APPENDIX A – CODES USED FOR GROUPING

One of the challenges of this report was to combine information on cancer from several different sources and develop a comprehensive report that details the burden and risk of cancer in the State of Nevada. To add to the complexity of it all, each data source did not use identical coding to identify each type of cancer.

The Nevada Central Cancer Registry uses the International Classification of Diseases – Oncology (ICD-O) coding system that is then broken down into the Topography, or Primary Site, as well as the Morphology of the specific cancer. The Topography section of the ICD-O coding structure is fairly comparable to the ICD-10 mortality classification system, with very little variation between the two systems. However, there are some variations, so this report uses the ICD-O coding structure as the primary source for identifying the type of cancer for this report.

Furthermore, the cancer incidence data for 2001 and beyond that are included in this report were classified using the ICD-O3 coding classification structure, while data in previous years were classified using the ICD-O2 coding system. However, this classification change is done within the Cancer Registry. Therefore, this report only shows the classification of the ICD-O code system.

The ICD-10 structure was implemented in 1999 for the coding of the underlying cause of death. However, for this report, due to the variations between the ICD-O and ICD-10 coding structures and the fact that the ICD-O system is the primary one used, there have not been any adjustments made to account for potential coding differences that may have occurred due to the change from the ICD-9 to the ICD-10 system in 1999 for all mortality data used in this report.

The inpatient hospital discharge (UB92) database that was used to provide the inpatient hospital discharge statistics for this report uses the ICD-9 coding structure.

The following pages detail the codes used for each type of coding structure present in the data used for this report. The codes used to identify the leading types of cancer for this report are highlighted. Those not falling under any of the highlighted leading groups were categorized into the All Other Sites grouping.

Table 296. ICD-O Codes Used

Type of Cancer	ICD-O2 Codes		
	Topography	Morphology	Excluding (M = Morphology)
Total	Sum	Sum	---
Lip, Oral Cavity and Pharynx	Sum of subgroups		
Lip	C00		M-9590:9989
Base of Tongue	C01		M-9590:9989
Other & Unspecified Parts of Tongue	C02		M-9590:9989
Parotid Gland	C07		M-9590:9989
Other & Unspecified Major Salivary glands	C08		M-9590:9989
Floor of Mouth	C04		M-9590:9989
Gum	C03		M-9590:9989
Palate	C05		M-9590:9989
Other & Unspecified Parts of Mouth	C06		M-9590:9989
Nasopharynx	C11		M-9590:9989
Tonsil	C09		M-9590:9989
Oropharynx	C10		M-9590:9989
Pyriform Sinus	C12		M-9590:9989
Hypopharynx	C13		M-9590:9989
Other & Unspecified Oral (Buccal) Cavity & Pharynx	C14		M-9590:9989
Digestive System	Sum of Subgroups		
Esophagus	C15		M-9590:9989
Stomach	C16		M-9590:9989
Small Intestine	C17		
Colorectal	Sum of Colon, Rectum, Rectosigmoid Junction, Anus, Anal Canal and Anorectum		
Colon (excluding Rectum)	Sum of Subgroups		
Cecum	C18.0		M-9590:9989
Appendix	C18.1		M-9590:9989
Ascending Colon	C18.2		M-9590:9989
Hepatic Flexure	C18.3		M-9590:9989
Transverse Colon	C18.4		M-9590:9989
Splenic Flexure	C18.5		M-9590:9989
Descending Colon	C18.6		M-9590:9989
Sigmoid Colon	C18.7		M-9590:9989
Large Intestine, NOS	C18.8-C18.9, C26.0		M-9590:9989
Rectum	C20		M-9590:9989
Rectosigmoid Junction	C19		M-9590:9989
Anus, Anal Canal and Anorectum	C21		M-9590:9989
Liver	C22.0		M-9590:9989
Intrahepatic Bile Ducts	C22.1		M-9590:9989
Gallbladder	C23		M-9590:9989
Other & Unspecified Biliary Tract	C24		M-9590:9989
Pancreas	C25		M-9590:9989
Retroperitoneum	C48.0		M-9590:9989
Peritoneum, Omentum and Mesentery	C48.1-C48.2		M-9590:9989
Other Digestive Organs	C26.8-C26.9, C48.8		M-9590:9989
Respiratory System	Sum of Subgroups		
Nasal Cavity and Middle Ear	C30		M-9590:9989
Accessory Sinuses	C31		M-9590:9989
Larynx	C32		M-9590:9989
Lung and Bronchus	C34		M-9590:9989
Pleura	C38.4		M-9590:9989
Trachea	C33		M-9590:9989
Mediastinum and Other Respiratory Organs	C38.1, C38.3, C38.8, C39		M-9590:9989
Bones, Joints and Articular Cartilage	Sum of Subgroups		
Bones, Joints & Articular Cartilage of Limbs	C40		M-9590:9989
Bones, Joints & Articular Cartilage of Other & Unspec Sites	C41		M-9590:9989
Soft Tissue (Including Heart)	Sum of Subgroups		
Heart	C38.0		M-9590:9989
Peripheral Nerves & Autonomic Nervous System	C47		M-9590:9989
Connective, Subcutaneous & Other Soft Tissues	C49		M-9590:9989

