < 1.5 year Yearling: age ≥1.5 through < 2.5 years Adult: age ≥ 2.5 years
Age_group_numeric	Age of deer when harvested.	Categorical	0: No Age 1: Fawn 2: Yearling 3: Adult
Sex	Sex of deer.	Text	Female Male Unknown
Sex_numeric	Sex of deer.	Categorical	0: Female 1: Male 2: Unknown
Date_harvested	Date deer was harvested.	Date	MM/DD/YYYY No data: unknown or unrecorded
Date_sampled	Date sample was collected.	Date	MM/DD/YYYY No data: unknown or unrecorded
Sample_tissue	Tissue type sampled and tested.	Text	No data: Unknown or unrecorded

<b>Variable Name</b>	<b>Description</b>	<b>Format</b>	<b>Values</b>
<b>Sample_tissue_numeric</b>	Tissue type sampled and tested.	Categorical	No data: Unknown or unrecorded
<b>Sample_source</b>	Source of deer for sampling.	Text	Unknown Hunter harvest Clinical Suspect Road kill Targeted Removal
<b>Sample_source_numeric</b>	Source of deer for sampling.	Categorical	0: Unknown 1: Hunter harvest 2: Clinical Suspect, Road kill, or Targeted Removal
<b>Sample_source_Sample_opt_model</b>	Source of deer for sampling.	Text	Hunter: Hunter harvest Other: Clinical Suspect, Road kill, Targeted Removal, or Unknown
<b>Sample_source_Sample_opt_model_numeric</b>	Source of deer for sampling.	Categorical	1: Hunter 2: Other
<b>Sample_collection_program</b>	Program under which sample was collected.	Text	No data: unknown or unrecorded
<b>Sample_collection_method</b>	Method of sample collection.	Text	No data: unknown or unrecorded
<b>Season_year</b>	Hunting season in which deer harvest occurred, defined as July 1, YYYY through June 30 of following year YY.	Text	YYYY-YY
<b>Season_type</b>	Hunting season type in which deer was harvested.	Text	No data: unknown or unrecorded
<b>County</b>	County in which deer was harvested.	Text	County name No data: unknown or unrecorded
<b>County FIPS</b>	Federal Information Processing Standards Code for the county in which deer was harvested.	Text	XXXXX No data: unknown or unrecorded
<b>State</b>	US Postal System two-letter abbreviation for state in which deer was harvested.	Text	IN: Indiana, USA

<b>Variable Name</b>	<b>Description</b>	<b>Format</b>	<b>Values</b>
<b>Country</b>	Country in which deer was harvested.	Text	US: USA
<b>Agency_management_unit</b>	Agency-defined location in which deer was harvested.	Text	Deer management unit X No data: unknown or unrecorded
<b>Disease_management_area</b>	Agency-defined location in which deer was harvested.	Text	No data: unknown or unrecorded
<b>Grid_cell</b>	Agency-defined location in which deer was harvested.	Text	XXXX No data: unknown or unrecorded
<b>Latitude</b>	Latitude in decimal degrees at which deer was harvested.	Numeric	No data: unknown or unrecorded
<b>Longitude</b>	Longitude in decimal degrees at which deer was harvested.	Numeric	No data: unknown or unrecorded
<b>Geolocation_source</b>	Method of geolocation determination.	Text	No data: unknown or unrecorded
<b>Geolocation_precision</b>	Precision of geolocation determination.	Text	No data: unknown or unrecorded
<b>Sample_status</b>	Current status of CWD testing of sample.	Text	No data: unknown or unrecorded
<b>Test_type</b>	Type of CWD test performed on sample.	Text	IHC: immunohistochemistry test
<b>Test_result</b>	Laboratory-determined CWD test result of sample.	Text	Not Detected: CWD prion not detected
<b>Test_result_numeric</b>	Laboratory-determined CWD test result of sample.	Categorical	0: Not Detected
<b>Surveillance_type</b>	Type of surveillance.	Text	No data: unknown or unrecorded
<b>PLSS_township</b>	Public land survey system township in which deer was harvested.	Text	No data: unknown or unrecorded
<b>PLSS_section</b>	Public land survey system section in which deer was harvested.	Text	No data: unknown or unrecorded
<b>PLSS_range</b>	Public land survey system range in which deer was harvested.	Text	No data: unknown or unrecorded
<b>PLSS_direction</b>	Public land survey system direction in which deer was harvested.	Text	No data: unknown or unrecorded

