



2nd EAAP Conference on *Artificial Intelligence* *4 Animal Science*

Preparing Video Data for Behavioral Annotation, Visualization, and Machine Learning in Livestock Systems

Abstract 1229812874

June 28th – 30th 2026

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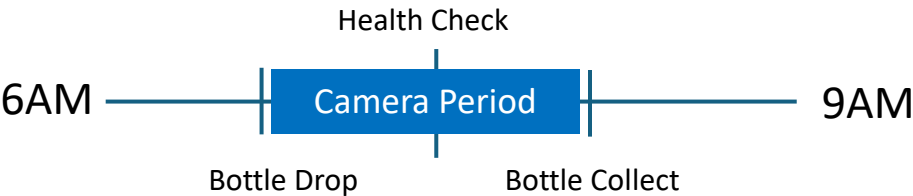
J.M. Peralta DVM, PhD, Western University College of Veterinary Medicine, CA USA

Data



Kodak Play Sport and Sony HDR-AS100V video cameras

Recordings: early mornings, ~1.5 hrs. Recording



Days from birth for each calf:

- Day 4
- Day 9
- Day 14



NOAA Weather for Period



Group Housed (3)



Farm	MP4 Video Files	Total Size
CO	28 MP4 files	89 GB



Single House (1)



Farm	MP4 Video Files	Total Size
CA	48 MP4 files	368 GB

Received
Files

File Name
MAH00021.mp4
MAH00022 (Start),mp4
MAH00023.mp4
MAH00024.mp4
MAH00025.mp4
CD_26840_d9.mp4
26840.mp4
MAH00028.mp4
MAH00029.mp4
MAH00030.mp4
MAH00031.mp4
CD_26847_d4_coloredit.mp4
MAH00017.mp4
MAH00018,mp4
CD_26847_D9.mp4
26847.mp4
CD 26852.mp4



Calf ID
26840
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New File Lable
20240629-102600.MP4
20240629-102700.MP4
20240629-110300.MP4
20240629-113800.MP4
20240629-121400.MP4
20240704-134500.MP4
20240709-103900.MP4
20240630-113000.MP4
20240630-120500.MP4
20240630-124000.MP4
20240630-141300.MP4
20240705-052700.MP4
20240630-104600.MP4
20240629-112100.MP4

