

**SUPPORTING STATEMENT FOR
BLS QUARTERLY CENSUS OF EMPLOYMENT AND WAGES PROGRAM**

OMB CONTROL NO. 1220-0012

B. COLLECTION OF DATA EMPLOYING STATISTICAL METHODS

1. Describe (including a numerical estimate) the potential respondent universe and any sampling or other respondent selection methods to be used. Data on the number of entities (e.g., establishments, State and local government units, households, or persons) in the universe covered by the collection and in the corresponding sample are to be provided in tabular form for the universe as a whole and for each of the strata in the proposed sample. Indicate expected response rates for the collection as a whole. If the collection had been conducted previously, include the actual response rate achieved during the last collection.

1a. Universe

The universe of respondents to the U.S. Bureau of Labor Statistics (BLS) for the Quarterly Census of Employment and Wages (QCEW) are the 50 States, the District of Columbia, Puerto Rico, and the U.S. Virgin Islands. The ultimate source of data for these 53 entities is the Quarterly Contribution Reports (QCR) submitted to State Workforce Agencies (SWAs) by employers subject to State Unemployment Insurance (UI) laws. The QCEW data, which are compiled for each calendar quarter, provide a comprehensive business name and address file with monthly employment and quarterly wage information by industry, at the six-digit North American Industry Classification System (NAICS) level, and at the national, State, Metropolitan Statistical Area (MSA), and county levels for employers subject to State UI laws. Similar data for Federal Government employees covered by the Unemployment Compensation for Federal Employees program (UCFE) also are included.

The QCEW program provides a virtual census of nonagricultural employees and their wages, with about 55% of the workers in agriculture covered as well. As shown in Table 1 in December 2022, the number of covered private business establishments (worksites) is about 10.97 million, and the number of covered employment is about 130.68 million. Additionally, about 61,000 federal government, 72,000 state government, and 172,000 local government establishments are covered. In December 2022, the total number of covered establishments is about 11.75 million, and the total number of covered employment is about 152.53 million. The QCEW series has broad economic significance in measuring labor trends and major industry developments, in time series analyses and industry comparisons, and in special studies, such as analyses of establishments, employment, and wages by size of establishment.

The BLS role in the QCEW program is to establish and enforce uniform methods and processes that yield a consistent level of data quality for the multifaceted uses of QCEW data. The BLS role is to take in raw UI administrative data, to understand error components, to address each

with methods and processes to reduce resulting error, and to yield high quality economic data which are often used by other programs to create sampling frames. The improvement processes include but are not limited to: efficiency in data collection from large multi-establishment employers through Electronic Data Interchange (EDI); statistically valid procedures for editing, estimating missing reports and data elements, record linkage and standardized processing systems, training of staff; and quality control procedures for data review (see Sections 2b and 2c on estimation procedures and reliability for details). After the data have gone through extensive review at the state, regional, and national levels, the BLS summarizes these data to produce totals for all counties, MSAs, the states, and the nation by various industrial levels.

1b. Sample

The QCEW is a census of establishments; hence, every unit is in the sample and represents itself only. That is, each unit has a sampling weight of one.

2. Describe the procedures for the collection of information including:

- **Statistical methodology for stratification and sample selection,**
- **Estimation procedure,**
- **Degree of accuracy needed for the purpose described in the justification,**
- **Unusual problems requiring specialized sampling procedures, and**
- **Any use of periodic (less frequent than annual) data collection cycles to reduce burden.**

2a. Sample Design

The QCEW is a census of establishments. Thus, its sample design is simple since all establishments are included with certainty. Because all establishments are certainty units representing only themselves, each unit carries a sampling weight of one.

2b. Estimation Procedure

The aggregated totals of employment and wages for each sub-domain (e.g., industry, geography, and size) are simply the sum of the micro records belonging to that sub-domain. Averages and other statistics for each sub-domain are derived by performing the appropriate arithmetic functions.

As mentioned above, the BLS role is to add quality to the raw data. One of these processes involves editing the data and conducting validation checks. The basic monthly employment edit consists of a six-step statistical test that includes the use of multiple t-tests for month-to-month change, over-the-year change, and a 12-month variation in data. Some tests are conducted on levels while others are conducted on rate of change. The wage edit includes the use of an inter-quartile test developed by Hoaglin, Iglewicz, and Tukey. The edit conditions and formulas are described in Appendix-F of the QCEW Operating Manual (2007).

