

RRB - SSA - CMS FINANCIAL INTERCHANGE

**Calculations for Fiscal Year 2019
With Respect to OASI, DI, and HI Trust Funds**

Summary and Documentation

68th Determination

Prepared jointly by

**U.S. RAILROAD RETIREMENT BOARD
SOCIAL SECURITY ADMINISTRATION
and
CENTERS FOR MEDICARE & MEDICAID SERVICES**

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**Compiled by
U.S. RAILROAD RETIREMENT BOARD
CHICAGO, ILLINOIS
2020**

INTRODUCTION

The financial interchange between the railroad retirement and social security systems is intended to place the Social Security Old-Age and Survivors Insurance (OASI) and Disability Insurance (DI) Trust Funds and the Centers for Medicare and Medicaid Services Hospital Insurance (HI) Trust Fund in the same condition they would have been had railroad employment been covered by the Social Security and Federal Insurance Contributions Acts. Every year estimates are made of the additional benefits and administrative expenses that would have been paid from the Trust Funds as well as the additional payroll taxes and income taxes that would have been received by them, with allowances for interest.

This booklet documents the determination through fiscal year 2019. Included are the official determination and certification documents and a summary of the results of the determination. Exhibit 1 provides details on the benefit, administrative cost, income tax, and interest calculations for the determination and Exhibit 2 covers the payroll calculations.

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**DETERMINATIONS PURSUANT TO SECTION 7(c)(2)
OF THE RAILROAD RETIREMENT ACT OF 1974, AS AMENDED**

DETERMINATION PURSUANT TO SECTION 7(c)(2)
OF THE RAILROAD RETIREMENT ACT OF 1974, AS AMENDED

Pursuant to the provisions of section 7(c)(2) of the Railroad Retirement Act of 1974, as amended, the Commissioner of Social Security and the Railroad Retirement Board have determined that, as of the close of the fiscal year ended September 30, 2019, the subtraction of \$4,763,700,000 from the Federal Old-Age and Survivors Insurance Trust Fund and \$141,400,000 from the Federal Disability Insurance Trust Fund would place such Funds in the same position in which they would have been if service as an employee after December 31, 1936, covered by said Railroad Retirement Act, had been included in the term "employment" as defined in the Social Security Act and in the Federal Insurance Contributions Act.

The amount of \$4,763,700,000 for the Federal Old-Age and Survivors Insurance Trust Fund is based on expenditures of \$6,959,100,000 in benefit payments and \$15,900,000 in administrative expenses, less payroll taxes of \$2,013,000,000 and net income taxes of \$255,700,000, plus net interest of \$57,400,000. The amount of \$141,400,000 for the Federal Disability Insurance Trust Fund is based on expenditures of \$508,600,000 in benefit payments and \$4,200,000 in administrative expenses, less payroll taxes of \$371,600,000 and net income taxes of \$3,300,000, plus net interest of \$3,500,000.

It is understood by the Commissioner and the Board that the determination of the amounts specified herein is made without prejudice to settlement of any unresolved questions between the Commissioner and the Board, relative to the provisions of section 7(c)(2) of the Railroad Retirement Act, in making any subsequent determinations pursuant to such section.

IN WITNESS WHEREOF the Commissioner of Social Security and the Railroad Retirement Board, by its Acting Secretary to the Board, have hereunto set their respective hands.

Social Security Administration

By 


Commissioner of Social Security

May 29, 2020

Date signed

Applying my electronic signature here is the equivalent of my hand-written signature and certification of the contents of the reports.

Railroad Retirement Board

By 

SYLVIA ZARAGOZA
FOR THE BOARD
Acting Secretary to the Board

Digitally signed by SYLVIA ZARAGOZA
DN: c=US, o=U.S. Government, ou=Railroad
Retirement Board, cn=SYLVIA ZARAGOZA,
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May 14, 2020

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DETERMINATION PURSUANT TO SECTION 7(c)(2)
OF THE RAILROAD RETIREMENT ACT OF 1974, AS AMENDED

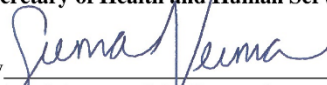
Pursuant to the provisions of section 7(c)(2) of the Railroad Retirement Act of 1974, as amended, the Secretary of Health and Human Services and the Railroad Retirement Board have determined that, as of the close of the fiscal year ended September 30, 2019, the addition of \$596,400,000 to the Federal Hospital Insurance Trust Fund would place such Fund in the same position in which it would have been if service as an employee after December 31, 1936, covered by said Railroad Retirement Act, had been included in the term "employment" as defined in the Social Security Act and in the Federal Insurance Contributions Act.

The amount of \$596,400,000 for the Federal Hospital Insurance Trust Fund is based on payroll taxes of \$585,500,000, less net income taxes of \$400,000 and administrative expenses of \$2,200,000, plus net interest of \$13,500,000.

It is understood by the Secretary and the Board that the determination of the amounts specified herein is made without prejudice to settlement of any unresolved questions between the Secretary and the Board, relative to the provisions of section 7(c)(2) of the Railroad Retirement Act, in making any subsequent determinations pursuant to such section.

IN WITNESS WHEREOF the Administrator of the Centers for Medicare & Medicaid Services, acting herein by virtue of authority vested in her by the Secretary of Health and Human Services, and the Railroad Retirement Board, by its Acting Secretary to the Board, have hereunto set their respective hands.

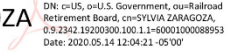
Secretary of Health and Human Services

By 
Administrator of the Centers for
Medicare & Medicaid Services

June 4, 2020
Date signed

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Railroad Retirement Board

By 
SYLVIA ZARAGOZA
FOR THE BOARD

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Acting Secretary to the Board
May 14, 2020
Date signed

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**CERTIFICATIONS PURSUANT TO SECTION 7(c)(2)
OF THE RAILROAD RETIREMENT ACT OF 1974, AS AMENDED**

CERTIFICATION PURSUANT TO SECTION 7(c)(2)
OF THE RAILROAD RETIREMENT ACT OF 1974, AS AMENDED

Pursuant to the provisions of section 7(c)(2) of the Railroad Retirement Act of 1974, as amended, the Commissioner of Social Security and the Railroad Retirement Board have determined that, as of the close of the fiscal year ended September 30, 2019, the amount of \$4,763,700,000, if subtracted from the Federal Old-Age and Survivors Insurance Trust Fund, would place such Fund in the same position in which it would have been if service as an employee after December 31, 1936, covered by said Railroad Retirement Act, had been included in the term "employment" as defined in the Social Security Act and in the Federal Insurance Contributions Act.

The amount of \$4,763,700,000 for the Federal Old-Age and Survivors Insurance Trust Fund is based on expenditures of \$6,959,100,000 in benefit payments and \$15,900,000 in administrative expenses, less payroll taxes of \$2,013,000,000 and net income taxes of \$255,700,000, plus net interest of \$57,400,000.

The Commissioner of Social Security hereby certifies to the Secretary of the Treasury, pursuant to the provisions of such section 7(c)(2), the amount of \$4,843,965,000 including interest of \$80,265,000 for the period October 1, 2019 to the date of certification, for transfer from the Federal Old-Age and Survivors Insurance Trust Fund to the Social Security Equivalent Benefit Account.

Certified as of the 2nd day of June 2020.

IN WITNESS WHEREOF the Commissioner of Social Security has hereunto set his hand.

Social Security Administration

By 

Commissioner of Social Security

05/29/20

Date signed

Applying my electronic signature here is the equivalent of my hand-written signature and certification of the contents of the reports.

CERTIFICATION PURSUANT TO SECTION 7(c)(2)
OF THE RAILROAD RETIREMENT ACT OF 1974, AS AMENDED

Pursuant to the provisions of section 7(c)(2) of the Railroad Retirement Act of 1974, as amended, the Commissioner of Social Security and the Railroad Retirement Board have determined that, as of the close of the fiscal year ended September 30, 2019, the amount of \$141,400,000, if subtracted from the Federal Disability Insurance Trust Fund, would place such Fund in the same position in which it would have been if service as an employee after December 31, 1936, covered by said Railroad Retirement Act, had been included in the term "employment" as defined in the Social Security Act and in the Federal Insurance Contributions Act.


The amount of \$141,400,000 for the Federal Disability Insurance Trust Fund is based on expenditures of \$508,600,000 in benefit payments and \$4,200,000 in administrative expenses, less payroll taxes of \$371,600,000 and net income taxes of \$3,300,000, plus net interest of \$3,500,000.

The Commissioner of Social Security hereby certifies to the Secretary of the Treasury, pursuant to the provisions of such section 7(c)(2), the amount of \$143,782,000, including interest of \$2,382,000 for the period October 1, 2019 to the date of certification, for transfer from the Federal Disability Insurance Trust Fund to the Social Security Equivalent Benefit Account.

Certified as of the 2nd day of June 2020.

IN WITNESS WHEREOF the Commissioner of Social Security has hereunto set his hand.

Social Security Administration

By 

Commissioner of Social Security

05/29/20

Date signed

Applying my electronic signature here is the equivalent of my hand-written signature and certification of the contents of the reports.

CERTIFICATION PURSUANT TO SECTION 7(c)(2)
OF THE RAILROAD RETIREMENT ACT OF 1974, AS AMENDED

Pursuant to the provisions of section 7(c)(2) of the Railroad Retirement Act of 1974, as amended, the Secretary of Health and Human Services and the Railroad Retirement Board have determined that, as of the close of the fiscal year ended September 30, 2019, the amount of \$596,400,000, if added to the Federal Hospital Insurance Trust Fund, would place such Fund in the same position in which it would have been if service as an employee after December 31, 1936, covered by said Railroad Retirement Act, had been included in the term "employment" as defined in the Social Security Act and in the Federal Insurance Contributions Act.

The amount of \$596,400,000 for the Federal Hospital Insurance Trust Fund is based on payroll taxes of \$585,500,000, less net income taxes of \$400,000 and administrative expenses of \$2,200,000, plus net interest of \$13,500,000.

The Railroad Retirement Board hereby certifies to the Secretary of the Treasury, pursuant to the provisions of such section 7(c)(2), the amount of \$606,449,000, comprised of \$582,900,000 in principal, net interest of \$13,500,000 through September 30, 2019, plus \$10,049,000 in interest for the period October 1, 2019 to the date of certification, for transfer from the Social Security Equivalent Benefit Account to the Federal Hospital Insurance Trust Fund.

Certified as of the 2nd day of June 2020.

IN WITNESS WHEREOF the Acting Secretary to the Board of the Railroad Retirement Board, acting herein by virtue of authority vested in her by the Railroad Retirement Board, has hereunto set her hand.

Railroad Retirement Board

By SYLVIA ZARAGOZA
FOR THE BOARD
Acting Secretary to the Board

Digitally signed by SYLVIA ZARAGOZA
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Retirement Board, cn=SYLVIA ZARAGOZA,
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May 14, 2020

Date signed

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RESULTS OF DETERMINATION THROUGH FISCAL YEAR 2019

RRB-SSA-CMS Financial Interchange Results of Determination through Fiscal Year 2019

As of September 30, 2019, the Social Security Equivalent Benefit Account (Account) was due \$4,763.7 million from the OASI Trust Fund and \$141.4 million from the DI Trust Fund; \$596.4 million was due from the Account to the HI Trust Fund. With the inclusion of interest to June 2, 2020, the anticipated date of transfer, the amounts to be transferred are \$4,843,965,000 from the OASI Trust Fund, \$143,782,000 from the DI Trust Fund and \$606,449,000 to the HI Trust Fund. This will result in a net transfer of \$4,381,298,000 to the Account.

The results of the calculations, including adjustments, for fiscal year 2019 are shown below, separately for each of the Trust Funds:

<u>OASI Trust Fund</u>	<u>Amount</u> (millions)
Amount due to Social Security Equivalent Benefit Account:	
September 30, 2018.....	\$4,803.5
Plus: Benefit payments.....	6,959.1
Administrative expenses	15.9
Interest.....	134.3
Less: Payroll taxes at OASI rates on railroad payroll.....	2,013.0
Income taxes (after Treasury reconciliation).....	255.7
Transferred to Social Security Equivalent Benefit Account on June 3, 2019 (principal of \$4,803.5 million plus interest of \$76.9 million).....	4,880.4
Amount due to Social Security Equivalent Benefit Account:	
September 30, 2019.....	\$4,763.7
June 2, 2020 (including interest at 2.500 percent)	\$4,844.0
 <u>DI Trust Fund</u>	
Amount due to Social Security Equivalent Benefit Account:	
September 30, 2018.....	\$65.0
Plus: Benefit payments.....	508.6
Administrative expenses	4.2
Interest.....	4.5
Less: Payroll taxes at DI rates on railroad payroll.....	371.6
Income taxes (after Treasury reconciliation).....	3.3
Transferred to Social Security Equivalent Benefit Account on June 3, 2019 (principal of \$65.0 million plus interest of \$1.0 million).....	66.0
Amount due to Social Security Equivalent Benefit Account:	
September 30, 2019.....	\$141.4
June 2, 2020 (including interest at 2.500 percent).....	\$143.8

<u>HI Trust Fund</u>	<u>Amount</u> (millions)
Amount due to HI Trust Fund:	
September 30, 2018.....	\$561.3
Plus: Payroll taxes at HI rates on railroad payroll.....	585.5
Income taxes (after Treasury reconciliation).....	(0.4)
Interest.....	22.5
Less: Administrative expenses	2.2
Transferred to HI Trust Fund on June 3, 2019 (principal of \$561.3 million plus interest of \$9.0 million).....	570.3
Amount due to HI Trust Fund:	
September 30, 2019.....	\$596.4
June 2, 2020 (including interest at 2.500 percent)	\$606.4

The net payment of \$4,381.3 million due the Social Security Equivalent Benefit Account is \$5.2 million more than the previous determination. This is the result of an increase of \$27.3 million in benefit payments and decreases of \$48.9 million in payroll tax revenues and \$48.4 million in income tax revenues, offset by decreases of \$0.8 million in administrative expenses and \$118.6 million in total interest.

Presented below is a more detailed comparison between the current and prior determinations.

Benefit Amounts

Overall, the additional social security benefits that would have been payable if railroads had been covered by the Social Security Act increased by 0.4 percent to \$7,467.7 million from the previous determination amount of \$7,440.4 million. While the number of beneficiaries has been decreasing year over year, rising wage levels and higher limits on creditable earnings generally cause benefits awarded in a period to be larger than those that terminate. In addition, a cost-of-living increase of 2.8 percent was in effect for 9 months of fiscal year 2019.

Payroll Taxes

The combined payroll tax amount creditable to the OASDHI Trust Funds decreased by 1.6 percent to \$2,970.1 million from the previous determination amount of \$3,019.0 million. This decrease was due primarily to a decline in average employment levels from 224,000 in fiscal year 2018 to 219,000 in fiscal year 2019, which more than offset an increase in taxable wage limit.

Income Taxes

Federal income taxes credited to the OASDHI Trust Funds decreased by 15.8 percent to \$258.6 million from the previous determination amount of \$307.0 million. The current determination reflects Treasury OASDI and HI reconciliations for calendar year 2014.

Administrative Expenses

Administrative expense reimbursements decreased by 3.5 percent to \$22.3 million from the previous determination amount of \$23.1 million. OASI administrative expense reimbursements decreased from \$16.4 million to \$15.9 million due primarily to a decrease in new OASI enrollments. DI administrative expense reimbursements decreased from \$4.9 million to \$4.2 million due primarily to a decrease in benefit maintenance charges that more than offset increases in unit cost factors. HI administrative expense reimbursements increased from \$1.8 million to \$2.2 million due primarily to increases in OASI unit cost factors that more than offset a decrease in new OASI enrollments.