Table 296. ICD-O Codes Used (Continued)

Type of Cancer	ICD-O2 Codes		
	Topography	Morphology	Excluding (M = Morphology)
Skin (Excluding Basal And Squamous)	Sum of Subgroups		
Melanomas Of The Skin	C44	M-8720-8790	
Other Non-Epithelial Skin	C44		M-8000:8004, 8010:8045, 8050:8082, 8090:8110, 8720:8790,
Breast	C50		M-9590:9989
Female Genital System	Sum of Subgroups		
Cervix Uteri	C53		M-9590:9989
Corpus Uteri & Uterus, NOS	Sum of Corpus Uteri and Uterus, NOS		
Corpus Uteri	C54		M-9590:9989
Uterus, NOS	C55		M-9590:9989
Ovary	C56		M-9590:9989
Vagina	C52		M-9590:9989
Vulva	C51		M-9590:9989
Placenta	C58		M-9590:9989
Other Female Genital Organs	C57		M-9590:9989
Male Genital System	Sum of Subgroups		
Prostate	C61		M-9590:9989
Testis	C62		M-9590:9989
Penis	C60		M-9590:9989
Other Male Genital Organs	C63		M-9590:9989
Urinary System	Sum of Subgroups		
Urinary Bladder	C67		M-9590:9989
Kidney and Renal Pelvis	Sum of Kidney and Renal Pelvis		
Kidney	C64		M-9590:9989
Renal Pelvis	C65		M-9590:9989
Ureter	C66		M-9590:9989
Other Urinary Organs	C68		M-9590:9989
Eye and Orbit	C69		
Brain and Other Central Nervous System	Sum of Subgroups		
Brain	C71		M-9530:9539, 9590:9989
Meninges	C70		M-9590:9989
Spinal Cord, Cranial Nerves, & Other Parts of CNS	C72	C71 & M-9530:9539	M-9590:9989
Endocrine System	Sum of Subgroups		
Thyroid Gland	C73		
Adrenal Gland	C74		
Other Endocrine (Including Thymus)	C37, C75		M-9590:9989
Hodgkin's Lymphoma		M-9650:9667	
Non-Hodgkin's Lymphoma		M-9590-9595, 9670-9677, 9680-9688, 9690-9698, 9700-9717, 9823, 9827	C42.0, C42.1, C42.4
Multiple Myeloma		M-9731-9732	
Leukemia	Sum of subgroups		
Lymphocytic	Sum of subgroups		
Acute Lymphocytic		M-9821, 9826, 9828	
Chronic Lymphocytic	C42.0, C42.1, C42.4	M-9823	
Other Lymphocytic		M-9820, 9822, 9824-9825, 9850, 9940-9941	
Myeloid and Monocytic	Sum of subgroups		
Acute Myeloid Leukemia		9866, 9867, 9871-9874, 9910	
Acute Monocytic Leukemia		M-9891	
Chronic Myeloid Leukemia		M-9863, 9868	
Other Myeloid/Monocytic Leukemia		9880, 9890, 9892-9894, 9930	
Other	Sum of subgroups		
Other Acute		M-9801, 9931, 9932	
Aleukemic, Subleukemic and NOS		M-9800, 9802-9804, 9830, 9842, 9870, 9900	
	C42.0, C42.1, C42.4	M-9827	
Mesothelioma		M-9050-9055	
Kaposi's Sarcoma		M-9140	
Other, Ill-Defined and Unspecified Sites	All Others		

