

# Expenditures for Residential Improvements and Repairs

3rd Quarter

2001

Issued March 2001

C50/01-Q3

**Current  
Construction  
Reports**

## Quarterly Expenditures for Residential Improvements and Repairs

Seasonally adjusted annual rate in billions of dollars



Source: U.S. Census Bureau, Expenditures for Residential Improvements and Repairs.

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## **INTRODUCTION**

This report provides estimates of expenditures by property owners for construction improvements (additions, alterations, and major replacements) and maintenance and repairs to residential properties.

Table 1 presents quarterly expenditures for all properties at a seasonally adjusted annual rate in current dollars for 1992 to 2001. Table 2 shows actual (not seasonally adjusted) quarterly estimates separately by type of property (all owner-occupied, owner-occupied one-unit, and rental) for 1998 to 2001. Tables 3, 4, and 5 present actual quarterly expenditures for owner-occupied one-unit properties by region (Table 3), year structure was built (Table 4), and for payment to contractors or for materials purchased (Table 5) for 2000 and 2001. Please note that all dollar values shown in this report are in current dollars.

Data for this report were collected by direct interview and by mail from a sample of owners of residential properties. General information about the survey

including definitions, survey methodology, and reliability of the data appears in Appendixes A and B. Appendix C includes a description of the adjustments for seasonal variation.

## **SUMMARY**

Expenditures made by residential property owners for construction improvements and repairs during the third-quarter 2001 were estimated at a seasonally adjusted annual rate of \$157.7 billion. Spending on improvements was at a seasonally adjusted rate of \$111.0 billion during the third-quarter and expenditures for repairs amounted to \$46.6 billion.

Actual expenditures for improvements and repairs to all properties amounted to an estimated \$45.4 billion during the third-quarter 2001. Of this amount, owners of all owner-occupied properties spent \$33.0 billion and owners of rental, vacant, and seasonal properties spent \$12.4 billion.

**Table 1. Expenditures for Residential Properties: Quarterly 1992 to 2001**

Seasonally Adjusted Annual Rate

[Millions of dollars. Components may not add to totals because of rounding]

Year and quarter	Total expenditures	Maintenance and repairs	Improvements		
			Total	Additions and alterations	Major replacements
<b>1992</b>					
1st quarter .....	107,700	47,800	59,900	41,100	18,800
2nd quarter .....	128,200	60,200	68,000	43,900	24,200
3rd quarter .....	106,000	47,600	58,400	40,700	17,700
4th quarter .....	120,000	47,400	72,600	50,700	21,900
<b>1993</b>					
1st quarter .....	120,000	49,300	70,700	48,200	22,500
2nd quarter .....	118,700	43,400	75,300	46,700	28,600
3rd quarter .....	120,700	44,000	76,700	57,500	19,200
4th quarter .....	129,500	47,000	82,500	61,300	21,200
<b>1994</b>					
1st quarter .....	126,300	45,100	81,300	61,100	20,100
2nd quarter .....	138,700	49,600	89,100	65,300	23,900
3rd quarter .....	123,300	43,800	79,500	51,800	27,700
4th quarter .....	130,400	49,800	80,600	49,000	31,600
<b>1995</b>					
1st quarter .....	131,200	49,100	82,100	55,300	26,800
2nd quarter .....	133,200	48,700	84,500	56,200	28,300
3rd quarter .....	127,900	48,800	79,100	48,300	30,900
4th quarter .....	107,200	41,600	65,600	44,300	21,200
<b>1996</b>					
1st quarter .....	135,500	43,400	92,200	60,900	31,200
2nd quarter .....	113,300	39,200	74,100	52,400	21,700
3rd quarter .....	136,800	35,700	101,200	70,400	30,700
4th quarter .....	142,300	43,200	99,100	75,100	24,100
<b>1997</b>					
1st quarter .....	126,500	36,900	89,600	62,500	27,200
2nd quarter .....	129,000	42,600	86,400	62,000	24,400
3rd quarter .....	138,500	45,800	92,700	66,000	26,700
4th quarter .....	138,300	37,400	100,900	70,300	30,600
<b>1998</b>					
1st quarter .....	140,700	40,900	99,800	72,200	27,600
2nd quarter .....	152,700	43,700	109,000	79,000	30,000
3rd quarter .....	119,100	42,400	76,700	49,200	27,500
4th quarter .....	123,300	40,500	82,800	52,800	30,000
<b>1999</b>					
1st quarter .....	127,900	37,400	90,500	60,200	30,300
2nd quarter .....	129,100	40,400	88,700	60,500	28,200
3rd quarter .....	147,700	44,600	103,100	79,600	23,500
4th quarter .....	165,400	45,800	119,600	85,900	33,700
<b>2000</b>					
1st quarter .....	155,100	45,500	109,600	73,700	35,900
2nd quarter .....	148,000	43,100	104,900	68,200	36,700
3rd quarter .....	151,700	42,000	109,700	84,600	25,100
4th quarter .....	160,700	39,500	121,200	85,000	36,200
<b>2001</b>					
1st quarter .....	166,800	53,300	113,500	84,000	29,500
2nd quarter .....	165,800	46,900	119,000	79,800	39,200
3rd quarter <sup>f</sup> .....	157,700	46,600	111,000	86,100	24,900

<sup>f</sup>Revised.