Table 1. -- RRB-SSA Financial Interchange: Change in Balance of OASI Trust Fund at End of Each Calendar Year 1937-2018, and on September 30, 2019
(Dollar amounts in millions)

Calendar Year	Appropriations (Payroll Taxes) ¹	Income Taxes	Benefit Payments ²	Administrative Expenses	Military Service Adjustments	Transfers to SSEB Account ³	Interest factor ⁴		Second Semi-Annual %	Interest Creditable to SSEB Account ⁵	Decrease in Trust Fund Balance at End of Year ⁶
							First Semi-Annual %	Semi-Annual %			
Total	\$70,841.3	\$4,336.6	\$219,636.7	\$999.7	\$810.6	\$150,375.4				\$10,491.1	
1937	37.2		0.1				0.8819			(0.2)	(837.3)
1938	24.7		0.9				2.2607			(1.1)	(62.2)
1939	40.3		1.3				2.3651			(1.9)	(103.1)
1940	44.2		6.0	1.9			2.6680			(3.2)	(142.6)
1941	49.7		14.1	1.9			2.6440			(4.2)	(180.5)
1942	62.3		20.2	2.0			2.4610			(4.9)	(225.5)
1943	74.7		25.7	2.2			2.2530			(5.6)	(277.9)
1944	83.5		32.1	2.5			2.1450			(6.4)	(333.2)
1945	84.7		40.7	2.6			2.1010			(7.4)	(382.0)
1946	87.8		52.5	2.9			2.0470			(8.1)	(422.5)
1947	91.5		61.5	3.2			2.0240			(8.8)	(458.1)
1948	95.4		71.8	3.4			2.1150			(9.8)	(488.1)
1949	87.8		84.6	3.6			2.1620			(10.4)	(498.1)
1950	131.6		112.2	3.7			2.1520			(10.9)	(524.7)
1951	153.6		184.8	3.7			2.1510			(10.7)	(500.5)
1952	154.8		200.9	3.9			2.2050			(10.4)	(460.9)
1953	154.5		241.4	4.0			1.1200		1.1760	(9.4)	(379.4)
1954	179.6		270.6	3.6		(21.1)	1.1700		1.1150	(7.1)	(270.8)
1955	193.5		337.7	5.0		(7.4)	1.0510		1.1330	(3.9)	(118.1)
1956	208.1		371.1	4.4		(5.2)	1.1430		1.2430	(0.5)	54.0
1957	205.6		413.2	4.8		(1.6)	1.2390		1.2400	4.3	272.3
1958	178.8		451.8	5.5		124.4	1.2570		1.2470	9.3	435.7
1959	203.2		516.3	5.8		282.0	1.2740		1.2940	12.3	484.9
1960	259.0		578.6	6.1		318.4	1.2850		1.2940	12.8	505.0
1961	230.0		606.8	6.5		331.7	1.3410		1.3840	14.8	571.4
1962	236.9		640.8	6.3		360.8	1.3850		1.4080	17.2	638.0
1963	268.7		662.9	7.1		422.5	1.4160		1.4750	18.7	635.5
1964	265.6		675.5	7.3		402.6	1.5000		1.5510	20.0	670.1
1965	259.4		732.9	6.9		435.6	1.5490		1.5940	22.1	737.0
1966	330.2		743.4	8.2		443.8	1.6410		1.7820	25.6	740.2

Table 1. – RRB-SSA Financial Interchange: Change in Balance of OASI Trust Fund at End of Each Calendar Year 1937-2018, and on September 30, 2019 (Continued)
(Dollar amounts in millions)

Calendar Year	Appropriations (Payroll Taxes) ¹	Income Taxes	Benefit Payments ²	Administrative Expenses	Military Service Adjustments	Transfers to SSEB Account ³	Interest factor ⁴		Interest Creditable to SSEB Account ⁵	Decrease in Trust Fund Balance at End of Year ⁶
							First Semi-Annual %	Second Semi-Annual %		
1967	\$334.3		\$759.2	\$9.1		\$508.0	1.7750	1.9040	\$24.6	\$690.8
1968	336.6		851.7	9.8		437.6	1.9120	1.9570	27.7	805.8
1969	374.3		878.7	10.2		491.5	2.0510	2.2440	34.5	863.4
1970	366.5		1,012.7	10.6		578.8	2.3520	2.5400	43.1	984.5
1971	403.4		1,119.0	11.1		613.0	2.5140	2.5740	51.7	1,149.9
1972	441.9		1,189.7	10.8		724.3	2.5840	2.6340	58.6	1,242.8
1973	544.8		1,461.4	10.6		783.0	2.7080	2.8740	68.5	1,455.5
1974	647.3		1,581.6	11.8		908.6	2.9100	3.1530	83.5	1,576.5
1975	640.6		1,708.8	13.2		981.8	3.1670	3.2940	103.5	1,779.6
1976	707.6		1,838.2	13.1	\$47.0	1,212.3	3.2720	3.3460	112.4	1,776.4
1977	760.8		1,945.5	13.6	2.6	1,207.8	3.3650	3.4570	118.4	1,882.7
1978	795.9		2,069.1	14.0		1,588.7	3.5070	3.5370	117.2	1,698.4
1979	990.4		2,261.4	16.2		1,447.5	3.6270	3.6850	114.6	1,652.7
1980	1,089.7		2,526.5	15.0		1,442.0	4.1560	4.1810	134.6	1,797.1
1981	1,173.6		2,863.0	17.5		1,584.9	4.7750	4.9190	175.7	2,094.8
1982	1,106.9		3,167.6	19.9		1,793.3	5.0270	5.8080	238.6	2,620.7
1983	1,146.0		3,252.1	21.0		2,250.8	5.3020	5.2950	270.7	2,767.7
1984	1,303.7	\$57.0	3,370.4	21.8		2,404.0	5.1510	6.1970	284.5	2,679.7
1985	1,261.7	65.0	3,506.7	23.3		2,310.2	5.7970	5.2900	290.2	2,863.0
1986	1,235.3	68.3	3,619.0	21.4		2,585.1	5.5630	5.4800	299.1	2,913.8
1987	1,236.7	(12.0)	3,686.1	20.4		2,557.3	5.1190	4.7940	283.4	3,121.7
1988	1,289.4	4.2	3,832.6	23.2		2,790.0	4.7850	4.7740	283.3	3,177.2
1989	1,271.7	14.0	3,992.3	19.3		2,845.3	4.7436	4.6028	286.9	3,344.7
1990	1,270.5	30.5	4,182.5	18.6		2,969.3	4.5631	4.5323	298.4	3,573.9
1991	1,299.1	47.1	4,391.1	18.6		3,374.6	4.4871	4.3982	300.2	3,563.0
1992	1,329.6	53.9	4,522.8	19.1		3,148.4	4.3350	4.2187	302.3	3,875.3
1993	1,355.6	58.8	4,644.5	18.4		3,352.5	4.1602	3.9913	306.2	4,077.5
1994	1,249.5	49.4	4,693.0	17.6		3,419.6	3.9462	3.9283	317.5	4,387.1
1995	1,253.4	39.9	4,723.5	16.0	51.2	4,052.3	3.9134	3.8165	307.0	4,036.8
1996	1,285.4	55.9	4,759.8	16.8		3,554.1	3.7763	3.7618	295.6	4,213.6

Table 1. -- RRB-SSA Financial Interchange: Change in Balance of OASI Trust Fund at End of Each Calendar Year 1937-2018, and on September 30, 2019 (Continued)
(Dollar amounts in millions)

Calendar Year	Appropriations (Payroll Taxes) ¹	Income Taxes	Benefit Payments ²	Administrative Expenses	Military Service Adjustments	Transfers to SSEB Account ³	Interest factor ⁴		Interest Creditable to SSEB Account ⁵	Decrease in Trust Fund Balance at End of Year ⁶
							First Semi-Annual %	Second Semi-Annual %		
1997	\$1,338.2	\$55.5	\$4,814.8	\$16.2		\$3,688.1	3.7287	3.6895	\$298.5	\$4,261.3
1998	1,407.9	72.1	4,825.1	14.1		3,662.2	3.6343	3.5192	288.6	4,246.9
1999	1,427.1	103.4	4,796.0	14.4		3,681.4	3.4594	3.4101	272.1	4,117.5
2000	1,413.3	124.5	4,815.2		\$326.1	3,538.2	3.4051	3.3607	259.2	3,803.0
2001	1,401.5	89.5	4,858.7	14.0		3,273.1	3.3149	3.2369	248.7	4,160.3
2002	1,388.3	106.7	4,857.4	14.6		3,493.3	3.2021	3.1118	253.6	4,297.6
2003	1,405.3	108.6	4,879.8	15.4		3,580.0	3.0557	2.8726	242.5	4,341.4
2004	1,468.8	107.4	4,863.8	14.5		3,628.1	2.8360	2.7672	227.2	4,242.6
2005	1,543.2	111.5	4,921.7	21.4		3,579.3	2.7386	2.6368	212.3	4,164.0
2006	1,592.8	124.4	5,076.6	18.1		3,458.0	2.6274	2.6119	207.3	4,290.8
2007	1,654.5	128.3	5,196.5	19.1		3,574.6	2.6010	2.5769	210.2	4,359.2
2008	1,715.5	104.1	5,290.1	18.1		3,632.3	2.5465	2.4784	206.6	4,422.1
2009	1,622.8	128.5	5,646.0	19.1		3,689.7	2.4377	2.3513	207.3	4,853.5
2010	1,634.8	151.5	5,687.6	22.1		3,929.7	2.3340	2.2338	212.6	5,059.8
2011	1,755.6	170.1	5,764.7	19.0		4,109.5	2.2167	2.1109	203.5	5,011.8
2012	1,837.0	273.9	6,051.3	18.7	154.8	4,139.2	2.0820	1.9380	186.0	4,862.9
2013	1,882.8	238.9	6,198.5	20.4		3,948.4	1.9143	1.8135	174.9	5,186.6
2014	2,036.1	244.0	6,364.0	20.3		4,257.1	1.8017	1.7191	170.0	5,203.7
2015	2,117.8	291.7	6,543.0	17.3		4,258.0	1.7046	1.6139	160.0	5,256.5
2016	1,835.1	295.5	6,624.3	20.8	228.9	4,286.9	1.6037	1.5197	155.9	5,411.1
2017	1,854.7	287.8	6,720.1	18.3		4,315.8	1.5130	1.4498	154.7	5,845.9
2018	1,970.5	288.7	6,928.5	16.9		4,768.9	1.4470	1.4274	156.7	5,919.9
2019 (9 month estimate)	1,558.6	198.0	5,350.1	12.7		4,880.4	1.4182	1.3640	118.0	4,763.7

¹ Appropriations are net of payroll tax refunds for the calendar year.

² Uncollectible benefits overpayments are included in annual benefit payments.

³ Figures in parentheses represent amounts creditable or transferred to trust fund.

⁴ Represents rate derived from average interest rate earned by trust fund in indicated six month period (calendar year for 1937-1952). Interest factors applied to balance at beginning of period plus weighted net income in period.

⁵ The Social Security Equivalent Benefit (SSEB) Account replaced the Railroad Retirement Account (RRA) as the Financial Interchange depository beginning in 1984.

⁶ Figures in parentheses represent increases in trust fund balances at end of year.

NOTE - Detail may not add to totals shown because of rounding.

Table 2. -- RRB-SSA Financial Interchange: Change in Balance of DI Trust Fund at End of Each Calendar Year 1957-2018, and on September 30, 2019
(Dollar amounts in millions)

Calendar Year	Appropriations (Payroll Taxes) ¹	Income Taxes	Benefit Payments ²	Administrative Expenses	Military Service Adjustments	Transfers to SSEB Account ³	Interest factor ⁴		Interest Creditable to SSEB Account ⁵	Decrease in Trust Fund Balance at End of Year ⁶
							First Semi-Annual %	Second Semi-Annual %		
Total	\$10,650.5	\$120.9	\$17,998.8	\$237.6	\$144.9	\$8,007.4			\$828.4	
1957	23.2		2.6	0.4			1.0830	1.1680	(0.2)	(\$20.4)
1958	22.6		19.4	0.7			1.1900	1.2240	(0.5)	(23.4)
1959	22.7		26.0	0.9		(22.0)	1.2310	1.2560	(0.2)	2.6
1960	23.8		31.8	1.1		(4.9)	1.2880	1.3160	0.3	16.9
1961	20.9		34.3	1.2		5.1	1.3840	1.4460	0.6	27.0
1962	20.7		36.5	1.3		11.0	1.4280	1.4720	0.9	34.0
1963	19.9		38.1	1.6		19.6	1.4730	1.5060	1.0	35.2
1964	19.7		39.3	2.0		19.1	1.5320	1.6030	1.2	38.9
1965	19.2		48.1	1.7		23.6	1.5930	1.7350	1.4	47.3
1966	33.0		52.1	2.0		25.0	1.8360	1.8570	1.7	45.1
1967	33.0		53.2	2.3		30.6	1.9810	2.1040	1.6	38.6
1968	48.0		59.0	2.0		20.4	1.9860	2.3090	1.5	32.7
1969	48.0		59.5	1.7		21.3	2.4080	2.6100	1.4	26.0
1970	55.1		67.8	2.6		10.4	2.7940	2.9450	1.6	32.5
1971	54.8		71.0	3.5		13.2	2.9450	2.9580	2.0	41.0
1972	60.0		75.2	2.8		24.2	2.9500	2.9520	2.0	36.8
1973	69.7		91.7	4.2		19.5	2.9960	3.0870	2.3	45.8
1974	85.1		103.4	1.9		22.3	3.1260	3.2700	2.7	46.4
1975	84.2		112.5	2.2		28.5	3.2890	3.3320	3.1	51.5
1976	93.0		123.1	2.5	28.4	26.4	3.3040	3.3450	2.7	32.0
1977	100.0		137.2	2.2	3.8	(0.3)	3.4430	3.5700	3.7	71.6
1978	143.6		146.3	2.8		29.8	3.5990	3.7240	4.3	51.6
1979	171.7		151.9	2.7		29.9	3.8690	3.9280	2.1	6.7
1980	136.1		165.0	2.5		(12.1)	4.3330	4.2770	2.7	52.9
1981	161.9		190.2	4.4		29.4	4.8340	5.0380	5.5	61.7
1982	198.0		195.7	4.4		26.4	5.5220	5.9770	6.3	43.7
1983	152.0		188.4	3.8		27.8	5.1070	5.0260	5.4	61.5
1984	126.7	1.8	186.8	2.3		21.6	5.1510	5.2820	8.9	109.4
1985	121.3	2.0	183.4	1.4		42.7	5.3420	4.9420	12.6	140.8
1986	118.8	2.1	182.5	2.3		67.7	4.9890	4.8360	14.0	151.0
1987	118.9	(1.8)	179.6	3.3		56.9	4.8620	4.5870	15.1	175.0
1988	123.6	(0.7)	187.3	3.3		61.3	4.6890	4.7030	17.0	198.4
1989	121.9	0.2	197.1	3.4		88.2	4.7092	4.6612	18.3	206.9
1990	135.7	0.3	193.4	3.8		79.9	4.6134	4.5708	18.6	206.8
1991	139.2	0.6	216.3	2.8		82.1	4.5373	4.4280	18.6	222.6

Table 2. -- RRB-SSA Financial Interchange: Change in Balance of DI Trust Fund at End of Each Calendar Year 1957-2018, and on September 30, 2019 (Continued)
(Dollar amounts in millions)

Calendar Year	Appropriations (Payroll Taxes) ¹	Income Taxes	Benefit Payments ²	Administrative Expenses	Military Service Adjustments	Transfers to SSEB Account ³	Interest factor ⁴		Second Semi-Annual %	Interest Creditable to SSEB Account ⁵	Decrease in Trust Fund Balance at End of Year ⁶
							First Semi-Annual %	Second Semi-Annual %			
1992	\$142.4	\$0.8	\$235.5	\$3.1		\$58.0	4.3697	4.3236	\$21.6	\$281.6	
1993	145.2	1.2	246.5	3.1		82.8	4.2213	4.1717	24.7	326.7	
1994	223.4	1.1	248.0	3.8		106.0	4.0431	3.9940	23.6	271.6	
1995	224.0	1.0	261.1	3.6	\$41.5	67.8	3.9499	3.3458	18.3	220.3	
1996	229.7	1.2	272.6	4.9		2.2	3.3242	3.4263	17.0	281.7	
1997	212.6	1.5	301.4	4.5		59.1	3.4160	3.4207	20.7	335.1	
1998	223.7	1.8	314.1	6.4		156.8	3.3774	3.2997	20.2	293.5	
1999	226.7	2.6	337.8	6.2		134.6	3.2486	3.2498	18.2	291.8	
2000	240.0	3.5	369.1	4.4	145.0	159.4	3.2600	3.2483	15.6	133.0	
2001	237.9	2.9	395.9	5.6		9.7	3.2049	3.1466	13.6	297.6	
2002	235.7	3.8	440.8	4.2		153.5	3.1153	3.0480	19.7	369.3	
2003	238.7	4.5	524.8	5.3		167.4	2.9995	2.8445	24.6	513.4	
2004	249.4	4.8	567.1	6.5		215.4	2.8170	2.2766	28.8	646.2	
2005	262.1	5.0	587.1	10.4		337.9	2.7455	2.6705	34.2	672.9	
2006	270.5	5.8	629.5	9.3		388.3	2.6628	2.6440	34.1	681.2	
2007	280.9	6.4	677.5	8.1		445.2	2.6336	2.6097	33.5	667.8	
2008	291.2	5.5	690.6	5.4		417.6	2.5890	2.5282	33.0	682.5	
2009	275.6	7.6	727.9	7.1		447.6	2.4937	2.4602	32.8	719.5	
2010	277.6	7.5	738.4	6.1		461.9	2.4392	2.4164	34.1	751.1	
2011	298.1	6.7	735.0	7.9		464.7	2.3802	2.3650	34.1	758.6	
2012	311.9	4.4	742.4	6.7	(74.5)	511.8	2.3306	2.2930	33.2	787.3	
2013	319.7	4.6	718.6	5.2		550.6	2.2281	2.2010	30.6	666.8	
2014	345.7	8.0	699.2	4.4		443.7	2.2198	2.2442	26.8	599.8	
2015	359.6	6.2	668.8	5.8		418.6	2.2479	2.2560	23.7	513.7	
2016	433.9	6.1	623.8	3.7	0.7	375.7	1.9036	1.6935	14.7	339.5	
2017	438.3	7.0	538.8	4.4		206.7	1.6224	1.5138	8.8	239.5	
2018	465.6	1.2	501.9	4.3		173.5	1.5216	1.5720	4.9	110.3	
2019 (9 month estimate)	264.4	3.7	358.9	3.2		66.0	1.5628	1.5167	3.1	141.4	

¹ Appropriations are net of payroll tax refunds for the calendar year.

