



MEMO

TO: Subcommittee on Dose Reconstruction
FROM: Rose Gogliotti, SC&A
DATE: January 7, 2016
SUBJECT: Summary Statistics Representing Sets 6 through 13; Revision 3

At the Subcommittee on Dose Reconstruction (DRSC) meeting on June 24, 2015, the Subcommittee members directed SC&A to develop new summary statistics representing cases from Sets 6 through 13 (Tabs 101 through 334). This memo provides summary tables and figures for sets 6 through 13 equivalent to the information and figures included in the July 31, 2009, Advisory Board on Radiation Worker Health (ABRWH) letter to Department of Health and Human Services Secretary Kathleen Sebelius. SC&A also included several figures summarizing Sets 1 through 13. At the request of the DRSC Chair, Dr. Kotelchuck, and the DFO Ted Katz, the original memo dated July 17, 2015, was revised on September 16, 2015, to include additional tables, figures, and selection criteria. At the September 24th DRSC meeting, SC&A and NIOSH were tasked to re-evaluate the status of these findings to determine if any should be withdrawn or reduced to observations based on the outcomes of issues resolution. This memo revision updates the tables and figures to account for that re-evaluation and DRSC comments. If desired by the DRSC, SC&A is prepared to supply the supporting data files and can generate additional tables and figures.

DOSE RECONSTRUCTION CASES 101 THROUGH 334 SUMMARY FIGURES

Included herein are four tables and eight figures that summarize the characteristics of the dose reconstruction cases audited by the Advisory Board with the assistance of the Board's technical support contractor, SC&A. These tables and figures are as follows:

Table 1. Summary of DR Methodology Applied to Cases 101 through 334

Table 2. Summary of Overall Case Rank

Table 3. Summary of Findings and Observations from Cases 101 through 334

Table 4. Finding Classification for Cases 101 through 334

Figure 1. Breakdown of Cases 101 through 334 Reviewed by Employment Site

Figure 2. Comparison of Cases 1 through 100 and 101 through 334 by Site

Figure 3. Comparison of Claims Reviewed to Goal of 1% Total Claims

Figure 4. Breakdown of Case Reviews 101 through 334 by Decade First Employed

Figure 5. Breakdown of Case Reviews 101 through 334 by POC

Figure 6. Breakdown of Case Reviews 101 through 334 by Years of Employment

Figure 7. Breakdown of Case Reviews 101 through 334 by Risk Model

Figure 8. Breakdown of Cases 1 through 334 by Risk Model

Table 1. Summary of DR Methodology Applied to Cases 101 through 334

DR Methodology	Total	Percentage
Maximized	32	14%
Minimized	7	3%
Best Estimate	193	83%
Total¹	232	100%

¹ Although there are 234 cases in this subset, 2 cases were not reviewed by the DRSC. This brings the total to 232.

Table 2. Summary of Overall Case Rank

	Total	Cumulative Case Rank			
		No Rank ¹	Low ²	Medium ³	High ⁴
Total Cases	232	46	122	47	17

- ¹ **No Rank** is assigned to cases without any deficiencies identified.
- ² **Low** means that the combined deficiency of all findings has only a marginal impact on dose.
- ³ **Medium** means that the combined deficiency of all findings moderately impacts the dose.
- ⁴ **High** means that the combined deficiency of all findings substantially impacts the dose.

Table 3. Summary of Findings and Observations from Cases 101 through 334

	Total	Finding Rank		
		Low ¹	Medium ²	High ³
Total Findings	626 ⁴	513	91	22
Total Observations ⁵	241	NA	NA	NA