Table 2. **Expenditures for Residential Properties by Property Type: Quarterly 1998 to 2001**

Not Seasonally Adjusted

[Millions of dollars. Components may not add to totals because of rounding]

Property type, year, and quarter	Total expenditures	Maintenance and repairs	Improvements					Major replacements
			Total	Additions and alterations			To property outside of structures	
				Total	To structures			
					Additions	Alterations		
<b>ALL PROPERTIES</b>								
<b>Annual</b>								
1998	133,693	41,980	91,712	62,971	11,897	38,787	12,287	28,741
1999	142,900	42,352	100,549	72,056	16,164	42,058	13,833	28,493
2000	152,975	42,236	110,739	77,979	18,189	40,384	19,407	32,760
Relative standard error of annual estimates . . . . . (percent) . .	4	4	5	7	11	10	9	7
<b>Quarterly</b>								
1998: 1st quarter	26,163	7,462	18,701	13,914	2,392	9,225	2,296	4,787
2nd quarter	41,397	11,773	29,623	22,329	4,480	14,461	3,389	7,294
3rd quarter	35,066	12,353	22,713	13,848	2,078	7,209	4,560	8,865
4th quarter	31,067	10,392	20,675	12,880	2,947	7,892	2,042	7,794
1999: 1st quarter	23,780	6,848	16,932	11,591	1,622	8,081	1,887	5,341
2nd quarter	34,798	10,896	23,902	17,081	3,961	9,558	3,562	6,821
3rd quarter	42,934	12,990	29,944	22,400	5,813	11,420	5,167	7,544
4th quarter	41,388	11,618	29,770	20,984	4,768	12,998	3,217	8,786
2000: 1st quarter	29,055	8,530	20,525	14,160	3,639	7,156	3,366	6,365
2nd quarter	39,693	11,543	28,150	19,219	4,612	10,369	4,238	8,931
3rd quarter	44,027	12,243	31,784	23,827	5,523	12,881	5,423	7,957
4th quarter	40,199	9,919	30,280	20,773	4,416	9,978	6,379	9,507
2001: 1st quarter	31,563	10,200	21,362	16,127	3,810	9,417	2,900	5,235
2nd quarter	44,986	12,590	32,396	22,415	3,821	13,318	5,276	9,982
3rd quarter <sup>f</sup>	45,352	13,525	31,827	24,425	4,253	14,981	5,191	7,402
Relative standard error of current quarter estimates . . (percent) . .	8	10	10	13	27	18	18	12
<b>ALL OWNER-OCCUPIED PROPERTIES</b>								
<b>Annual</b>								
1998	99,400	27,040	72,360	50,096	10,175	29,868	10,053	22,264
1999	99,281	24,250	75,031	55,802	10,773	33,678	11,351	19,229
2000	104,584	23,493	81,091	59,251	14,782	29,559	14,910	21,839
Relative standard error of annual estimates . . . . . (percent) . .	6	6	8	10	17	12	13	7
<b>Quarterly</b>								
1998: 1st quarter	18,324	4,606	13,718	10,680	2,200	6,426	2,054	3,038
2nd quarter	31,241	7,646	23,595	17,843	3,797	11,386	2,660	5,752
3rd quarter	26,716	8,437	18,279	11,252	1,661	5,756	3,834	7,027
4th quarter	23,119	6,351	16,768	10,321	2,517	6,300	1,505	6,446
1999: 1st quarter	17,363	4,478	12,884	8,982	1,177	6,234	1,570	3,902
2nd quarter	26,251	6,790	19,461	14,064	2,586	8,204	3,274	5,397
3rd quarter	28,565	7,059	21,506	16,798	3,635	9,050	4,113	4,708
4th quarter	27,102	5,923	21,179	15,958	3,375	10,189	2,394	5,221
2000: 1st quarter	19,622	5,106	14,515	11,098	3,183	5,278	2,638	3,417
2nd quarter	27,216	5,645	21,571	14,830	4,149	7,064	3,617	6,740
3rd quarter	29,955	7,516	22,439	17,011	4,167	9,015	3,829	5,428
4th quarter	27,791	5,225	22,565	16,312	3,283	8,203	4,826	6,254
2001: 1st quarter	21,746	4,754	16,992	13,387	3,560	7,609	2,218	3,605
2nd quarter	32,168	6,766	25,402	17,633	2,754	10,171	4,708	7,769
3rd quarter <sup>f</sup>	32,987	7,924	25,063	20,457	3,577	12,374	4,507	4,605
Relative standard error of current quarter estimates . (percent) . .	9	13	12	15	30	21	22	13

See footnotes at end of table.

Table 2. **Expenditures for Residential Properties by Property Type: Quarterly 1998 to 2001—Con.**

Not Seasonally Adjusted

[Millions of dollars. Components may not add to totals because of rounding]