<b>Variable Name</b>	<b>Description</b>	<b>Format</b>	<b>Values</b>
<b>PLSS_quarter</b>	Public land survey system quarter in which deer was harvested.	Text	No data: unknown or unrecorded
<b>PLSS_forty</b>	Public land survey system forty in which deer was harvested.	Text	No data: unknown or unrecorded
<b>PLSS_DTRS</b>	Public land survey system direction-township-range-section in which deer was harvested.	Text	No data: unknown or unrecorded
<b>UTM_X</b>	Universal Transverse Mercator X coordinate at which deer was harvested.	Numeric	No data: unknown or unrecorded
<b>UTM_Y</b>	Universal Transverse Mercator Y coordinate at which deer was harvested.	Numeric	No data: unknown or unrecorded

**INDNR\_processors 2019.csv:**

<b>Variable Name</b>	<b>Description</b>	<b>Format</b>	<b>Values</b>
<b>State</b>	US Postal System two-letter abbreviation for state in which taxidermists and meat processors are located.	Text	IN: Indiana, USA
<b>County</b>	County in which taxidermists and meat processors are located.	Text	County name
<b>County FIPS</b>	Federal Information Processing Standards Code for the county in which taxidermists and meat processors are located.	Text	XXXXX
<b>Taxidermists</b>	Count of taxidermists in county.	Numeric	Integer
<b>Processors</b>	Count of cervid meat processors in county.	Numeric	Integer

**Metadata:**

**INDNR\_WTD\_surveillance\_2021.csv** is a combination of three datasets from the Indiana Department of Natural Resources.

2018-2019:

This dataset was collected as part of Indiana's disease surveillance efforts between February 1, 2018 and January 31, 2019. Most samples were collected during the 2018-2019 deer hunting season from (September 15, 2018 - January 31, 2019) in targeted surveillance counties in northwest and northeast Indiana.

Sample submission for CWD testing was voluntary. Most samples were collected from hunter harvested deer at sampling stations in targeted surveillance counties during the hunting season, particularly opening weekend of firearms season (November 17-18, 2018). Tissues were removed by biologists and trained volunteers. Other samples were collected from hunter harvested deer by biologists at division properties statewide. Indiana DNR biologists also sampled roadkill deer to meet their individual quotas for sample collection. A few deer were found dead and opportunistically sampled by biologists. Some deer exhibiting clinical signs of CWD (e.g., stumbling, lack of fear of humans, walking in circles, abnormal behavior, etc.) were reported by the public and euthanized by law enforcement or biologists to collect a sample.

2019-2020:

This dataset was collected as part of Indiana's disease surveillance efforts between February 1, 2019 and January 31, 2020. Most samples were collected during the 2019-2020 deer hunting season from (September 15, 2019 - January 31, 2020) in targeted surveillance counties in northwest and northeast Indiana.

Sample submission for CWD testing was voluntary. Most samples were collected from hunter harvested deer at sampling stations in targeted surveillance counties during the hunting season, particularly opening weekend of firearms season (November 16-17, 2019). Tissues were removed by biologists and trained volunteers. Other samples were collected from hunter harvested and road killed deer by biologists at division properties statewide. Biologists also collected samples opportunistically from deer being sampled for EHD. Some deer exhibiting clinical signs of CWD (i.e., targeted deer: stumbling, lack of fear of humans, walking in circles, abnormal behavior, etc.) were reported by the public and euthanized by law enforcement or biologists to collect a sample.

2020-2021:

This dataset was collected as part of Indiana's disease surveillance efforts between February 1, 2020 and January 31, 2021. Most samples were collected during the 2020-2021 deer hunting season from (September 15, 2020 - January 31, 2021) in targeted surveillance counties in northwest and northeast Indiana.

Sample submission for CWD testing was voluntary. Most samples were collected from hunter harvested deer at sampling stations in targeted surveillance counties during the hunting season, particularly opening weekend of firearms season (November 14-15, 2020). Tissues were removed by biologists and trained volunteers. Other samples were collected from hunter harvested and road killed deer by biologists at division properties statewide. Biologists also collected samples opportunistically from deer being sampled for EHD. Some deer exhibiting clinical signs of CWD (i.e., targeted deer: stumbling, lack of fear of humans, walking in circles, abnormal behavior, etc.) were reported by the public and euthanized by law enforcement or biologists to collect a sample.