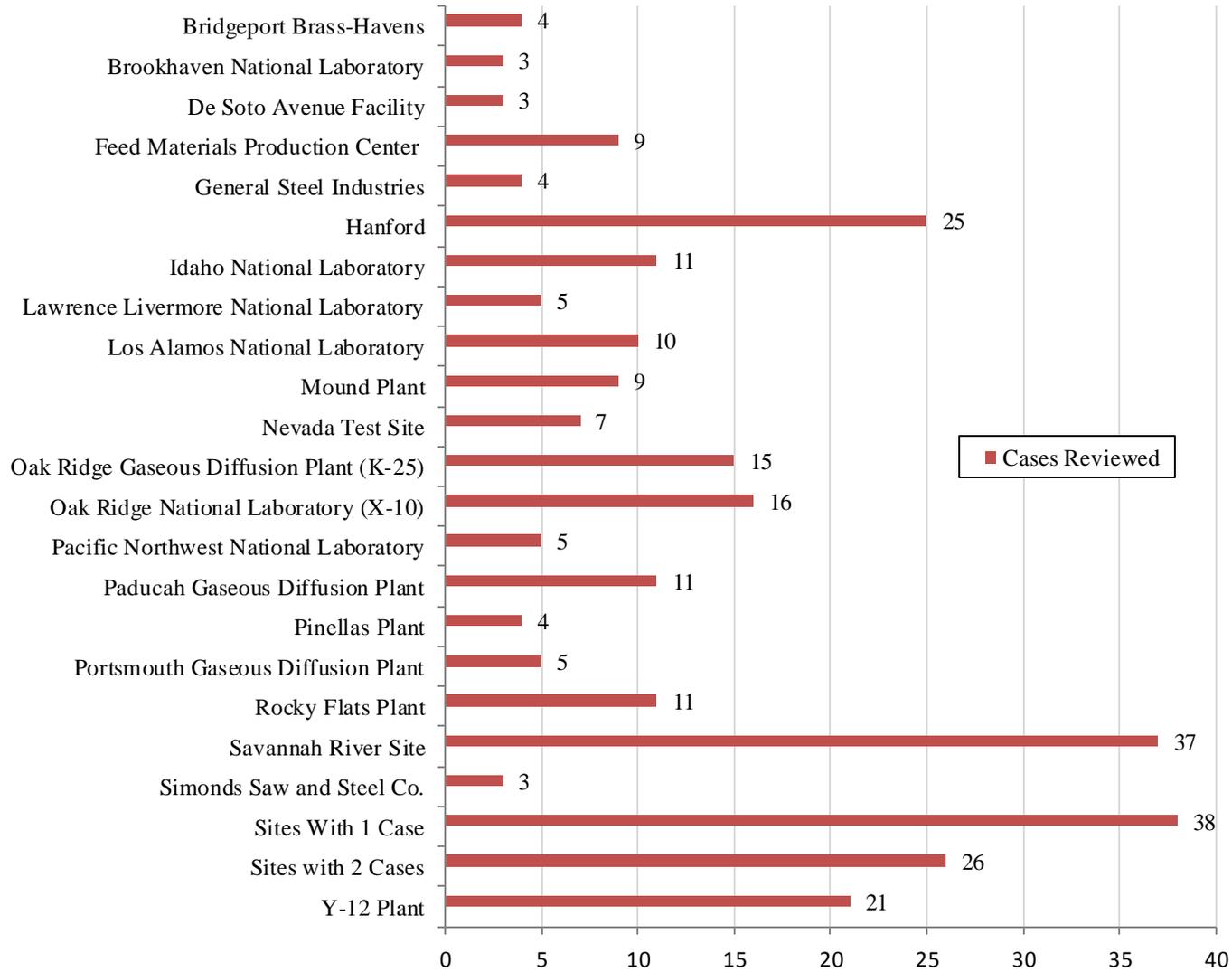
- ¹ **Low** means that the deficiency has only a marginal impact on dose.
- ² **Medium** means that the deficiency moderately impacts the dose.
- ³ **High** means that the deficiency substantially impacts the dose.
- ⁴ Four findings remain open and thus were assigned their original finding rank.
- ⁵ Observations began in the 8th set.

Table 4. Finding Classification for Cases 101 through 334

Classification	Meaning of Classification	Number of Findings
A.	Was the proper judgment made regarding placing a person physically at a work location?	13
B.	Were all exposure scenarios considered (i.e., neutron, thorium)?	28
C.	Were the correct external dose model and assumptions used?	253
D.	Were the correct internal dose model and assumptions used?	134
E.	Is it a quality concern?	95
F.	It does not meet either of the above criteria.	103
	Total	626