Property type, year, and quarter	Total expenditures	Maintenance and repairs	Improvements					Major replacements
			Total	Additions and alterations			To property outside of structures	
				Total	To structures			
					Additions	Alterations		
<b>OWNER-OCCUPIED ONE-UNIT PROPERTIES</b>								
<b>Annual</b>								
1998	96,159	26,110	70,049	48,515	10,154	28,427	9,934	21,535
1999	95,778	23,137	72,641	54,441	10,738	32,489	11,214	18,200
2000	100,161	22,411	77,750	57,410	14,597	28,224	14,589	20,340
Relative standard error of annual estimates . . . . . (percent) . .	6	6	8	10	17	16	13	7
<b>Quarterly</b>								
1998: 1st quarter	17,875	4,437	13,438	10,525	2,200	6,298	2,027	2,913
2nd quarter	30,153	7,444	22,710	17,052	3,797	10,640	2,616	5,657
3rd quarter	25,949	8,196	17,753	10,980	1,661	5,487	3,832	6,773
4th quarter	22,182	6,034	16,149	9,957	2,495	6,002	1,460	6,192
1999: 1st quarter	16,607	4,272	12,334	8,601	1,157	5,873	1,570	3,734
2nd quarter	25,127	6,518	18,608	13,637	2,586	7,900	3,151	4,972
3rd quarter	27,554	6,610	20,945	16,523	3,628	8,795	4,100	4,421
4th quarter	26,491	5,737	20,753	15,680	3,367	9,921	2,392	5,073
2000: 1st quarter	18,329	4,917	13,412	10,296	3,051	4,821	2,425	3,116
2nd quarter	26,160	5,378	20,782	14,288	4,140	6,601	3,546	6,494
3rd quarter	28,975	7,131	21,844	16,663	4,155	8,696	3,811	5,181
4th quarter	26,697	4,985	21,712	16,162	3,251	8,105	4,806	5,549
2001: 1st quarter	21,282	4,545	16,736	13,200	3,554	7,456	2,190	3,537
2nd quarter	31,480	6,594	24,886	17,326	2,719	9,941	4,666	7,560
3rd quarter <sup>f</sup>	31,781	7,754	24,027	19,637	3,459	11,671	4,506	4,391
Relative standard error of current quarter estimates . . . (percent) . .	9	13	12	16	30	22	22	13
<b>RENTAL PROPERTIES<sup>1</sup></b>								
<b>Annual</b>								
1998	34,293	14,940	19,352	12,875	1,722	8,919	2,234	6,477
1999	43,619	18,102	25,518	16,254	5,391	8,380	2,482	9,264
2000	48,391	18,742	29,649	18,728	3,407	10,825	4,497	10,921
Relative standard error of annual estimates . . . . . (percent) . .	7	7	11	13	30	17	25	18
<b>Quarterly</b>								
1998: 1st quarter	7,839	2,856	4,983	3,234	*192	*2,799	*242	1,749
2nd quarter	10,156	4,127	6,028	4,486	*683	*3,075	*729	1,542
3rd quarter	8,350	3,916	4,434	2,596	*417	*1,453	*726	1,838
4th quarter	7,948	4,041	3,907	2,559	*430	*1,592	*537	1,348
1999: 1st quarter	6,417	2,370	4,048	2,609	*445	*1,847	*317	1,439
2nd quarter	8,547	4,106	4,441	3,017	*1,375	*1,354	*288	1,424
3rd quarter	14,369	5,931	8,438	5,602	*2,178	*2,370	*1,054	2,836
4th quarter	14,286	5,695	8,591	5,026	*1,393	*2,809	*823	3,565
2000: 1st quarter	9,434	3,424	6,010	3,062	*456	*1,878	*728	2,948
2nd quarter	12,477	5,898	6,579	4,389	*462	*3,305	*621	2,190
3rd quarter	14,072	4,727	9,345	6,816	*1,356	*3,866	*1,594	2,529
4th quarter	12,409	4,694	7,715	4,461	*1,132	*1,775	*1,554	3,254
2001: 1st quarter	9,817	5,447	4,370	2,740	*249	*1,809	*682	1,630
2nd quarter	12,818	5,824	6,994	4,782	*1,067	*3,146	*568	2,213
3rd quarter	12,365	5,601	6,764	3,967	*676	*2,607	*684	2,796
Relative standard error of current quarter estimates . . . (percent) . .	14	14	19	21	43	26	35	27

\*These estimates are subject to high sampling errors. Caution should be used in estimating quarterly differences. <sup>f</sup>Revised.

<sup>1</sup>Includes rental, vacant, and seasonal properties.

Note: Quarterly relative standard errors are derived from an average of the most recent 4 quarters. Annual standard errors are derived from an average of the most recent 3 years.

Table 3. **Expenditures for Owner-Occupied One-Unit Properties by Region: Quarterly 2000 to 2001**

Not Seasonally Adjusted

[Millions of dollars. Components may not add to totals because of rounding]