Table 297. ICD-9 and ICD-10 Codes Used

Type of Cancer	ICD-9	ICD-10
Total	**Sum**	**Sum**
Lip, Oral Cavity and Pharynx	Sum of subgroups	Sum of subgroups
Lip	140	C00
Base of Tongue	141.0	C01
Other & Unspecified Parts of Tongue	141.1-141.9	C02
Parotid Gland	142.0	C07
Other & Unspecified Major Salivary glands	142.1-142.9	C08
Floor of Mouth	144	C04
Gum	143	C03
Palate	145.2-145.5	C05
Other & Unspecified Parts of Mouth	145.0, 145.1, 145.6-145.9	C06
Nasopharynx	147	C11
Tonsil	146.0-146.2	C09
Oropharynx	146.3-146.9	C10
Pyriform Sinus	148.1	C12
Hypopharynx	148.0, 148.2-148.9	C13
Other & Unspecified Oral (Buccal) Cavity & Pharynx	149	C14
Digestive System	Sum of Subgroups	Sum of Subgroups
Esophagus	150	C15
Stomach	151	C16
Small Intestine	152	C17
Colorectal	Sum of Colon, Rectum, Rectosigmoid Junction, Anus, Anal Canal and Anorectum	
Colon (excluding Rectum)	Sum of Subgroups	Sum of Subgroups
Cecum	153.4	C18.0
Appendix	153.5	C18.1
Ascending Colon	153.6	C18.2
Hepatic Flexure	153.0	C18.3
Transverse Colon	153.1	C18.4
Splenic Flexure	153.7	C18.5
Descending Colon	153.2	C18.6
Sigmoid Colon	153.3	C18.7
Large Intestine, NOS	153.8-153.9, 159.0	C18.8-C18.9, C26.0
Rectum	154.1	C20
Rectosigmoid Junction	154.0	C19
Anus, Anal Canal and Anorectum	154.2-154.8	C21
Liver	155.0, 155.2	C22.0, C22.2-C22.4, C22.7, C22.9
Intrahepatic Bile Ducts	155.1	C22.1
Gallbladder	156.0	C23
Other & Unspecified Biliary Tract	156.1-156.9	C24
Pancreas	157	C25
Retroperitoneum	158.0	C48.0
Peritoneum, Omentum and Mesentery	158.8-158.9	C48.1, C48.2
Other Digestive Organs	159.8, 159.9	C26.8-C26.9, C48.8
Respiratory System	Sum of Subgroups	Sum of Subgroups
Nasal Cavity and Middle Ear	160.0, 160.1	C30
Accessory Sinuses	160.2-160.9	C31
Larynx	161	C32
Lung and Bronchus	162.2-162.9	C34
Pleura	163	C38.4
Trachea	162.0	C33
Mediastinum and Other Respiratory Organs	164.2-164.9, 165	C38.1, C38.3, C38.8, C39
Bones, Joints and Articular Cartilage	Sum of Subgroups	Sum of Subgroups
Bones, Joints & Articular Cartilage of Limbs	170.4, 170.5, 170.7, 170.8	C40
Bones, Joints & Articular Cartilage of Other & Unspec Sites	170.0-170.3, 170.6, 170.9	C41
Soft Tissue (Including Heart)	Sum of Subgroups	Sum of Subgroups
Heart	164.1	C38.0
Peripheral Nerves & Autonomic Nervous System	---	C47
Connective, Subcutaneous & Other Soft Tissues	171	C49

