

Historical Control Data in New Zealand White Rabbits



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¹ Additional HCD endpoints and years are available upon request.

Embryo-Fetal Developmental Historical Control Data

Notes regarding this dataset:

Due to calculation and database constraints, the study count may differ for each data type. This also means that animal count may differ for each data type. All the data that is presented is acceptable for use.

In the Reproductive Data, the total number of viable fetuses may not match the sum of the male and female fetuses. Sometimes, the sex of a fetus is not able to be determined.

Study Date Range: 18 Jan 2011 - 18 Aug 2016

Mean of Study Means

Endpoint	Total	Mean	S.D.	SEM	Median	Min	Max	25th Quartile	75th Quartile
NO. OF DATASETS	85								
Total No. of Animals in the Control Group	1894								
No. of Animals That Died	18								
No. of Animals That Aborted	6								
No. of Animals That Delivered	1								
Percent Pregnant		95.52	4.733	0.513	95.45	81.82	100.00	91.83	100.00
No. Gravid	1808								
No. With Only Resorptions	6								
No. of Dams With Live Fetuses	1778								
No. Nongravid	86								
No. Nongravid That Died	1								
No. of Animals Examined at Laparohysterectomy	1869								
Mean Gravid Uterine Weight (g)		502.10	25.346	2.782	497.31	442.13	565.27	482.39	509.67
Mean No. Viable Fetuses/Dam		8.79	0.521	0.056	8.74	7.35	10.00	8.44	8.98
Total No. Viable Fetuses	15680								
Viable Fetuses (%/Litter)		95.57	1.971	0.214	95.88	89.85	99.40	94.59	96.75
Mean No. Postimplantation Loss/Dam		0.41	0.171	0.019	0.39	0.05	1.05	0.30	0.49
Total No. of Postimplantation Losses	721								
Postimplantation Loss (%/Litter)		4.43	1.971	0.214	4.12	0.60	10.15	3.25	5.41
Early Resorptions (%/Litter)		3.35	1.760	0.191	3.08	0.60	9.65	2.30	3.93
Late Resorptions (%/Litter)		1.08	1.012	0.110	1.04	0.00	5.51	0.51	1.53
Dead Fetuses (%/Litter)		0.00	0.000	0.000	0.00	0.00	0.00	0.00	0.00
Mean No. Implantations/Dam		9.19	0.508	0.055	9.17	7.90	10.38	8.81	9.43
Mean No. Corpora Lutea/Dam		10.10	0.505	0.055	9.95	8.85	11.41	9.71	10.30
Mean No. Preimplantation Loss/Dam		0.91	0.335	0.036	0.86	0.24	2.35	0.72	1.00
Total No. Preimplantation Losses	1610								
Preimplantation Loss (%/Litter)		8.69	3.086	0.335	8.48	2.27	21.56	6.73	10.32
Total No. Male Fetuses	7610								
Total No. Female Fetuses	7891								
% Males/Litter		48.54	6.495	0.704	49.10	0.00	59.08	46.33	51.43
% Females/Litter		50.28	6.653	0.722	50.88	0.00	61.61	48.43	53.53
Mean Fetal Body Weight (g)		41.449	1.2922	0.1427	41.308	38.097	43.945	40.221	41.918
Mean Male Body Weight (g)		41.941	1.3985	0.1544	41.774	38.220	44.959	40.574	42.513
Mean Female Body Weight (g)		40.884	1.2805	0.1414	40.827	37.548	43.472	39.600	41.388

Developmental Parameters for New Zealand White Rabbits (5 Year - Standard)

CR_ASH_BZ_EFD-5S_2017.01
25 Jan 2017

Mean of Study Means

NO. OF DATASETS: 84	Fetuses	Litters
Total No. Examined Externally	15511	1759
Total No. Examined Viscerally	15511	1759
Total No. Examined Skeletally	15511	1759