² Uncollectible benefits overpayments are included in annual benefit payments.

³ Figures in parentheses represent amounts creditable or transferred to trust fund.

⁴ Represents rate derived from average interest rate earned by trust fund in indicated six month period. Interest factors applied to balance at beginning of period plus weighted net income in period.

⁵ The Social Security Equivalent Benefit (SSEB) Account replaced the Railroad Retirement Account (RRA) as the Financial Interchange depository beginning in 1984.

⁶ Figures in parentheses represent increases in trust fund balances at end of year.

NOTE - Detail may not add to totals shown because of rounding.

Table 3. -- RRB-CMS Financial Interchange: Change in Balance of HI Trust Fund at End of Each Calendar Year 1966-2018, and on September 30, 2019
(Dollar amounts in millions)

Calendar Year	Appropriations (Payroll Taxes) ¹	Income Taxes	Administrative Expenses	Transfers to HI Trust Fund	Interest Factor ²		Interest Creditable to HI Trust Fund ³	Tax Refunds	Increase in Trust Fund Balance at End of Year
					First Semi-Annual %	Second Semi-Annual %			
Total	\$18,410.9	\$10.9	\$111.6	\$19,111.9			\$1,392.0	\$18.5	
1966	33.1		0.4	16.3	2.1800	2.4200	0.5		\$16.9
1967	47.2		0.1	44.0	2.1400	2.3800	1.4	0.1	21.4
1968	60.7		0.1	54.2	2.4200	2.5200	1.7	0.4	29.5
1969	60.7		0.1	63.5	2.7100	2.8000	2.2	1.1	28.8
1970	60.3		0.1	65.9	3.0900	3.1700	2.5	0.8	25.6
1971	59.8		0.1	66.1	3.2900	3.2600	2.3	0.6	21.5
1972	65.5		0.1	63.2	3.2800	3.1600	2.4	0.8	26.1
1973	126.3		0.1	99.2	3.1800	3.2300	4.1	0.7	57.2
1974	133.2		0.1	132.5	3.3800	3.5000	6.2	1.2	64.0
1975	131.7		0.1	137.7	3.5500	3.5100	7.0	0.8	64.9
1976	145.6		0.8	142.9	3.5700	3.6000	7.6	0.6	74.4
1977	156.5		1.0	0.0	3.6200	3.7200	11.6	0.7	241.5
1978	185.8		1.2	213.7	3.5900	3.7200	16.0	0.5	228.4
1979	240.1		1.7	191.1	3.8200	3.8900	19.0	1.5	294.7
1980	253.4		1.5	244.3	4.1000	4.1700	23.7	0.9	326.0
1981	323.2		1.9	276.5	4.4900	4.8800	31.4	0.7	402.2
1982	314.3		2.5	351.4	5.0700	5.4200	38.3	0.7	400.9
1983	312.5		2.3	357.7	5.4800	5.6000	40.0	0.6	393.4
1984	326.7		2.0	350.6	5.7800	5.9300	43.3	0.5	410.8
1985	327.2		2.1	371.4	5.8900	5.6600	43.7	0.8	408.2
1986	343.8		2.1	364.4	5.1500	4.9800	38.6	0.8	424.1
1987	344.9		2.2	368.0	4.8800	4.8400	38.5	0.5	437.3
1988	338.8		2.6	363.8	4.8500	4.8200	39.6	0.9	449.3
1989	333.5		2.7	378.8	4.8200	4.7200	39.2	0.9	440.5
1990	329.1		2.5	367.4	4.7100	4.6700	38.2	0.7	437.9
1991	347.3		2.4	352.2	4.6300	4.5400	38.0	0.5	468.6
1992	363.7		2.7	374.5	4.5200	4.4200	39.3		494.4
1993	375.3		2.7	400.5	4.3900	4.2700	40.2		506.7
1994 ⁴	362.6	0.0	2.7	412.9	4.2600	4.2100	38.5	0.2	492.2
1995	367.8	0.2	2.4	396.1	4.2200	4.1100	38.2		499.9

Table 3. -- RRB-CMS Financial Interchange: Change in Balance of HI Trust Fund at End of Each Calendar Year 1966-2018, and on September 30, 2019 (Continue d)
(Dollar amounts in millions)

Calendar Year	Appropriations (Payroll Taxes) ¹	Income Taxes	Administrative Expenses	Transfers to HI Trust Fund	Interest Factor ²		Interest Creditable to HI Trust Fund ³	ACA Adjustments	Increase in Trust Fund Balance at End of Year
					First Semi-Annual %	Second Semi-Annual %			
1996	\$375.1	\$0.0	\$3.2	\$401.3	4.0900	4.0600	\$37.9		\$508.4
1997	382.2	(0.1)	3.0	419.1	4.0100	4.0100	37.2		505.6
1998	411.7	0.0	3.0	419.4	3.9800	3.9200	37.9		532.8
1999	416.4	0.0	2.8	429.9	3.8800	3.7200	38.1		554.6
2000	407.4	0.0	2.1	465.3	3.6800	3.6200	36.4		531.0
2001	397.6	(0.3)	2.4	469.7	3.5200	3.4100	32.7		488.9
2002	393.3	(0.3)	2.2	424.7	3.3400	3.2300	29.6		484.6
2003	402.8	0.1	2.4	426.3	3.1800	2.9200	27.4		486.2
2004	423.8	0.3	2.6	418.6	2.9500	2.9200	27.2		516.3
2005	447.2	0.0	3.5	444.9	2.8100	2.7000	27.0		542.1
2006	469.0	(0.4)	3.4	471.5	2.7000	2.6500	27.7		563.5
2007	488.5	(0.2)	3.5	483.3	2.6500	2.6200	28.6		593.6
2008	519.6	(0.2)	3.3	525.7	2.5900	2.5100	28.8		612.8
2009	470.9	0.0	3.3	524.3	2.4800	2.4200	27.4		583.5
2010	472.0	0.0	3.9	535.1	2.4000	2.3800	24.5		541.0
2011	517.8	0.3	3.7	477.2	2.3500	2.3700	25.1		603.3
2012	566.2	0.7	3.5	510.9	2.2900	2.2900	27.7		683.5
2013	548.1	0.7	2.5	576.6	2.2300	2.2200	28.4		681.6
2014	608.0	1.1	2.5	611.6	2.1900	2.1800	28.2		704.8
2015	625.0	1.4	2.6	594.7	2.1700	2.0900	29.6		763.5
2016	571.3	2.2	2.8	656.8	2.0300	1.8800	27.0	\$1.2	705.6
2017	576.9	1.9	2.2	637.4	1.8500	1.8100	23.6	1.4	669.8
2018	603.1	1.8	2.2	596.5	1.8200	1.7800	23.2	1.7	700.9
2019 (9 month estimate)	446.4	1.7	1.7	570.3	1.7400	1.5900	17.6		596.4

¹ Appropriations are net of payroll tax refunds for the calendar year.

² Represents rate derived from average interest earned by trust fund in indicated six month period. Interest factor applied to balance at beginning of period plus weighted net income in period.

³ Figures adjusted to allow for interest on cash transfers to trust fund, at rates shown in table, from date of transfer to end of year.

⁴ Tax refunds ceased after 1994.

NOTE - Detail may not add to totals shown because of rounding.

EXHIBIT 1 – BENEFIT, ADMINISTRATIVE COST, AND INCOME TAX CALCULATIONS AND CORRESPONDENCE

Part I. Summary of Benefit, Administrative Cost, and Income Tax Calculations

Benefit Calculations

The benefit calculations for each determination include estimating, from one-percent sample data, the additional benefit amounts payable on the basis of railroad employment for the calendar year ending in the fiscal year covered by the determination. A preliminary estimate is also made of the benefit amounts for the last nine months of the fiscal year. In addition, adjustments in benefit calculations for prior years are made to reflect new information or to correct processing errors.

The railroad beneficiary universe for the calendar year, to which sample amounts are inflated, consists of all accounts on which a monthly benefit was in force (payable or withheld) under the Railroad Retirement Act (RRA) for at least one month of the year and on which a monthly benefit might have been payable under Social Security Administration (SSA) eligibility conditions. Also included are those on which an SSA lump sum based on death in the year would have been payable. The corresponding one-percent sample consists of cases carried over from earlier determinations and new cases in the universe with employee SSA account number ending in the digits "30."

The sample also includes cases with employee SSA number ending in "30" of non-retired employees full retirement age and over, employees (and their auxiliaries) eligible for RRA benefits but only paid benefits by SSA, and of widows ages 60 and over not on the RRB rolls (due to election of residual payment) where SSA benefits would have been payable in the year. The universe numbers for these railroad non-beneficiaries are assumed to be 100 times the sample numbers.

For each railroad employee beneficiary in the sample, a gross benefit amount was calculated on the basis of the employee's combined railroad and social security earnings record. Appropriate reductions for benefits payable on other earnings records and for earnings received during the year were then applied. Auxiliary benefits are either computed or estimated. Beginning with the 60th determination for calendar year 2010, auxiliary benefits are only computed when there is a spouse under full retirement age whose annuity is not reduced for early retirement. For all other cases, auxiliary benefits are estimated by applying factors based on SSA experience by gender (Tables 1 and 2) to the employee's benefit amounts. The gross amounts were reduced by the amounts of actual SSA payments, to obtain net additional amounts that would be paid on the basis of railroad employment. Separate OASI and DI amounts were developed for employee disability beneficiaries who were paid actual old-age benefits by SSA.

Separate OASI life and survivor amounts were developed in cases where the employee annuitant died during the year. For all survivor cases, the gross amount is computed based on the employee's combined earnings, with reduction when needed for beneficiary earnings in the year. Survivor gross amounts are reduced for actual SSA payments based on other earnings records (in most cases the beneficiary's) to obtain the net additional OASI amounts based on railroad service.

For employees who retired after 1956 and for non-retired employees who died after 1956, actual earnings under social security annual limits have been obtained from railroad employers. For cases on the rolls before 1957, however, annual benefits before reduction for SSA payments were increased by fixed ratios according to year of accrual. (Development of the ratios is described in the Financial Interchange Summary and Documentation for Fiscal Year 1957-58, pages 135-142.) The distribution of OASI and DI sample amounts by type of benefit is shown in Table 3.

The sample and universe are stratified to improve the accuracy of the benefit estimates. The retirement

beneficiary stratification is based on the employee's age in the determination year, the year their RRA annuity began and whether an RRA spouse annuity was payable. Monthly survivor beneficiary records are stratified on the basis of number of beneficiaries, type of benefit, beneficiary's age, and year of employee's death, or, if applicable, year retired employee had attained age 65. There is a single stratum for lump-sum death benefits and one for the railroad non-beneficiary group. Employee disability benefit strata are based entirely on employee's age. The composition of the 2018 strata is shown in Table 4.

Universe and sample counts were obtained for each stratum and the sample benefit payment amounts were tabulated by stratum (Tables 5 and 5a). These sample benefit payment amounts were then inflated by multiplying each stratum total by the ratio of the universe number to the sample number.

On an accrual basis the uninflated additional OASI benefits for 2018 totaled \$70,052,000 and the inflated amount was \$6,949,398,000. The standard error of the OASI inflated amount was \$52,195,000 and the 95-percent confidence interval for the amount of OASI benefits was \$6,847,096,000 to \$7,051,700,000.

The uninflated amount of additional DI benefits accrued in 2018 was \$4,422,000. The inflated amount was \$501,889,000. The standard error of the DI inflated amount was \$14,308,000 and the 95-percent confidence interval for the amount of DI benefits was \$473,846,000 to \$529,932,000.

The preliminary estimates of additional benefit payments in January-September 2019 were made largely on the basis of the net sample amounts in current-payment status at the end of 2018. Allowances were made for lump-sum payments and the effect of family composition factors. The estimated cash amounts payable in the 9-month period were \$5,350 million in OASI and \$359 million in DI benefits. These figures will be superseded in the next determination by a calendar year 2019 estimate based on the one-percent sample.

Adjustments were made to the benefit calculations for years prior to 2018. These adjustments primarily involved the late receipt of data on benefit payments or earnings from RRB or SSA and the correction of processing errors. OASI adjustments decreased benefits by \$127,825,000 for calendar years 2006-2017 and DI adjustments increased benefits by \$4,030,000 for calendar years 2005-2017.

The inflated adjustments and adjusted benefit amounts are shown by Trust Fund in Tables 6 and 6a.

The adjusted benefit payments for a year are the latest estimates of the amounts that would have been payable for that period on an accrual basis. Beginning with the 39th determination, second-degree curves are fit to annual accrued benefit amounts to estimate accrued benefit payments by month. The payments are then converted from an accrual to a cash basis by adding the estimated amount accrued in the preceding year but paid in the current year to the estimated amount both accrued and paid in the current year. These amounts are estimated from the number of lag months, i.e., the average length of time from date of accrual to payment, under SSA experience.

Beginning with the 46th determination (see Financial Interchange Summary and Documentation for Fiscal Year 1997, pages 42-46), the calculation of the float period reflects cycled benefit payments initiated by SSA. The float is the average number of days between the beginning of the month and the day on which Treasury clears funds for benefit payments. Effective June 1997, SSA began paying monthly benefits on staggered Wednesdays in the month (cycles 2 through 4) in addition to the third of the month (cycle 1). Almost all the SSA benefits paid in cycles 2 through 4 payments are to new beneficiaries, and the formula assumes all cycle 2 through 4 payments are by electronic funds transfer (EFT). The methodology to calculate a cycled float utilizes RRB experience on the percentage of

annuitants receiving payments by EFT and SSA experience on the proportion of payments made in cycle 1 versus cycles 2 through 4. Table 7 displays the calculation of the float.

Beginning with the 53rd determination (see Financial Interchange Summary and Documentation for Fiscal Year 2004, pages 36-48), benefit overpayments written off as uncollectible are included in the calculations. Table 8 displays the calculation of the uncollectible overpayment amounts included in the benefit calculations for calendar years 1999-2018.

The Financial Interchange is liable under Public Law 88-133 for crediting SSA with benefits they have paid that are associated with pre-1957 military service covered under both the RRA and SSA. These benefits paid during 1952-1972, 1973-1974, 1975-1979, 1980-1991, 1992-1997 and 1998-2005 were reimbursed in the 25th, 26th, 44th, 49th, 61st and 65th determinations, respectively. In the current determination, SSA did not receive any reimbursement related to the pre-1957 military service adjustment.

Administrative Costs Calculations

The additional administrative expenses that would have been paid by the OASDHI Trust Funds with respect to coverage of railroad employment were estimated to total \$23.5 million for 2018 (Tables 9 and 9a). Expenses are based on unit cost factors supplied by SSA (see Correspondence) and workload estimates developed from the financial interchange one-percent sample of beneficiaries, the gross earnings one-percent sample of active railroad employees and actual RRB wage reports processing.

Beginning with the 38th determination, administrative expense calculations reflect an agreement on the treatment of dually entitled annuitants (discussed in the Financial Interchange Summary and Documentation for Fiscal Year 1986 (pages 76-95), Fiscal Year 1987 (pages 49-59) and Fiscal Year 1988 (pages 70-77)). The following discussion is a simplified explanation of how cases receiving SSA benefits are treated under the agreement.

The estimated net additional number of OASI cases for which there would have been a determination of insured status and computation of the primary insurance amount (PIA) is based on the financial interchange sample. It is 100 times the difference between (1) the number of new awards to employees and survivors where no previous FI or SSA award had been based on the account and (2) the number of accounts on the FI employee and survivor rolls on which SSA awarded benefits in the determination year.

Additional DI cases requiring determination of insured status and computation of PIA are based on the inflated number of disability freeze decisions reached in the determination year, less the number where SSA made the first freeze determination.

The number of additional cases that would have required adjudication of OASI auxiliary benefits was estimated from financial interchange sample data. It is the difference (inflated) between (1) the number of new OASI awards to spouses and children not receiving SSA benefits or to survivors who were not receiving life benefits in the month prior to the employee's death and (2) the number of aged widows (not on the RRA rolls), spouses, and children on the FI rolls who were awarded SSA benefits in the determination year.

The approximate increase in administrative costs due to the maintenance of benefit rolls is based on the number of benefits in the financial interchange sample. It is the average of the inflated number of

financial interchange benefits (excluding those to individuals receiving SSA benefits) payable at the end of the determination year and at the end of the preceding determination year.