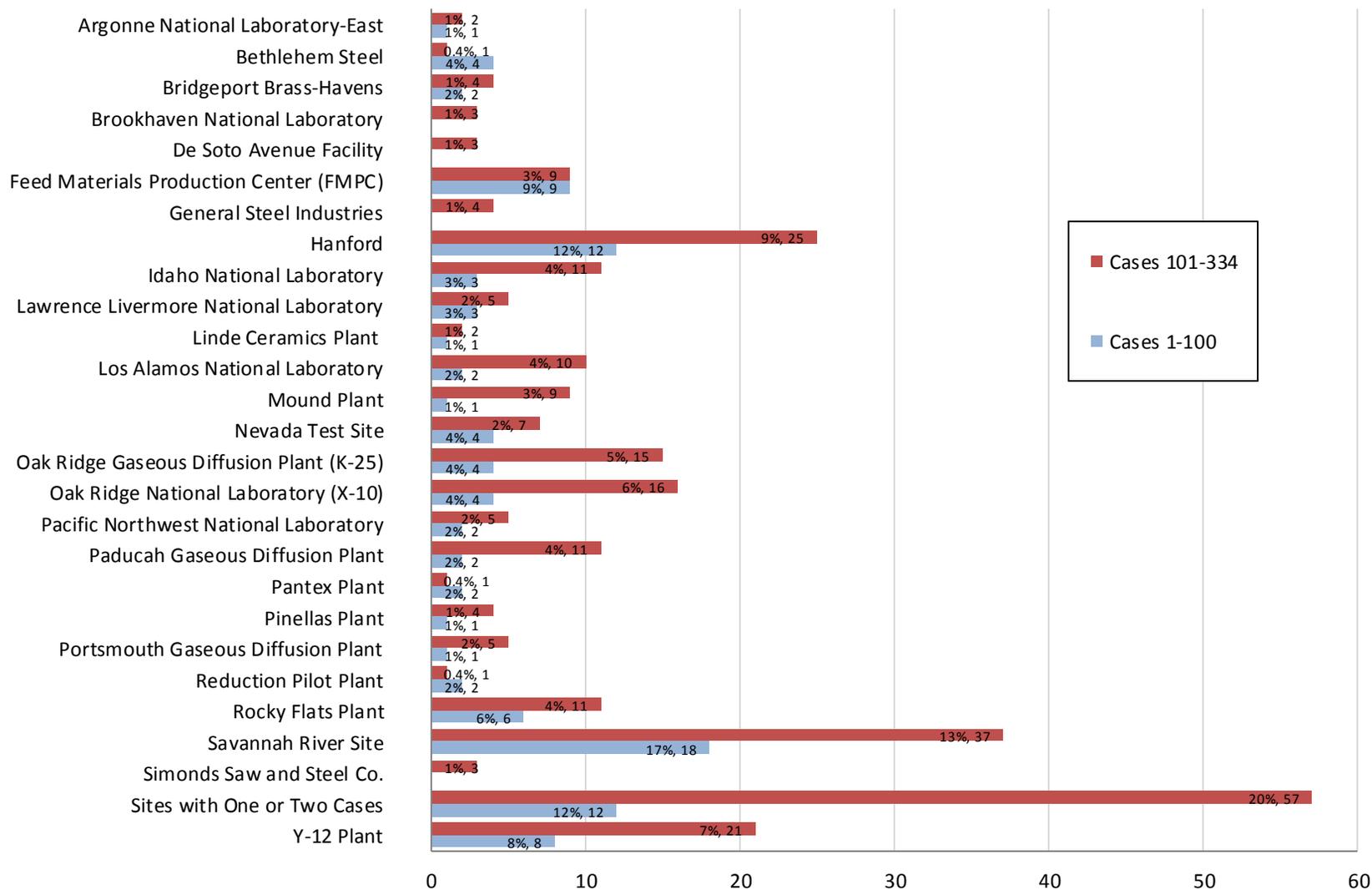
NOTICE: This memo has been reviewed for Privacy Act information and has been cleared for distribution. However, this report is pre-decisional and has not been reviewed by the Advisory Board on Radiation and Worker Health for factual accuracy or applicability within the requirements of 42 CFR 82.