MALFORMATIONS (% Per Litter)	Mean	S.D.	N	SEM	Median	Min	Max	25th Quartile	75th Quartile
TOTAL EXTERNAL MALFORMATIONS	0.43	0.784	84	0.086	0.00	0.00	4.58	0.00	0.63
TOTAL VISCERAL MALFORMATIONS	1.53	1.251	84	0.137	0.60	0.00	5.56	0.00	1.33
TOTAL SKELETAL MALFORMATIONS	1.05	0.972	84	0.106	0.89	0.00	5.44	0.42	1.39
TOTAL MALFORMATIONS	2.65	1.761	84	0.192	1.75	0.00	8.62	0.94	3.07
EXTERNAL									
Anodontia	0.00	0.000	84	0.000	0.00	0.00	0.00	0.00	0.00
Apodia	0.00	0.000	84	0.000	0.00	0.00	0.00	0.00	0.00
Arhinencephaly	0.01	0.082	84	0.009	0.00	0.00	0.75	0.00	0.00
Brachydactyly	0.01	0.082	84	0.009	0.00	0.00	0.75	0.00	0.00
Carpal and/or Tarsal Flexure	0.07	0.295	84	0.032	0.00	0.00	1.94	0.00	0.00
Claw- Absent	0.00	0.000	84	0.000	0.00	0.00	0.00	0.00	0.00
Cleft Palate	0.01	0.061	84	0.007	0.00	0.00	0.56	0.00	0.00
Cyclopia	0.00	0.000	84	0.000	0.00	0.00	0.00	0.00	0.00
Disseminated Subcutaneous Hemorrhage(s)	0.00	0.043	84	0.005	0.00	0.00	0.40	0.00	0.00
Ectrodactyly	0.02	0.095	84	0.010	0.00	0.00	0.53	0.00	0.00
Exencephaly with or without Open Eyelid(s)	0.00	0.000	84	0.000	0.00	0.00	0.00	0.00	0.00
Eyelid(s)- Open	0.01	0.077	84	0.008	0.00	0.00	0.53	0.00	0.00
Filamentous Tail	0.00	0.000	84	0.000	0.00	0.00	0.00	0.00	0.00
Gastroschisis	0.05	0.181	84	0.020	0.00	0.00	0.88	0.00	0.00
Hydrocephaly with or without Dome Head	0.03	0.273	84	0.030	0.00	0.00	2.50	0.00	0.00
Intestine- Umbilical Herniation	0.01	0.082	84	0.009	0.00	0.00	0.75	0.00	0.00
Limb(s)- Hyperextension	0.00	0.000	84	0.000	0.00	0.00	0.00	0.00	0.00
Limb(s)- Hyperflexion	0.00	0.000	84	0.000	0.00	0.00	0.00	0.00	0.00
Limb(s)- Malrotated	0.00	0.000	84	0.000	0.00	0.00	0.00	0.00	0.00
Localized Fetal Edema	0.01	0.062	84	0.007	0.00	0.00	0.57	0.00	0.00
Macroglossia	0.00	0.000	84	0.000	0.00	0.00	0.00	0.00	0.00
Mandibular Micrognathia	0.00	0.000	84	0.000	0.00	0.00	0.00	0.00	0.00
Maxillary Micrognathia	0.01	0.055	84	0.006	0.00	0.00	0.51	0.00	0.00
Meningocele	0.00	0.000	84	0.000	0.00	0.00	0.00	0.00	0.00

Developmental Parameters for New Zealand White Rabbits (5 Year - Standard)

CR_ASH_BZ_EFD-5S_2017.01
25 Jan 2017

Mean of Study Means

NO. OF DATASETS: 84	Fetuses	Litters
Total No. Examined Externally	15511	1759
Total No. Examined Viscerally	15511	1759
Total No. Examined Skeletally	15511	1759