The number of compensation reports that would have been received by SSA from railroad employers was estimated from RRB experience during the year. Included are allowances for compensation adjustments and additional reports for employees with more than one railroad employer. The cost is apportioned between the OASI, DI, and HI Trust Funds. A portion of the costs for both OASI and DI awards are charged to the HI Trust Fund as it pays the hospital insurance benefits that are charged to these accounts. This portion of the OASI and DI costs is supplied by SSA in the form of unit cost factors. The 2018 HI administrative cost calculation is shown in Table 9a.

Income Tax Calculations

At the beginning of each quarter, Treasury transfers the estimated increase in tax liability to the OASI and DI Trust Funds and the Social Security Equivalent Benefit Account for benefit payments to be received during such quarters. Proper adjustments to the transfers are made whenever the actual increase in tax liability is determined.

Income tax transfers in the financial interchange are calculated as a proportion of railroad retirement Tier 1 to social security equivalent benefit income taxes. Children of life annuitants are excluded from the calculations because it can be assumed that they would have negligible tax liability. All other non-RRB annuitants (primarily widow(er)s and spouses) are assumed to have proportionate tax liability.

Beginning with the 36th determination, income tax calculations reflect prior year income tax reconciliations. Financial interchange income tax adjustments are made in the year of the Treasury reconciliation.

The Omnibus Budget Reconciliation Act of 1993 legislation passed in 1994 raised the level of taxes imposed on Social Security beneficiaries. The increased tax revenues resulting from this legislation are payable to the HI Trust Fund. The manner of financial interchange tax liability calculations and Treasury payments to the HI Trust Fund are similar to that for OASDI. Beginning with the 43rd determination, annual adjustments are calculated to equate Treasury's quarterly and adjustment payments to what they would have been had they been calculated under the financial interchange methodology.

Table 10 shows the results of the OASDI calculations for calendar years 1984-2018 and January-September 2019. Table 10a shows the results of the HI calculations for calendar years 1994-2018 and January-September 2019.

Communications

The Correspondence and Memoranda section in Part V contains letters and memoranda sent between the RRB and SSA and the RRB and CMS on financial interchange related matters.

Part II.

Tables Pertaining to Benefit Calculations

**Table 1. -- Computation of Family Composition Factors and Factors for Child's Benefits for Calendar Year 2018
Applied to Male Old-Age Employees**

Age Last Birthday of Old-Age Beneficiary	Social Security Data		
	(A)	(B)	(C)
	Child Factors	Family Composition Factors I	Family Composition Factors II
	$\frac{(1)-(7)+(3)-(9)}{(1)-(7)}$	$\frac{(5)+(6)}{(5)}$	$\frac{(2)-(5)+(3)+(10)-(6)}{(2)-(5)}$
62	1.0274	.....	.....
63	1.0265	.....	.....
64	1.0233	.....	.....
65	1.0197	1.0145	1.0187
66	1.0168	1.0125	1.0177
67	1.0156	1.0105	1.0165
68	1.0144	1.0108	1.0151
69	1.0131	1.0110	1.0138
70	1.0115	1.0098	1.0122
71	1.0105	1.0103	1.0110
72	1.0102	1.0113	1.0104
73	1.0096	1.0124	1.0096
74	1.0091	1.0139	1.0088
75	1.0084	1.0143	1.0081
76	1.0081	1.0159	1.0076
77	1.0076	1.0178	1.0071
78	1.0073	1.0192	1.0068
79	1.0071	1.0213	1.0064
80-84	1.0061	1.0203	1.0054
85 and over	1.0047	1.0144	1.0042

NOTE - Numbers in above column formulae correspond to the columns in Table 1a, which is supplied annually by SSA.

Column (A) - Factors to be applied to amounts of male old-age benefits in area of actual life benefits.

Column (B) - Factors to be applied to amounts of male old-age benefits in area of presumptive life benefits with a spouse on the rolls.

Column (C) - Factors to be applied to amounts of male old-age benefits in area of presumptive life benefits with no spouse on the rolls.

Table 1a. — Selected benefit estimates relating to male old-age (primary) beneficiary families in current-payment status on 12/31/2018

Age	All old-age families			Beneficiary families consisting of a male old-age beneficiary with an aged wife receiving a full benefit whether or not children are present			Beneficiary families consisting of a male old-age beneficiary with a wife whose entitlement is based on having an eligible child in her care and is receiving a full benefit			
	(1) Old-age benefits	(2) Monthly rate of PIA	(3) Child benefits	(4) Old-age benefits	(5) Monthly rate of PIA	(6) Child benefits	(7) Old-age benefits	(8) Monthly rate of PIA	(9) Child benefits	(10) Wife benefits
62	\$388,050,210	\$524,874,921	\$11,661,954	\$1,504,682	\$2,036,152	\$26,523	\$1,951,187	\$2,642,005	\$1,084,154	\$838,091
63	596,478,598	788,246,500	17,331,357	3,071,275	4,052,641	56,461	2,943,815	3,899,916	1,598,150	1,267,414
64	716,303,084	918,955,641	18,313,442	4,621,037	5,862,913	83,932	3,210,149	4,133,974	1,695,877	1,353,537
65	894,208,124	1,104,790,884	19,260,577	8,161,837	9,816,925	142,262	3,356,090	4,180,904	1,703,888	1,390,585
66	2,093,723,688	2,318,604,602	38,189,079	45,882,464	48,683,388	608,399	6,961,117	7,722,516	3,144,781	2,568,308
67	2,187,179,396	2,404,697,289	36,837,638	79,009,908	82,516,468	865,748	6,199,408	6,798,492	2,773,161	2,282,533
68	2,125,797,599	2,331,179,645	32,903,536	95,690,034	99,009,229	1,070,427	5,371,438	5,870,754	2,406,134	1,965,507
69	2,176,545,864	2,387,441,569	30,725,159	113,169,805	116,005,974	1,276,387	4,924,579	5,343,306	2,184,508	1,797,661
70	2,448,655,384	2,609,520,787	29,958,909	166,952,904	157,091,880	1,533,510	4,396,146	4,630,610	1,884,704	1,565,409
71	2,488,056,588	2,668,495,212	27,773,019	154,387,191	146,196,620	1,498,661	4,028,223	4,232,276	1,742,981	1,434,735
72	2,200,200,410	2,376,596,881	23,703,465	122,525,161	117,427,695	1,323,107	3,067,393	3,269,969	1,347,078	1,089,290
73	1,733,731,911	1,880,659,943	17,464,828	82,734,307	79,932,415	994,946	2,038,336	2,170,842	904,556	727,385
74	1,674,894,798	1,829,338,877	15,918,992	69,760,781	68,423,467	952,962	1,633,115	1,750,643	718,738	588,086
75	1,674,104,932	1,841,606,408	14,742,153	61,746,978	61,229,950	877,390	1,582,982	1,702,511	705,655	569,967
76	1,565,128,861	1,726,292,388	13,160,303	50,649,538	51,039,973	811,032	1,229,973	1,308,816	542,339	441,048
77	1,343,677,868	1,484,140,123	10,674,814	39,788,282	40,455,936	720,280	918,782	995,474	415,593	339,056
78	1,193,019,425	1,317,477,927	9,069,995	33,171,976	34,015,606	654,024	699,879	754,149	313,633	252,767
79	1,056,288,632	1,164,560,623	7,667,530	26,915,577	27,673,279	589,214	495,459	535,677	219,913	183,202
80	981,948,420	1,081,171,507	6,648,321	23,804,186	24,564,576	519,386	406,857	435,780	179,005	149,087
81	860,757,383	943,511,234	5,502,141	20,532,131	21,164,905	434,670	271,372	292,810	121,892	97,678
82	737,292,150	807,987,194	4,415,526	17,393,853	17,969,401	350,489	191,045	206,064	86,983	70,254
83	656,790,737	719,236,718	3,848,572	15,845,907	16,377,351	339,187	147,927	158,574	64,039	53,756
84	579,915,082	631,767,369	3,251,235	15,477,154	15,778,977	301,927	125,257	134,093	54,682	46,160
85	499,285,169	539,957,346	2,674,457	14,928,732	14,871,178	264,803	90,596	94,222	38,139	32,289
86	466,126,375	502,816,603	2,418,508	14,870,312	14,536,353	230,773	83,864	88,260	34,595	30,576
87	402,849,985	431,009,862	1,995,366	13,580,925	12,967,991	184,693	57,885	58,502	23,826	19,476
88	355,573,804	379,622,360	1,750,345	12,141,726	11,471,956	155,795	50,689	53,022	20,897	19,371
89	289,810,437	308,196,619	1,403,919	9,751,737	9,148,663	126,719	29,109	30,841	11,964	10,746
90	247,920,011	264,215,376	1,132,443	8,130,948	7,711,737	103,968	36,085	38,932	16,086	13,910
91	205,614,421	218,506,889	932,737	6,096,117	5,747,733	74,044	20,283	21,340	8,660	7,278
92	157,734,350	167,751,643	638,830	4,419,667	4,201,287	46,014	16,235	15,909	6,260	5,767
93	122,991,267	130,489,522	504,821	3,402,026	3,227,776	40,541	15,275	15,678	6,448	5,612
94	91,937,147	97,547,715	345,494	2,490,715	2,366,049	22,408	11,012	10,648	4,305	3,556
95	65,479,029	68,936,999	240,599	1,672,061	1,589,374	16,732	4,340	4,568	1,954	1,588
96	45,408,932	47,614,107	169,784	1,048,496	994,970	13,693	1,637	1,560	367	322
97	31,586,624	33,001,821	108,510	678,524	636,486	4,017	0	0	0	0
98	19,330,111	20,079,751	76,263	367,666	347,033	5,271	0	0	0	0
99	11,641,543	12,051,561	46,789	203,373	192,974	4,091	0	0	0	0
100	7,725,964	8,013,378	28,848	116,981	112,539	951	0	0	0	0
101+	10,320,927	10,659,624	35,738	192,950	186,641	1,662	0	0	0	0
Total	35,404,085,236	39,101,625,415	413,525,995	1,346,889,922	1,337,636,459	17,326,825	56,567,477	63,603,635	26,065,941	21,222,004

**Table 2. -- Computation of Family Composition Factors and Factors for Child's Benefits for Calendar Year 2018
Applied to Female Old-Age Employees**

Social Security Data			
Age Last Birthday of Old-Age Beneficiary	(A) Child Factors $\frac{(1)-(7)+(3)-(9)}{(1)-(7)}$	(B) Family Composition Factors I $\frac{(5)+(6)}{(5)}$	(C) Family Composition Factors II $\frac{(2)-(5)+(3)+(10)-(6)}{(2)-(5)}$
62	1.0067	.....	.....
63	1.0064	.....	.....
64	1.0056	.....	.....
65	1.0045	1.0027	1.0039
66	1.0040	1.0026	1.0038
67	1.0037	1.0026	1.0036
68	1.0034	1.0028	1.0033
69	1.0030	1.0027	1.0029
70	1.0025	1.0025	1.0026
71	1.0022	1.0029	1.0023
72	1.0022	1.0022	1.0022
73	1.0019	1.0024	1.0020
74	1.0018	1.0027	1.0018
75	1.0016	1.0024	1.0017
76	1.0015	1.0022	1.0016
77	1.0015	1.0035	1.0016
78	1.0013	1.0013	1.0014
79	1.0012	1.0014	1.0013
80-84	1.0009	1.0030	1.0011
85 and over	1.0004	1.0022	1.0006

NOTE - Numbers in above column formulae correspond to the columns in Table 2a, which is supplied annually by SSA.

Column (A) - Factors to be applied to amounts of female old-age benefits in area of actual life benefits.

Column (B) - Factors to be applied to amounts of female old-age benefits in area of presumptive life benefits with a spouse on the rolls.

Column (C) - Factors to be applied to amounts of female old-age benefits in area of presumptive life benefits with no spouse on the rolls.

Table 2a. — Selected benefit estimates relating to female old-age (primary) beneficiary families in current-payment status on 12/31/2018

Age	All old-age families			Beneficiary families consisting of a female old-age beneficiary with an aged husband receiving a full benefit whether or not children are present			Beneficiary families consisting of a female old-age beneficiary with a husband whose entitlement is based on having an eligible child in his care and is receiving a full benefit			
	(1) Old-age benefits	(2) Monthly rate of PIA	(3) Child benefits	(4) Old-age benefits	(5) Monthly rate of PIA	(6) Child benefits	(7) Old-age benefits	(8) Monthly rate of PIA	(9) Child benefits	(10) Husband benefits
62	\$342,045,979	\$448,183,710	\$2,295,144	\$2,135,307	\$2,886,250	\$12,133	\$21,050	\$28,562	\$10,783	\$9,380
63	516,479,570	657,673,954	3,333,006	4,243,389	5,548,248	20,946	22,202	29,303	11,306	10,851
64	629,077,626	768,952,403	3,527,149	6,560,731	8,168,326	21,540	16,102	20,352	7,443	6,838
65	793,767,733	924,827,479	3,575,432	9,183,895	10,933,991	29,394	18,332	22,901	8,689	8,446
66	1,582,798,471	1,685,233,658	6,325,589	24,400,495	26,215,823	67,897	22,848	26,023	9,759	9,218
67	1,638,930,983	1,720,636,363	6,128,305	26,906,173	28,393,114	74,446	22,132	24,426	8,496	8,239
68	1,589,284,009	1,649,767,403	5,416,878	21,458,171	22,498,173	63,025	14,022	16,068	5,565	6,239
69	1,631,080,279	1,681,503,354	4,895,947	16,490,466	17,259,923	46,634	8,801	10,591	4,444	3,725
70	1,848,663,191	1,842,528,226	4,706,795	17,219,094	16,427,178	40,608	7,701	8,423	3,397	2,963
71	1,871,354,184	1,843,633,420	4,166,509	12,360,955	11,936,990	34,175	2,061	2,378	892	892
72	1,650,201,304	1,621,334,361	3,620,132	8,786,756	8,623,862	18,941	6,030	6,547	2,519	1,372
73	1,301,248,971	1,260,404,081	2,497,838	5,522,233	5,487,777	13,108	2,343	3,072	1,054	1,054
74	1,266,525,562	1,216,693,471	2,232,240	4,396,271	4,434,068	11,817	3,490	3,491	1,501	741
75	1,270,404,460	1,210,108,649	2,022,894	3,559,950	3,644,806	8,893	404	534	133	133
76	1,185,758,513	1,118,843,002	1,782,612	3,022,054	3,101,954	6,960	0	0	0	0
77	1,026,570,181	961,039,053	1,509,153	2,202,742	2,272,571	7,933	0	0	0	0
78	920,663,048	850,088,642	1,163,611	1,838,968	1,899,918	2,509	0	0	0	0
79	831,151,833	751,949,555	998,830	1,557,174	1,612,363	2,231	0	0	0	0
80	782,907,801	695,793,456	841,058	1,282,724	1,312,419	3,130	674	847	212	212
81	699,497,002	606,767,502	725,742	1,011,884	1,032,035	3,709	0	0	0	0
82	623,140,189	522,740,503	524,373	763,367	774,683	4,338	0	0	0	0
83	571,766,862	466,972,516	438,943	594,394	595,092	849	0	0	0	0
84	518,397,330	413,970,504	337,348	483,156	487,383	616	0	0	0	0
85	458,361,555	359,963,567	277,661	375,447	368,915	794	0	0	0	0
86	438,656,529	341,663,164	236,678	290,421	286,774	291	0	0	0	0
87	392,859,728	294,744,367	196,925	227,686	224,153	608	0	0	0	0
88	360,858,054	263,472,006	170,157	185,206	172,133	160	0	0	0	0
89	313,942,128	223,067,766	109,411	131,660	126,742	623	0	0	0	0
90	283,453,933	201,977,314	102,037	90,391	82,265	0	0	0	0	0
91	248,348,828	175,875,125	95,745	60,651	58,288	25	0	0	0	0
92	206,770,950	143,700,898	66,963	56,084	53,418	486	0	0	0	0
93	172,557,488	120,725,171	55,356	44,475	40,255	0	0	0	0	0
94	139,692,570	95,552,810	31,737	24,364	22,748	0	0	0	0	0
95	106,987,254	72,086,591	26,765	14,976	14,078	0	0	0	0	0
96	80,971,206	53,826,287	19,851	7,173	4,816	183	0	0	0	0
97	62,488,982	40,857,483	15,451	3,146	2,570	0	0	0	0	0
98	43,519,936	28,097,564	10,083	591	514	0	0	0	0	0
99	28,585,968	19,122,545	4,274	853	1,037	0	0	0	0	0
100	20,172,706	14,102,343	7,960	0	0	0	0	0	0	0
101+	32,294,147	24,426,007	7,699	0	0	0	0	0	0	0
Total	28,482,237,040	27,392,906,271	64,505,279	177,493,470	187,005,653	498,996	168,189	203,518	76,193	70,300

Table 3. -- Analysis of Net Benefit Amounts (Uninflated) for 2018, By Type of Benefit (Accrual Basis)
(in thousands)

Type of Benefit	Total			OASI			DI		
	Net Chargeable	Combined ¹ Earnings	Actual SSA Offsets	Net Chargeable	Combined ¹ Earnings	Actual SSA Offsets	Net Chargeable	Combined Earnings	Actual SSA Offsets
Total	\$74,474	\$82,367	\$7,893	\$70,052	\$77,772	\$7,720	\$4,422	\$4,595	\$173
Retired Employees, Total	50,275	53,934	3,659	46,118	49,612	3,494	4,157	4,321	165
Full Rate	14,689	16,459	1,770	10,550	12,156	1,605	4,139	4,304	165
Reduced Rate	35,586	37,474	1,889	35,568	37,457	1,889	18	18	-
Non-Retired Employees, Total	5	69	64	5	69	64	-	-	-
Presumptives ²	-	-	-	-	-	-	-	-	-
Regular ³	5	69	64	5	69	64	-	-	-
Auxiliaries of Retired Employees, Total	9,635	9,694	60	9,369	9,421	51	265	274	8
Spouses, Full Rate, Full Retirement Age and Over	609	617	8	596	604	8	13	13	-
Spouses, Reduced Rate	8,760	8,803	43	8,608	8,651	43	151	151	-
Spouses, Full Rate, Under Full Retirement Age	73	73	-	65	65	-	8	8	-
Children ⁴	193	202	8	100	100	-	93	101	8
Auxiliaries of Non-Retired Employees, Total	-	-	-	-	-	-	-	-	-
Survivors, Total	14,560	18,671	4,111	14,560	18,671	4,111	-	-	-
Aged Widow(er)s, Full Rate	2,431	3,434	1,003	2,431	3,434	1,003	-	-	-
Aged Widow(er)s, Reduced Rate	10,644	13,533	2,889	10,644	13,533	2,889	-	-	-
Disabled Widow(er)s	552	669	117	552	669	117	-	-	-
Widowed Mothers/Fathers	70	70	-	70	70	-	-	-	-
Children and Parents	847	931	84	847	931	84	-	-	-
Widow(er)s Not on RRB Rolls	1	20	19	1	20	19	-	-	-
Lump Sum	14	14	-	14	14	-	-	-	-

¹ Includes amounts due to child and family composition factors.