Figure 1. Breakdown of Cases 101 through 334 by Employment Site



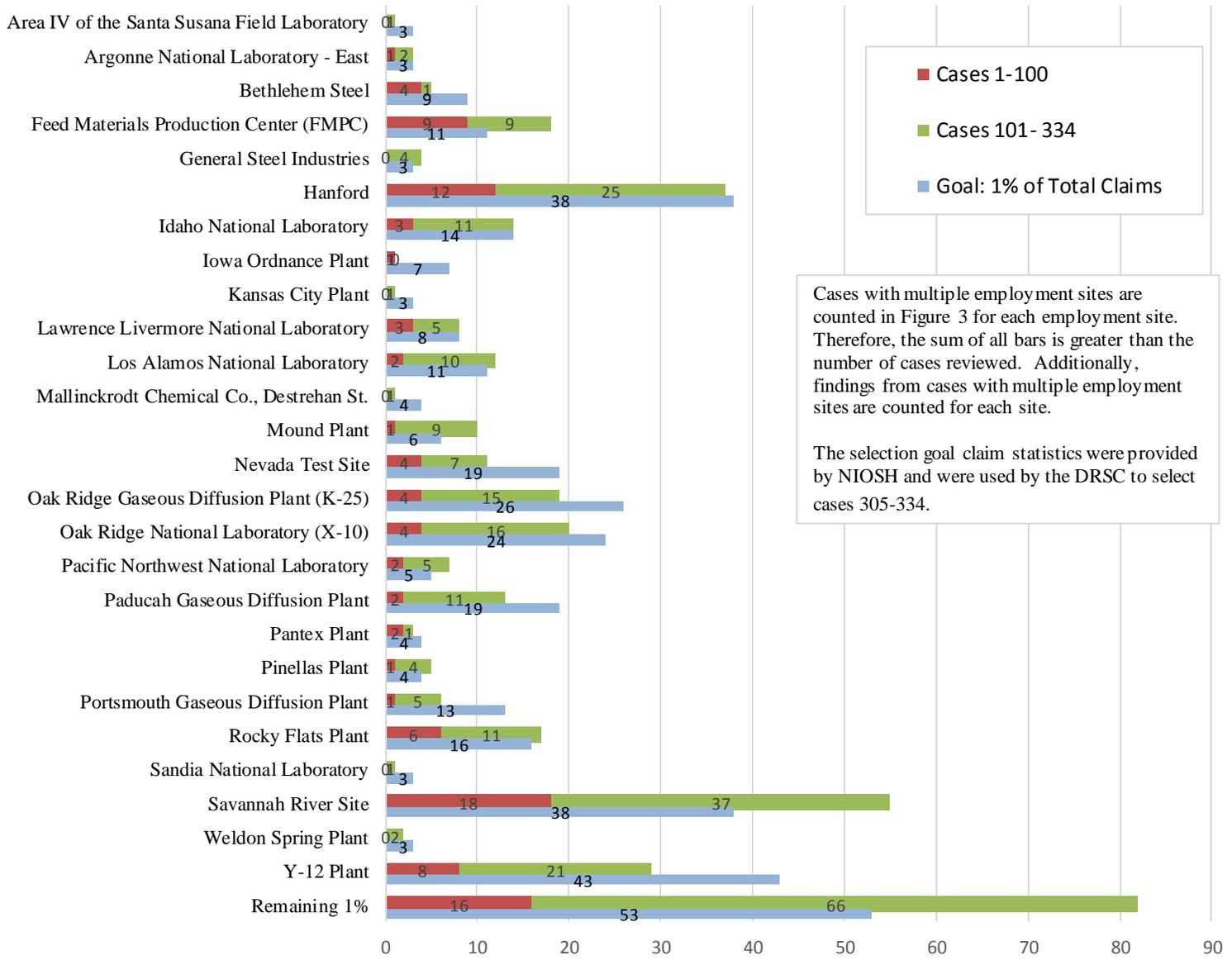
Cases with multiple employment sites are counted in Figure 1 for each employment site. Therefore, the sum of all bars is greater than the number of cases reviewed.

Figure 2. Comparison of Cases 1 through 100 and 101 through 334 by Site



Cases with multiple employment sites are counted in Figure 2 for each employment site. Therefore, the sum of all bars is greater than the number of cases reviewed.