Year and quarter	United States	Region			
		Northeast	Midwest	South	West
<b>TOTAL EXPENDITURES</b>					
<b>2000: Total</b> .....	<b>100,161</b>	<b>19,561</b>	<b>27,461</b>	<b>29,873</b>	<b>23,265</b>
1st quarter .....	18,329	2,568	4,299	6,469	4,993
2nd quarter .....	26,160	6,240	7,213	7,094	5,612
3rd quarter .....	28,975	5,937	8,573	9,053	5,412
4th quarter .....	26,697	4,816	7,376	7,257	7,247
2001: 1st quarter .....	21,282	3,725	5,650	5,304	6,603
2nd quarter .....	31,480	4,883	7,292	9,201	10,105
3rd quarter .....	31,781	6,906	6,004	7,080	11,792
Relative standard error estimates (percent):					
Annual .....	6	13	9	9	16
Quarter .....	9	15	12	14	20
<b>MAINTENANCE AND REPAIRS</b>					
<b>2000: Total</b> .....	<b>22,411</b>	<b>4,897</b>	<b>5,554</b>	<b>6,893</b>	<b>5,066</b>
1st quarter .....	4,917	772	1,610	1,447	1,088
2nd quarter .....	5,378	1,247	1,173	1,575	1,383
3rd quarter .....	7,131	1,996	1,604	1,929	1,602
4th quarter .....	4,985	883	1,167	1,942	993
2001: 1st quarter .....	4,545	851	933	1,785	977
2nd quarter .....	6,594	2,109	1,248	1,888	1,348
3rd quarter .....	7,754	2,474	1,663	2,058	1,558
Relative standard error estimates (percent):					
Annual .....	6	10	12	10	12
Quarter .....	13	35	18	21	17
<b>TOTAL IMPROVEMENTS</b>					
<b>2000: Total</b> .....	<b>77,750</b>	<b>14,664</b>	<b>21,908</b>	<b>22,979</b>	<b>18,199</b>
1st quarter .....	13,412	1,796	2,689	5,022	3,096
2nd quarter .....	20,782	4,994	6,041	5,519	4,229
3rd quarter .....	21,844	3,941	6,969	7,123	3,810
4th quarter .....	21,712	3,934	6,209	5,315	6,254
2001: 1st quarter .....	16,736	2,874	4,717	3,519	5,626
2nd quarter .....	24,886	2,774	6,043	7,313	8,756
3rd quarter .....	24,027	4,432	4,340	5,022	10,233
Relative standard error estimates (percent):					
Annual .....	8	16	11	10	20
Quarter .....	12	24	14	16	24

Note: Quarterly relative standard errors are derived from an average of the most recent 4 quarters. Annual standard errors are derived from an average of the most recent 3 years.

Table 4. **Expenditures for Owner-Occupied One-Unit Properties by Year Built: Quarterly 2000 to 2001**

Not Seasonally Adjusted

[Millions of dollars. Components may not add to totals because of rounding]

Year and quarter	All years	Year built					
		1990 to 2001	1980 to 1989	1970 to 1979	1960 to 1969	Before 1960	Not reported
<b>TOTAL EXPENDITURES</b>							
<b>2000: Total</b> .....	<b>100,161</b>	<b>16,998</b>	<b>15,719</b>	<b>14,315</b>	<b>13,557</b>	<b>30,491</b>	<b>9,120</b>
1st quarter .....	18,329	3,009	3,425	3,076	1,862	5,455	1,501
2nd quarter .....	26,160	3,325	4,822	4,551	3,584	8,302	1,575
3rd quarter .....	28,975	4,322	4,698	4,110	4,262	9,135	2,449
4th quarter .....	26,697	6,341	2,774	2,578	3,850	7,599	3,595
2001: 1st quarter .....	21,282	4,354	2,166	3,297	2,101	7,012	2,351
2nd quarter .....	31,480	4,119	2,565	4,677	3,658	15,247	1,214
3rd quarter .....	31,781	3,324	1,895	1,360	2,019	22,609	573
Relative standard error estimates (percent):							
Annual .....	6	14	12	11	13	11	23
Quarter .....	9	24	24	21	29	15	27
<b>MAINTENANCE AND REPAIRS</b>							
<b>2000: Total</b> .....	<b>22,411</b>	<b>3,176</b>	<b>3,612</b>	<b>3,160</b>	<b>2,066</b>	<b>8,074</b>	<b>2,322</b>
1st quarter .....	4,917	706	900	477	288	1,729	817
2nd quarter .....	5,378	557	947	1,085	616	1,813	359
3rd quarter .....	7,131	899	1,126	1,233	660	2,593	620
4th quarter .....	4,985	1,014	639	365	502	1,939	526
2001: 1st quarter .....	4,545	546	532	622	819	1,644	382
2nd quarter .....	6,594	695	679	667	815	3,516	221
3rd quarter .....	7,754	463	372	493	522	5,731	173
Relative standard error estimates (percent):							
Annual .....	6	14	14	13	14	11	21
Quarter .....	13	28	30	21	31	20	38
<b>TOTAL IMPROVEMENTS</b>							
<b>2000: Total</b> .....	<b>77,750</b>	<b>13,822</b>	<b>12,107</b>	<b>11,155</b>	<b>11,491</b>	<b>22,377</b>	<b>6,798</b>
1st quarter .....	13,412	2,304	2,525	2,599	1,574	3,726	684
2nd quarter .....	20,782	2,768	3,875	3,466	2,967	6,489	1,216
3rd quarter .....	21,844	3,423	3,572	2,877	3,602	6,542	1,829
4th quarter .....	21,712	5,327	2,134	2,213	3,348	5,620	3,069
2001: 1st quarter .....	16,736	3,808	1,634	2,675	1,282	5,368	1,968
2nd quarter .....	24,886	3,424	1,886	4,010	2,843	11,732	993
3rd quarter .....	24,027	2,862	1,523	868	1,497	16,879	400
Relative standard error estimates (percent):							
Annual .....	8	16	16	14	15	12	28
Quarter .....	12	27	29	25	36	19	29

Note: Quarterly relative standard errors are derived from an average of the most recent 4 quarters. Annual standard errors are derived from an average of the most recent 3 years.