Edited
Files

Farm	File Name	Date	Length Mins	Notes	Size GB	Dimensions	Calf ID	View	Day	Time (start on video F	New File Lable
Gauss	MAH00021.mp4	6/29/2024	0.02		0.004	1,920 x 1,080	26840	Side	4		20240629-102600.MP4
Gauss	MAH00022 (Start).mp4	6/29/2024	35.23		3.98	1,920 x 1,080	26840	Side	4		20240629-102700.MP4
Gauss	MAH00023.mp4	6/29/2024	35.23		3.98	1,920 x 1,080	26840	Side	4		20240629-110300.MP4
Gauss	MAH00024.mp4	6/29/2024	35.23		3.98	1,920 x 1,080	26840	Side	4		20240629-113800.MP4
Gauss	MAH00025.mp4	6/29/2024	7.04		0.82	1,920 x 1,080	26840	Side	4		20240629-121400.MP4
Gauss	CD 26840_d9.mp4	7/4/2024	81.36		11.01	1,920 x 1,080	26840	Back	9		20240704-134500.MP4
Gauss	26840.mp4	7/10/2024	111.25		7.69	1,920 x 1,080	26840	Front	14		20240709-103900.MP4
Gauss	MAH00028.mp4	6/30/2024	35.23		3.98	1,920 x 1,080	26847	Back	4		20240630-113000.MP4
Gauss	MAH00029.mp4	6/30/2024	35.23		3.98	1,920 x 1,080	26847	Back	4		20240630-120500.MP4
Gauss	MAH00030.mp4	6/30/2024	28.14		3.18	1,920 x 1,080	26847	Back	4		20240630-124000.MP4
Gauss	MAH00031.mp4	6/30/2024	0.08		0.01	1,920 x 1,080	26847	Back	4		20240630-141300.MP4
Gauss	CD 26847_d4_coloredit.mp4	6/30/2024	55.56		7.55	1,920 x 1,080	26847	Front	4		20240705-052700.MP4
Gauss	MAH00017.mp4	6/30/2024	35.23		3.98	1,920 x 1,080	26847	Front	4		20240630-104600.MP4
Gauss	MAH00018.mp4	6/30/2024	20.33		2.31	1,920 x 1,080	26847	Front	4		20240630-112100.MP4
Gauss	CD 26847_D9.mp4	7/5/2024	93.44		12.65	1,920 x 1,080	26847	Back	9		20240705-082900.MP4
Gauss	26847.mp4	7/10/2024	91.56		6.37	1,080 x 1,920	26847	Front	14		20240710-141100.MP4
Gauss	CD 26852.mp4	7/2/2024	99.1		13.38	1,920 x 1,080	26852	Back	4		20240702-063000.MP4
Gauss	CD 26852_d9.mp4	7/7/2024	97.3		13.16	1,080 x 1,920	26852	Back	9		20240707-063000.MP4
Gauss	26852.mp4	7/13/2024	103.16		7.14	1,920 x 1,080	26852	Front	14		20240712-070400.MP4
Gauss	MAH00016.mp4	6/28/2024	35.23		3.98	1,920 x 1,080	35007	Side	4		20240628-101200.MP4
Gauss	MAH00017.mp4	6/28/2024	35.23		3.98	1,920 x 1,080	35007	Side	4		20240628-104800.MP4
Gauss	MAH00018.mp4	6/28/2024	35.23		3.98	1,920 x 1,080	35007	Side	4		20240628-112300.MP4
Gauss	MAH00019.MP4	6/28/2024	3.55		0.45	1,920 x 1,080	35007	Side	4		20240628-115800.MP4
Gauss	CD 35007_d9.mp4	7/4/2024	113.22		15.30	1,920 x 1,080	35007	Back	9		20240703-065700.MP4
Gauss	video1233848561 (online_vide	7/4/2024	3.45	Obstructi	0.04	1,920 x 1,080	35007	Back	9		
Gauss	video1659233257 (online_vide	7/4/2024	15	Duplicate	0.15	1,920 x 1,080	35007	Back	9		
Gauss	video1839620718 (online_vide	7/4/2024	7.3	Duplicate	0.08	1,920 x 1,080	35007	Back	9		
Gauss	video1985473201 (online_vide	7/4/2024	1.52	Duplicate	0.02	1,920 x 1,080	35007	Back	9		
Gauss	CD 35007_d14.mp4	7/8/2024	100.18		13.54	1,920 x 1,080	35007	Front	14		20240708-063300.MP4
Gauss	101_1627.mp4	6/29/2024	40.38		3.66	1,920 x 1,080	35010	Side	4		20240629-073400.MP4
Gauss	101_1628.mp4	6/29/2024	0.02		0.00	1,920 x 1,080	35010	Side	4		
Gauss	10111627.mp4	6/29/2024	40.49		3.66	1,920 x 1,080	35010	Side	4		20240629-081400.MP4
Gauss	10121627.mp4	6/29/2024	13.38		1.21	1,920 x 1,080	35010	Side	4		20240629-091000.MP4
Gauss	CD 35010.mp4	7/4/2024	97.55		12.99	1,920 x 1,080	35010	Back	9		20240704-064300.MP4
Gauss	35010.mp4	7/9/2024	103.09		7.13	1,080 x 1,920	35010	Front	14		20240709-072700.MP4
Gauss	101_1629.mp4	6/30/2024	6.5		0.55	1,920 x 1,080	35015	Back	4		20240630-075200.MP4
Gauss	101_1630.mp4	6/30/2024	48.54		3.66	1,920 x 1,080	35015	Front	4		20240630-080100.MP4
Gauss	10111630.mp4	6/30/2024	46.39		3.63	1,080 x 1,920	35015	Front	4		20240630-091000.MP4
Gauss	CD 35015_d9_coloredit.mp4	7/5/2024	76.26	Duplicate	10.32	1,080 x 1,920	35015	Back	9		20240705-065100.MP4
Gauss	CD 35015_d9_noedit.mp4	7/5/2024	76.26	Duplicate	10.32	1,080 x 1,920	35015	Back	9		
Gauss	CD 35015_d14.mp4	7/10/2024	96.58		13.80	1,920 x 1,080	35015	Front	14		20240710-070400.MP4
Gauss	MAH00021.mp4	7/1/2024	9.14		1.04	1,920 x 1,080	35019	Back	4		20240701-094200.MP4
Gauss	CD 35019_d9.mp4	7/6/2024	102.3		13.88	1,920 x 1,080	35019	Back	9		20240706-063100.MP4
Gauss	CD 35019_d14.mp4	7/11/2024	119.18		10.70	1,920 x 1,080	35019	Back	14		20240711-071200.MP4
Gauss	101_1631.mp4	7/1/2024	46.31	Duplicate	3.66	1,920 x 1,080	35021	Back	4		
Gauss	CD 35021.mp4	7/2/2024	101.19		13.67	1,080 x 1,920	35021	Back	4		20240701-063800.MP4
Gauss	CD 35021_d9.mp4	7/6/2024	92.16		12.52	1,080 x 1,920	35021	Back	9		20240706-064000.MP4
Gauss	35021.mp4	7/11/2024	97.05		6.72	1,920 x 1,080	35021	Front	14		20240711-070600.MP4
Gauss	CD 35023.mp4	7/2/2024	113.44		15.35	1,920 x 1,080	35023	Back	4		20240702-065200.MP4
Gauss	CD 35023_d9.mp4	7/7/2024	90.32		12.22	1,920 x 1,080	35023	Back	9		20240707-065800.MP4
Gauss	CD 35023_d14.mp4	7/12/2024	109.16		14.75	1,920 x 1,080	35023	Front	14		20240712-070400.MP4
Gauss	CD 35028.mp4	7/3/2024	97.2		13.13	1,920 x 1,080	35028	Back	4		20240703-064600.MP4
Gauss	CD 35028_d9.mp4	7/8/2024	96.16		12.99	1,920 x 1,080	35028	Front	9		20240708-064500.MP4
Gauss	CD 35028_d14.mp4	7/13/2024	91.58		12.41	1,920 x 1,080	35028	Front	14		20240713-065300.MP4
Gauss	CD 35039_35040_d10.mp4	7/14/2024	119.52		14.83	1,920 x 1,080	35039 + 35040	Front	10		20240711-064600.MP4
Gauss	CD 35039_35040_d14.mp4	7/15/2024	91.22		12.83	1,920 x 1,080	35039 + 35040	Front	14		20240715-063100.MP4

File Structure

FarmID_AnimalID/

└─ Animal ID

└─ Video Files (yyyymmdd-hhmmss.mp4)