Although the BLS receives the QCEW files from all 53 geographic entities (i.e., the 50 states, the District of Columbia, Puerto Rico, and the U.S. Virgin Islands) in a timely manner, the files

contain estimates for late and missing respondents. Therefore, a step in the data process is estimation for late respondents and for missing respondents (i.e., unit non-response) and data elements (i.e., item non-response). As shown in Table 2a, about one and a half to three percent of the establishments respond late or fail to respond to the QCEW in a timely manner. The corresponding range for employment is similar. The non-response rates for wages are about one to two and a half percent as shown in Table 2c.

The current method of imputation uses current trends from responding establishments with characteristics similar to the non-respondents. The BLS defines this procedure as the Cell Ratio Method. The ratio of a particular estimation cell is computed as the sum of the current month's reported employment divided by the sum of the previous month's reported employment. To impute this month's employment for a non-respondent, the ratio is then multiplied by the non-respondent's previous month employment. A similar procedure is applied to impute average quarterly wages. The details of the method including various exceptions are available in Attachment 1.

The QCEW system at BLS matches summary counts of claims for the regular state unemployment insurance benefits per employer to missing employers. This match identifies employers who are likely to have ceased operations. These non-responding employer records are immediately dropped from the QCEW file. These employer records otherwise would have been imputed for two quarters before being dropped.

State QCEW staff are provided with summary claims counts. State staff members may then use this information as a supplement to their review of imputed and reported QCEW data.

QCEW data are also used to tabulate data on Business Employment Dynamics. In order to develop these statistics, data are linked across quarters. Data processing for this purpose includes: 1) additional editing and imputation; 2) separation of establishments into new establishments (openings or births), continuous establishments (existing businesses), and out-of-business establishments (closings or deaths); and 3) longitudinal research. The BLS employs the Method described in the paper "A simplified Approach to Administrative Record Linkage in the Quarterly Census of Employment and Wages" by Justin McIllece and Vinod Kapani (October, 2014), JSM 2014-Survey research Methods Section, 4392:4404.

2c. Reliability

Since the QCEW is a census, the data are only subject to non-sampling errors. To control for these non-sampling errors, the BLS has extensive quality control procedures that include: 1) improved data collection methods especially for large multi-establishment employers through EDI; 2) standardized data processing systems that include edits, imputation, record linkages including address standardization and industrial classification coding; and 3) standardized training of staff at state, regional, and national levels in the review of data according to the guidelines provided by the QCEW Policy Council and stated in official memorandums (available upon request). Records that fail these edits are individually reviewed. Respondent contact is frequently used to validate significant movements or to correct the data.

The three most important initiatives undertaken by the BLS to enhance the quality of QCEW data are the establishment of the Multiple Worksites Report (MWR) Survey, the Annual Refiling Survey (ARS), and the development of a new comprehensive processing system for states use. Two separate OMB clearances are obtained for the ARS (OMB Control No. 1220-0032) and MWR Survey (OMB Control No. 1220-0134). The MWR survey is sent quarterly to multi-establishment employers for the purpose of asking them to break out their consolidated UI reports to the establishment level. For example, some employers provide data for all of their operations within a state or at the county level; the MWR asks the employer to provide information for each establishment so that all records on the file can be at the establishment level, which is generally the sampling unit for most BLS surveys. This also improves the quality of local economic data by more accurately reporting the location and type of economic activity.

The ARS is conducted annually on about one-third of the establishments on the frame for the purpose of updating the industrial classification, business name, reporting and physical location addresses, and auxiliary status. Establishments with more than 3 employees are eligible for the ARS. Each eligible establishment is placed into a three-year cohort using a random selection process. In order to ensure data quality, state and regional staff are trained extensively in industrial classification coding. Additionally, standardized systems are provided to the state and regions to process the data.