**Table 5. Expenditures for Owner-Occupied One-Unit Properties by Payments to Contractors or Materials Purchased by Owner: Quarterly 2000 to 2001**

Not Seasonally Adjusted

[Millions of dollars. Components may not add to totals because of rounding]

Year and quarter	All payments	Total payments to contractors or hired labor <sup>1</sup>	Payments for building materials purchased by owner—		
			Total	For jobs done by owner <sup>2</sup>	For jobs done under contract
<b>TOTAL EXPENDITURES</b>					
<b>2000: Total</b> .....	<b>100,161</b>	<b>84,778</b>	<b>15,382</b>	<b>11,682</b>	<b>3,700</b>
1st quarter .....	18,329	15,043	3,286	2,731	555
2nd quarter .....	26,160	22,289	3,870	2,868	1,002
3rd quarter .....	28,975	24,379	4,596	3,159	1,437
4th quarter .....	26,697	23,067	3,630	2,924	706
2001: 1st quarter .....	21,282	17,127	4,155	3,198	957
2nd quarter .....	31,480	26,543	4,938	4,026	911
3rd quarter .....	31,781	26,623	5,159	3,693	1,466
Relative standard error estimates (percent):					
Annual .....	6	7	7	8	15
Quarter .....	9	10	12	12	30
<b>MAINTENANCE AND REPAIRS</b>					
<b>2000: Total</b> .....	<b>22,411</b>	<b>18,260</b>	<b>4,151</b>	<b>3,384</b>	<b>767</b>
1st quarter .....	4,917	3,962	955	799	155
2nd quarter .....	5,378	4,154	1,223	1,065	158
3rd quarter .....	7,131	6,059	1,073	794	279
4th quarter .....	4,985	4,085	900	726	175
2001: 1st quarter .....	4,545	3,581	965	868	97
2nd quarter .....	6,594	5,373	1,222	1,061	160
3rd quarter .....	7,754	6,276	1,478	966	512
Relative standard error estimates (percent):					
Annual .....	6	7	10	11	18
Quarter .....	14	17	14	15	28
<b>TOTAL IMPROVEMENTS</b>					
<b>2000: Total</b> .....	<b>77,750</b>	<b>66,517</b>	<b>11,232</b>	<b>8,298</b>	<b>2,933</b>
1st quarter .....	13,412	11,080	2,332	1,932	400
2nd quarter .....	20,782	18,135	2,647	1,803	844
3rd quarter .....	21,844	18,320	3,523	2,365	1,158
4th quarter .....	21,712	18,982	2,730	2,198	531
2001: 1st quarter .....	16,736	13,546	3,190	2,330	860
2nd quarter .....	24,886	21,170	3,716	2,965	751
3rd quarter .....	24,027	20,347	3,681	2,727	953
Relative standard error estimates (percent):					
Annual .....	8	9	8	9	16
Quarter .....	12	13	15	15	36

<sup>1</sup>Includes building materials supplied by the contractor or hired labor.

<sup>2</sup>Includes building materials purchased to have on hand.

Note: Quarterly relative standard errors are derived from an average of the most recent 4 quarters. Annual standard errors are derived from an average of the most recent 3 years.

# Appendix A.

## Explanations

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### **PROPERTIES INCLUDED IN THIS REPORT**

This report presents improvement and repair expenditures by property owners for residential properties in the 50 states and the District of Columbia, with the exceptions noted below. These data cover single and multiunit structures, publicly and privately owned structures, nonfarm and farm properties, and residential properties that are occupied by owners or renters or are vacant.

Information on properties classified as primarily non-residential is excluded, even though such properties may contain some residential space. Residential properties are defined as those having half or more of the enclosed space devoted to nontransient residential use. Also excluded are residential structures on the grounds of institutions, schools, convents, Armed Forces installations, etc.; hotels, motels, tourist cabins, manufactured homes, and boarding houses; and unusual living quarters, such as tents, boats, etc.

Expenditures made by renters are not included in this report. A study of renters' expenditures in 1989 showed that they accounted for less than 1 percent of all expenditures for improvements and repairs.

### **EXPENDITURES INCLUDED IN THIS REPORT**

The expenditures covered in this report are those connected with construction activity intended to maintain or improve the property. The expenditures involve expenses for maintenance and repairs, additions, alterations, and major replacements that are made on the property by the owners. Included are all costs, for both the inside and outside of the house, whether on the main dwelling, on other structures on the property incidental to the residential use of the main dwellings, or for the grounds on which the structures are erected.

As a general principle, expenses connected with items not permanently attached or firmly affixed to some part of the house or property are not included in the report. Thus, expenses connected with the repair or replacement of household appliances, such as stoves, refrigerators, television sets, room air-conditioners, etc., are excluded, as are costs connected with house furnishings such as furniture, rugs, and draperies. While the cost of appliances is excluded, the construction cost of building-in such appliances (e.g., the cost of building-in a wall oven) is included in the scope of this report.

Everyday household and housekeeping expenses, such as waxing floors and furniture, cleaning walls and windows, etc., are not within the scope of this report. Expenditures for grading, draining, fencing, and paving are included, but costs of landscaping (i.e., planting of flowers, trees, shrubs, etc.) are not included in this report.

### **Kinds of Expenditures**

Expenditures included in this report cover work done under contract or by hired labor, materials purchased by owners, and the cost of purchasing or renting tools and equipment for purposes of carrying on jobs that fall within the scope of the report. However, no attempt is made to estimate or include the value of labor in do-it-yourself jobs.

### **Timing of Expenditures**

For one-to-four-housing-unit properties with one unit owner-occupied and owner-occupied condominiums, expenditures are reported in the month of payment for labor and materials regardless of when the work was done.

For one-to-four-housing-unit properties with no unit owner occupied and all properties with five housing units or more, expenditures appear in the quarter in which they are found in the owners' or managers' records.