CameraID_AnimalID/

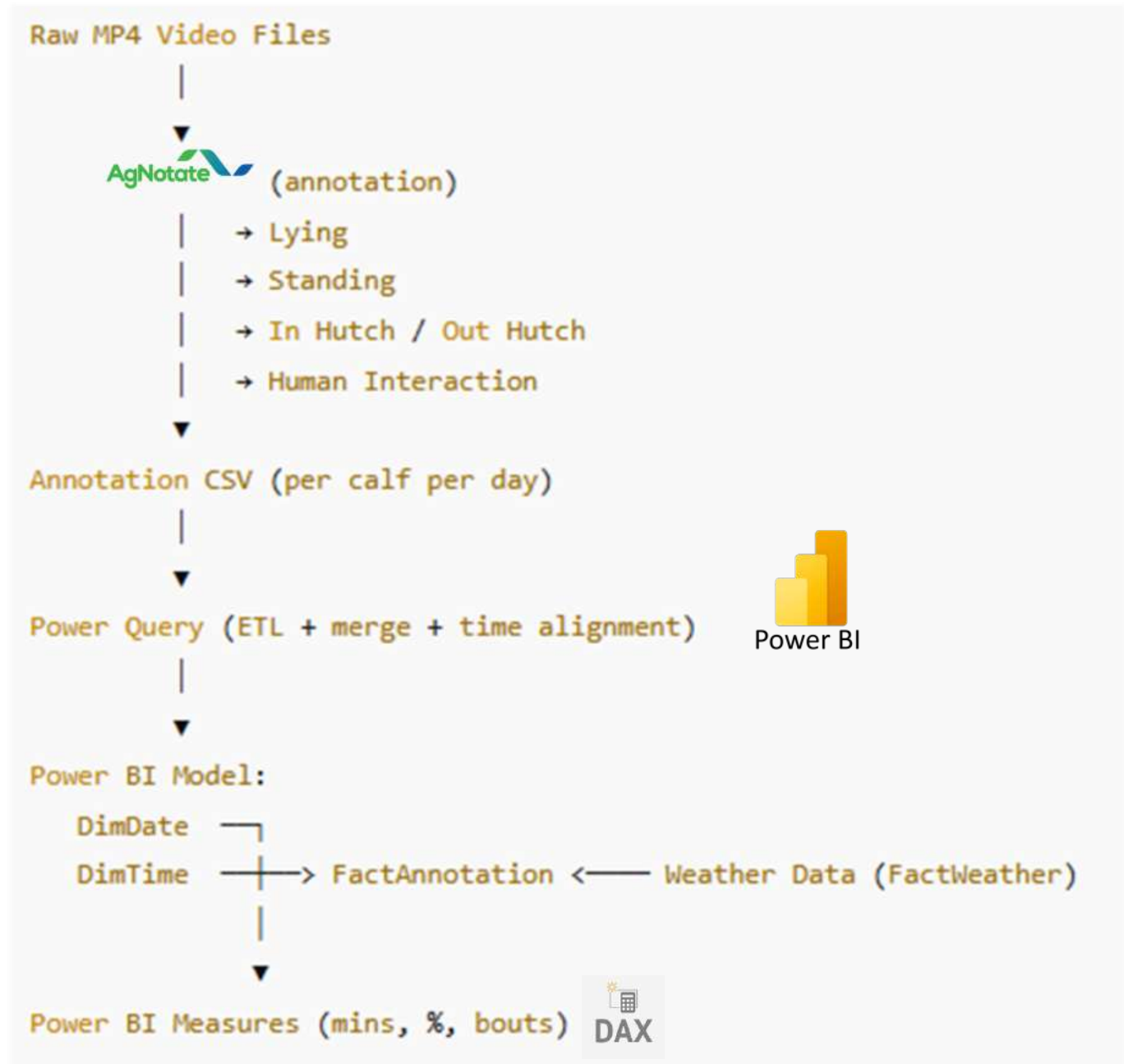
└─ Date/

└─ Video Files (yyyymmdd-hhmmss.mp4)

Workflow

Data Tools

- AgNotate™
- Power BI
 - DAX
 - Power Query



Cam 1



Skip Value [Minutes]