Table 297. ICD-9 and ICD-10 Codes Used (Continued)

Type of Cancer	ICD-9	ICD-10
Skin (Excluding Basal And Squamous)	Sum of Subgroups	Sum of Subgroups
Melanomas Of The Skin	172	C43
Other Non-Epithelial Skin	173	C44
Breast	174-175	C50
Female Genital System	Sum of Subgroups	Sum of Subgroups
Cervix Uteri	180	C53
Corpus Uteri & Uterus, NOS	Sum of Corpus Uteri and Uterus, NOS	Sum of Corpus Uteri and Uterus, NOS
Corpus Uteri	182	C54
Uterus, NOS	179	C55
Ovary	183.0	C56
Vagina	184.0	C52
Vulva	184.1-184.4	C51
Placenta	181	C58
Other Female Genital Organs	183.2-183.9, 184.8, 184.9	C57
Male Genital System	Sum of Subgroups	Sum of Subgroups
Prostate	185	C61
Testis	186	C62
Penis	187.1-187.4	C60
Other Male Genital Organs	187.5-187.9	C63
Urinary System	Sum of Subgroups	Sum of Subgroups
Urinary Bladder	188	C67
Kidney and Renal Pelvis	Sum of Kidney and Renal Pelvis	Sum of Kidney and Renal Pelvis
Kidney	189.0	C64
Renal Pelvis	189.1	C65
Ureter	189.2	C66
Other Urinary Organs	189.3-189.9	C68
Eye and Orbit	190	C69
Brain and Other Central Nervous System	Sum of Subgroups	Sum of Subgroups
Brain	191	C71
Meninges	192.1, 192.3	C70
Spinal Cord, Cranial Nerves, & Other Parts of CNS	192.0, 192.2, 192.8, 192.9	C72
Endocrine System	Sum of Subgroups	Sum of Subgroups
Thyroid Gland	193	C73
Adrenal Gland	194.0	C74
Other Endocrine (Including Thymus)	164.0, 194.1-194.9	C37, C75
Hodgkin's Lymphoma	201	C81
Non-Hodgkin's Lymphoma	200, 202.8, 202.9, 202.0-202.2	C82-C85, C96.3
Multiple Myeloma	203.0, 238.6	C90.0, C90.2
Leukemia	Sum of subgroups	
Lymphocytic	Sum of subgroups	
Acute Lymphocytic	204.0	C91.0
Chronic Lymphocytic	204.1	C91.1
Other Lymphocytic	202.4, 204.2, 204.8-204.9	C91.2-C91.4, C91.7, C91.9
Myeloid and Monocytic	Sum of subgroups	
Acute Myeloid Leukemia	205.0, 207.0, 207.2	C92.0, C92.4-C92.5, C94.0, C94.2
Acute Monocytic Leukemia	206.0	C93.0
Chronic Myeloid Leukemia	205.1	C92.1
Other Myeloid/Monocytic Leukemia	205.2-205.3, 205.8-205.9, 206.1-206.2, 206.8-206.9	C92.2-C92.3, C92.7, C92.9, C93.1-C93.2, C93.7, C93.9
Other	Sum of subgroups	
Other Acute	208.0	C94.4, C94.5, C95.0
Aleukemic, Subleukemic and NOS	203.1, 207.1, 207.8, 208.1-208.2, 208.8, 208.9	C90.1, C91.5, C94.1, C94.3, C94.7, C95.1, C95.2, C95.7, C95.9
Mesothelioma	N/A	C45
Kaposi's Sarcoma	176	C46
Other, Ill-Defined and Unspecified Sites	All Others	All Others