Figure 3. Comparison of Claims Reviewed to Goal of 1% Total Claims



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Figure 4. Breakdown of Cases Reviews 101 through 334 by Decade First Employed

**NIOSH Case Statistics
for Population of all
Cases**

First Employment Period	Percent of Cases
1910s	<0.1%
1920s	0.2%
1930s	1.2%
1940s	14.7%
1950s	33.9%
1960s	17.6%
1970s	15.6%
1980s	11.5%
1990s	4.1%
2000s	1.0%
2010s	0.1%

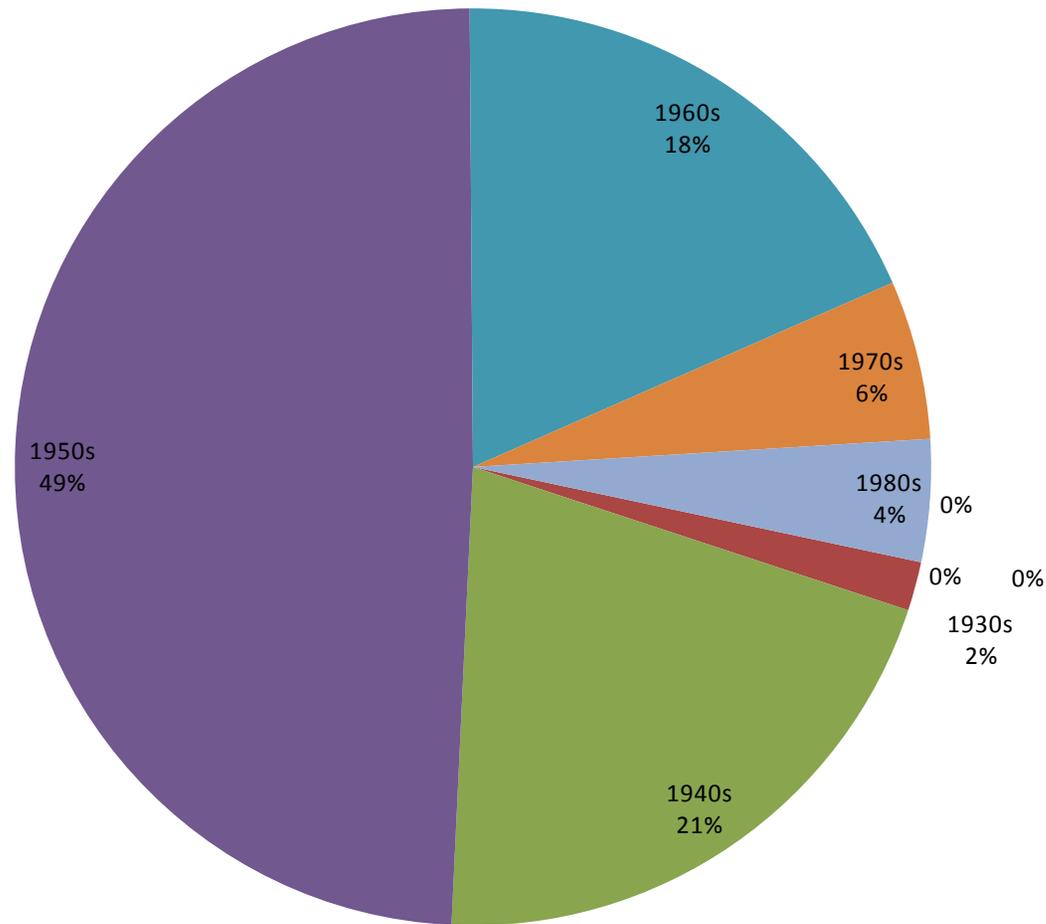


Figure 5. Breakdown of Case Reviews 101 through 334 by POC

**NIOSH Case Statistics
for Population of all
Cases**

POC Range	Percent of Cases
< 20%	44.00%
20% - 39.9%	20.51%
40% - 44.9%	6.13%
45% - 49.9%	0.99%
50% <	28.37%