60

Back

Forward

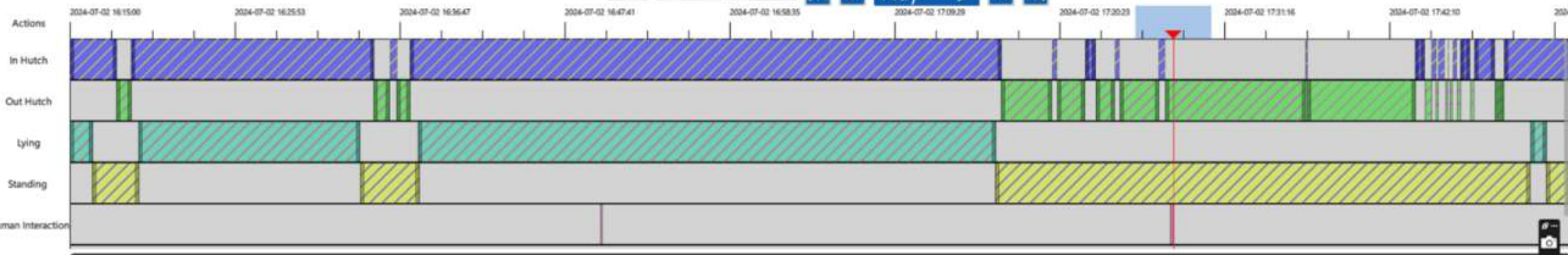
⏮

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Play

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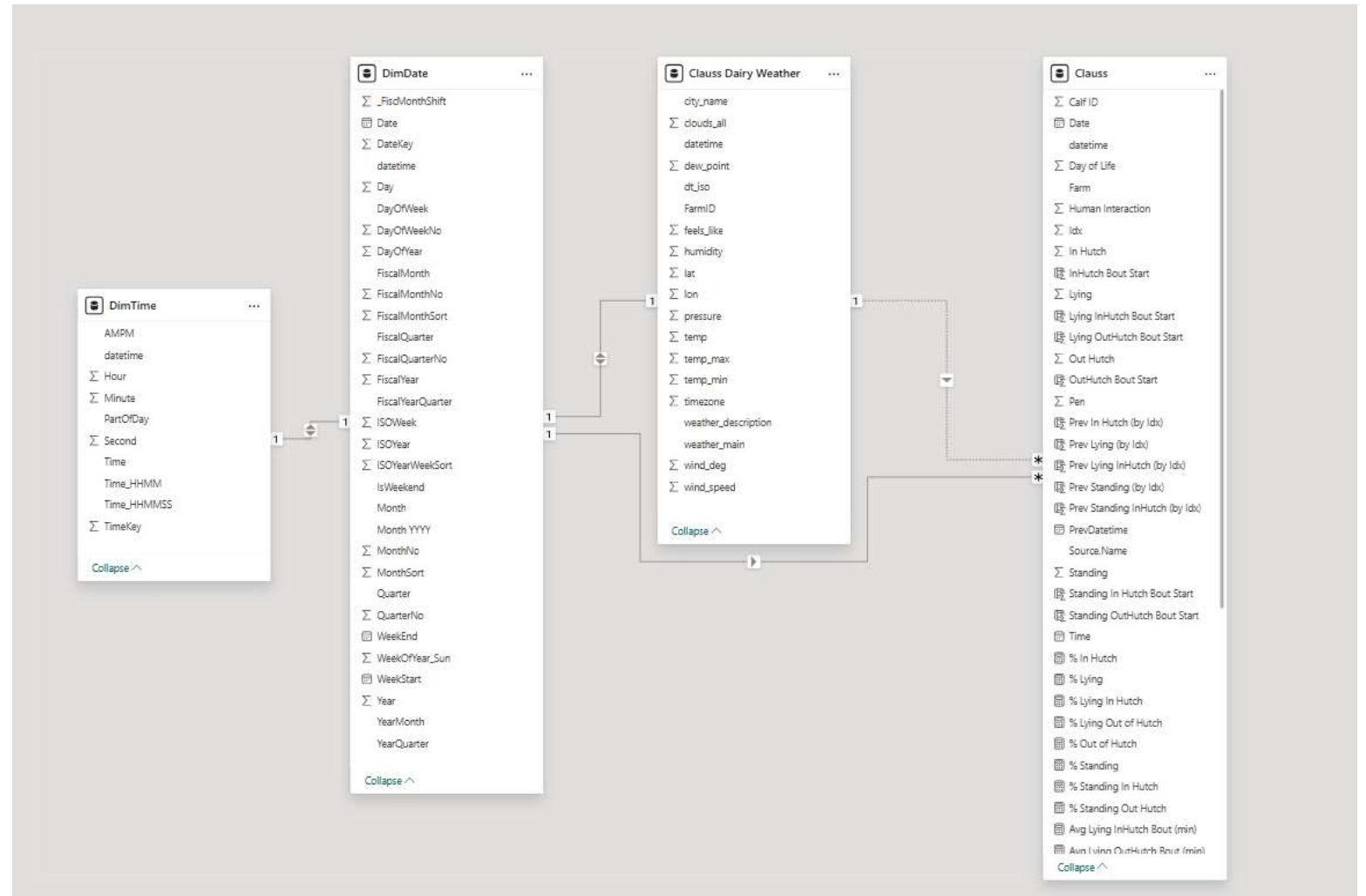
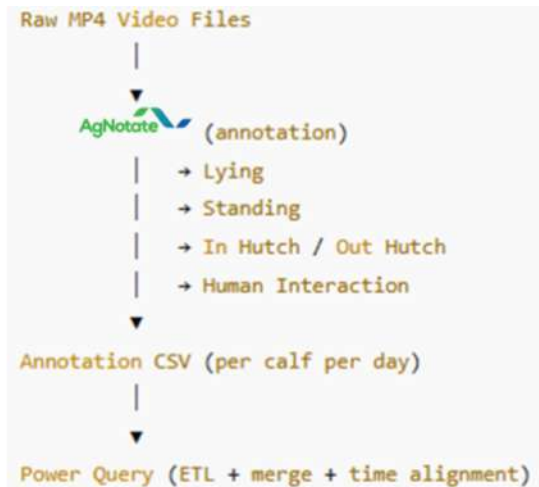


Scroll to pan, Ctrl + Scroll to zoom, Click to change current time

Zoom:



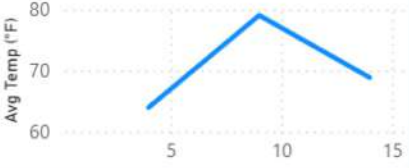
Model view of data in power BI





Summary Page

Avg Temp (°F) by Day of Life



Day of Life	Avg Temp (°F)
5	65
10	80
15	70

Avg Temp (°F)

71

Bouts In Hutch

7

Bouts Out of Hutch

7

% In Hutch

85%

% Out of Hutch

15%

% Lying

83%

% Standing

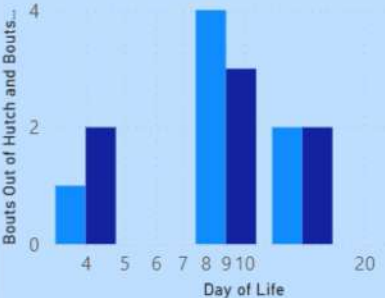
17%

Select Calf ID

Select (Deselect) Calf ID number to visualize data in tables.

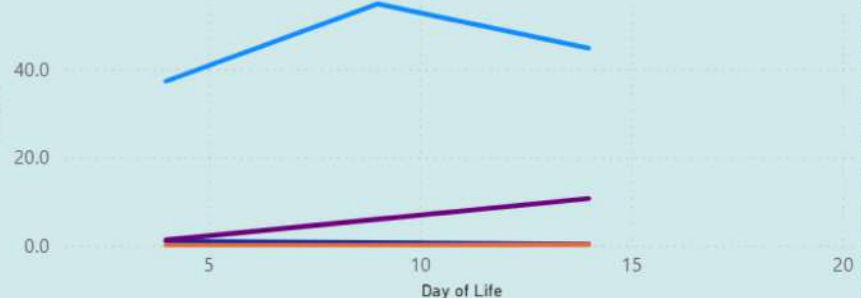
26840	26847	26852	35007	35010	35015
35019	35021	35023	35028	35039	35040

Bouts Out of Hutch and Bouts In Hutch by Day of Life



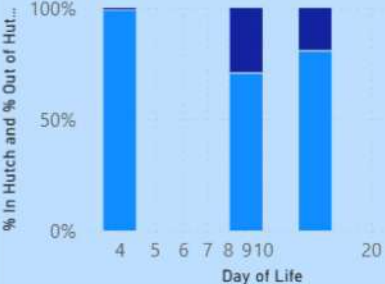
Day of Life	Bouts Out of Hutch	Bouts In Hutch
4	1	2
8	4	3
10	2	2

Summary of Averages for Activity Bouts over Day of Life (Mins)



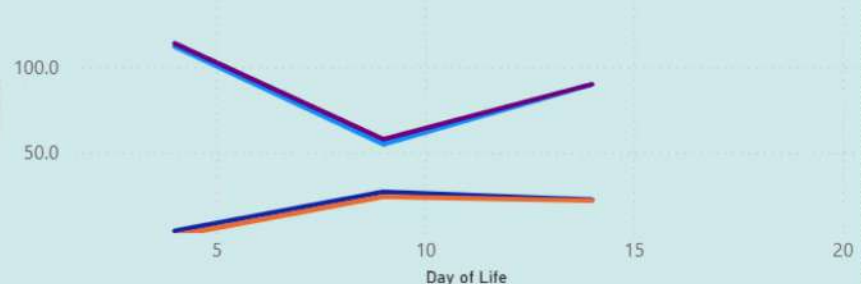
Day of Life	Avg Lying InHutch Bout (Mins)	Avg Standing InHutch (Mins)	Avg Lying OutHutch (Mins)	Avg Standing OutHutch (Mins)
5	38	0	0	0
10	55	0	0	5
15	45	0	0	10