² Benefits for period between earliest retroactivity of application and date of first payment by RRB or SSA.

³ Benefits paid by SSA, but not RRB.

⁴ Actual SSA offsets under OASI were below \$500, and thus were rounded down to \$0.

NOTE - For retired employees and auxiliaries, combined earnings are after reduction for receipt of SSA benefits based on other than retired employee's earnings. SSA offsets for retired employees and auxiliaries include only payments based on retired employee's earnings. For survivors, SSA offsets are payments based on other than the employee's earnings. Detail may not add to totals shown because of rounding.

Table 4. -- Stratification of Universe of RRB Beneficiaries, Calendar Year 2018

Stratum Number	Type of RRA Benefit Payable	Age of Beneficiary on		RRA Spouse Annuity Payable in 2018	Criterion Year ¹	Number in Survivor Family
		Birth day in 2018	Death day in 2018			
<u>OLD-AGE AND SURVIVORS INSURANCE TRUST FUND²</u>						
1	Employee	62-65	---	---	Before 2019	-
2	Employee	66 or older	Yes	Yes	Before 1988	-
3	Employee	66 or older	Yes	Yes	1988-1991	-
4	Employee	66 or older	Yes	Yes	1992-2002	-
5	Employee	66 or older	Yes	Yes	2003-2007	-
6	Employee	66 or older	Yes	Yes	2008-2018	-
7	Employee	66 or older	No	No	Before 1988	-
8	Employee	66 or older	No	No	1988-1991	-
9	Employee	66 or older	No	No	1992-2002	-
10	Employee	66 or older	No	No	2003-2007	-
11	Employee	66 or older	No	No	2008-2018	-
12	Aged Widow(er)	60-61	---	---	Before 2019	1
13	Aged Widow(er), Parent	62 or older	---	---	Before 1971	1
14	Aged Widow(er), Parent	62 or older	---	---	1971-1975	1
15	Aged Widow(er), Parent	62 or older	---	---	1976-1982	1
16	Aged Widow(er), Parent	62 or older	---	---	1983-1987	1
17	Aged Widow(er), Parent	62 or older	---	---	1988-1994	1
18	Aged Widow(er), Parent	62 or older	---	---	1995-1998	1
19	Aged Widow(er), Parent	62 or older	---	---	1999-2018	1
20	Child	---	---	---	Before 2019	1
21	Disabled Widow(er)	---	---	---	Before 2019	1
22	Monthly Survivor	---	---	---	Before 2019	1
23	Monthly Survivor, Lump Sum	---	---	---	Before 2019	2 or more
24	None ⁴	---	---	---	2018 ³	-
<u>DISABILITY INSURANCE TRUST FUND</u>						
1	Employee Disability	64-FRA ⁵	---	---	---	-
2	Employee Disability	60-63	---	---	---	-
3	Employee Disability	55-59	---	---	---	-
4	Employee Disability	Under 55	---	---	---	-

¹ For employee benefits, employee annuity accrual year; for monthly survivor benefits, year employee attained age 65, where employee had retired and died at age 65 or older; in all other cases year of employee death.

² Excludes all interim widow(er) benefits, survivor-option annuities, and other survivor benefits based on deaths before April 1938.

³ Employee death in 2018, without regard to employee's age or annuity accrual date.

⁴ Non-retired employees at full retirement age and older; employees (and their auxiliaries) with 10 or more years of railroad service (or 5 or more years of railroad service after 1995) paid benefits by SSA but not RRB, and widow(er)'s age 60 and older who are not on the rolls.

⁵ Full retirement age gradually increases from age 65 to age 67, for those born between 1937 and 1960. It is age 67 for those born after 1959 and age 65 for those born before 1938.

Table 5. -- Basic Data Used to Compute Inflated Amount of OASI Benefits and Sampling Error, 2018

Stratum Number ¹ <i>i</i>	Universe Number <i>N_i</i>	Sample Number <i>n_i</i>	Sum of Net Benefit Amounts $\sum_{j=1}^{n_i} X_{ij}$	Sum of Squares of Net Benefit Amounts $\sum_{j=1}^{n_i} X_{ij}^2$
Total ²	364,365	3,679	\$70,051,714	\$1,760,549,079,422
1	31,053	365	7,833,753	204,863,612,130
2	4,247	41	725,312	15,299,347,461
3	7,299	66	1,334,929	31,365,353,683
4	42,155	403	10,000,050	280,672,867,760
5	30,395	302	8,197,367	250,817,176,048
6	49,062	515	14,087,223	442,866,822,341
7	7,077	57	734,535	11,415,978,134
8	7,958	87	1,185,311	20,941,051,322
9	25,964	253	4,187,680	82,005,099,455
10	13,413	130	2,303,189	48,183,510,072
11	27,340	273	4,898,118	106,075,019,108
12	1,066	10	143,707	2,326,446,587
13	1,792	21	126,435	1,261,673,917
14	2,061	20	176,733	2,157,661,725
15	7,820	80	877,992	13,688,022,822
16	13,084	137	1,627,086	24,593,936,906
17	28,029	289	3,468,644	57,785,552,454
18	12,870	125	1,602,782	27,486,964,494
19	31,202	314	4,496,176	90,970,977,682
20	5,229	55	568,090	7,603,294,040
21	3,863	45	560,963	8,846,279,985
22	5,585	33	896,003	29,304,415,677
23	5,401	54	13,770	---
24	400	4	5,866	18,015,619

¹ For description of strata, see Table 4.

² Universe and sample numbers exclude 5,801 and 55 retirement annuities, respectively, from a group that consists almost entirely of non-disabled annuitants under age 62.

NOTE - The inflated amount, A , of the benefits and the sample error, S_a , of the inflated amount are computed from the following formulas:

$$A = \sum_{i=1}^{24} \frac{N_i}{n_i} * \sum_{j=1}^{n_i} x_{ij}$$

$$s_a^2 = \sum_{i=1}^{24} \frac{N_i(N_i - n_i)}{n_i^2(n_i - 1)} \left[n_i \sum_{j=1}^{n_i} x_{ij}^2 - \left(\sum_{j=1}^{n_i} x_{ij} \right)^2 \right]$$

where x_{ij} is the benefit amount for the j th individual in the i th stratum and the remaining symbols are defined by the table caption headings. Detail may not add to totals shown because of rounding.

Table 5a. -- Basic Data Used to Compute Inflated Amount of DI Benefits and Sampling Error, 2018

Stratum Number ¹ <i>i</i>	Universe Number <i>N_i</i>	Sample Number <i>n_i</i>	Sum of Net Benefit Amounts $\sum_{j=1}^{n_i} X_{ij}$	Sum of Squares of Net Benefit Amounts $\sum_{j=1}^{n_i} X_{ij}^2$
Total ²	21,455	188	\$4,422,185	\$118,755,163,403
1	8,206	61	1,334,827	35,012,664,907
2	7,412	72	1,799,805	48,625,101,185
3	3,250	32	712,688	17,384,392,084
4	2,587	23	574,865	17,733,005,227

¹ For description of strata, see table 4.

² Universe and sample numbers exclude 8,557 and 106 disability annuities, respectively, composed largely of annuitants denied a disability freeze. Of these, 4,949 and 72, respectively, were annuitants ages 62 to 66 who were included in the OASI strata.

NOTE - The inflated amount, A , of the benefits and the sample error, S_a , of the inflated amount are computed from the following formulas:

$$A = \sum_{i=1}^4 \frac{N_i}{n_i} * \sum_{j=1}^{n_i} x_{ij}$$

$$S_a^2 = \sum_{i=1}^4 \frac{N_i(N_i - n_i)}{n_i^2(n_i - 1)} \left[n_i \sum_{j=1}^{n_i} x_{ij}^2 - \left(\sum_{j=1}^{n_i} x_{ij} \right)^2 \right]$$

where x_{ij} is the benefit amount for the j th individual in the i th stratum and the remaining symbols are defined by the table caption headings. Detail may not add to totals shown because of rounding.

Table 6. -- OASI Benefit Payments, 1937-2018, Including Adjustments, on an Accrual Basis

Year	Benefit Payments		Adjusted Benefit Payments
	Before Adjustments (Accrual Basis)	Adjustments ¹	
Total	\$214,991,041,226	(\$127,825,335)	\$214,863,215,891
1937-1970 ²	11,739,327,167	---	11,739,327,167
1971	1,128,570,194	---	1,128,570,194
1972	1,210,965,811	---	1,210,965,811
1973	1,471,457,246	---	1,471,457,246
1974	1,590,141,425	---	1,590,141,425
1975	1,724,239,005	---	1,724,239,005
1976	1,845,392,953	---	1,845,392,953
1977	1,955,837,142	---	1,955,837,142
1978	2,079,934,396	---	2,079,934,396
1979	2,281,435,049	---	2,281,435,049
1980	2,552,252,439	---	2,552,252,439
1981	2,892,694,764	---	2,892,694,764
1982	3,187,533,843	---	3,187,533,843
1983	3,257,653,071	---	3,257,653,071
1984	3,383,732,525	---	3,383,732,525
1985	3,515,602,903	---	3,515,602,903
1986	3,623,833,354	---	3,623,833,354
1987	3,700,591,036	---	3,700,591,036
1988	3,843,574,962	---	3,843,574,962
1989	4,009,931,952	---	4,009,931,952
1990	4,199,908,201	---	4,199,908,201
1991	4,402,929,123	---	4,402,929,123
1992	4,531,315,765	---	4,531,315,765
1993	4,653,171,768	---	4,653,171,768
1994	4,694,292,958	---	4,694,292,958
1995	4,726,567,302	---	4,726,567,302
1996	4,764,123,499	---	4,764,123,499
1997	4,816,342,931	---	4,816,342,931
1998	4,822,260,567	---	4,822,260,567
1999	4,796,837,227	---	4,796,837,227
2000	4,819,396,869	---	4,819,396,869
2001	4,849,956,379	---	4,849,956,379
2002	4,855,267,294	---	4,855,267,294
2003	4,884,810,004	---	4,884,810,004
2004	4,860,606,010	---	4,860,606,010
2005	4,937,109,169	---	4,937,109,169
2006	5,084,761,993	(777,191)	5,083,984,802
2007	5,206,820,425	(2,917,527)	5,203,902,898
2008	5,318,226,332	(4,214,179)	5,314,012,153
2009	5,658,083,982	(5,721,671)	5,652,362,311
2010	5,696,255,582	(7,395,174)	5,688,860,408
2011	5,798,880,155	(7,936,306)	5,790,943,849
2012	6,073,918,198	(10,479,754)	6,063,438,444
2013	6,221,867,012	(11,809,443)	6,210,057,569
2014	6,396,094,432	(16,536,365)	6,379,558,067
2015	6,566,827,018	(19,373,136)	6,547,453,882
2016	6,653,777,273	(20,498,023)	6,633,279,250
2017	6,756,534,316	(20,166,566)	6,736,367,750
2018	6,949,398,206	---	6,949,398,206

¹ Includes revision of work deduction amounts and adjustments based on information received subsequent to the previous determination.

² Data for years 1937-1970 are not shown separately as they are not adjusted in this determination.

Table 6a. -- DI Benefit Payments, 1957-2018, Including Adjustments, on an Accrual Basis

Year	Benefit Payments			
	Before Adjustments (Accrual Basis)	Adjustments ¹	Adjusted Benefit Payments	
	Total	\$17,669,375,619	\$4,029,882	\$17,673,405,501
1957-1988 ²	3,259,212,386	---	3,259,212,386	
1989	197,740,405	---	197,740,405	
1990	193,105,261	---	193,105,261	
1991	220,337,476	---	220,337,476	
1992	235,789,575	---	235,789,575	
1993	248,045,289	---	248,045,289	
1994	247,567,099	---	247,567,099	
1995	263,632,596	---	263,632,596	
1996	273,373,545	---	273,373,545	
1997	305,386,677	---	305,386,677	
1998	313,779,875	---	313,779,875	
1999	341,164,897	---	341,164,897	
2000	370,410,146	---	370,410,146	
2001	398,061,910	---	398,061,910	
2002	446,311,624	---	446,311,624	
2003	533,554,116	---	533,554,116	
2004	566,071,157	---	566,071,157	
2005	590,577,343	6,317	590,583,660	
2006	632,592,821	6,577	632,599,398	
2007	680,721,501	6,890	680,728,391	
2008	690,350,010	6,885	690,356,895	
2009	729,234,971	15,569	729,250,540	
2010	737,292,653	36,263	737,328,916	
2011	735,182,421	48,177	735,230,598	
2012	740,285,502	47,832	740,333,334	
2013	714,863,933	46,654	714,910,587	
2014	696,554,818	273,272	696,828,090	
2015	662,058,927	519,710	662,578,637	
2016	618,009,270	397,683	618,406,953	
2017	526,218,300	2,618,053	528,836,353	
2018	501,889,114	---	501,889,114	

¹ Includes revision of work deduction amounts and adjustments based on information received subsequent to the previous determination.

² Data for years 1957-1988 are not shown separately as they are not adjusted in this determination.