**Spatial Data:**

Indiana DNR uses three levels of spatial resolution: region, county, 16 sq. mi area. Regions are called deer management units (DMU) and are used for the analysis of datasets that don't have enough county level data. DMUs are nine groupings of similar counties (i.e., habitat, human population, deer harvest, etc.) based on statistical modelling. A tenth region is of urban areas defined by Indiana's Deer Reduction Zones.

<b>DMU Number</b>	<b>DMU Name</b>	<b>Counties Included</b>
<b>1</b>	Northwest	Cass, Elkhart, Fulton, Kosciusko, Lake, LaPorte, Marshall, Miami, Porter, Pulaski, Saint Joseph, Starke, Wabash
<b>2</b>	Northeast	Dekalb, LaGrange, Noble, Steuben
<b>3</b>	West Central	Benton, Carroll, Fountain, Jasper, Montgomery, Newton, Tippecanoe, Warren, White
<b>4</b>	East Central	Adams, Allen, Bartholomew, Blackford, Boone, Clinton, Decatur, Delaware, Fayette, Grant, Hamilton, Hancock, Hendricks, Henry, Howard, Huntington, Jay, Johnson, Madison, Marion, Randolph, Rush, Shelby, Tipton, Union, Wayne, Wells, Whitely
<b>5</b>	Wabash Valley	Clay, Parke, Putnam, Sullivan, Vermillion, Vigo
<b>6</b>	South	Brown, Clark, Crawford, Floyd, Greene, Harrison, Jackson, Jefferson, Lawrence, Martin, Monroe, Morgan, Orange, Owen, Perry, Washington
<b>7</b>	Muscatatuck Plateau	Franklin, Jennings, Ripley, Scott
<b>8</b>	Dearborn Upland	Dearborn, Ohio, Switzerland
<b>9</b>	Southwest	Daviess, Dubois, Gibson, Knox, Pike, Posey, Spencer, Vanderburgh, Warrick
<b>10</b>	Urban	Portions of: Allen, Boone, Brown, Clark, Delaware, Elkhart, Floyd, Hamilton, Hendricks, Johnson, Kosciusko, Lake, LaPorte, Marion, Morgan, Porter, Saint Joseph, Tippecanoe, Vanderburgh, Warrick

The 16 sq. mi. areas are part of a 4 mi. X 4 mi. grid that overlays Indiana. The grid was developed through the ArcGIS fishnet tool. Grid numbers range from 1 to 3148, and the grids do not necessarily align with county boundaries. The grid map is available online for reference at [on.in.gov/deergrid](http://on.in.gov/deergrid). For hunter harvested deer, hunters indicated which grid the deer was harvested in when they submitted a sample. For road killed and targeted deer, biologists indicated the grid location of where the deer was found or located.

Trained biologists aged deer based on tooth wear and replacement protocols.

Collection Method:



The collection method was recorded for each deer sampled for CWD. This is the source of the sample. Each method is given a different significance weight for calculating prevalence estimates.

<b>Method</b>	<b>Definition</b>
<b>Hunter Harvested</b>	Deer harvested by a hunter and brought to a sampling station for CWD testing.
<b>Road Killed</b>	Deer hit by a car and opportunistically sampled by DNR biologists.
<b>Found Dead</b>	Deer found dead (not road killed) and opportunistically sampled by DNR biologists.
<b>Targeted Sample</b>	Sick deer exhibiting clinical signs consistent with CWD (i.e., walking in circles, lack of fear of humans, excessive salivating, etc.). Deer may have been euthanized by DNR law enforcement or biologists, then sampled by biologists.

Any other notes that might make a difference to statisticians:

Although all samples were tested using the same method (IHC), not all samples were tested at the same diagnostic lab.

Prior to 2019, Indiana DNR Division of Fish & Wildlife biologists were required to collect a certain amount of CWD samples each year, and many biologists collected mostly road killed samples to meet that quota. In 2019, Indiana DNR DFW made a shift to focus efforts on higher valued samples such as hunter harvested and community reported deer. Biologists were no longer required to meet an individual sample quota.

In 2020, CWD drop-off stations were located at most fish & wildlife areas, state fish hatcheries, and national wildlife refuges, providing hunters with more convenient locations statewide to submit a deer for testing than in 2019.

**INDNR\_processors\_2019.csv** includes all the Indiana commercial taxidermists and deer meat processors that were registered with the state in 2019. The data were gathered from annual agency information and constitute a summary of information of these types of facilities.