% In Hutch and % Out of Hutch by Day of Life



Day of Life	% In Hutch	% Out of Hutch
4	100%	0%
8	75%	25%
10	85%	15%

Summary of Activity over Day of Live (Mins)



Day of Life	Lying (Mins)	Standing (Mins)	Out of Hutch (Mins)	In Hutch (Mins)
5	115	10	0	0
10	60	20	0	0
15	90	20	0	0

FileHomeInsertModelingViewOptimizeHelpFormatData / Drill

CutCopyPasteFormat painter

Clipboard

Get data

Excel workbook catalog

OneLake Server

SQL Enter data

Data

Data

Recent sources

Transform data

Refresh data

Queries

VIEW visual

REAL box

WRITE visuals

Insert

ANALYTICS calculation

NEW measure

measure measure

Calculations

Sensitivity

Sensitivity

Publish

Share

Prep data for Copilot AI

Copilot

All Animals (Calf ID) by Day of Life



Select (Deselect) Day of Life number to visualize data in tables.

☒ 4

☐ 9

☐ 10

☐ 14

Calf ID	Total Pen Time (Mins)	Standing (Mins)	Lying (Mins)	In Hutch (Mins)	Out of Hutch (Mins)	Human Interaction (Mins)	Total Lie + Stand (Mins)	Time difference	% Lying	% Standing	% In Hutch	% Out of Hutch	Avg Temp (°F)	Count of datetime
26847	162.6	26.7	136.8	156.3	6.3	0.3	163.5	-0.5%	83.7%	16.3%	96.1%	3.9%	67.7	96976
35015	125.3	56.9	68.1	79.6	45.6	0.4	124.9	0.3%	54.5%	45.5%	63.6%	36.4%	70.0	74793
26840	115.2	4.3	111.9	113.8	1.5	0.3	116.2	-0.8%	96.3%	3.7%	98.7%	1.3%	63.9	69045
35023	114.8	25.9	88.1	96.4	18.4	0.1	114.0	0.7%	77.3%	22.7%	84.0%	16.0%	73.9	68238
35010	111.0	13.7	97.0	69.1	41.9	0.1	110.7	0.3%	87.6%	12.4%	62.2%	37.8%	67.3	65783
35007	110.7	4.6	106.0	109.9	0.7	2.4	110.6	0.1%	95.8%	4.2%	99.3%	0.7%	59.6	65953
35021	102.1	25.1	76.4	85.8	16.3	4.1	101.5	0.6%	75.3%	24.7%	84.0%	16.0%	73.5	60790
26852	100.0	44.0	55.5	69.2	30.8	0.4	99.5	0.6%	55.8%	44.2%	69.2%	30.8%	87.0	59501
35028	98.2	30.5	67.5	79.8	18.4	0.5	98.0	0.2%	68.9%	31.1%	81.3%	18.7%	76.5	58403
35019	9.3	4.5	4.8	6.2	3.1	0.0	9.3	0.5%	51.5%	48.5%	66.8%	33.2%		5541

Calf ID	Standing In Hutch (Mins)	Standing Out of Hutch (Mins)	Lying In Hutch (Mins)	Lying Out of Hutch (Mins)	% Standing In Hutch	% Standing Out of Hutch	% Lying In Hutch	% Lying Out of Hutch	Bouts In Hutch	Bouts Out of Hutch	Bouts Lying In Hutch	Bouts Lying Out of Hutch	Bouts Standing In Hutch	Bouts Standing Out of Hutch
26840	3.0	1.3	111.9	0.0	69.5%	30.5%	100.0%	0.0%	2	1	3	1	3	1
26847	21.4	5.3	136.8	0.0	80.1%	19.9%	100.0%	0.0%	3	2	5	0	6	2
26852	14.0	30.0	55.5	0.0	31.8%	68.2%	100.0%	0.0%	17	16	4	0	20	16
35007	4.6	0.0	106.0	0.0	100.0%	0.0%	100.0%	0.0%	1	0	2	0	2	0
35010	4.4	9.3	65.3	31.7	32.1%	67.9%	67.3%	32.7%	7	6	6	5	10	8
35015	11.8	45.0	68.1	0.0	20.8%	79.2%	100.0%	0.0%	11	11	6	0	16	11
35019	1.5	3.0	4.8	0.0	33.1%	66.9%	100.0%	0.0%	3	2	1	0	3	2
35021	9.6	15.5	76.4	0.0	38.2%	61.8%	100.0%	0.0%	16	16	6	0	20	16
35023	8.5	17.4	88.1	0.0	33.0%	67.0%	100.0%	0.0%	10	9	4	0	13	9
35028	18.2	12.3	62.1	5.4	59.6%	40.4%	92.0%	8.0%	4	4	4	2	5	4

FileHomeInsertModelingViewOptimizeHelpFormatData / Drill

CutCopyFormat painter

Clipboard

Get data

Excel workbook

OneLake catalog

SQL Server

Enter data

Data

Transform data

Refresh data

Queries

New visual

Text box

More visuals

Insert

New visual calculation

New measure

Quick measure

Calculations

Sensitivity

Sensitivity

Publish

Share

Prep data for Copilot AI

Copilot

Individual calf (Calf ID) by Day of Life

CA

California Republic

AgriGates

Western University of Health Sciences

Select Calf ID

Select (Deselect) calf ID to visualize data in tables.