2d. Revisions

For the first quarter of each year, QCEW data are published five times; the original data are first released in August of the same year followed by revisions in the following November, February, May, and August. For example, March 2022 data were first published in August 2022, then in November 2022, and subsequently in February, May, and August of 2023. The 2nd quarter data are published four times; the 3rd quarter data are published three times; and the 4th quarter data are published twice. Table 3a provides data for the initial publication of each quarter in 2022 to their final publication in August 2023. As shown in Table 3b, the largest revision generally occurs from initial publication to the first revision, as missing reports, including out-of-business reports, for late responding employers come in. The magnitude of revisions is relatively small, ranging from about 0.1 to 0.5 percentage points in 2022.

2e. Specialized Procedures

None.

2f. Data Collection Cycles

The QCEW program is quarterly, as employers are required to file Quarterly Contribution Reports (i.e. UI reports) on a quarterly basis.

3. Describe methods to maximize response rates and to deal with issues of non-response. The accuracy and reliability of information collected must be shown to be adequate for intended uses. For collections based on sampling, a special justification must be provided for any collection that will not yield "reliable" data that can be generalized to the universe studied.

Since employers are required to file Quarterly Contributions Reports under the UI law for each State, the response rates are generally very high. The unit response rates for employment are about 97-98 percent (Table 2b) and also about 97-98 percent (Table 2c) for wages as reporting of wages are required by UI law. The response rates based on total covered employment are about 97 percent (Table 2b), as the non-response is mostly concentrated among smaller establishments.

Growth of Electronic Data Interchange (EDI), the direct transfer of data from the firm to the BLS, also provides a high level of response and stability. The BLS currently collects over 500,000 reports from nearly 270 large firms with about 15 million employees via EDI. For final estimates, virtually all these firms provide data.

4. Describe any tests of procedures or methods to be undertaken. Testing is encouraged as an effective means of refining collections of information to minimize burden and improve utility. Tests must be approved if they call for answers to identical questions from 10 or more respondents. A proposed test or set of tests may be submitted for approval separately or in combination with the main collection of information.

The BLS has undertaken several initiatives in the area of research on control and measurement of non-sampling error. The 1991 benchmark of Current Employment Statistics Survey's (CES) estimate of employment to the QCEW revealed a substantial non-sampling error problem caused by payroll processing firms. The American Statistical Association formed a committee to review BLS procedures and issued a report in January 1994 (American Statistical Association, 1994). The BLS adopted most of the report's recommendations. The BLS also conducted a Response Analysis Survey of Payroll Processing Firms (Goldenberg, Moore, and Rosen, 1994). The purpose of the survey was to identify practices that can affect the data collected by the CES and QCEW programs (the benchmark source data) and educate payroll processors on proper reporting procedures. The BLS also conducted a Response Analysis Survey (RAS) of CES and QCEW covering employment reporting (Werking, Clayton, and Rosen, 1995). The survey identified factors affecting both CES and QCEW reporting within the same firm. Based on these RAS studies, the BLS undertook an extensive education program with CES respondents. This included highlighting correct reporting of problem items on the CES report form and the inclusion of special notices on correct reporting on the monthly advance notice fax message. Another RAS was conducted in 2008; an Executive Summary of the report detailing those findings is in Attachment 2.

5. Provide the name and telephone number of individuals consulted on statistical aspects of the design and the name of the agency unit, contractor(s), grantee(s), or other person(s) who will actually collect and/or analyze person(s) who will actually collect and/or analyze the information for the agency.

Mr. Edwin Robison, Chief, Statistical Methods Staff of the Office of Employment and Unemployment Statistics is responsible for the statistical aspects of the QCEW program. As mentioned in the above paragraph, the BLS seeks consultation with other outside experts on an as needed basis. The QCEW Policy Council, composed of ten state representatives and BLS staff, has been consulted on the content, uses, and methodology of the program.

6. References

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Goldenberg, Karen L., Susan E. Moore, and Richard J. Rosen (1994), "Commercial Payroll Software and the Quality of Employment Data." Proceedings of the Survey Research Methods Section, American Statistical Association, 13-18 August, 1994. Toronto: American Statistical Association, 1994.