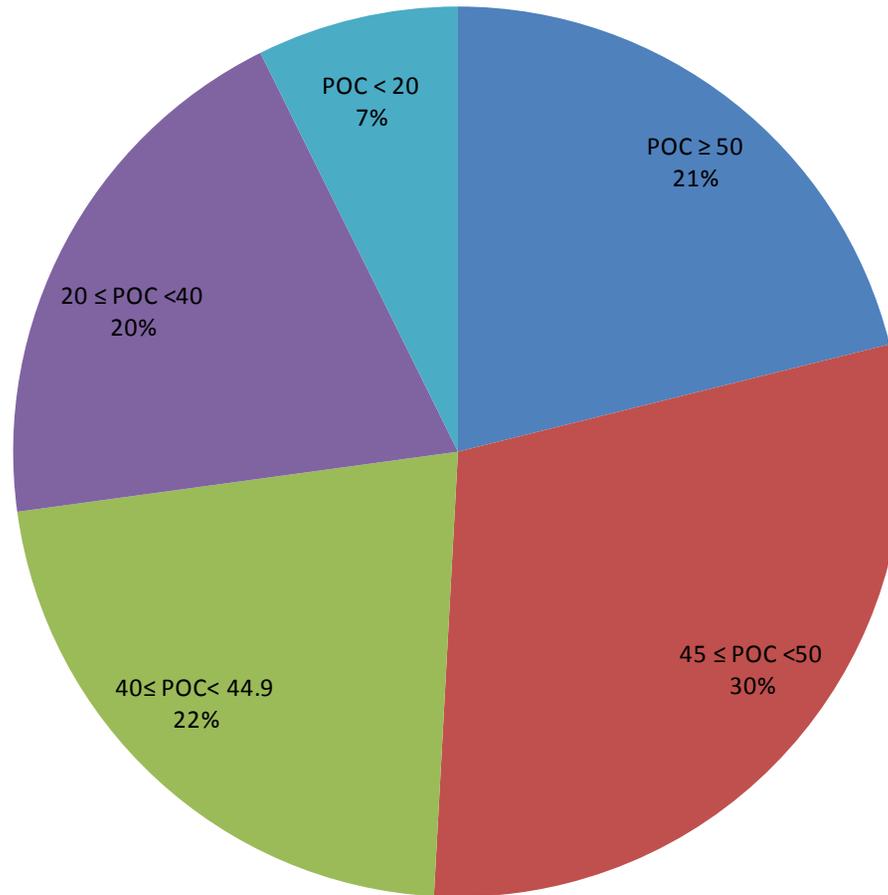


Figure 6. Breakdown of Case Reviews 101-334 by Years of Employment

**NIOSH Case Statistics
for Population of all
Cases**

Years of Employment	Percent of Cases
< 1	8.46
1-5	16.83
5-10	10.92
10 - 20	17.87
20 - 30	19.51
30 - 40	21.2
>40	5.2