26840

26847

26852

35007

35010

35015

35019

35021

35023

35028

35039

35040

Day of Life	Total Pen Time (Mins)	Lying (Mins)	Standing (Mins)	In Hutch (Mins)	Out of Hutch (Mins)	Human Interaction (Mins)	Total Lie + Stand (Mins)	% Lying	% Standing	% In Hutch	% Out of Hutch	Avg Temp (°F)	Count of datetime
9	76.9	34.4	42.2	40.8	36.1	0.4	76.6	44.9%	55.1%	53.0%	47.0%	78.6	45864
14	98.0	46.7	51.5	43.6	54.4	0.6	98.2	47.5%	52.5%	44.5%	55.5%	70.7	58183
4	125.3	68.1	56.9	79.6	45.6	0.4	124.9	54.5%	45.5%	63.6%	36.4%	70.0	74793

Day of Life	Standing In Hutch (Mins)	Standing Out of Hutch (Mins)	Lying In Hutch (Mins)	Lying Out of Hutch (Mins)	% Standing In Hutch	% Standing Out Hutch	% Lying In Hutch	% Lying Out of Hutch	Bouts In Hutch	Bouts Out of Hutch	Bouts Lying In Hutch	Bouts Lying Out of Hutch	Bouts Standing In Hutch	Bouts Standing Out of Hutch
4	11.8	45.0	68.1	0.0	20.8%	79.2%	100.0%	0.0%	11	11	6	0	16	11
9	6.6	35.6	34.4	0.0	15.6%	84.4%	100.0%	0.0%	4	4	2	0	6	4
14	20.2	31.3	24.3	22.3	39.2%	60.8%	52.1%	47.9%	7	7	3	1	9	8

FileHomeInsertModelingViewOptimizeHelp

Paste

Cut

Copy

Format painter

Clipboard

Get data

Excel

OneLake

SQL Server

Enter data

Data

Recent sources

Transform data

Refresh data

Queries

New visual

Text box

More visuals

Insert

New visual calculation

New measure

Quick measure

Calculations

Sensitivity

Sensitivity

Publish

Share

Prep data for Copilot AI

Copilot

Pen Number (Calf ID) by Day of Life

1 - Select Pen Number

Select (Deselect) Pen Number to visualize data in tables.

18

2 - Select Calf ID

Select (Deselect) Calf ID to visualize data in tables.

81874

81875

81880

Day of Life	Total Pen Time (Mins)	Lying (Mins)	Standing (Mins)	In Hutch (Mins)	Out of Hutch (Mins)	Human Interaction (Mins)	Total lie + Stand (Mins)	% Lying	% Standing	% In Hutch	% Out of Hutch	Avg Temp (°F)	Count of datetime
3	52.8	52.8	0.0	52.8	0.0	0.0	52.8	100.0%	0.0%	100.0%	0.0%	58.0	31682
9	114.0	86.4	27.2	98.3	15.7	1.3	113.6	76.1%	23.9%	86.6%	13.8%	66.9	68025
14	112.4	79.3	33.0	79.8	32.7	8.8	112.3	70.6%	29.4%	71.0%	29.1%	61.8	67154

Day of Life	Standing In Hutch (Mins)	Standing Out Hutch (Mins)	Lying In Hutch (Mins)	Lying Out of Hutch (Mins)	% Standing In Hutch	% Standing Out Hutch	% Lying In Hutch	% Lying Out of Hutch	Bouts Into Hutch	Bouts Out of Hutch	Bouts Lying In Hutch	Bouts Lying Out of Hutch	Bouts Standing In Hutch	Bouts Standing Out of Hutch
3	0.0	0.0	52.8	0.0	0.0%	0.0%	100.0%	0.0%	1	0	1	0	0	0
9	12.1	15.5	86.4	0.2	44.5%	57.1%	100.0%	0.2%	2	2	2	0	4	2
14	6.5	27.1	73.6	5.7	19.6%	81.9%	92.8%	7.2%	2	2	1	1	2	3

Aurora Dairy Figure

AD_Day_of_Life_All

AD_Day_Of_Life_Individual

AD_Pen_Individual

Definitions & Meanings

Visualizations

Build visual

Filters

Values

Drill through

Cross-report

Keep all filters

Add drill-through fields here

Data

Search

Aurora

Aurora Weather Data

DimDate

DimTime

Definitions and Calculations for Data

- Avg temp
- Bouts (eg, In-out hutch)
- Minutes lying, standing, In-out of the hutch
- Total lie & standing
- Total pen time

Definitions & Meanings for Data

Avg Temp (°F)
The average barn/microclimate temperature measured during the same time period as the animal activity. Sourced from the weather dataset.

Bout:
A continuous run of the same state (e.g., *In Hutch*, *Out Hutch*, *Lying*, *Standing*).
A bout starts when the current row/state is different from the previous row/state for that animal, and ends when it next changes. A bout's duration is the time between its start and the next state change (or the end of the recording).
Example: a calf goes from Out → In (bout start for *In Hutch*); that bout ends when it goes from In → Out.

Bouts Lying / Bouts Standing / Bouts In Hutch / Bouts Out Hutch
The number of bouts — i.e., number of transitions into that state.
Example: If a calf stands → lies → stands → lies, that is 2 lying bouts and 2 standing bouts.

Count of datetime:
A count on the number of rows in the Excel file, as a validators for total file present.

Calf ID
A unique identifier for each animal.

Day of Life:
The number days post birth date.

Minutes Lying / Minutes Standing / Minutes In Hutch / Minutes Out Hutch
The total minutes the animal spent in that state during the selected time period.
Calculated from every timestamped row in the dataset.

