[1]Survey of Employer Provided Training Preliminary Sample Size Estimates

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Estimation Priorities

Establishment Sample
Percent of employers
- providing formal training to employees, by industry and mode of training
- providing informal training to employees, by industry and mode of training

Household Sample
Percent of employees
- receiving formal training from employees, by occupation and mode of training
- receiving informal training from employees, by occupation and mode of training

Preliminary Independent-Samples Design

Establishment Sample
- Sample Frame: Longitudinal Database (LDB)
- Sample Unit: Establishment
- Response Unit: Establishment
- Scope: Total Private
- Design: Stratified Simple Random Sample
- Stratification: 14 industries (CES supersectors) x 5 size classes (collapsed CES)

Sample Allocation Example 1 (*see Table 1 on page 2*)
- 3% margin of error by industry, assuming p = 0.50 for all strata
- 3% margin of error by size class
- Assumed 60% response rate
- Total sample size ≈ 20,700

Margins of error are constructed on the proportions of employers providing formal training and the proportions of employers providing informal training to employees. Expected margins of error for these questions by mode of training are presented in Table 2 (see page 3). Since the response distribution of training mode is unknown, ranges of 90% margins of error are given for various response levels by mode.

Sample Allocation Example 2 (*see Table 3 on page 3*)
- 2% margin of error by industry, assuming p = 0.50 for all strata
- 3% margin of error size class
- Assumed 60% response rate
- Total sample size ≈ 41,900

90% margin of error estimates are also given for various response levels by mode in Table 4 (*see page 3*).

Table 1. Sample allocation with 3% margin of error targets on industry and size class (60% response rate)

Supersector	Size Class 1 (1-19)	Size Class 2 (20-49)	Size Class 3 (50-249)	Size Class 4 (250-499)	Size Class 5 (500+)	All Size Classes	90% Margin of Error
Mining & Logging	1045	134	61	12	9	1261	0.03
Construction	1084	112	81	53	32	1362	0.03
Durable Manufacturing	844	194	147	120	136	1441	0.03
Nondurable Manufacturing	852	176	149	86	92	1355	0.03
Wholesale Trade	1081	103	77	55	33	1349	0.03
Retail Trade	960	216	228	201	38	1643	0.03
Transportation & Warehousing	1012	129	78	62	80	1361	0.03
Utilities	902	192	133	22	11	1260	0.03
Information	1032	117	75	36	49	1309	0.03
Financial Activities	1122	86	70	73	107	1458	0.03
Professional & Business Services	1027	225	229	266	296	2043	0.03
Education & Health Services	1027	224	234	215	314	2014	0.03
Leisure & Hospitality	737	422	251	78	69	1557	0.03
Other Services	1159	63	35	21	10	1288	0.03
Total Private	13883	2393	1848	1299	1274	20697	0.01
90% Margin of Error	0.01	0.02	0.03	0.03	0.03	0.01	

Table 2. Estimated 90% margins of error for modes with various response proportions for Example 1

90% MoE: Incidence Rate by Mode	Mode: 5% incidence	Mode: 10% of incidence	Mode: 20% incidence	Mode: 30% incidence	Mode: 40% incidence	Mode: 50% incidence
Supersector	0.06	0.06	0.05	0.05	0.05	0.04
Total Private	0.02	0.02	0.02	0.02	0.02	0.01

Table 3. Sample allocation with 2% margin of error targets on industry, 3% on size class (60% resp. rate)

Supersector	Size Class 1 (1-19)	Size Class 2 (20-49)	Size Class 3 (50-249)	Size Class 4 (250-499)	Size Class 5 (500+)	All Size Classes	90% Margin of Error
Mining & Logging	2353	302	137	26	9	2827	0.02
Construction	2509	201	98	54	32	2894	0.02
Durable Manufacturing	1946	427	310	123	137	2943	0.02
Nondurable Manufacturing	1961	397	332	89	92	2871	0.02
Wholesale Trade	2487	218	94	56	33	2888	0.02
Retail Trade	2284	280	278	207	38	3087	0.02
Transportation & Warehousing	2298	286	168	64	80	2896	0.02
Utilities	2025	432	298	48	24	2827	0.02
Information	2339	262	166	37	49	2853	0.02
Financial Activities	2582	136	85	75	108	2986	0.02
Professional & Business Services	2376	273	279	272	297	3497	0.02
Education & Health Services	2376	272	285	221	315	3469	0.02
Leisure & Hospitality	1868	657	306	79	69	2979	0.02
Other Services	2634	138	43	22	10	2847	0.02
Total Private	32038	4278	2879	1372	1293	41860	0.01
90% Margin of Error	0.01	0.02	0.03	0.03	0.03	0.01	

Table 4. Estimated 90% margins of error for modes with various response proportions for Example 2

90% MoE: Incidence Rate by Mode	Mode: 5% incidence	Mode: 10% of incidence	Mode: 20% incidence	Mode: 30% incidence	Mode: 40% incidence	Mode: 50% incidence
Supersector	0.04	0.04	0.04	0.03	0.03	0.03
Total Private	0.01	0.01	0.01	0.01	0.01	0.01

Household sample
- Sample Frame: Address listing
  - Master Address File (Census Bureau)
  - Area listing / other frame development
- Sample Unit: Housing unit
- Response Unit: Full-time (35+ hours) employed person within household
- Scope: Civilian Noninstitutional Population, 16 years of age or older (CNP16+)
- Design: National Cluster Sample
- Cluster: Household

Estimated design effects (*see Table 5 below*) derived from existing CPS variance information for total employed in
- CNP16+, as proxy for full-time employed
- Management, professional, & related occupations
- Service occupations
- Sales & office occupations
- Natural resources, construction, & maintenance occupations
- Production, transportation, & material moving occupations

Note: Original target of seven major occupational groups reduced to five. CPS major occupation categories have a grouping of six that combines "Farming, forestry, & fishing occupations" with "Construction, & maintenance occupations". The former only has one million employed persons and is too small to serve as a major category. Also, "Armed forces" were removed, since the military personnel are not in the CNP.