### **PROPERTY CHARACTERISTICS**

#### **Residential Property**

A property consists of the land in one ownership unit, all residential structures on this land, and any facilities attached to the land. It includes the house and additional residential structures on the land, and auxiliary nonresidential structures, such as a garage or a workshop. For the nonresident owners and owners of properties with five housing units or more, property identification is generally determined by bookkeeping practices. Groups of buildings owned by one person or organization can be classified as one or more properties, depending on whether separate expenditure data are kept by the owner.

#### **Housing Unit**

In general, a housing unit is a group of rooms or a single room occupied as separate living quarters by a family, a group of unrelated persons living together, or by a person living alone. Vacant living quarters that are

intended for occupancy as separate quarters are also housing units. Separate living quarters are defined as having either (1) direct access from the outside or through a common hall, or (2) a kitchen or cooking equipment for the exclusive use of the occupants.

## REGIONS

The standard census geographic regions are used in the tables of this report. States contained in each region are as follows: **Northeast**—Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, Pennsylvania, and New Jersey; **Midwest**—Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Missouri, Kansas, Nebraska, North Dakota, and South Dakota; **South**—Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Tennessee, Kentucky, Arkansas, Louisiana, Oklahoma, and Texas; **West**—Montana, Wyoming, Colorado, New Mexico, Arizona, Utah, Idaho, Alaska, Washington, Oregon, Nevada, California, and Hawaii.

## TYPES OF EXPENDITURES

Expenditures are classified broadly as either maintenance and repairs or construction improvements. Improvements are further classified as additions to residential structures, alterations within residential structures, additions and alterations on property outside residential structures, and major replacements.

In general, when a maintenance or repair job is undertaken as part of a more extensive alteration or construction improvement, the cost of it is reported with the alteration or improvement of which it is a part. For example, repair of a floor as part of remodeling a room is reported with the alteration.

### Maintenance and Repairs

Expenditures represent current costs for incidental maintenance and repairs that keep a property in ordinary working condition, rather than additional investment in the property.

Maintenance includes expenses for painting, papering, floor sanding, furnace cleaning or adjustment, etc. Repairs include many kinds of expenditures for plumbing, heating, electrical work, and other kinds of activity involved in the upkeep of residential properties. Repairs also include replacements of parts and of whole units, except for a select list specified below as major replacement expenditures. For example, roof repairs (including replacement of shingles, gutters, etc.) are classified under maintenance and repairs, but a complete reroofing is classified as a major replacement. Plumbing repairs may include extensive replacement of water pipes, but if the entire piping system is removed and a new one put in, the expenditures for the work are classified as major replacements.

Maintenance and repairs do not include expenses for trash and snow removal, lawn maintenance and landscaping, or cleaning and janitorial services.

### Construction Improvements

Expenditures for construction improvements are capital expenditures, which add to the value or useful life of a property. Since the classification is based on the concept of additions, alterations, and major replacements rather than dollar value, some very small expenditures which may not be considered capital investments are included among the improvements, such as installing a new electrical socket or garbage disposal. Construction improvements, as noted above, cover additions to residential structures, alterations within residential structures, additions and alterations on properties outside residential structures, and major replacements.

**Additions to residential structures.** These refer to the actual enlargement of the structure, either by adding a wing, room, porch, attached garage, shed, or a carport, or by raising the roof, or digging a basement.

**Alterations within residential structures.** These include changes or improvements made within or on the structure. The changes or improvements range from a complete restructuring, which involves removal of the entire interior of the structure and remodeling it, to the installation of a new electric service outlet, wall switch, or new shelves.

**Additions and alterations on property outside residential structures.** These include laying or improving walks or driveways; building walls or fences; creating or improving recreational facilities such as swimming pools, tennis courts, barbecue fireplaces; constructing detached garages, sheds, patios, green houses, or the improvement of these by the installation of electricity, drains, or new storage facilities. Grading and filling are included, but not landscaping.

**Major replacements.** The following is a list of relatively expensive items that, when replaced, are considered to be construction improvements as opposed to repairs:

Complete furnace or boiler	Plumbing fixtures
Entire roof	All water pipes
Central air-conditioner	Windows
All siding	Septic tank or cesspool
Water heater	Sink or laundry tub
Entire electrical wiring	Complete walks or drive ways
Doors	Garbage disposal unit

In general, the distinction between major replacements and additions and alterations is that major replacements are not innovations. Installation of a bathtub, where there had not been one before, is an alteration, but the substitution of a new bathtub for an old one is a major replacement.

# Appendix B.

## Survey Methods and Reliability of Data

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### INTRODUCTION

This appendix describes the data sources, sample design, and estimation procedures used to develop quarterly estimates of expenditures for the improvement and repairs to residential properties. This description refers to the revised survey methods effective with fourth-quarter 1984 data. A description of the earlier methods appears in Construction Reports C50-84-A, issued April 1985.

### SOURCES OF DATA

The data presented in this report are compiled from two sources:

1. Household survey of a sample of consumer units, and
2. Mail survey of owners of a sample of rental or vacant properties.

### Household Survey

**Description of survey.** Data based on personal interviews are obtained from household members as part of the Consumer Expenditure (CE) Surveys conducted by the U.S. Census Bureau for the Bureau of Labor Statistics (BLS). The CE surveys are designed to collect data on major items of consumer expense, household characteristics, and income. The expenditures covered by the survey are those that respondents can be expected to recall fairly accurately for 3 months or longer, including expenditures for maintenance and repairs and improvement of properties. Each sample household is interviewed once per quarter for five consecutive quarters.