Total Lie + Standing Calculation
$$\text{Total Lie + Stand (Mins)} = [\text{Lying (Mins)}] + [\text{Standing (Mins)}]$$

This metric acts as a second reference to Total Pen Time

Total Pen Time
$$\text{Total Pen Time (Mins)} = [\text{In Hutch (Mins)}] + [\text{Out of Hutch (Mins)}]$$

Time difference
$$\text{Time difference} = \frac{[\text{Total Pen Time (Mins)}] - [\text{Total Lie + Stand (Mins)}]}{[\text{Total Pen Time (Mins)}]}$$

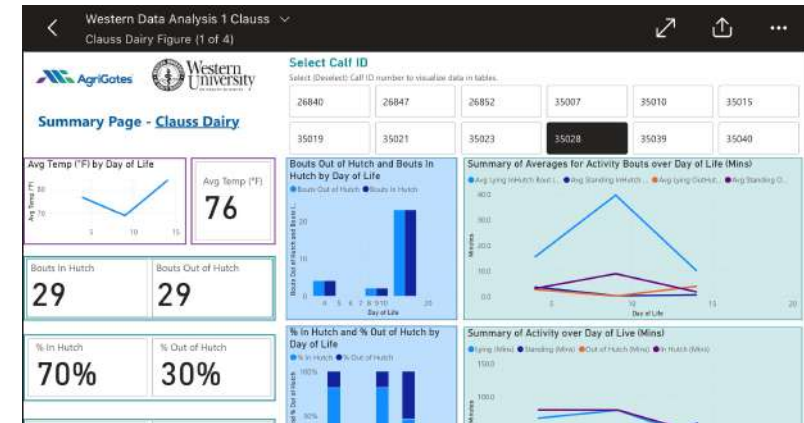
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Analysis Interface



Western Data Analysis 1 Clauss
CD_Day_of_Life_All (2 of 4)

AgriGates Western University

All Animals (Calf ID) by Day of Life - Clauss Dairy

Select (Deselect) Calf ID to visualize data in tables.

4 9 10 14

Calf ID	Total Pen Time (Mins)	Standing (Mins)	Lying (Mins)	In Hutch (Mins)	Out of Hutch (Mins)	Human Interaction (Mins)	Total Lie + Stand (Mins)	Time difference	% Lying	% Standing	% In Hutch	% Out of Hutch	Avg Temp (°F)	Count of downtime
26840	115.2	4.3	111.9	113.8	1.5	0.3	116.2	-0.8%	96.3%	3.7%	96.7%	1.3%	63.9	69045
26847	162.4	28.7	133.6	116.3	4.3	0.3	163.5	-0.5%	81.7%	18.3%	96.1%	3.9%	67.7	58916
35007	110.7	4.6	106.0	109.9	0.7	2.4	110.6	0.1%	95.6%	4.2%	99.3%	0.7%	59.6	65953
35028	98.2	30.5	67.7	79.8	18.4	0.5	98.0	0.2%	68.9%	31.1%	81.3%	18.7%	76.5	58403
35015	125.3	56.9	68.1	79.6	45.6	0.4	124.9	0.3%	54.3%	45.5%	63.6%	36.4%	70.0	74793
35010	111.0	13.7	97.0	89.1	41.9	0.1	110.7	0.3%	87.6%	12.4%	62.2%	37.8%	67.3	60781
35019	111.0	4.5	4.8	6.2	3.1	0.0	8.3	0.5%	51.3%	48.5%	68.8%	31.2%	55.1	5541
26852	100.0	44.0	55.5	89.2	30.8	0.4	99.5	0.6%	55.8%	44.2%	89.2%	10.8%	87.0	59501
35021	102.1	25.1	76.4	85.8	16.3	4.1	101.5	0.6%	75.3%	24.7%	84.0%	16.0%	73.5	60790
35023	114.8	25.9	88.1	96.4	18.4	0.1	114.0	0.7%	77.3%	22.7%	84.0%	16.0%	73.9	68238

Calf ID	Standing In Hutch (Mins)	Standing Out of Hutch (Mins)	Lying In Hutch (Mins)	Lying Out of Hutch (Mins)	% Standing In Hutch	% Standing Out of Hutch	% Lying In Hutch	% Lying Out of Hutch	Bouts In Hutch	Bouts Out of Hutch	Bouts Lying In Hutch	Bouts Lying Out of Hutch	Bouts Standing In Hutch	Bouts Standing Out of Hutch
26840	3.0	1.3	111.9	0.0	69.5%	30.5%	100.0%	0.0%	2	1	3	1	3	1
26847	28.7	0.0	106.0	0.0	100.0%	0.0%	0.0%	0.0%	0	0	0	0	0	0
35007	4.6	0.0	101.4	0.0	100.0%	0.0%	0.0%	0.0%	0	0	0	0	0	0
35010	4.4	0.0	84.6	0.0	100.0%	0.0%	0.0%	0.0%	0	0	0	0	0	0
35015	11.8	45.0	68.1	0.0	20.8%	79.2%	100.0%	0.0%	11	11	6	0	16	11

Invite Annotate Comments Reset to default Filters Pages

Western Data Analysis 1 Clauss
CD_Day_of_Life_Individual (3 of 4)

AgriGates Western University

Individual calf (Calf ID) by Day of Life - Clauss Dairy

Select Calf ID
Select (Deselect) Calf ID to visualize data in tables.

26840	26847	26852	35007	35010	35015
35019	35021	35023	35028	35039	35040

Day of Life	Total Pen Time (Mins)	Standing (Mins)	Lying (Mins)	In Hutch (Mins)	Out of Hutch (Mins)	Human Interaction (Mins)	Total Lie + Stand (Mins)	% Lying	% Standing	% In Hutch	% Out of Hutch	Avg Temp (°F)	Count of downtime
4	9.3	4.8	4.5	6.2	3.1	0.0	9.3	51.5%	48.5%	66.8%	33.2%	77.6	5541
14	79.7	41.3	38.2	48.0	31.7	1.6	79.4	51.9%	48.1%	60.2%	39.8%	77.6	47562
9	103.6	79.6	23.6	87.7	15.8	1.1	103.2	77.1%	22.9%	84.7%	15.3%	77.9	61502