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Quarterly Census of Employment and Wages

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Table 1 – QCEW Summary Data for 50 States, D.C., Puerto Rico, and Virgin Island on NAICS Basis					
October, November, December 2022 (in thousands)					
Industry Code	Industry Description	Number of Establishments	Employment October 2022	Employment November 2022	Employment December 2022
<i>Total</i>		11754	152243	152763	152525
<i>Total Private</i>		10970	130466	130832	130683
11	Agriculture, Forestry, Fishing and Hunting	113	1338	1226	1148
21	Mining	31	574	574	574
22	Utilities	23	558	560	561
23	Construction	917	7924	7844	7733
31*	Manufacturing – Nondurable Goods	147	4858	4849	4846
33*	Manufacturing – Durable Goods	239	7989	8007	8032
42	Wholesale Trade	640	6052	6069	6086
44-45	Retail Trade	1068	15511	15814	1067
48-49	Transportation and Warehousing	318	6476	6672	6753
51	Information	274	3079	3094	3071
52	Finance and Insurance	569	6290	6294	6282
53	Real Estate and Rental and Leasing	482	2390	2380	2387
54	Professional, Scientific, and Technical Services	1623	10708	10742	10748
55	Management of Companies and Enterprises	90	2531	2544	2553
56	Administrative and Support and Waste Management and Remediation Services	671	9726	9684	9504
61	Educational Services	157	3125	3158	3102
62	Health Care and Social Assistance	1886	20620	20706	20760
71	Arts, Entertainment, and Recreation	177	2345	2265	2255
72	Accommodation and Food Services	770	13581	13552	13529
81	Other Services, Except Public Administration	878	4473	4470	4464
91	Federal Government	61	2870	2878	2884
92	State Government	72	4598	4614	4602
93	Local Government	172	14309	14439	14356
99	Unclassified	379	318	328	339

**NOTE: The nondurable goods manufacturing category includes all of NAICS 31 and part of NAICS 32. The durable goods manufacturing category includes all of NAICS 33 and the part of NAICS 32 that is not included in the nondurable good manufacturing category.*

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Table 2a – U.S. Percentage of Imputed Establishments by Year and Month												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2001	5.96	5.96	5.99	5.72	5.73	5.81	5.04	5.06	5.08	5.02	5.04	5.09
2002	5.57	5.58	5.57	5.12	5.12	5.19	4.98	4.99	5.04	4.75	4.78	4.82
2003	6.25	6.26	6.26	5.65	5.62	5.70	5.27	5.27	5.29	5.49	5.51	5.57
2004	5.98	5.97	5.98	5.83	5.80	5.93	5.50	5.50	5.62	5.33	5.35	5.45
2005	5.66	5.68	5.74	5.13	5.11	5.28	5.23	5.25	5.26	4.65	4.71	4.80
2006	5.96	5.98	6.01	4.96	4.91	5.01	4.89	4.97	5.01	4.46	4.55	4.60
2007	5.14	5.28	5.31	4.59	4.70	4.78	4.37	4.40	4.45	4.15	4.18	4.25
2008	5.29	5.27	5.33	4.19	4.18	4.31	4.19	4.17	4.24	3.83	3.88	3.99
2009	4.88	4.90	4.99	4.12	4.09	4.21	3.71	3.72	3.79	3.64	3.66	3.81
2010	4.85	4.87	4.89	4.22	4.22	4.42	4.33	4.34	4.56	3.83	3.87	4.02
2011	4.76	4.80	4.88	5.02	5.02	5.21	3.44	3.46	3.59	2.93	3.00	3.12
2012	3.73	3.73	3.79	3.71	3.70	3.84	3.38	3.38	3.52	4.00	4.03	4.14
2013	4.28	4.19	4.27	3.43	3.43	3.58	3.01	2.95	3.06	2.95	2.90	3.04
2014	4.11	4.04	4.11	2.89	2.81	2.95	2.74	2.74	2.87	2.65	2.68	2.77
2015	3.38	3.38	3.41	2.78	2.74	2.84	3.36	3.36	3.49	2.52	2.56	2.68
2016	4.46	4.46	4.54	3.16	3.16	3.33	2.77	2.78	2.87	3.16	3.20	3.31
2017	3.87	3.87	3.89	2.95	2.94	3.04	2.36	2.39	2.47	2.31	2.35	2.47
2018	3.97	3.96	4.02	2.72	2.72	2.82	2.43	2.46	2.57	2.33	2.37	2.51
2019	3.29	3.26	3.34	2.93	2.94	3.05	2.76	2.77	2.90	2.25	2.29	2.43
2020	2.38	2.37	2.52	2.10	1.95	1.93	1.54	1.57	1.64	1.56	1.60	1.76
2021	2.12	2.12	2.18	1.82	1.82	1.94	1.60	1.63	1.97	2.44	2.50	2.67
2022	3.22	3.34	3.33	2.34	2.44	2.69	1.90	1.95	2.09	1.74	1.80	1.98