MALFORMATIONS (% Per Litter)	Mean	S.D.	N	SEM	Median	Min	Max	25th Quartile	75th Quartile
EXTERNAL									
Meningoencephalocele	0.00	0.000	84	0.000	0.00	0.00	0.00	0.00	0.00
Microcephaly	0.00	0.000	84	0.000	0.00	0.00	0.00	0.00	0.00
Micromelia	0.01	0.068	84	0.007	0.00	0.00	0.63	0.00	0.00
Microphthalmia and/or Anophthalmia	0.07	0.236	84	0.026	0.00	0.00	1.23	0.00	0.00
Naris- Absent	0.00	0.000	84	0.000	0.00	0.00	0.00	0.00	0.00
Omphalocele	0.08	0.254	84	0.028	0.00	0.00	1.39	0.00	0.00
Paw(s)- Hyperflexion	0.00	0.000	84	0.000	0.00	0.00	0.00	0.00	0.00
Paw(s)- Malrotated	0.01	0.068	84	0.007	0.00	0.00	0.63	0.00	0.00
Pectoral Girdle- Narrow	0.00	0.000	84	0.000	0.00	0.00	0.00	0.00	0.00
Polydactyly	0.01	0.072	84	0.008	0.00	0.00	0.66	0.00	0.00
Snout- Short	0.01	0.095	84	0.010	0.00	0.00	0.87	0.00	0.00
Spina Bifida	0.00	0.000	84	0.000	0.00	0.00	0.00	0.00	0.00
Syndactyly	0.00	0.000	84	0.000	0.00	0.00	0.00	0.00	0.00
Tail- Bent	0.00	0.045	84	0.005	0.00	0.00	0.41	0.00	0.00
Tail- Short	0.04	0.311	84	0.034	0.00	0.00	2.78	0.00	0.00
Thoracogastroschisis	0.00	0.000	84	0.000	0.00	0.00	0.00	0.00	0.00
Vertebral Agenesis	0.01	0.083	84	0.009	0.00	0.00	0.76	0.00	0.00
VISCERAL									
Aorta- Bulbous	0.03	0.137	84	0.015	0.00	0.00	0.68	0.00	0.00
Aorta- Malpositioned	0.01	0.052	84	0.006	0.00	0.00	0.48	0.00	0.00
Aortic Arch- Coarctation	0.00	0.000	84	0.000	0.00	0.00	0.00	0.00	0.00
Aortic Arch- Retroesophageal	0.00	0.000	84	0.000	0.00	0.00	0.00	0.00	0.00
Aortic Arch- Right-Sided	0.01	0.053	84	0.006	0.00	0.00	0.48	0.00	0.00
Atria- Enlarged	0.00	0.000	84	0.000	0.00	0.00	0.00	0.00	0.00
Diaphragmatic Hernia	0.05	0.164	84	0.018	0.00	0.00	0.68	0.00	0.00
Great Vessel(s)- Transposed	0.03	0.145	84	0.016	0.00	0.00	1.07	0.00	0.00
Heart- Enlarged	0.00	0.000	84	0.000	0.00	0.00	0.00	0.00	0.00
Hydrocephaly	0.07	0.194	84	0.021	0.00	0.00	0.87	0.00	0.00
Hydropericardium	0.00	0.000	84	0.000	0.00	0.00	0.00	0.00	0.00

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Total No. Examined Externally	15511	1759
Total No. Examined Viscerally	15511	1759
Total No. Examined Skeletally	15511	1759

MALFORMATIONS (% Per Litter)	Mean	S.D.	N	SEM	Median	Min	Max	25th Quartile	75th Quartile
VISCERAL									
Interventricular Septal Defect	0.03	0.131	84	0.014	0.00	0.00	0.66	0.00	0.00
Kidney(s) and/or Ureter(s)- Absent	0.03	0.135	84	0.015	0.00	0.00	1.05	0.00	0.00
Kidney(s)- Fused	0.02	0.095	84	0.010	0.00	0.00	0.60	0.00	0.00
Kidney(s)- Malpositioned	0.06	0.289	84	0.032	0.00	0.00	2.08	0.00	0.00
Lung(s)- Lobular Agenesis	1.13	1.152	84	0.126	0.00	0.00	4.42	0.00	0.56
Lung(s)- Lobular Dysgenesis	0.01	0.089	84	0.010	0.00	0.00	0.63	0.00	0.00
Persistent Truncus Arteriosus	0.03	0.121	84	0.013	0.00	0.00	0.70	0.00	0.00
Pulmonary Trunk- Coarctation	0.00	0.000	84	0.000	0.00	0.00	0.00	0.00	0.00
Pulmonary Trunk- Stenotic	0.01	0.074	84	0.008	0.00	0.00	0.68	0.00	0.00
Pulmonary Trunk- Vestigial	0.00	0.000	84	0.000	0.00	0.00	0.00	0.00	0.00
Subclavian, Right- Malpositioned	0.00	0.000	84	0.000	0.00	0.00	0.00	0.00	0.00
Testis(es)- Undescended	0.00	0.000	84	0.000	0.00	0.00	0.00	0.00	0.00
Thyroid Gland(s)- Absent	0.00	0.000	84	0.000	0.00	0.00	0.00	0.00	0.00
Uterine Horn(s)- Portion Absent	0.00	0.000	84	0.000	0.00	0.00	0.00	0.00	0.00
SKELETAL									
Costal Cartilage Anomaly	0.11	0.280	84	0.031	0.00	0.00	1.36	0.00	0.00
Limb Bone(s)- Bent	0.00	0.000	84	0.000	0.00	0.00	0.00	0.00	0.00
Rib(s)- 11 Pairs	0.02	0.102	84	0.011	0.00	0.00	0.67	0.00	0.00
Rib(s)- 14th Full	0.01	0.115	84	0.013	0.00	0.00	1.05	0.00	0.00
Rib(s)- Anomaly	0.13	0.285	84	0.031	0.00	0.00	1.39	0.00	0.00
Skull Anomaly	0.05	0.183	84	0.020	0.00	0.00	1.11	0.00	0.00
Sternebra(e)- Fused	0.10	0.258	84	0.028	0.00	0.00	1.52	0.00	0.00
Sternebra(e)- Malaligned (Severe)	0.11	0.269	84	0.029	0.00	0.00	1.36	0.00	0.00
Sternoschisis	0.01	0.081	84	0.009	0.00	0.00	0.57	0.00	0.00
Vertebra(e)- 24 Presacral	0.00	0.000	84	0.000	0.00	0.00	0.00	0.00	0.00
Vertebra(e)- 28 Presacral	0.00	0.045	84	0.005	0.00	0.00	0.41	0.00	0.00
Vertebra(e)- 8 Cervical	0.02	0.095	84	0.010	0.00	0.00	0.57	0.00	0.00
Vertebral Anomaly with or without Associated Rib Anomaly	0.36	0.509	84	0.056	0.00	0.00	2.14	0.00	0.60
Vertebral Centra Anomaly	0.10	0.270	84	0.029	0.00	0.00	1.39	0.00	0.00