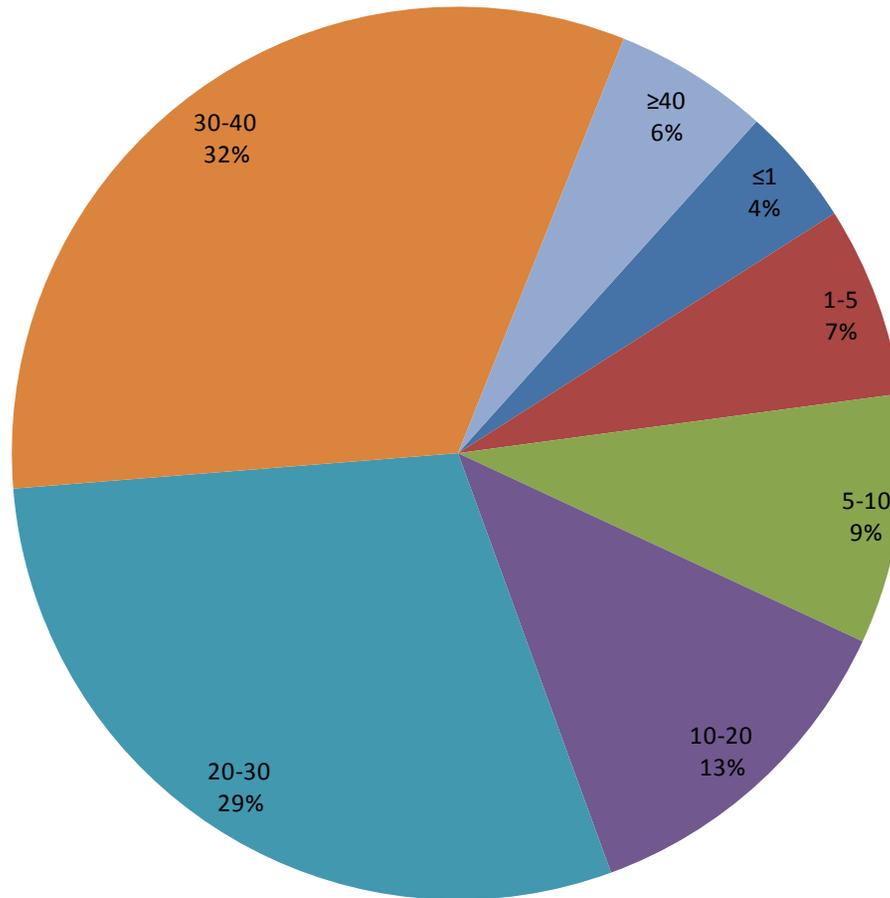
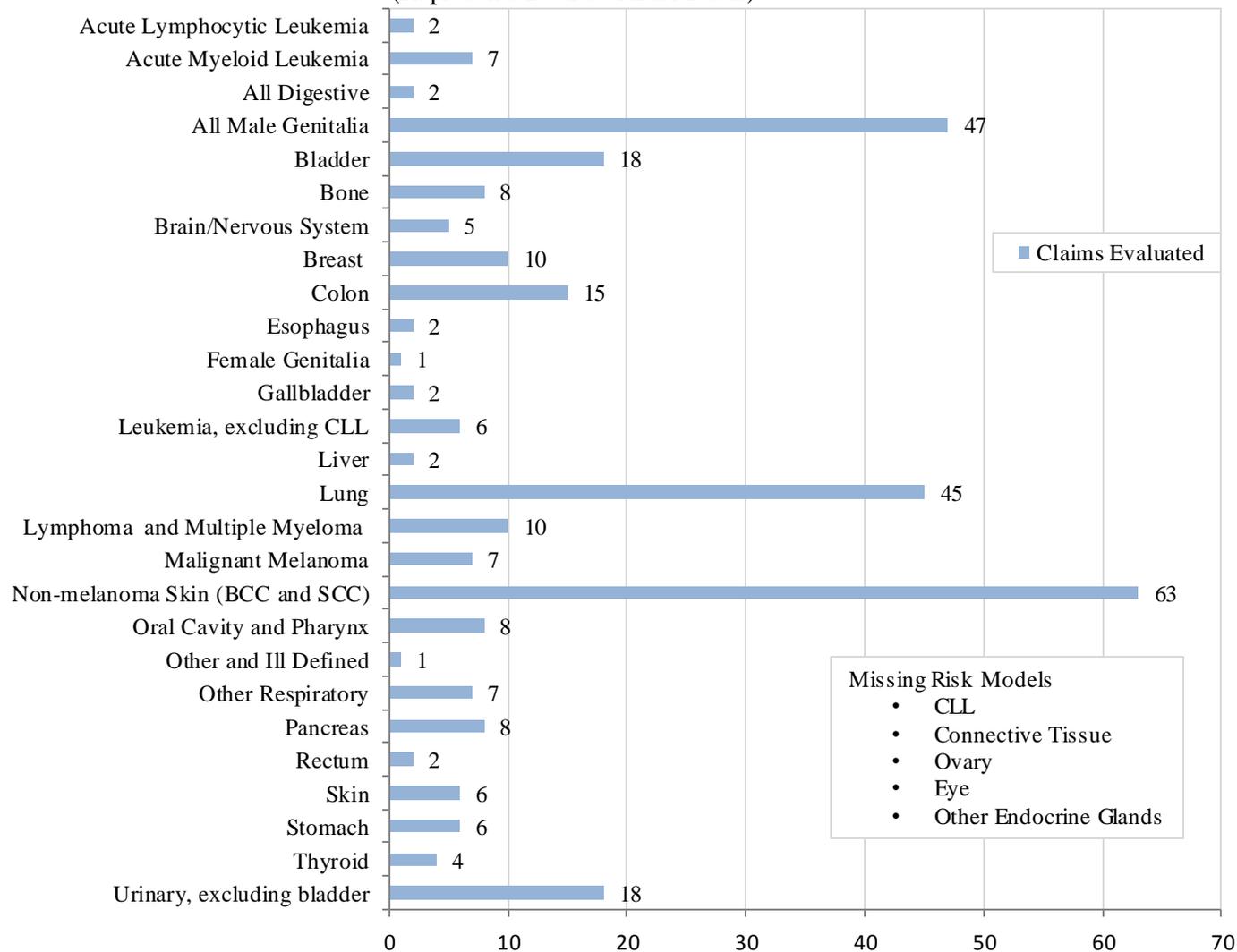