For the initial interview, information is collected on demographic and family characteristics and on the inventory of major durable goods of each consumer unit. Construction expenditure information is also collected in this interview, using a 1-month recall, and is used solely for bounding purposes: that is, to prevent the reporting of expenditures outside the reference period in subsequent interviews.

The second through fifth interviews use uniform questionnaires to collect expenditures for the previous months and the current month to date. Six months of data collection are required to account for all the expenditures for a quarter.

Households that move from their sample address between interviews are dropped from the survey. New households that move into the sample address are screened for eligibility and included in the survey, if found qualified.

**Sample design.** The sample for the CE survey is a national probability sample of households designed to be representative of the urban U.S. civilian population. The eligible population is composed of all civilian non-institutional persons.

The second step in sampling was the selection of primary sampling units (PSUs) that consist of counties (or parts thereof), groups of counties, or independent cities. The set of sample PSUs used for the survey is composed of 105 areas. The PSUs in this part of the design are classified according to the following four categories: "A" PSUs, which comprise 31 self-representing areas, and are large metropolitan statistical areas with nonfarm population greater than 1.2 million, plus the Anchorage and Honolulu MSAs; 46 "B" PSUs defined as nonself-representing metropolitan areas; 10 "C" PSUs defined as urban nonmetropolitan areas; and 18 "D" PSUs defined as rural nonmetropolitan areas. The "B," "C," and "D" PSUs were selected using a controlled selection procedure to ensure a distribution across states and other stratifying characteristics.

The sampling frame (the list from which housing units were chosen) for this survey was generated from the 1990 census 100-percent detail file, augmented by a new construction permits frame, and an area sample frame to represent all areas that do not have good 1990 census addresses, which are in nonpermit areas, or which have permit office problems.

The sample design is a rotating panel survey. Each rotation comprises one-fourth of a sample and is interviewed for five consecutive quarters. In each quarter, the housing units in five rotations are interviewed, but the rotation that is being interviewed for the second time is used solely to bound the data to be collected in the four subsequent quarters. Allowing for the bounding interviews and for nonresponse (including vacancies), the number of interviews per quarter is targeted at 5,000.

**Estimation and data adjustment procedures.** Estimates of expenditures for improvements and repairs are tabulated from responses to the CE questionnaire

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(CE- 302), Section 5, “Construction Repairs, Alterations, and Maintenance of Property,” and Section 7, “Household Equipment Repairs, Service Contracts, and Furniture Repair and Reupholstering” by owner occupants of one- to four-unit properties and condominiums. Each sample household included in the survey represents a given number of households in the United States. The sum of the weighted sample households is the estimate of total households in the United States or the universe. The translation of sample households into the universe of households is known as weighting.

There are five basic steps in determining the weight for each interviewed household:

1. The basic weight assigned to a household is the PSU weight multiplied by the within PSU sampling interval. The PSU weight is the inverse of the PSU’s probability of selection.
2. A subsampling factor adjusts for sampling that is done in the field.
3. A new permit factor is an adjustment made to the new permit sample that is introduced in that month for the other panels.
4. A noninterview adjustment factor adjusts for interviews that could not be collected from occupied housing units because of refusals or because no one was home. The adjustment is performed as a function of region, tenure, family size, and race.
5. A second stage adjustment factor adjusts the sample estimates of the population to independently derive census population estimates.

### Mail Survey

**Description of the survey.** Nonresident owners of rental or vacant properties with one to four housing units and owners of rental or vacant properties containing five housing units or more, as identified in the CE household survey, are mailed a questionnaire to report detailed maintenance and repairs and improvement expenditures for their entire property. Approximately 3,000 owners are queried each quarter.

All mail questionnaires, including those from the initial mailing, are used in the tabulation of data for this report. This is based on an assumption that owners of rental properties keep detailed records of their expenditures for improvements and repairs and that the reports would be based on such records rather than on memory alone.

**Sample design.** The mail survey consists of owners of the properties identified in the household survey as being one to four unit properties with no resident owner and all properties (excluding owner occupied

condominiums) with five housing units or more. The probability of selection of a property is proportional to the number of housing units in the property.

**Estimation and data adjustment procedures.** The data collected on form SORAR-705 are adjusted for unreturned or unusable forms by region and MSA status. The weights are adjusted so that sample counts of renter occupied and vacant housing units agree with independently derived controls from the Current Population Survey.

### RELIABILITY OF DATA

The statistics in this report are based on sample surveys and may differ from statistics that would have been obtained from a complete census using the same forms and procedures. An estimate based on a sample survey is subject to both sampling error and nonsampling error. The accuracy of a survey result is determined by the joint effect of these errors.

**Measures of sampling errors.** Sampling error reflects the fact that only a particular sample was surveyed rather than the entire population. The sample selected for the CE survey is one of a large number of similar probability samples that, by chance, might have been selected under the same specifications. Estimates derived from the different samples would differ from each other. The standard error, or sampling error, of a survey estimate is a measure of the variation among the estimates from all possible samples and, thus, is a measure of the precision with which an estimate from a particular sample approximates the average from all possible samples.

Estimates of standard errors have been computed from the sample data for statistics in this report. They are presented in the tables in the form of relative standard errors. The relative standard error equals the standard error divided by the estimated value to which it refers.