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Mean of Study Means									
NO. OF DATASETS: 84	Fetuses	Litters							
Total No. Examined Externally	15511	1759							
Total No. Examined Viscerally	15511	1759							
Total No. Examined Skeletally	15511	1759							
VARIATIONS (% Per Litter)	Mean	S.D.	N	SEM	Median	Min	Max	25th Quartile	75th Quartile
TOTAL EXTERNAL VARIATIONS	0.00	0.000	84	0.000	0.00	0.00	0.00	0.00	0.00
TOTAL VISCERAL VARIATIONS	29.34	5.268	84	0.575	29.27	17.69	42.53	24.89	34.46
TOTAL SKELETAL VARIATIONS	62.85	5.894	84	0.643	62.42	45.75	75.27	57.65	66.44
TOTAL VARIATIONS	73.37	4.480	84	0.489	73.09	61.25	85.17	69.67	76.61
EXTERNAL									
Fat Pads- Extra	0.00	0.000	84	0.000	0.00	0.00	0.00	0.00	0.00
VISCERAL									
Adrenal Gland(s)- Accessory	0.01	0.078	84	0.009	0.00	0.00	0.71	0.00	0.00
Blood Vessel(s), Major- Variation	8.15	3.358	84	0.366	7.08	1.51	17.06	5.49	8.78
Brachiocephalic Trunk- Short	0.02	0.152	84	0.017	0.00	0.00	1.25	0.00	0.00
Fat Pads- Extra	0.00	0.000	84	0.000	0.00	0.00	0.00	0.00	0.00
Gallbladder- Absent or Small	3.02	2.007	84	0.219	2.83	0.00	9.91	1.78	4.66
Gallbladder- Accessory	0.01	0.091	84	0.010	0.00	0.00	0.83	0.00	0.00
Gallbladder- Bilobed	0.05	0.183	84	0.020	0.00	0.00	0.99	0.00	0.00
Heart- Absent Papillary Muscle	0.21	0.446	84	0.049	0.00	0.00	2.23	0.00	0.00
Heart- Extra Papillary Muscle	2.85	1.470	84	0.160	5.07	0.36	6.65	3.14	6.46
Heart- Misshapen	0.02	0.105	84	0.011	0.00	0.00	0.56	0.00	0.00
Heart- Small	0.05	0.169	84	0.018	0.00	0.00	0.87	0.00	0.00
Iris- Hemorrhagic	0.02	0.116	84	0.013	0.00	0.00	0.71	0.00	0.00
Iris- Hemorrhagic Ring	0.18	0.315	84	0.034	0.00	0.00	1.11	0.00	0.42
Kidney(s)- Pale	0.02	0.082	84	0.009	0.00	0.00	0.54	0.00	0.00
Kidney(s)- Small	0.01	0.124	84	0.014	0.00	0.00	1.14	0.00	0.00
Liver- Accessory Lobule(s)	0.40	0.639	84	0.070	0.00	0.00	2.55	0.00	0.00
Liver- Misshapen	0.02	0.136	84	0.015	0.00	0.00	1.01	0.00	0.00
Liver- Pale	0.01	0.047	84	0.005	0.00	0.00	0.43	0.00	0.00
Lung(s)- Small	0.09	0.312	84	0.034	0.00	0.00	2.16	0.00	0.00
Pancreas- Small	0.00	0.000	84	0.000	0.00	0.00	0.00	0.00	0.00
Renal Papilla(e) not Developed and/or Distended Ureter(s)	0.05	0.174	84	0.019	0.00	0.00	0.91	0.00	0.00