Table 5. Approximate design effects by major occupational group

Major Occupational Group	CPS 2016 Annual Avg	CPS 2016 design effect	Approx. SEPT design effect
Full-time employed	123,800	1.07*	1.05
Management, professional, & related	57,960	1.62	1.35
Service	25,896	1.45	1.25
Sales & office	33,598	1.38	1.20
Natural resources, construction, & maintenance	13,733	1.40	1.20
Production, transportation, & material moving	17,647	1.53	1.30

(in thousands)   *Design effect from *total employed*

For preliminary planning, design effects for the SEPT are assumed to be smaller than for the CPS, since the CPS utilizes a considerably more complex sample design. These design effects should produce reasonable, if not slightly conservative, sample size estimates for desired margins of error for the major occupational groups.

Sample size estimates for a 60% and 70% response rate are presented in Table 6. Margins of error are constructed on the proportions of employees receiving formal training from their employers, which is assumed to be p = 0.50. This is likely conservative, compared to the 1993/1995 SEPT results. Expected margins of error for these questions by mode of training are shown in Table 7 below. A range of values are given since the response distribution of training mode is unknown.

Table 6. Sample size estimates, by response rate, for 3% margins of error on occupational groups

Major Occupational Group	Sample Size, Response Rate, & Respondents	90% Margin of Error	Sample Size, Response Rate, & Respondents	90% Margin of Error
Sampled Housing Units	18,500		15,800	
Eligible Households (82%)	15,355		13,114	
Response Rate	60%		70%	
Respondent Distribution				
Full-time employed	9,918	0.01	9,882	0.01
Management, professional, & related occupations	3,862	0.02	3,848	0.02
Service occupations	1,726	0.02	1,719	0.02
Sales & office occupations	2,239	0.02	2,231	0.02
Natural resources, construction, & maintenance occupations	915	0.03	912	0.03
Production, transportation, & material moving occupations	1,176	0.03	1,172	0.03

Table 7. Estimated 90% margins of error for training mode by occupational group for household sample 1

90% MoE: Incidence Rate by Mode (applies to both examples in Table 6)	Mode: 5% incidence	Mode: 10% of incidence	Mode: 20% incidence	Mode: 30% incidence	Mode: 40% incidence	Mode: 50% incidence
Full-time employed	0.02	0.02	0.02	0.01	0.01	0.01
Management, professional, & related occupations	0.03	0.03	0.03	0.03	0.02	0.02
Service occupations	0.04	0.04	0.04	0.04	0.03	0.03
Sales & office occupations	0.04	0.04	0.03	0.03	0.03	0.03
Natural resources, construction, & maintenance occupations	0.06	0.06	0.05	0.05	0.05	0.04
Production, transportation, & material moving occupations	0.05	0.05	0.05	0.05	0.04	0.04

Tables 8 and 9 are analogous to Tables 6 and 7 but target a 2% margin of error on the occupational group proportions, instead of 3%.

Table 8. Sample size estimates, by response rate, for 2% margins of error on occupational groups

Major Occupational Group	Sample Size, Response Rate, & Respondents	90% Margin of Error	Sample Size, Response Rate, & Respondents	90% Margin of Error
Sampled Housing Units	41,500		35,600	
Eligible Households (82%)	34,445		29,548	
Response Rate	60%		70%	
Respondent Distribution				
Full-time employed	22,248	0.01	22,266	0.01
Management, professional, & related occupations	8,664	0.01	8,671	0.01
Service occupations	3,871	0.01	3,874	0.01
Sales & office occupations	5,022	0.01	5,026	0.01
Natural resources, construction, & maintenance occupations	2,053	0.02	2,055	0.02
Production, transportation, & material moving occupations	2,638	0.02	2,640	0.02

Table 9. Estimated 90% margins of error for training mode by occupational group for household sample 2

90% MoE: Incidence Rate by Mode (applies to both examples in Table 8)	Mode: 5% incidence	Mode: 10% of incidence	Mode: 20% incidence	Mode: 30% incidence	Mode: 40% incidence	Mode: 50% incidence
Full-time employed	0.01	0.01	0.01	0.01	0.01	0.01
Management, professional, & related occupations	0.02	0.02	0.02	0.02	0.02	0.01
Service occupations	0.03	0.03	0.03	0.02	0.02	0.02
Sales & office occupations	0.02	0.02	0.02	0.02	0.02	0.02
Natural resources, construction, & maintenance occupations	0.04	0.04	0.04	0.03	0.03	0.03
Production, transportation, & material moving occupations	0.04	0.03	0.03	0.03	0.03	0.03