The sample estimate and an estimate of its standard error allow us to construct interval estimates with prescribed confidence that the interval includes the average result of all possible samples with the same size and design. A 90-percent confidence interval is defined to be from 1.6 standard errors below the estimate to 1.6 standard errors above the estimate. If all possible samples were selected and surveyed under essentially the same conditions and all the respective 90-percent confidence intervals were generated, then approximately 90-percent of the intervals would include the average value of all sample estimates and approximately 10-percent would not include this estimate. For example, this report shows that residential property owners spent \$45.4 billion for improvements and

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repairs in the third-quarter 2001 and the average relative standard error of this estimate is 8 percent. Multiplying \$45.4 billion by .08, we obtain \$3.6 billion as the standard error. To obtain a 90-percent confidence interval, multiply \$3.6 billion by 1.6, yielding limits of \$39.6 billion and \$51.2 billion (\$45.4 billion plus or minus \$5.8 billion). The average estimate for the specified quarter may or may not be contained in this computed interval, but one can say that the average estimate from all possible samples is included in the constructed interval with a specified confidence of 90 percent.

The sampling errors of some estimates are too great to allow meaningful comparisons among these estimates. The sampling errors should be regarded as orders of magnitude rather than absolute measurements.

**Nonsampling errors and other limitations.** As calculated for this report, the estimated relative standard errors measure certain nonsampling errors, but do not measure any systematic biases in the data. Bias is the difference, averaged over all possible samples with the same size and design, between the estimates and the true value being estimated. Nonsampling errors can be attributed to many sources: inability to obtain information about all cases in the sample; definitional difficulties; differences in interpretation of questions; inability or unwillingness of respondents to provide correct information; and errors made in processing the data.

These nonsampling errors also occur in complete censuses. Although no direct measurements of the biases have been obtained, it is believed that most of the important response and operational errors were detected in the course of reviewing the data for reasonableness and consistency.

Six potential sources of bias are:

1. Nonresponse to the survey as a result of selecting housing units from the permit frame for which addresses are no longer available at the permit office.
2. Nonresponse resulting from interview refusal or because no one was home.
3. Undercoverage in the sampling frame with respect to demographic and family characteristics of sample consumer units.
4. Memory failure, including failure to remember exact values, and the reporting of information for an earlier or later time period than when it actually occurred (telescoping).
5. Problems in classifying the types of jobs performed.
6. Adjustment for extreme values ("outliers") where an unusually large weighted value or more is contributed by a single job.

# Appendix C.

## Adjustments for Seasonal Variations

### ADJUSTMENTS FOR SEASONAL VARIATIONS

Quarterly estimates of expenditures for improvements and repairs are adjusted to eliminate the effect of changes that normally occur about the same time and in about the same magnitude each year. The seasonally adjusted estimates are converted to annual rates by multiplying by 4. Estimates for expenditures at seasonally adjusted annual rates are shown in Table 1.

The factors used for making the adjustment were developed using the X-12-ARIMA, an enhanced version of the X-11 variant of the Census Method II seasonal adjustment program. A description of the X-12-ARIMA program appears in "New Capabilities and Methods of the X-12-ARIMA Seasonal Adjustment Program," by David F. Findley et al. of the U.S. Census Bureau.

**Table C. Factors Used to Seasonally Adjust Expenditures for Residential Properties**

Year and quarter	Total expenditures	Maintenance and repairs	Improvements		
			Total	Additions and alterations	Major replacements
<b>1996</b>					
1st quarter . . . . .	73.4	74.3	72.9	77.4	64.2
2nd quarter . . . . .	109.0	105.9	110.7	115.5	99.2
3rd quarter . . . . .	116.6	115.2	117.1	111.2	130.8
4th quarter . . . . .	100.4	105.6	98.2	96.2	104.5
<b>1997</b>					
1st quarter . . . . .	73.4	71.9	74.1	77.1	67.0
2nd quarter . . . . .	109.3	106.9	110.5	115.6	97.7
3rd quarter . . . . .	116.6	116.3	116.8	111.1	130.6
4th quarter . . . . .	100.5	105.4	98.7	96.4	104.2
<b>1998</b>					
1st quarter . . . . .	73.4	70.7	74.6	77.0	68.4
2nd quarter . . . . .	109.2	107.2	109.9	115.3	96.2
3rd quarter . . . . .	118.1	117.4	118.5	111.5	131.3
4th quarter . . . . .	100.9	105.0	98.9	96.3	103.6
<b>1999</b>					
1st quarter . . . . .	73.0	69.8	74.3	76.9	69.5
2nd quarter . . . . .	108.3	107.5	108.8	115.1	95.6
3rd quarter . . . . .	116.6	118.0	115.9	111.7	131.0
4th quarter . . . . .	100.2	104.6	98.6	96.6	103.7
<b>2000</b>					
1st quarter . . . . .	74.0	72.3	74.8	76.0	72.3
2nd quarter . . . . .	107.3	106.6	107.6	113.4	97.1
3rd quarter . . . . .	116.8	116.6	116.7	113.7	126.8
4th quarter . . . . .	110.3	101.2	100.0	98.0	104.8
<b>2001</b>					
1st quarter . . . . .	75.7	76.5	75.3	76.8	71.0
2nd quarter . . . . .	108.5	107.4	108.9	112.4	101.9
3rd quarter . . . . .	115.0	116.1	114.7	113.5	118.9