Mean of Study Means

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Total No. Examined Externally	15511	1759
Total No. Examined Viscerally	15511	1759
Total No. Examined Skeletally	15511	1759

VARIATIONS (% Per Litter)	Mean	S.D.	N	SEM	Median	Min	Max	25th Quartile	75th Quartile
VISCERAL									
Spleen- Accessory	16.36	3.981	84	0.434	14.86	8.02	25.16	12.53	18.98
Spleen- Pale	0.16	0.354	84	0.039	0.00	0.00	1.77	0.00	0.00
Spleen- Small	0.17	0.400	84	0.044	0.00	0.00	2.27	0.00	0.43
Thymus- Hemorrhagic	0.00	0.000	84	0.000	0.00	0.00	0.00	0.00	0.00
Thyroid Gland(s)- Enlarged	0.00	0.000	84	0.000	0.00	0.00	0.00	0.00	0.00
Ureter(s)- Retrocaval	1.74	1.331	84	0.145	1.37	0.00	6.38	0.68	2.22
SKELETAL									
Extra Site of Ossification- Sternebra(e)	2.44	1.826	84	0.199	1.17	0.00	7.62	0.62	1.85
Extra Site of Ossification- Vertebra(e)	0.17	0.342	84	0.037	0.00	0.00	1.27	0.00	0.39
Hyoid Arch(es)- Bent	4.67	2.895	84	0.316	5.67	0.48	15.08	4.35	7.81
Hyoid Body and/or Arch(es)- Unossified	0.13	0.263	84	0.029	0.00	0.00	1.18	0.00	0.58
Irregular Ossification- Sternebra(e)	0.00	0.000	84	0.000	0.00	0.00	0.00	0.00	0.00
Pubis Unossified	0.01	0.087	84	0.010	0.00	0.00	0.58	0.00	0.00
Reduced Ossification- 12th Rib(s)	0.00	0.045	84	0.005	0.00	0.00	0.41	0.00	0.00
Reduced Ossification- Rib(s)	0.02	0.101	84	0.011	0.00	0.00	0.66	0.00	0.00
Reduced Ossification- Skull	0.14	0.675	84	0.074	0.00	0.00	4.76	0.00	0.00
Reduced Ossification- Vertebral Arch(es)	0.00	0.000	84	0.000	0.00	0.00	0.00	0.00	0.00
Rib(s)- 13th Full	32.90	6.814	84	0.743	31.47	12.54	50.90	27.15	36.24
Rib(s)- 13th Rudimentary	17.27	3.601	84	0.393	18.05	8.16	25.09	15.77	20.87
Rib(s)- 14th Rudimentary	0.00	0.000	84	0.000	0.00	0.00	0.00	0.00	0.00
Rib(s)- 7th Cervical	2.31	2.025	84	0.221	1.28	0.00	11.98	0.24	2.32
Rib(s)- Spherical Enlargement	0.05	0.189	84	0.021	0.00	0.00	1.00	0.00	0.00
Rib(s)- Thickened	0.02	0.114	84	0.012	0.00	0.00	0.80	0.00	0.00
Skull Bone(s)- Accessory	0.33	0.449	84	0.049	0.44	0.00	1.46	0.00	0.89
Sternebra(e) #1, #2, #3 and/or #4 Unossified	0.02	0.103	84	0.011	0.00	0.00	0.66	0.00	0.00
Sternebra(e) #5 and/or #6 Unossified	11.40	3.637	84	0.397	9.04	3.16	21.58	6.19	11.93
Sternebra(e)- 7th	0.17	0.395	84	0.043	0.00	0.00	2.73	0.00	0.00
Sternebra(e)- Malaligned (Slight or Moderate)	0.96	0.824	84	0.090	0.83	0.00	3.49	0.45	1.44
Sternebra(e) with Thread-Like Attachment	0.95	0.841	84	0.092	0.78	0.00	4.19	0.48	1.42