APPENDIX B – FORMULAS

AGE-ADJUSTED RATE:

$$\frac{E_t}{S_t} \times 100{,}000$$

$$E_t \quad = \text{Total Expected Number of Events} = \sum_{i=1}^{k} E_i$$

$$S_t \quad = \text{Total Standard Population} = \sum_{i=1}^{k} S_i$$

$$CR \quad = \text{Crude Rate} = \frac{N_t}{P_t} \times 100{,}000$$

$$P_t \quad = \text{Total State Population} = \sum_{i=1}^{k} P_i$$

$$N_t \quad = \text{Total Number of Events} = \sum_{i=1}^{k} N_i$$

$$E_i \quad = \text{Age-Specific Expected Number of Events} = \frac{N_i}{P_i} \times S_i$$

$$S_i \quad = \text{Standard Age-Specific Population}$$

$$k \quad = \text{Number of Age Groups}$$

AGE-ADJUSTED RATE
    CONFIDENCE INTERVALS:

$$w_i = \frac{stdmil_i}{\left(pop_i \times \sum_{j=x}^{y} stdmil_j \right)}$$

$$w_m = \max(w_i)$$

$$v = \sum_{i=x}^{y} (w_i^2 \times count_i)$$

$$CI_{low} = \left(\frac{v}{2 \times rate} \right) \times \left(ChiInv\left(\frac{p}{2}, \frac{\left(2 \times rate^2\right)}{v} \right) \right) \times 100{,}000$$

$$CI_{upper} = \left(\frac{v + w_m^2}{2(rate + w_m)} \right) \times \left(ChiInv\left(1 - \frac{p}{2}, \frac{2(rate + w_m)^2}{\left(v + w_m^2\right)} \right) \right) \times 100{,}000$$

AGE-ADJUSTED RATE
  STANDARD ERROR:

$$SE_{AArate} = \left[\sum_{i=x}^{y} \left(\frac{stdmil_i}{\sum_{j=x}^{y} stdmil_j} \right)^2 \times \left(\frac{count_i}{population_i^2} \right) \right]^{\frac{1}{2}} \times 100,000$$

CAUSE SPECIFIC SURVIVAL RATE:

$$L_x = L_{x-1} - D_{x-1} - U_{x-1} - W_{x-1}$$

$$L_x^* = L_x - \frac{1}{2}(U_x + W_x)$$

$$P_x = 1 - \frac{D_x}{L_x^*}$$

$$CP_x = P_1, P_2, \ldots, P_x$$

L_1 = Total number of cases included in table

L_x = Number of cases alive at beginning of interval x

L_x^* = Adjusted number of cases alive at during interval x

D_x = Number of cases dying from Cancer during interval x

U_x = Number of cases untraced (lost to follow up) during interval x, where the definition for "lost to follow up" is: alive with follow up date prior to some prescribed date

W_x = Number of cases withdrawn alive during interval x, where the definition of "withdrawn alive" is: alive with follow up date later than some specified date (This is the same as in previous definition.)

P_x = Cause specific survival rate for interval x

CP_x = Cumulative cause specific survival rate

CRUDE RATE:

$$CR = \frac{Number of Events}{Population} \times 100{,}000$$

CRUDE RATE CONFIDENCE INTERVALS:

$$CI_{lower} = \left(\frac{100{,}000}{Population}\right) \times \left(Events - \left(1.96 \times \sqrt{Events}\right)\right)$$

$$CI_{upper} = \left(\frac{100{,}000}{Population}\right) \times \left(Events + \left(1.96 \times \sqrt{Events}\right)\right)$$

MEDIAN SURVIVAL RATE:

$$MedianSurvival = (Interval - 1) + \left(\frac{(CP_{x-1} - .5)}{(CP_{x-1} - CP_x)}\right)$$

ELSE IF: CP_x for first interval is less than .5, then median survival:

$$MedianSurvival = \frac{.5}{(1 - CP_x)}$$

ELSE IF: CP_x for interval is equal to .5, then median survival:

$$MedianSurvival = Interval$$

$$CP_x = \text{Cumulative cause specific survival rate for interval } x$$

PERCENTAGE (BRFSS) CONFIDENCE INTERVALS:

$$CI_{lower} = Weighted\% - 1.96 \times \sqrt{\frac{Weighted\% \times (1 - Weighted\%)}{Total\,Responses}}$$

$$CI_{upper} = Weighted\% + 1.96 \times \sqrt{\frac{Weighted\% \times (1 - Weighted\%)}{Total Responses}}$$

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