Figure 7. Breakdown of Cases 101 through 334 by Risk Model

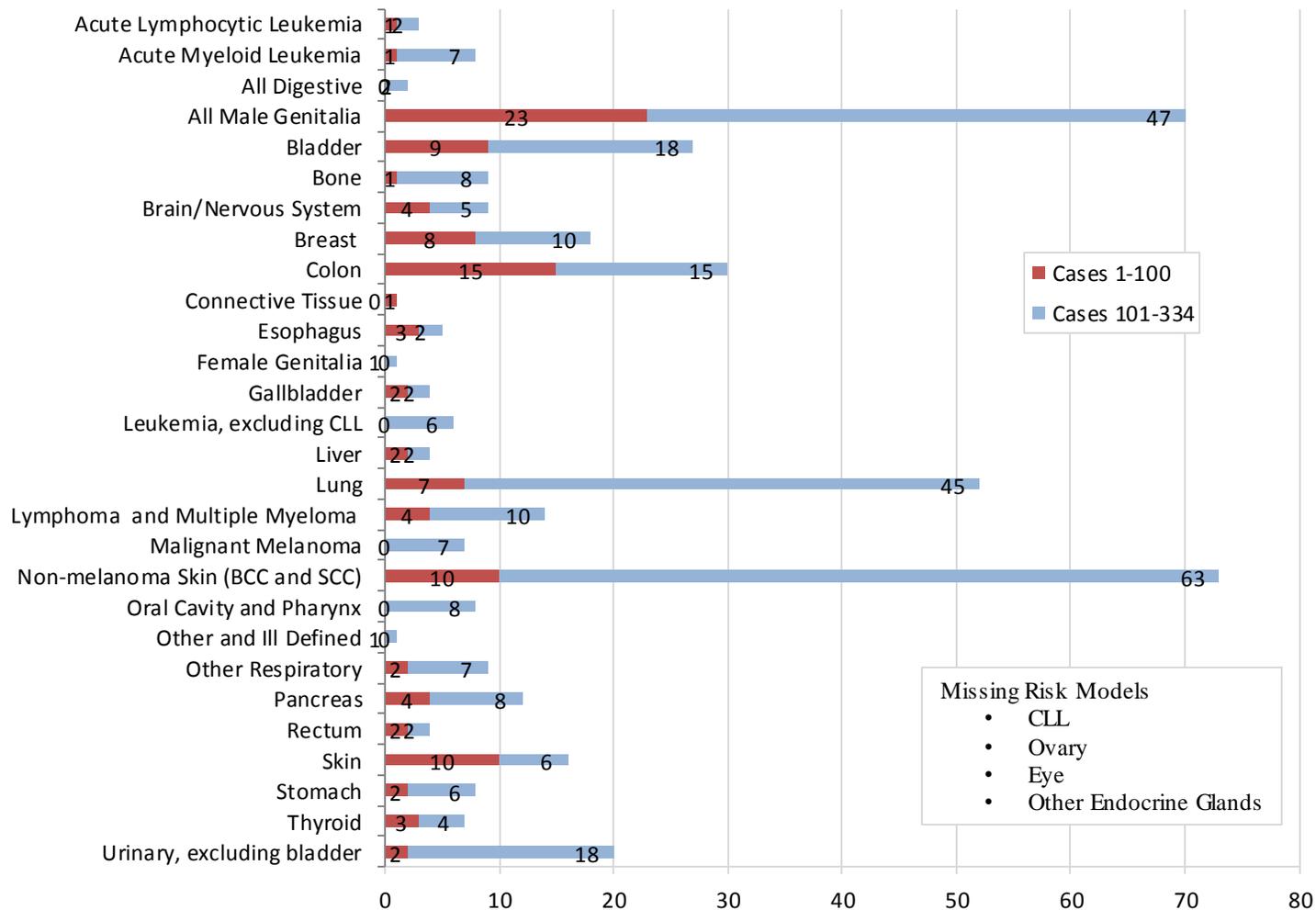
(Represents 28 of 33 Risk Models)



Cases with multiple cancer sites are counted in Figure 7 for each unique cancer site. Cases with multiple cancers with the same risk model are counted once for each unique risk model. Therefore, the sum of all bars is greater than the number of cases reviewed.

Figure 8. Breakdown of Cases 1 through 334 by Risk Model

(Represents 29 of 33 Risk Models)



Cases with multiple cancer sites are counted in Figure 8 for each unique cancer site. Cases with multiple cancers with the same risk model are counted once for each unique risk model (excluding BCC and SCC). Therefore, the sum of all bars is greater than the number of cases reviewed.