Developmental Parameters for New Zealand White Rabbits (5 Year - Standard)

CR_ASH_BZ_EFD-5S_2017.01
25 Jan 2017

			Mean of Study Means								
NO. OF DATASETS: 84	Fetuses	Litters									
Total No. Examined Externally	15511	1759									
Total No. Examined Viscerally	15511	1759									
Total No. Examined Skeletally	15511	1759									
VARIATIONS (% Per Litter)			Mean	S.D.	N	SEM	Median	Min	Max	25th Quartile	75th Quartile
SKELETAL											
Talus- Unossified			0.00	0.000	84	0.000	0.00	0.00	0.00	0.00	0.00
Vertebra(e)- 25 Presacral			0.17	0.304	84	0.033	0.00	0.00	1.06	0.00	0.52
Vertebra(e)- 27 Presacral			7.47	3.374	84	0.368	7.87	0.96	18.28	6.10	10.25
Vertebral Centra not Fully Ossified			0.03	0.137	84	0.015	0.00	0.00	0.79	0.00	0.00

Modal Distribution of Fetal Body Weights

Number of Datasets in Historical Control

82

Range of Study Dates 18 Jan 2011 - 18 Aug 2016

Number of Dams with Fetal Body Weight Data 1722

Dams with Fetal Body Weight Data with Live Fetuses 1716

Mean Fetal Body Weight Range (g) 38.097 - 43.945

Mean Fetal Body Weight (g)	36.0 - 36.9	37.0 - 37.9	38.0 - 38.9	39.0 - 39.9	40.0 - 40.9
Total No. Datasets	0	0	3	7	19
Mean Litter Size	NA	NA	9.161	9.156	9.492
Litter Size Range	NA - NA	NA - NA	8.58 - 9.68	8.38 - 9.95	8.46 - 17.80
Mean Fetal Body Weight (g)	41.0 - 41.9	42.0 - 42.9	43.0 - 43.9	44.0 - 44.9	45.0 - 45.9
Total No. Datasets	30	12	11	0	0
Mean Litter Size	8.874	8.369	8.445	NA	NA
Litter Size Range	7.83 - 9.77	7.70 - NA	7.60 - 9.00	NA - NA	NA - NA

Summary Incidence Malformations and Variations

(Total Number Fetuses/Litters Affected)

Ranked Uppermost to Nethermost

NO. OF DATASETS: 84	Fetuses	Litters
Total No. Examined Externally	15511	1759
Total No. Examined Viscerally	15511	1759
Total No. Examined Skeletally	15511	1759

MALFORMATIONS	Number	
	Fetuses	Litters
EXTERNAL		
Anal Atresia	1	1
Arhinencephaly	1	1
Brachydactyly	1	1
Carpal and/or Tarsal Flexure	10	9
Cleft Lip	1	1
Cleft Palate	1	1
Digit(s)- Malpositioned	1	1
Disseminated Subcutaneous Hemorrhage(s)	1	1
Ectrodactyly	3	3
Eyelid(s)- Open	2	2
Gastroschisis	7	7
Hydrocephaly with or without Dome Head	5	1
Intestine- Umbilical Herniation	1	1
Localized Fetal Edema	1	1
Maxillary Micrognathia	1	1
Micromelia	1	1
Microphthalmia and/or Anophthalmia	10	8
Naris- Single Present	1	1
Omphalocele	12	12
Paw(s)- Malrotated	1	1
Polydactyly	1	1
Snout- Short	1	1
Tail- Bent	1	1
Tail- Short	3	2
Vertebral Agenesis	1	1