NOTE: Tables 2a & 2b are based on Imputed Employment Indicator and all ownerships, and exclude Puerto Rico & Virgin Islands

Quarterly Census of Employment and Wages

OMB Control Number: 1220-0012

OMB Expiration Date: 7/31/2024

Table 2b – U.S. Percentage of Imputed Employment by Year and Month												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2001	5.14	5.09	5.10	4.76	4.70	4.74	4.41	4.38	4.47	4.68	4.68	4.74
2002	4.41	4.42	4.38	4.16	4.13	4.24	4.49	4.44	4.47	4.26	4.20	4.23
2003	4.92	4.93	4.82	4.36	4.29	4.39	4.62	4.54	4.58	4.62	4.61	4.57
2004	4.52	4.42	4.35	4.70	4.59	4.77	5.07	5.01	5.24	4.54	4.48	4.49
2005	4.10	4.09	4.12	3.80	3.74	4.09	3.96	3.95	3.83	3.82	3.78	3.79
2006	3.78	3.74	3.75	3.14	3.04	3.06	3.29	3.31	3.28	3.23	3.28	3.27
2007	3.28	3.28	3.24	2.95	2.89	2.94	3.08	3.08	3.10	2.86	2.82	2.87
2008	3.07	2.97	3.00	2.60	2.53	2.68	2.69	2.58	2.68	2.49	2.44	2.56
2009	2.84	2.75	3.26	2.35	2.29	2.36	2.34	2.30	2.51	2.34	2.26	2.34
2010	2.85	2.81	2.79	2.32	2.25	2.43	2.70	2.67	3.09	2.42	2.44	2.57
2011	2.80	2.79	2.89	3.04	2.99	3.25	2.32	2.33	2.41	2.22	2.23	2.27
2012	2.49	2.41	2.45	2.37	2.30	2.45	2.31	2.18	2.29	2.71	2.53	2.64
2013	2.72	2.54	2.62	2.17	2.13	2.28	2.34	2.14	2.26	2.21	1.97	2.13
2014	2.46	2.31	2.37	1.88	1.80	1.92	1.91	1.84	1.96	2.13	2.09	2.19
2015	2.07	2.03	2.07	1.78	1.71	1.83	1.96	1.89	2.05	1.73	1.73	1.87
2016	2.17	2.14	2.23	1.56	1.56	1.87	1.72	1.67	1.84	1.94	1.90	2.00
2017	1.90	1.90	1.91	1.58	1.58	1.71	1.47	1.47	1.58	1.48	1.52	1.6
2018	1.98	1.96	2.05	1.55	1.55	1.64	1.50	1.47	1.62	1.57	1.61	1.71
2019	1.91	1.87	1.93	1.65	1.63	1.77	1.65	1.62	1.83	1.64	1.63	1.75
2020	1.81	1.72	1.88	1.55	1.42	1.98	1.43	1.74	1.55	1.35	1.43	2.03
2021	1.85	1.88	1.96	1.35	1.37	1.72	1.60	1.53	2.18	2.14	2.11	2.34
2022	2.30	2.32	2.54	1.99	1.98	3.05	2.48	2.39	2.70	2.36	2.39	2.68

NOTE: Tables 2a & 2b are based on Imputed Employment Indicator and all ownerships, and exclude Puerto Rico & Virgin Islands