Table 7. -- Summary of Float Days for Financial Interchange, 1997-2019

Year	Cycle 1-4 Payments																												
	First Half						Second Half																						
	RRB EFT PCT		Cycle 1		Cycles 2-4		Combined		RRB EFT PCT		Cycle 1		Cycles 2-4		Combined														
	Percentage	OASI	DI	EFT	Check	Float	OASI	DI	Float	Check	EFT	OASI	DI	Float	Check	EFT	OASI	DI	Float	Check	EFT	OASI	DI	Float	Check	EFT	OASI	DI	Float
1997	63.60%	100.00%	63.60%	63.60%	2.8333	7.6333	4.5805	4.5805	66.30%	99.29%	99.47%	66.06%	66.12%	2.6667	8.1000	17.4339	4.6025	4.5760											
1998	68.90%	97.38%	97.31%	68.06%	2.5000	7.8333	4.5718	4.5828	71.50%	95.35%	94.39%	70.11%	69.81%	2.6667	8.1333	17.4339	4.9114	5.0531											
1999	74.20%	93.34%	91.37%	72.36%	2.3333	7.6667	4.8067	5.1246	75.20%	91.14%	88.11%	72.79%	71.85%	2.5000	8.3000	17.7673	5.2904	5.7536											
2000	76.20%	88.87%	85.00%	73.22%	2.8333	7.6667	5.6883	6.2728	77.00%	85.57%	82.20%	73.12%	72.02%	2.3333	8.1000	18.1006	5.9350	6.4663											
2001	77.70%	83.21%	79.38%	73.20%	2.3333	7.8000	6.3404	6.9760	78.80%	81.06%	76.97%	73.85%	72.46%	2.3333	8.1000	18.2673	6.5735	7.2252											
2002	80.90%	78.82%	74.33%	75.77%	2.3333	7.6000	6.6432	7.3440	81.70%	76.64%	72.06%	76.12%	74.60%	2.5000	8.0000	18.3768	7.2153	7.9428											
2003	82.20%	74.55%	70.21%	76.12%	2.8333	7.6333	7.5731	8.2365	82.90%	72.43%	68.26%	76.39%	74.95%	2.6667	8.1000	17.4339	7.6666	8.2822											
2004	83.60%	70.28%	66.68%	76.67%	2.6667	7.8000	8.2932	8.8730	84.10%	68.29%	65.52%	76.72%	75.73%	2.5000	8.3000	17.7673	8.2635	8.6864											
2005	84.80%	66.05%	64.35%	76.99%	2.6667	7.8000	8.4597	8.7120	85.30%	64.13%	63.29%	77.08%	76.77%	2.3333	7.9333	19.1006	9.1709	9.3114											
2006	85.90%	62.05%	62.39%	77.28%	2.8333	7.9667	9.1610	9.1114	86.40%	60.27%	62.11%	77.43%	78.10%	2.3333	8.1000	18.1006	9.3820	9.0922											
2007	87.00%	58.30%	61.26%	77.70%	2.3333	7.8000	9.9660	9.4751	87.50%	56.61%	61.31%	77.92%	79.61%	2.3333	8.1000	18.2673	9.9672	9.2190											
2008	87.90%	54.72%	60.44%	77.89%	2.5000	7.6333	10.3358	9.4242	88.40%	52.90%	59.97%	78.07%	80.66%	2.6667	8.1000	17.4339	10.2529	9.2087											
2009	89.00%	51.00%	59.58%	78.43%	2.5000	7.8333	10.8124	9.4597	89.60%	49.05%	59.05%	78.80%	82.39%	2.6667	8.1333	17.5459	10.8169	9.3290											
2010	90.10%	47.24%	58.37%	79.04%	2.3333	7.6667	11.3665	9.5746	90.60%	45.47%	57.17%	79.33%	83.56%	2.5000	8.3000	17.7673	11.3703	9.5838											
2011	91.30%	43.85%	56.85%	80.16%	2.6667	7.8000	11.4052	9.4851	93.00%	42.36%	56.61%	83.47%	87.64%	2.3333	7.9333	19.1006	12.3904	10.0003											
2012	94.70%	40.85%	56.41%	87.02%	2.5000	7.8333	12.0112	9.5834	96.00%	39.44%	56.30%	89.86%	92.90%	2.3333	8.1000	18.2673	12.2142	9.5266											
2013	98.00%	37.93%	56.36%	94.73%	2.3333	7.6000	12.1215	9.2469	98.90%	36.60%	56.43%	96.99%	98.05%	2.5000	8.0000	18.3768	12.6268	9.4773											
2014	99.00%	35.33%	56.54%	97.17%	2.8333	7.6333	12.7545	9.5168	99.10%	34.15%	56.70%	97.36%	98.41%	2.6667	8.1000	17.4339	12.4395	9.1098											
2015	99.20%	32.97%	56.79%	97.57%	2.5000	7.8333	13.1118	9.3554	99.20%	31.86%	56.90%	97.49%	98.59%	2.6667	8.1333	17.5459	12.8489	9.1235											
2016	99.20%	30.82%	56.94%	97.40%	2.1667	7.8000	13.0042	8.9298	99.20%	29.86%	56.97%	97.32%	98.60%	2.3333	7.9333	19.1006	14.1393	9.5925											
2017	99.20%	28.84%	57.06%	97.23%	2.8333	7.9667	13.3834	9.2158	99.20%	27.93%	57.10%	97.14%	98.60%	2.3333	8.1000	18.1006	13.7424	9.1436											
2018	99.30%	26.97%	57.25%	97.40%	2.3333	7.8000	14.4947	9.4690	99.30%	26.14%	57.25%	97.32%	98.78%	2.3333	8.4667	18.2673	14.1454	9.1887											
2019	99.30%	25.28%	57.21%	97.23%	2.3333	7.6000	14.0267	9.0464	99.30%	24.52%	57.11%	97.15%	98.77%	2.5000	8.0000	18.3196	14.4790	9.3239											

Table 8. -- Summary of Uncollectible Benefit Overpayment Calculations

Year	SSA Equivalent Uncollectible Overpayments	Sample SSEB Percentage ¹	Overpayment Amount Charged	DI Trust Fund Proportion ²	Amount Charged By Trust Fund		Ratio of Overpayments to FI Benefits ³
					OASI	DI	
1999	\$3,503,422	66.21%	\$2,319,615	0.54260	\$1,060,986	\$1,258,629	0.0452%
2000	2,781,767	66.21%	1,841,808	0.57705	778,989	1,062,819	0.0355%
2001	1,770,787	66.21%	1,172,438	0.58205	490,016	682,422	0.0223%
2002	1,867,458	66.21%	1,236,444	0.61212	479,590	756,854	0.0233%
2003	1,867,671	66.21%	1,236,585	0.64232	442,303	794,282	0.0229%
2004	3,292,057	69.08%	2,274,153	0.64730	802,090	1,472,063	0.0419%
2005	2,304,781	69.08%	1,592,143	0.65336	551,905	1,040,238	0.0289%
2006	2,373,485	69.08%	1,639,603	0.68148	522,241	1,117,362	0.0287%
2007	2,262,935	69.08%	1,563,235	0.68956	485,285	1,077,950	0.0266%
2008	3,612,941	69.08%	2,495,820	0.64568	884,311	1,611,509	0.0417%
2009	2,979,389	60.85%	1,812,958	0.61575	696,620	1,116,338	0.0285%
2010	3,205,170	60.85%	1,950,346	0.62428	732,786	1,217,560	0.0304%
2011	2,246,004	60.85%	1,366,693	0.62373	514,240	852,454	0.0210%
2012	1,826,605	60.85%	1,111,489	0.63365	407,196	704,293	0.0164%
2013	1,503,658	60.85%	914,976	0.61118	355,757	559,219	0.0132%
2014	2,162,281	62.78%	1,357,480	0.59252	553,142	804,338	0.0192%
2015	2,633,041	62.78%	1,653,023	0.53843	762,986	890,037	0.0229%
2016	1,225,186	62.78%	769,172	0.48793	393,874	375,298	0.0106%
2017	924,273	62.78%	580,259	0.45594	315,694	264,565	0.0080%
2018	817,161	62.78%	513,013	0.40540	305,037	207,977	0.0069%

¹ Percentage of SSA equivalent uncollectible overpayments attributable to the SSEB portion of the Tier 1 benefit. Percentages are recalculated every 5 years based on a sample of railroad annuity overpayments written off as uncollectible in the first year of the 5 year grouping.

² OASI/DI allocation is based on overall SSA OASI/DI overpayment experience for the calendar year.

³ The uncollectible overpayment amount, when expressed as a fraction of total benefit payments for the calendar year, is limited to the corresponding ratio of uncollectible overpayments to total benefits experienced by SSA.

Part III.

Tables Pertaining to Administrative Cost Calculations

Table 9. -- Calculation of OASDI Administrative Expenses - 2018

Source	Total cost (thousands)	Number of Items		Unit cost
		Total	Chargeable	
OASI Trust Fund				
Total.....	<u>\$16,922</u>			
Determination of eligibility and benefit computations, OASI.....	8,202	20,300	2,400	17,900
Retired employees.....	4,055	11,000	2,300	\$466.14
Dependents of retired employees.....	3,065	6,900	100	450.68
Non-retired employees.....	-	-	-	466.14
Widow(er)s not on RRB rolls.....	-	-	-	450.68
Survivor monthly beneficiaries.....	1,082	2,400	-	450.68
Maintenance of benefit rolls.....	8,599	413,700	-	\$20.79
Handling compensation reports.....	121	331,100	-	0.37
DI Trust Fund				
Total.....	<u>\$4,336</u>			
Determination of eligibility and benefit computations, DI.....	3,285	1,900	100	1,800
Retired employees.....	2,348	1,400	100	\$1,806.50
Dependents of retired employees.....	937	500	-	1,873.70
Maintenance of benefit rolls.....	1,033	19,000	-	54.37
Handling compensation reports.....	18	331,100	-	0.06

Table 9a. -- Calculation of HI Administrative Expenses - 2018

Source	Total cost (thousands)	Number of Items		Unit cost
		Total	Chargeable	
HI Trust Fund				
Total.....	<u>\$2,204</u>			
Initial enrollment, OASI.....	1,080	2,400	17,900	
Retired employees.....	534	2,300	8,700	\$61.38
Dependents of retired employees.....	404	100	6,800	59.34
Non-retired employees.....	-	-	-	61.38
Widow(er)s not on RRB rolls.....	-	-	-	59.34
Survivor monthly beneficiaries.....	142	2,400	2,400	59.34
Initial enrollment, DI.....	815	100	1,800	
Retired employees.....	583	100	1,300	\$448.14
Dependents of retired employees.....	232	-	500	464.81
Maintenance of benefit rolls, OASI.....	173	-	413,700	0.42
Maintenance of benefit rolls, DI.....	96	-	19,000	5.07
Handling compensation reports.....	40	-	331,100	0.12

Part IV.**Summary of Income Tax Calculations****Table 10. -- Financial Interchange OASDI Income Tax Transfers, Calendar Years 1984-2018 and January-September 2019**

Year	Original Treasury Transfers		Adjusted Accrual Basis		Final FI Adjusted Taxes Due		
	Amount	FI Adjusted ¹	Taxes Due ²		Total	Cash Basis ³	
			Amount	FI Adjusted		OASI ⁴	DI ⁴
1984	\$68.0	\$58.8	\$36.0	\$31.1	\$58.8	\$57.0	\$1.8
1985	77.0	67.0	33.4	29.1	67.0	65.0	2.0
1986	69.0	70.4	29.3	29.9	70.4	68.3	2.1
1987	48.0	49.2	30.4	31.2	(13.8)	(12.0)	(1.8)
1988	41.0	42.0	32.4	33.2	3.5	4.2	(0.7)
1989	36.0	36.8	39.0	39.9	14.2	14.0	0.2
1990	39.0	39.6	45.0	45.7	30.8	30.5	0.3
1991	44.0	44.6	47.0	47.7	47.7	47.1	0.6
1992	48.0	48.6	46.0	46.6	54.7	53.9	0.8
1993	56.0	56.9	47.0	47.7	60.0	58.8	1.2
1994	52.0	52.5	48.0	48.5	50.5	49.4	1.1
1995	50.0	50.1	59.0	59.2	40.9	39.9	1.0
1996	57.0	57.1	75.0	75.1	57.1	55.9	1.2
1997	61.0	61.0	86.0	86.0	57.0	55.5	1.5
1998	74.0	73.9	88.0	87.9	73.9	72.1	1.8
1999	79.0	78.9	94.0	93.9	106.0	103.4	2.6
2000	102.0	102.0	105.0	105.0	128.0	124.5	3.5
2001	94.0	93.4	100.0	99.3	92.4	89.5	2.9
2002	97.0	96.5	93.0	92.5	110.5	106.7	3.8
2003	97.0	98.1	85.0	86.0	113.1	108.6	4.5
2004	109.0	109.2	91.0	91.2	112.2	107.4	4.8
2005	117.0	116.5	125.0	124.4	116.5	111.5	5.0
2006	125.0	124.3	149.0	148.2	130.2	124.4	5.8
2007	135.0	134.7	170.0	169.6	134.7	128.3	6.4
2008	144.0	143.7	168.0	167.6	109.6	104.1	5.5
2009	144.0	144.1	164.0	164.2	136.1	128.5	7.6
2010	159.0	159.0	182.0	182.1	159.0	151.5	7.5
2011	160.0	160.9	192.0	193.1	176.8	170.1	6.7
2012	194.0	195.6	211.0	212.8	278.3	273.9	4.4
2013	199.0	200.3	230.0	231.5	243.5	238.9	4.6
2014	250.0	252.0	251.0	253.0	252.0	244.0	8.0
2015	263.0	265.7			297.9	291.7	6.2
2016	281.0	284.4			301.6	295.5	6.1
2017	292.0	294.8			294.8	287.8	7.0
2018	255.0	257.7			289.9	288.7	1.2
1/2019-9/2019	200.0	201.7			201.7	198.0	3.7

¹ Total amount of quarterly transfers from Treasury originally received for the calendar year.² The FI Amount is the total original Treasury transfers multiplied by a ratio of $\left(\frac{FI\ Benefits}{SSEB\ Benefits}\right)$ for the appropriate year.³ Revised Total Amount and FI Amount based on subsequent reconciliations.⁴ Sum of FI Amount original transfers and any adjustments made in the year for prior calendar years. Amount for 9-month estimate year is calculated separately based on projected SSEB and FI Benefits for that period.⁵ OASI/DI allocation is based on overall SSA OASI/DI income tax allocation experience for the calendar year.

**Table 10a. -- Financial Interchange HI Income Tax Transfers, Calendar Years 1994-2018 and
January-September 2019**
(in millions)

Year	Original Treasury Transfers ¹		Treasury Adjustment		Final FI Adjusted Total
	Amount	FI Adjusted	Accrual Basis		
			Amount	FI Adjusted	
1994	\$14.0	\$14.0	\$1.0	\$0.9	\$0.0
1995	30.0	30.2	29.0	29.2	0.2
1996	30.0	30.0	35.0	35.0	0.0
1997	30.0	30.0	39.0	39.0	(0.1)
1998	31.0	31.0	27.0	27.0	0.0
1999	55.0	55.0	60.0	60.0	0.0
2000	50.0	50.0	52.0	52.0	0.0
2001	57.0	56.7	52.0	51.7	(0.3)
2002	58.0	57.7	53.0	52.7	(0.3)
2003	55.0	55.1	42.0	42.0	0.1
2004	53.0	53.3	46.0	46.3	0.3
2005	54.0	54.0	61.0	60.9	0.0
2006	64.0	63.6	81.0	80.5	(0.4)
2007	67.0	66.8	91.0	90.7	(0.2)
2008	76.0	75.9	97.0	96.9	(0.2)
2009	78.0	78.0	84.0	84.0	0.0
2010	86.0	86.0	89.0	89.0	0.0
2011	101.0	101.3	107.0	107.3	0.3
2012	121.0	122.0	129.0	130.1	0.7
2013	111.0	111.7	112.0	112.7	0.7
2014	153.0	154.1	159.0	160.1	1.1
2015	155.0	156.4			1.4
2016	177.0	179.1			2.2
2017	180.0	181.9			1.9
2018	176.0	177.8			1.8
1/2019-9/2019	165.0	166.7			1.7

¹ Total amount of quarterly transfers from Treasury directly to the HI trust fund for the calendar year.

² The FI Amount is the total original Treasury transfers multiplied by a ratio of $\left(\frac{FI\ Benefits}{SSEB\ Benefits}\right)$ for the appropriate year.

³ Revised Total Amount and FI Amount based on subsequent reconciliations.

⁴ Since the original Treasury transfers and subsequent reconciliations are made directly to the HI trust fund, the final FI amount results only from the difference between FI Benefits and SSEB Benefits.

Part V.

Correspondence and Memoranda

**SOCIAL SECURITY**

MEMORANDUM

Date: March 12, 2020 **Refer To:** S1NN1

To: Supervisory Actuary
Office of the Chief Actuary

From: Director
Office of Cost Analysis and Systems Support

Subject: Workload Unit Cost Factors for the SSA-Railroad Retirement Board (RRB) Financial Interchange (Your Memo, 01/23/20)—INFORMATION

This memorandum transmits and documents the final calendar year (CY) 2018 and preliminary CY 2019 unit cost factors for use in the SSA-RRB financial interchange. The CY 2018 calculations have not changed from those transmitted last year. The CY 2019 calculations will be revised only if necessitated by any future recalculations of the fiscal year 2019 administrative costs.