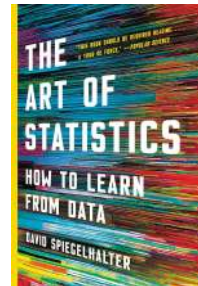
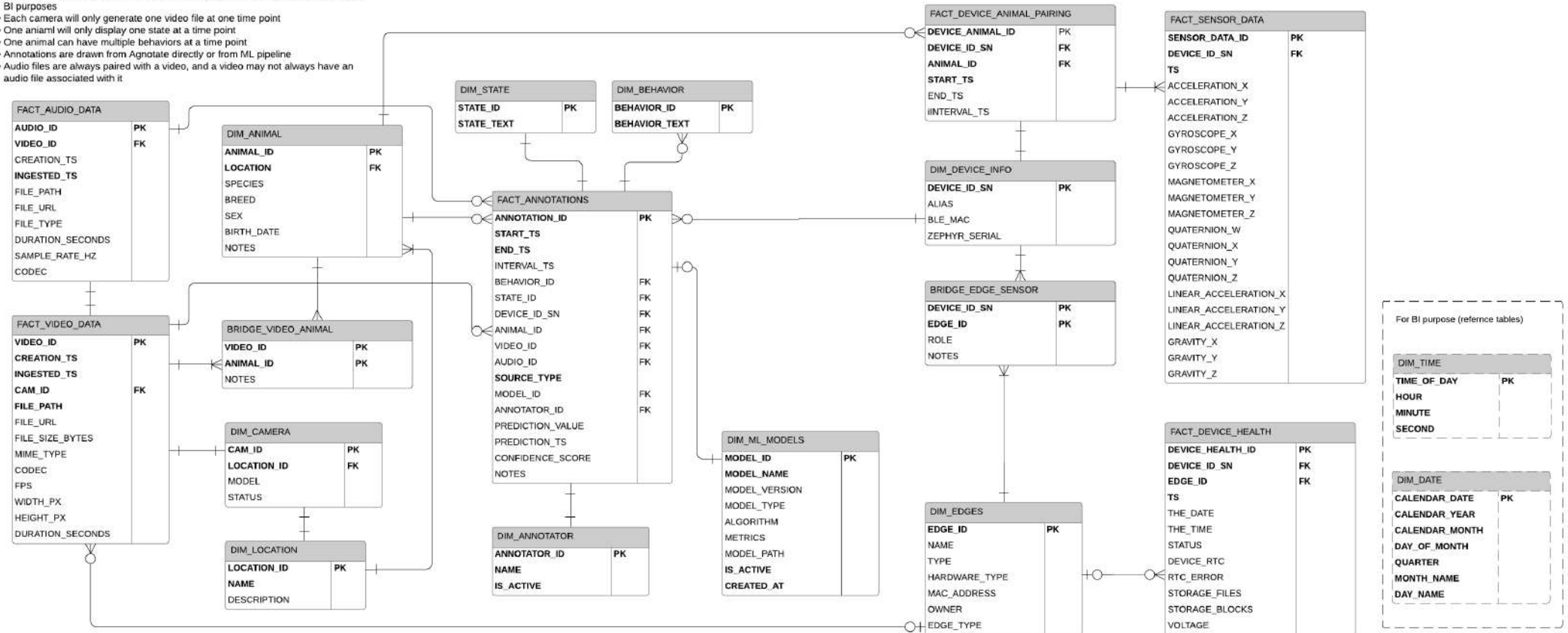
Day of Life	Standing In Hutch (Mins)	Standing Out of Hutch (Mins)	Lying In Hutch (Mins)	Lying Out of Hutch (Mins)	% Standing In Hutch	% Standing Out of Hutch	% Lying In Hutch	% Lying Out of Hutch	Bouts In Hutch	Bouts Out of Hutch	Bouts Lying In Hutch	Bouts Lying Out of Hutch	Bouts Standing In Hutch	Bouts Standing Out of Hutch
4	3.0	1.3	111.9	0.0	69.5%	30.5%	100.0%	0.0%	2	1	3	1	3	1
14	28.7	0.0	106.0	0.0	100.0%	0.0%	0.0%	0.0%	0	0	0	0	0	0
9	4.6	0.0	101.4	0.0	100.0%	0.0%	0.0%	0.0%	0	0	0	0	0	0

Video/IMU Data Relational Database



Assumptions:

- Date and Time attributes can be drawn from DIM_TIME and DIM_DATE tables for BI purposes
- Each camera will only generate one video file at one time point
- One animal will only display one state at a time point
- One animal can have multiple behaviors at a time point
- Annotations are drawn from Agnotate directly or from ML pipeline
- Audio files are always paired with a video, and a video may not always have an audio file associated with it

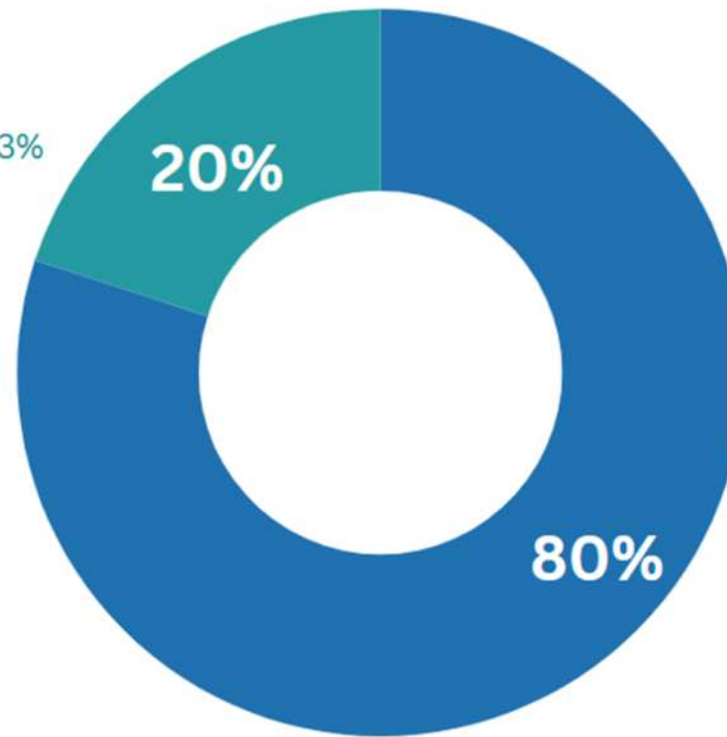


Problem
Plan
Data Collection
Analysis
Conclusion + Communication

Time In ML/AI Project

Machine Learning Applications

- ML Operation 2%
- ML Model Tuning 5%
- ML Model Training 10%
- ML Algorithm Development 3%



- Data Augmentation 15%
- Data Labeling 25%
- Data Cleaning 25%
- Data Aggregation 10%
- Data Identification 5%

Data Management



Website





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Thank you

**Preparing Video Data for Behavioral Annotation,
Visualization, and Machine Learning in Livestock Systems**

Abstract 1229812874

June 28th – 30th 2026