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MALFORMATIONS	Number	
	Fetuses	Litters
VISCERAL		
Aorta- Bulbous	5	5
Aorta- Malpositioned	1	1
Aortic Arc- Narrow	1	1
Aortic Arch- Interrupted	4	4
Aortic Arch- Right-Sided	1	1
Diaphragmatic Hernia	7	7
Diverticulum	1	1
Great Vessel(s)- Transposed	5	5
Hydrocephaly	10	10
Interventricular Septal Defect	4	4
Kidney(s) and/or Ureter(s)- Absent	4	4
Kidney(s)- Fused	3	3
Kidney(s)- Malpositioned	7	6
Lung(s)- Lobular Agenesis	168	122
Lung(s)- Lobular Dysgenesis	2	2
Persistent Truncus Arteriosus	5	4
Pulmonary Artery- Enlarged	1	1
Pulmonary Trunk- Enlarged	1	1
Pulmonary Trunk- Stenotic	1	1
Vena Cava- Malpositioned	1	1
SKELETAL		
Costal Cartilage Anomaly	17	13
Hyoid Body- Misshapen	1	1
Rib(s)- 11 Pairs	3	3
Rib(s)- 14th Full	1	1
Rib(s)- Anomaly	18	18

Summary Incidence Malformations and Variations

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MALFORMATIONS	Number	
	Fetuses	Litters
SKELETAL		
Rib(s)- Bent	2	2
Skull Anomaly	8	8
Sternebra(e)- Fused	16	15
Sternebra(e)- Malaligned (Severe)	15	14
Sternoschisis	2	2
Vertebra(e)- 28 Presacral	1	1
Vertebra(e)- 8 Cervical	3	3
Vertebral Anomaly with or without Associated Rib Anomaly	55	49
Vertebral Centra Anomaly	14	14

Summary Incidence Malformations and Variations

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VARIATIONS	Number	
	Fetuses	Litters
VISCERAL		
Adrenal Gland(s)- Accessory	1	1
Blood Vessel(s), Major- Variation	1238	627
Brachiocephalic Trunk- Short	3	2
Gallbladder- Absent or Small	466	308
Gallbladder- Accessory	1	1
Gallbladder- Bilobed	9	8
Heart- Absent Papillary Muscle	34	30
Heart- Extra Papillary Muscle	458	333
Heart- Misshapen	4	4
Heart- Small	7	7
Iris- Hemorrhagic	3	3
Iris- Hemorrhagic Ring	28	27
Kidney(s)- Pale	3	3
Kidney(s)- Small	2	1
Liver- Accessory Lobule(s)	65	50
Liver- Area(s), Yellow	1	1
Liver- Misshapen	4	4
Liver- Pale	1	1
Liver- Swollen	1	1
Lung(s)- Small	13	11
Renal Papilla(e) not Developed and/or Distended Ureter(s)	8	6
Spleen- Accessory	2479	1141
Spleen- Pale	28	24
Spleen- Small	26	22
Thyroid Gland(s)- Small	1	1
Ureter(s)- Retrocaval	263	199

Summary Incidence Malformations and Variations

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VARIATIONS	Number	
	Fetuses	Litters
SKELETAL		
Extra Site of Ossification- Dorsal to Cervical Arch #2	1	1
Extra Site of Ossification- Sternebra(e)	362	254
Extra Site of Ossification- Vertebra(e)	24	22
Hyoid Arch(es)- Bent	672	452
Hyoid Body and/or Arch(es)- Unossified	22	21
Pubis Unossified	2	2
Reduced Ossification- 12th Rib(s)	1	1
Reduced Ossification- Rib(s)	2	2
Reduced Ossification- Skull	15	7
Rib(s)- 13th Full	5071	1404
Rib(s)- 13th Rudimentary	2663	1307
Rib(s)- 7th Cervical	347	208
Rib(s)- 8th Cervical	2	2
Rib(s)- Hemispherical Enlargement	1	1
Rib(s)- Spherical Enlargement	7	7
Rib(s)- Thickened	2	2
Skull Bone(s)- Accessory	51	45
Sternebra(e) #1, #2, #3 and/or #4 Unossified	3	3
Sternebra(e) #5 and/or #6 Unossified	1792	854
Sternebra(e)- 7th	29	20
Sternebra(e)- Malaligned (Slight or Moderate)	148	129
Sternebra(e)- Misshapen	1	1
Sternebra(e) with Thread-Like Attachment	149	120
Vertebra(e)- 25 Presacral	26	26
Vertebra(e)- 27 Presacral	1158	591
Vertebral Centra not Fully Ossified	5	5

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Total No. Examined Skeletally	15511	1759

VARIATIONS	Number	
	Fetuses	Litters
SKELETAL		
Xyphoid Cartilage- Hole	2	1