The unit costs are as follows:

<u>Workload</u>	CY 2018 <u>Final</u>	CY 2019 <u>Preliminary</u>
OASI Maintenance of Earnings Accounts	\$ 0.365803	\$ 0.381602
DI Maintenance of Earnings Accounts	\$ 0.055577	\$ 0.054906
HI Maintenance of Earnings Accounts	\$ 0.121553	\$ 0.127342
OASI Initial Enrollment – Wage Earners	\$ 466.136555	\$ 449.888165
DI Initial Enrollment – Wage Earners	\$ 1,806.503879	\$ 1,772.493672
HI (OASI Related) Initial Enrollment – Wage Earners	\$ 61.380117	\$ 60.287703
HI (DI Related) Initial Enrollment – Wage Earners	\$ 448.136587	\$ 463.845879
OASI Initial Enrollment – Auxiliaries	\$ 450.681085	\$ 418.134346
DI Initial Enrollment – Auxiliaries	\$ 1,873.702101	\$ 1,734.553732
HI (OASI related) Initial Enrollment – Auxiliaries	\$ 59.344965	\$ 56.032502
HI (DI related) Initial Enrollment – Auxiliaries	\$ 464.806345	\$ 453.917333

<u>Workload</u>	<u>CY 2018</u> <u>Final</u>	<u>CY 2019</u> <u>Preliminary</u>
OASI Maintenance of the Rolls	\$ 20.786609	\$ 17.665921
DI Maintenance of the Rolls	\$ 54.373156	\$ 50.442708
HI (OASI Related) Maintenance of the Rolls	\$ 0.418409	\$ 0.354521
HI (DI Related) Maintenance of the Rolls	\$ 5.074653	\$ 4.509645

Copies of the worksheets and backup materials used to calculate these unit costs are available upon request. Should your staff or the staff of RRB wish to discuss these computations, they should contact Nicole Wartman at (410) 966-9452.


for Stephen Hull

Financial Operations of the OASI and DI Trust Funds, December 2019

Old-Age and Survivors Insurance Trust Fund			
	Current month	Fiscal year to date	Calendar year to date
Total income	\$103,985,389,970.12	\$229,799,223,064.54	\$917,873,106,157.37
Payroll tax contributions	66,202,601,571.40	183,113,601,571.40	807,973,427,603.18
Multi-employer tax refund	0.00	0.00	-2,882,044,350.00
Net payroll tax contributions	66,202,601,571.40	183,113,601,571.40	805,091,383,253.18
Reimbursement income tax credits	3,312.80	3,312.80	15,339.70
Reimbursement due to P.L. 111-312, 112-78, and 112-96	5,488,254.06	5,488,254.06	10,827,120.27
General Fund reimbursement subtotal	5,491,566.86	5,491,566.86	10,842,459.97
Income from benefit taxation	19,322,115.90	8,634,891,346.90	34,890,161,288.50
Interest on investments	37,757,963,460.66	38,044,725,329.11	77,880,027,201.75
Interest on reimbursements	5,407.30	495,159.34	509,633.55
Interest subtotal	37,757,968,867.96	38,045,220,488.45	77,880,536,835.30
Gifts & miscellaneous income	5,848.00	18,090.93	182,320.42
Total cost	76,507,318,295.47	229,789,573,860.69	911,422,979,198.32
Benefit payments	76,255,256,490.52	228,964,399,801.00	902,833,056,837.62
Reimbursements (uncashed checks & misc.)	-2,867,132.28	-9,070,178.65	-36,432,996.00
Vocational rehabilitation payments	930,813.82	3,357,673.73	12,814,256.20
Benefits subtotal	76,253,320,172.06	228,958,687,296.08	902,809,438,097.82
SSA-RRB Financial Interchange	0.00	0.00	4,880,389,000.00
Treasury administrative expenses	2,453,160.37	12,515,209.05	395,624,102.51
SSA salaries & expenses	248,907,253.00	803,675,514.00	3,267,584,052.95
Construction	3,602,782.00	16,212,521.00	75,504,615.54
Offsetting miscellaneous income	-78,244.48	-232,111.96	-766,234.62
Pension reform reimbursement	0.00	-397,740.00	-1,103,567.00
Reimbursement for SSA expenses	-886,827.48	-886,827.48	-3,690,868.88
Administrative expenses subtotal	253,998,123.41	830,886,564.61	3,733,152,100.50
Net increase in asset reserves	27,478,071,674.65	9,649,203.85	6,450,126,959.05
Undisbursed balance	-33,356,406.78	-33,356,406.78	-33,356,406.78
Invested asset reserves (book value)	2,804,355,261,000.00	2,804,355,261,000.00	2,804,355,261,000.00
Asset reserves at end of month	2,804,321,904,593.22	2,804,321,904,593.22	2,804,321,904,593.22

Disability Insurance Trust Fund			
	Current month	Fiscal year to date	Calendar year to date
Total income	\$12,706,344,616.56	\$32,981,576,009.77	\$143,901,490,020.19
Payroll tax contributions	11,334,194,856.51	31,186,194,856.51	140,059,784,942.41
Multi-employer tax refund	0.00	0.00	-683,203,650.00
Net payroll tax contributions	11,334,194,856.51	31,186,194,856.51	139,376,581,292.41
Reimbursement income tax credits	315.55	315.55	1,458.63
Reimbursement due to P.L. 111-312, 112-78, and 112-96	931,969.25	931,969.25	1,838,570.71
General Fund reimbursement subtotal	932,284.80	932,284.80	1,840,029.34
Income from benefit taxation	305,233.80	392,921,155.20	1,582,747,340.00
Interest on investments	1,370,907,814.52	1,401,218,297.07	2,936,839,917.34
Interest on reimbursements	4,426.93	309,416.19	3,481,441.10
Interest subtotal	1,370,912,241.45	1,401,527,713.26	2,940,321,358.44
Total cost	11,770,561,054.67	36,307,572,287.09	147,875,821,449.15
Benefit payments	11,553,687,904.07	35,596,424,194.76	145,048,859,767.70
Reimbursements (uncashed checks & misc.)	-1,691,326.87	-5,336,061.64	-19,821,083.19
Vocational rehabilitation payments	7,543,544.50	25,530,876.76	91,788,439.46
Benefits subtotal	11,559,540,121.70	35,616,619,009.88	145,120,827,123.97
SSA-RRB Financial Interchange	0.00	0.00	66,040,000.00
Treasury administrative expenses	511,313.57	2,411,663.51	72,314,944.32
SSA salaries & expenses	208,146,772.00	671,947,009.00	2,546,056,318.74
Construction	2,949,582.00	13,273,118.00	60,512,800.65
Reimbursement for SSA expenses	-726,041.57	-726,041.57	-3,021,697.36
Demonstration projects	139,306.97	4,047,528.27	13,091,958.83
Administrative expenses subtotal	211,020,932.97	690,953,277.21	2,688,954,325.18
Net increase in asset reserves	935,783,561.89	-3,325,996,277.32	-3,974,331,428.96
Undisbursed balance	-54,812,088.94	-54,812,088.94	-54,812,088.94
Invested asset reserves (book value)	93,137,565,000.00	93,137,565,000.00	93,137,565,000.00
Asset reserves at end of month	93,082,752,911.06	93,082,752,911.06	93,082,752,911.06

Notes:

- Fiscal year is the 12-month period ending September 30. See summary of [fiscal year data](#).
- Temporary tax credits were established by the 1983 Amendments (see footnote to our [tax rate table](#) for applicable years). The OASI and DI Trust Funds are reimbursed from the general fund of the Treasury for these tax credits.
- Income from taxation of benefits was established by the 1983 Amendments. A relatively small amount of this income is from taxation of benefits paid to non-resident aliens (deducted from monthly benefits). The remainder is transferred to the trust funds at the beginning of each calendar quarter on an estimated basis, with subsequent adjustment for actual income tax data. For further information, see [Taxation of Social Security benefits](#).
- The "SSA-RRB Financial Interchange" is an annual transfer among the Social Security Trust Funds and the Railroad Retirement program's *Social Security Equivalent Benefit Account*. The transfers, computed by the Railroad Retirement Board, are designed to put the Social Security Trust Funds in the same financial position that they would have been if railroad employment had always been covered by Social Security.
- Offsetting miscellaneous income is composed of miscellaneous income due to the Trust Funds, which can include refunds, penalties, fees, and other income due to the Trust Funds.
- The Employee Retirement Income Security Act of 1974 requires that SSA furnish information on deferred vested benefits to pension plan participants. The general fund of the Treasury reimburses the OASI Trust Fund for the costs incurred by furnishing such information.
- Net increase in asset reserves is calculated as total income less total cost.
- When a trust fund holds marketable securities, the book value differs from the face value of such securities. The OASI Trust Fund redeemed its marketable securities in November 1982; DI redeemed its last in February 2005. For special issues, book value is the same as face value.

Ratio of uncollectible overpayments to total benefit payments

[Dollar amounts in thousands]

Calendar year	OASI Trust Fund			DI Trust Fund		
	Uncollectible overpayments	Total benefit payments ^a	Ratio	Uncollectible overpayments	Total benefit payments ^a	Ratio
1999	\$90,533	\$334,383,416	0.0271%	\$234,852	\$51,313,271	0.4577%
2000	95,287	352,651,519	0.0270%	264,862	54,920,576	0.4823%
2001	95,898	372,312,043	0.0258%	262,639	59,558,650	0.4410%
2002	116,271	388,118,781	0.0300%	342,519	65,627,224	0.5219%
2003	114,015	399,842,083	0.0285%	337,982	70,885,971	0.4768%
2004	115,636	415,031,484	0.0279%	343,713	78,180,163	0.4396%
2005	118,455	435,325,384	0.0272%	367,617	85,373,479	0.4306%
2006	143,851	460,404,994	0.0312%	498,697	92,357,903	0.5400%
2007	135,954	485,819,057	0.0280%	473,033	99,057,104	0.4775%
2008	190,680	508,994,214	0.0375%	556,943	106,271,269	0.5241%
2009	169,630	557,101,116	0.0304%	448,360	118,298,745	0.3790%
2010	168,014	577,390,879	0.0291%	463,123	124,162,037	0.3730%
2011	168,088	596,153,634	0.0282%	473,100	128,904,536	0.3670%
2012	148,672	637,892,767	0.0233%	450,078	136,849,591	0.3289%
2013	136,349	672,126,128	0.0203%	385,530	140,046,294	0.2753%
2014	120,188	706,777,966	0.0170%	319,036	141,600,507	0.2253%
2015	93,543	742,905,710	0.0126%	206,111	143,263,174	0.1439%
2016	101,550	768,598,740	0.0132%	190,877	142,684,346	0.1338%
2017	180,098	798,686,160	0.0225%	336,532	142,720,079	0.2358%
2018	194,288	844,887,862	0.0230%	311,010	143,637,104	0.2165%
2019	171,646	902,796,624	0.0190%	387,767	145,029,039	0.2674%

^a Payments are reduced for unnegotiated checks.

Sources: 1. Uncollectible overpayment amounts are from SSA's Office of Financial Policy and Operations (OFPO).
2. Total benefit payments are computed based on input from OFPO and the Bureau of the Fiscal Service in the U.S. Department of the Treasury.

Social Security Administration
Office of the Chief Actuary
March 13, 2020

DEPARTMENT OF HEALTH & HUMAN SERVICES
Centers for Medicare & Medicaid Services
7500 Security Boulevard, Mail Stop 00-00-00
Baltimore, Maryland 21244-1850



March 12, 2020

Mr. Carl May
Bureau of the Actuary
Railroad Retirement Board
844 N. Rush Street
Chicago, Illinois 60611-2092

Dear Mr. May:

The effective semi-annual rates of interest earned by the HI Trust Fund during the six months ending June 30, 2019, and December 31, 2019, were 1.74 percent and 1.59 percent, respectively.

If you have any questions, please contact me at (410)786-6392.

Sincerely,

Jennifer Lee
CMS/OACT



January 16, 2020

Mr. Frank J. Buzzi
Chief Actuary
Railroad Retirement Board
844 North Rush Street
Chicago, Illinois 60611-2092

Dear Mr. Buzzi:

The attached tables provide estimated benefits in current-payment status as of December 31, 2018. Table 1 relates to male retired worker beneficiaries and their beneficiary dependents. Table 2 presents the corresponding estimates for female retired worker beneficiaries. We first provided table 2 in our letter dated January 19, 2012, per our agreement in August 2011 to revise the application of child and family composition factors.¹ Please note that the attached data were derived from 100-percent sample data.

Sincerely,



Michael Stephens, A.S.A.
Supervisory Actuary

/S/
Craig Feinstein
Actuary

Attachments: Tables 1-2

¹ See letter from Stephen C. Goss, dated August 19, 2011.

Table 1 — Selected benefit estimates relating to male old-age (primary) beneficiary families in current-payment status on 12/31/2018

Age	All old-age families			Beneficiary families consisting of a male old-age beneficiary with an aged wife receiving a full benefit whether or not children are present			Beneficiary families consisting of a male old-age beneficiary with a wife whose entitlement is based on having an eligible child in her care and is receiving a full benefit			
	Old-age benefits	Monthly rate of PIA	Child benefits	Old-age benefits	Monthly rate of PIA	Child benefits	Old-age benefits	Monthly rate of PIA	Child benefits	Wife benefits
62	\$388,050,210	\$524,874,921	\$11,661,954	\$1,504,682	\$2,036,152	\$26,523	\$1,951,187	\$2,642,005	\$1,084,154	\$838,091
63	596,478,598	788,246,500	17,331,357	3,071,275	4,052,641	56,461	2,943,815	3,899,916	1,598,150	1,267,414
64	716,303,084	918,955,641	18,313,442	4,621,037	5,862,913	83,932	3,210,149	4,133,974	1,695,877	1,353,537
65	894,208,124	1,104,790,884	19,260,577	8,161,837	9,816,925	142,262	3,356,090	4,180,904	1,703,888	1,390,585
66	2,093,723,688	2,318,604,602	38,189,079	45,882,464	48,683,388	608,399	6,961,117	7,722,516	3,144,781	2,568,308
67	2,187,179,396	2,404,697,289	36,837,638	79,009,908	82,516,468	865,748	6,199,408	6,798,492	2,773,161	2,282,533
68	2,125,797,599	2,331,179,645	32,903,536	95,690,034	99,009,229	1,070,427	5,371,438	5,870,754	2,406,134	1,965,507
69	2,176,545,864	2,387,441,569	30,725,159	113,169,805	116,005,974	1,276,387	4,924,579	5,343,306	2,184,508	1,797,661
70	2,448,655,384	2,609,520,787	29,958,909	166,952,904	157,091,880	1,533,510	4,396,146	4,630,610	1,884,704	1,565,409
71	2,488,056,588	2,668,495,212	27,773,019	154,387,191	146,196,620	1,498,661	4,028,223	4,232,276	1,742,981	1,434,735
72	2,200,200,410	2,376,596,881	23,703,465	122,525,161	117,427,695	1,323,107	3,067,393	3,269,969	1,347,078	1,089,290
73	1,733,731,911	1,880,659,943	17,464,828	82,734,307	79,932,415	994,946	2,038,336	2,170,842	904,556	727,385
74	1,674,104,932	1,829,338,877	15,918,992	69,760,781	68,423,467	952,692	1,633,115	1,750,643	718,738	588,086
75	1,565,128,861	1,841,606,408	14,742,153	61,746,978	61,229,950	877,390	1,582,982	1,702,511	705,655	569,967
76	1,343,677,868	1,726,292,388	13,160,303	50,649,538	51,039,973	811,032	1,229,915	1,308,816	542,339	441,048
77	1,193,019,425	1,484,140,123	10,674,814	39,788,282	40,455,936	720,280	918,782	995,474	415,593	339,056
78	1,056,288,632	1,317,477,927	9,069,995	33,171,976	34,015,606	654,024	699,879	754,149	313,633	252,767
79	981,948,420	1,081,171,507	6,648,321	23,804,186	24,564,576	519,386	406,857	435,780	179,005	149,087
80	860,757,383	943,511,234	5,502,141	20,532,131	21,164,905	434,670	271,372	292,810	121,892	97,678
81	737,292,150	807,987,194	4,415,526	17,393,853	17,969,401	350,489	191,045	206,064	86,983	70,254
82	656,790,737	719,236,718	3,848,572	15,845,907	16,377,351	339,187	147,927	158,574	64,039	53,756
83	579,915,082	631,767,369	3,251,235	15,477,154	15,778,977	301,927	125,257	134,093	54,682	46,160
84	499,285,169	539,957,346	2,674,457	14,928,732	14,871,178	264,803	90,596	94,222	38,139	32,289
85	466,126,375	502,816,603	2,418,508	14,870,312	14,536,353	230,773	83,864	88,260	34,595	30,576
86	402,849,985	431,009,862	1,995,366	13,580,925	12,967,991	184,693	57,885	58,502	23,826	19,476
87	355,573,804	379,622,360	1,750,345	12,141,726	11,471,956	155,795	50,689	53,022	20,897	19,371
88	289,810,437	308,196,619	1,403,919	9,751,737	9,148,663	126,719	29,109	30,841	11,964	10,746
89	247,920,011	264,215,376	1,132,443	8,130,948	7,711,737	103,968	36,085	38,932	16,086	13,910
90	205,614,421	218,506,889	932,737	6,096,117	5,747,733	74,044	20,283	21,340	8,660	7,278
91	157,734,350	167,751,643	638,830	4,419,667	4,201,287	46,014	16,235	15,909	6,260	5,767
92	122,991,267	130,489,522	504,821	3,402,026	3,227,776	40,541	15,275	15,678	6,448	5,612
93	91,937,147	97,547,715	345,494	2,490,715	2,366,049	22,408	11,012	10,648	4,305	3,556
94	65,479,029	68,936,999	240,599	1,672,061	1,589,374	16,732	4,340	4,568	1,954	1,588
95	45,408,932	47,614,107	169,784	1,048,496	994,970	13,693	1,637	1,560	367	322
96	31,586,624	33,001,821	108,510	678,524	636,486	4,017	0	0	0	0
97	19,330,111	20,079,751	76,263	367,666	347,033	5,271	0	0	0	0
98	11,641,543	12,051,561	46,789	203,373	192,974	4,091	0	0	0	0
99	7,725,964	8,013,378	28,848	116,981	112,539	951	0	0	0	0
100	10,320,927	10,659,624	35,738	192,950	186,641	1,662	0	0	0	0
101+	35,404,085,236	39,101,625,415	413,525,995	1,346,889,922	1,337,636,459	17,326,825	56,567,477	63,603,635	26,065,941	21,222,004
Total										