Table 2c – Percentage of Imputed Wage by Year and Quarter								
Year	Total Establishments Count Q1	Percent Imp Wage Records Q1	Total Establishments Count Q2	Percent Imp Wage Records Q2	Total Establishments Count Q3	Percent Imp Wage Records Q3	Total Establishments Count Q4	Percent Imp Wage Records Q4
2001	7,743,963	4.26	7,752,694	4.24	7,803,541	3.18	7,839,471	3.11
2002	7,891,412	3.94	7,901,173	3.40	7,935,862	3.31	7,973,775	3.28
2003	8,013,297	4.78	8,002,961	3.76	8,060,296	3.46	8,081,182	3.50
2004	8,129,247	4.31	8,133,737	4.07	8,192,688	3.71	8,259,088	3.70
2005	8,314,712	4.15	8,335,131	3.62	8,407,905	3.65	8,464,375	3.13
2006	8,542,371	4.39	8,550,053	3.61	8,617,164	3.52	8,703,001	3.06
2007	8,718,045	3.94	8,720,237	3.49	8,785,200	3.20	8,836,877	2.96
2008	8,875,359	4.04	8,876,227	3.34	8,918,706	3.24	8,943,568	2.99
2009	8,878,407	4.10	8,819,252	3.27	8,826,095	3.08	8,845,544	2.93
2010	8,802,125	3.99	8,769,242	3.53	8,802,038	3.30	8,842,899	2.94
2011	8,820,545	4.32	8,828,478	4.08	8,876,724	2.59	8,921,357	1.95
2012	8,951,937	2.89	8,968,693	2.84	8,918,033	2.59	8,958,625	3.25
2013	8,946,733	3.33	9,003,016	2.68	9,047,292	2.29	9,050,707	2.46
2014	9,045,619	3.45	9,041,974	2.14	9,092,059	2.17	9,149,628	1.96
2015	9,178,990	2.69	9,221,367	2.21	9,266,222	2.86	9,319,488	1.85
2016	9,320,160	3.88	9,371,351	2.72	9,432,306	2.35	9,489,189	2.76
2017	9,472,782	3.18	9,527,202	2.47	9,532,898	1.89	9,591,535	1.81
2018	9,618,757	2.80	9,663,973	2.07	9,731,525	1.83	9,781,919	1.78
2019	9,815,176	2.81	9,857,279	2.45	9,926,960	2.28	9,990,093	1.77
2020	10,284,017	1.84	10,288,335	1.17	10,387,210	1.06	10,502,837	1.11
2021	10,561,355	1.68	10,665,197	1.44	10,813,706	1.15	10,982,783	2.13
2022	11,071,143	2.62	11,216,613	2.10	11,357,973	1.70	11,524,291	1.44

NOTE: Table 2c is based on Imputed Wages Indicator of “E” and all ownerships, and excludes Puerto Rico & Virgin Islands

Table 3a – Revisions in Published Data, U.S. Total

Mar-22	Mar-22	Mar-22	Mar-22	Mar-22					
August 2022 Release	November 2022 Release	February 2023 Release	May 2023 Release	August 2023 Release	First Revision	Second Revision	Third Revision	Fourth Revision	Total Revision Since August 2022
147,648,359	147,781,400	147,815,124	147,815,394	147,775,977	133,041	33,724	270	-39,417	127,618
	Jun-22	Jun-22	Jun-22	Jun-22					
	November 2022 Release	February 2023 Release	May 2023 Release	August 2023 Release	First Revision	Second Revision	Third Revision		Total Revision Since November 2022
	149,901,995	150,541,452	150,658,220	150,675,725	639,457	116,768	17,505		773,730
		Sep-22	Sep-22	Sep-22					
		February 2023 Release	May 2023 Release	August 2023 Release	First Revision	Second Revision			Total Revision Since February 2023
		151,239,638	151,498,101	151,524,979	258,463	26,878			285,341
			Dec-22	Dec-22					
			May 2023 Release	August 2023 Release	First Revision				Total Revision Since May 2023
			152,317,914	152,525,285	207,371				207,371

Table 3b – Percentage of Revision from Original to Next Publication				
Preliminary publication	Mar-22	Jun-22	Sep-22	Dec-22
Revised Publication	November 2022 Release	February 2023 Release	May 2023 Release	August 2023 Release
% Revision from Preliminary Publication	0.09	0.42	0.17	0.14

Table 3c – Percentage of Revision from Original to Final Publication				
Preliminary Publication	Mar-22	Jun-22	Sep-22	Dec-22
Revised Publication	August 2023 Release	August 2023 Release	August 2023 Release	August 2023 Release
% Revision from Preliminary Published Data	0.09	0.52	0.19	0.14