Table 2 — Selected benefit estimates relating to female old-age (primary) beneficiary families in current-payment status on 12/31/2018

Age	All old-age families				Beneficiary families consisting of a female old-age beneficiary with an aged husband receiving a full benefit whether or not children are present				Beneficiary families consisting of a female old-age beneficiary with a husband whose entitlement is based on having an eligible child in his care and is receiving a full benefit				
	Old-age benefits	Monthly rate of PIA	Child benefits	Old-age benefits	Monthly rate of PIA	Child benefits	Old-age benefits	Monthly rate of PIA	Child benefits	Old-age benefits	Monthly rate of PIA	Child benefits	Husband benefits
62	\$342,045,979	\$448,183,710	\$2,295,144	\$2,135,307	\$2,886,250	\$12,133	\$21,050	\$28,562	\$10,783	\$9,380			
63	516,479,570	657,673,954	3,333,006	4,243,389	5,548,248	20,946	22,202	29,303	11,306	10,851			
64	629,077,626	768,952,403	3,527,149	6,560,731	8,168,326	21,540	16,102	20,352	7,443	6,838			
65	793,767,733	924,827,479	3,575,432	9,183,895	10,933,991	29,394	18,332	22,901	8,689	8,446			
66	1,582,798,471	1,685,233,658	6,325,589	24,400,495	26,215,823	67,897	22,848	26,023	9,759	9,218			
67	1,638,930,983	1,720,636,363	6,128,305	26,906,173	28,393,114	74,446	22,132	24,426	8,496	8,239			
68	1,589,284,009	1,649,767,403	5,416,878	21,458,171	22,498,173	63,025	14,022	16,068	5,565	6,239			
69	1,631,080,279	1,681,503,354	4,895,947	16,490,466	17,259,923	46,634	8,801	10,591	4,444	3,725			
70	1,848,663,191	1,842,528,226	4,706,795	17,219,094	16,427,178	40,608	7,701	8,423	3,397	2,963			
71	1,871,354,184	1,843,633,420	4,166,509	12,360,955	11,936,990	34,175	2,061	2,378	892	892			
72	1,650,201,304	1,621,334,361	3,620,132	8,786,756	8,623,862	18,941	6,030	6,547	2,519	1,372			
73	1,301,248,971	1,260,404,081	2,497,838	5,522,233	5,487,777	13,108	2,343	3,072	1,054	1,054			
74	1,266,525,562	1,216,693,471	2,232,240	4,396,271	4,434,068	11,817	3,490	3,491	1,501	741			
75	1,270,404,460	1,210,108,649	2,027,894	3,559,950	3,644,806	8,893	404	534	133	133			
76	1,185,758,513	1,118,843,002	1,782,612	3,022,054	3,101,954	6,960	0	0	0	0			
77	1,026,570,181	961,039,053	1,509,153	2,202,742	2,272,571	7,933	0	0	0	0			
78	920,663,048	850,088,642	1,163,611	1,838,968	1,899,918	2,509	0	0	0	0			
79	831,151,833	751,949,555	998,830	1,557,174	1,612,363	2,231	0	0	0	0			
80	782,907,801	695,793,456	841,058	1,282,724	1,312,419	3,130	674	847	212	212			
81	699,497,002	606,767,502	725,742	1,011,884	1,032,035	3,709	0	0	0	0			
82	623,140,189	522,740,503	524,373	763,367	774,683	4,338	0	0	0	0			
83	571,766,862	466,972,516	438,943	594,394	595,092	849	0	0	0	0			
84	518,397,330	413,970,504	337,348	483,156	487,383	616	0	0	0	0			
85	458,361,555	359,963,567	271,661	375,447	368,915	794	0	0	0	0			
86	438,656,529	341,663,164	236,678	290,421	286,774	291	0	0	0	0			
87	392,859,728	294,744,367	196,925	227,686	224,153	608	0	0	0	0			
88	360,858,054	263,472,006	170,157	185,206	172,133	160	0	0	0	0			
89	313,942,128	223,067,766	109,411	131,660	126,742	623	0	0	0	0			
90	283,453,933	201,977,314	102,037	90,391	82,265	0	0	0	0	0			
91	248,348,828	175,875,125	95,745	60,651	58,288	25	0	0	0	0			
92	206,770,950	143,700,898	66,963	56,084	53,418	486	0	0	0	0			
93	172,557,488	120,725,171	55,356	44,475	40,255	0	0	0	0	0			
94	139,692,570	95,552,810	31,737	24,364	22,748	0	0	0	0	0			
95	106,987,254	72,086,591	26,765	14,976	14,078	0	0	0	0	0			
96	80,971,206	53,826,287	19,851	7,173	4,816	183	0	0	0	0			
97	62,488,982	40,857,483	15,451	3,146	2,570	0	0	0	0	0			
98	43,519,936	28,097,564	10,083	591	514	0	0	0	0	0			
99	28,585,968	19,122,545	4,274	853	1,037	0	0	0	0	0			
100	20,172,706	14,102,343	7,960	0	0	0	0	0	0	0			
101+	32,294,147	24,426,007	7,699	0	0	0	0	0	0	0			
Total	28,482,237,040	27,392,906,271	64,505,279	177,493,470	187,005,653	498,996	168,189	203,518	76,193	70,300			

EXHIBIT 2 – PAYROLL CALCULATIONS AND GROSS EARNINGS SAMPLE

Part I.

Payroll Calculations Summary and Tables

Accrued Taxable Payroll

Accrued taxable payroll, as developed for financial interchange purposes, is the amount of railroad compensation to which combined employee and employer tax rates are applied to obtain additional accrued gross taxes (including overpayments of employee taxes) that would have been paid into the Old-Age and Survivors Insurance (OASI), Disability Insurance (DI) or Hospital Insurance (HI) Trust Funds if railroad employment were covered by the Federal Insurance Contributions Act (FICA).

Table 1 shows the maximum taxable earnings bases under the Railroad Retirement Act (RRA) and FICA. Tables 2 and 3 summarize the various components that determine accrued taxable payroll for calendar years 1937-1965 and 1966-2018, respectively.

The general methodology and assumptions governing the development of the OASDHI taxable payroll for financial interchange purposes are covered individually below.

RRA Creditable Payroll

The RRA creditable payroll for 2018, including sickness payments and miscellaneous compensation, was \$19,655.7 million. This amount is based on reports submitted by the railroads and third party payors to the Railroad Retirement Board (RRB). Beginning in 1985, RRA compensation is creditable up to an annual limit rather than a monthly limit. This limit, \$128,400 in 2018, is the same as FICA.

Prior year adjustments of \$13.24 million were added to the RRA creditable payrolls for 1982-2017. No prior year adjustments for years before 1982 were made in this determination, and the 1981 prior year adjustment amount remains unchanged.

Inflation Factor for HI Payroll

Inflation factors are developed from the sample gross earnings data, as described in Part II. Prior to 1985, inflation factors were the ratio of compensation under the annual FICA limit to compensation under the monthly RRA limit. Beginning in 1985, the RRA creditable limit became annual and equal to the FICA limit, so inflation factors were unnecessary for calendar years 1985-1990. Beginning in 1991, a higher taxable limit applied to payroll under the HI portion of the FICA contribution rate. Consequently, inflation factors were reinstated for HI payroll calculations. Beginning in 1994, the HI limit was removed entirely and all wages are subject to HI payroll taxes.

The amount of earnings that would have been subject to the HI portion of the FICA tax rate was estimated from a sample of accounts for which records of gross earnings (including sickness payments and miscellaneous compensation) were obtained from railroad employers. From these records, annual earnings data were gathered that indicated the RRA creditable compensation and total HI earnings for each sample record.

For 2018, the total sample amounts subject to HI and RRA taxes were, respectively, \$202,646,473 and \$192,685,774. Therefore, the 2018 ratio for inflating OASDI and HI taxable payroll is 1.0517. HI payroll calculations are elaborated upon further in Part II.

RRA Payroll up to FICA Limit

Prior to 1985, various adjustments and factors have been applied to RRA payroll to inflate it to OASDI levels. A summary of such adjustments and factors is included in the 41st determination report, pp. 62-63, with accompanying tables. Since 1985, OASDI payroll has been equal to RRA creditable payroll plus other adjustments. HI payroll has equaled OASDI payroll through 1990. Since 1991, HI payroll equals the OASDI payroll times the inflation factor.

The 68th determination incorporated an additional \$4.12 million payroll adjustments that were effective in calendar years 2006 through 2015 for retroactive coverage rulings. These adjustments reflect FICA covered payroll that was subsequently determined to have been subject to RRA taxes. Since the taxes originally levied on this payroll have remained with the OASDHI trust funds, this payroll is backed out so the trust funds do not double collect.

Multiple Railroads Employment and Miscellaneous Compensation Adjustment

Beginning in 1985, the employer RRA tax applies to the taxable compensation up to the annual limit earned by each employee, as has been the case under FICA. Under both systems, the employee's overall tax is limited by the annual maximum, even if the employee works for more than one employer. Thus, when an employee works with multiple employers and earns more than the FICA limit over the course of a year, the employee excess taxes are refundable, but the employer excess is not.

This is complicated somewhat by the inclusion of miscellaneous compensation, primarily sick pay, which became taxable and creditable in 1982. Third party miscellaneous compensation payors such as insurance companies and the RRB automatically withhold FICA taxes from the employee's payment. Consequently, such withholdings that exceed the maximum taxable amount are refundable to the employee.

The situation for railroad employers, however, is different. Insurance companies and the RRB notify them of the amount of benefits paid, and they in turn remit to the Internal Revenue Service (IRS) only that amount payable up to the annual limit for the employee. Consequently, employers generally do not pay excess FICA taxes on miscellaneous compensation.

Thus, it is necessary to determine both the amount and the source of payroll amounts in excess of annual FICA limits. Excess tax amounts resulting from multiple employment are paid for by both employers and employees, but refundable only to employees. Excess amounts resulting from miscellaneous compensation are paid only by employees and are fully refundable.

Full records of employer and miscellaneous payroll have been kept since 1989. Since records for 1982-1988 are not available, experience for these years was extrapolated from 1989-1991 experience.

The following equations are used to determine the miscellaneous pay/multiple railroad employment adjustment since 1989. They employ the following definitions relating to data for employee i and railroad employer j :

- C_{ij} = Compensation for employee i from railroad j
- B_i = Railroad Retirement Board sickness payments for employee i
- I_i = Insurance company sickness payments for employee i
- L = Annual FICA payroll limit
- R = Number of annual railroad employers
- N = Number of employees

The total excess payroll, A , for a given year is calculated as follows:

$$A = \sum_{i=1}^N \text{Max} \left\{ \left(\sum_{j=1}^R C_{ij} \right) + B_i + I_i - L, 0 \right\}$$

That portion of total excess payroll due to multiple railroads employment, B , is:

$$B = \sum_{i=1}^N \text{Max} \left\{ \left(\sum_{j=1}^R C_{ij} \right) - L, 0 \right\}$$

Therefore, the amount of excess payroll due to multiple railroads employment is given by B , and the excess payroll attributable to miscellaneous compensation is given by $(A - B)$. These formulas are problematic in certain cases where there is a combination of multiple employment and miscellaneous compensation within a year. Experience indicates, however, that these instances are very rare.

Dual Coverage Wage Adjustment and Sampling Error

Dual coverage is the estimate of the amount of Social Security wages earned and taxed that would have exceeded FICA limits had all railroad compensation been subject to FICA. For 2018, the amounts involved for an affected employee would be combined earnings under both systems in excess of \$128,400 but not in excess of \$128,400 under either system separately.

We estimate this adjustment using data received from SSA that contains OASDI wages for the Gross Earnings (see Part II) sample individuals. Combined earnings over the OASDI limit that are subject to the OASDI limits under either system are inflated to yield an estimate of the universe amount of employee refunds that would have been payable from this source.

The dual coverage wage adjustment estimate of \$43.4 million for 2018 was obtained using the formula:

$$A = \frac{N}{n} \sum_{i=1}^n X_i$$

- where A = estimated dual coverage adjustment for the universe
- X_i = dual coverage amount in excess of the Social Security wage base for sample account i
- N = universe number
- n = sample number

The standard error of \$16.2 million for 2018 was computed for these estimates from the formula:

$$S_A^2 = \frac{N(N-n)}{n(n-1)} \left\{ \sum_{i=1}^n X_i^2 - \frac{1}{n} \left(\sum_{i=1}^n X_i \right)^2 \right\}$$

Using the standard error, the 95 percent confidence interval was \$11.7 million to \$75.1 million for 2018.

Only the employee tax rates apply to dual coverage refunds. For 2018, the OASI inflated tax refund amount was \$2.18 million and the 95 percent confidence interval was \$0.59 million to \$3.77 million, while the DI inflated tax refund amount was \$0.51 million and the 95 percent confidence interval was \$0.14 million to \$0.89 million.

Final FICA Accrued Payroll

The final annual FICA accrued payroll, as shown in Tables 2 and 3, is the amount of railroad compensation to which combined employee and employer tax rates may be applied to obtain additional gross taxes (including overpayments of employee taxes) that would have been paid into the OASI, DI or HI Trust Funds if railroad employment were covered by FICA.

For years 1937-1965, the final accrued payroll is calculated as the net of (1) RRA payroll not in excess of the FICA limit, plus (2) compensation over the RRA monthly limit but not over the FICA limit, plus (3) the multiple railroad employment adjustment, less (4) 75 percent of dual coverage self-employment adjustment.

For years 1966-1987, the final accrued payroll is calculated as the net of (1) RRA creditable payroll inflated to under the annual FICA limit, plus (2) the multiple railroad employment adjustment, less (3) 50 percent of tips, less (4) sickness payments, less (5) the self-employment adjustment.

For years 1988 and later, the final accrued payroll is obtained by adding to the RRA creditable payroll up to the FICA limit the multiple railroad employment/miscellaneous compensation adjustment.

The OASDI accrued payroll for 2018 is \$19,668.7 million. The HI accrued payroll for 2018 is \$20,671.8 million.

Accrued Payroll under the Affordable Care Act

Beginning in calendar year 2013, the Affordable Care Act (ACA) imposes an additional employee Medicare tax of 0.9 percent on earnings above \$200,000 (for those who file an individual return) or \$250,000 (for those who file a joint return). The 0.9 percent tax is withheld from earnings above \$200,000 regardless of filing status. Because the taxable thresholds are applied separately to FICA earnings and railroad compensation, households with both FICA earnings and railroad compensation whose combined earnings are in excess of the taxable limits pay less tax than if all of their earnings were covered under FICA. An adjustment to the total accrued amount over \$200,000, the HI ACA payroll, is therefore required for the resulting shortfall of additional taxes that would have been collected if railroad employment was covered under FICA.

The \$403.6 million HI ACA payroll for 2018, was derived from gross earnings data reported by employers. A shortfall adjustment of \$1.8 million for 2016 was made in December 2018. Table 4 summarizes the various components that determine the HI ACA payroll and the shortfall adjustment.

FICA Payroll Taxes on Cash Basis

The financial interchange requires that both the amount and pattern of FICA taxes that would have been collected from the final accrued OASDHI payroll be determined. To determine the pattern, a quarterly payroll distribution was estimated using the Gross Earnings study (see Part II). Quarterly pay for sample employees was accumulated over each quarter, up to the \$128,400 annual limit for 2018 for each employee. The resulting sample quarterly distribution was then applied to the overall population. Beginning with the 39th determination, the pattern of payment was further refined by applying second-degree curves to the quarterly payrolls to determine hypothetical monthly distributions (see Financial Interchange Summary and Documentation: 35th determination, pages 60-70; 36th determination, pages 41-43; 39th determination, pages 73-77). Finally, for calendar years before 1993, the monthly payroll results were further adjusted to reflect the measurable lag period between payroll disbursement and actual collection of FICA taxes thereon. This was discontinued beginning with calendar year 1993.

The table below shows the quarterly dollar and percentage distributions of the sample OASDI accrued payroll for 2018 and the resulting distribution of the accrued OASDI payroll. For the purpose of these tables, the sample amounts were limited to those employees for whom quarterly data were reported.

	Sample Amount	Percentage Distribution	OASDI Payroll (millions)
Total	\$151,596,577	100.00	\$19,668.7
1st Quarter	41,980,536	27.69	5,446.3
2nd Quarter	36,899,956	24.34	4,787.4
3rd Quarter	37,254,853	24.58	4,834.6
4th Quarter	35,461,232	23.39	4,600.4

Similar calculations were performed for HI payroll, with the exception of the application of any annual covered earnings limit.

	Sample Amount	Percentage Distribution	HI Payroll (millions)
Total	\$156,882,513	100.00	\$20,671.8
1st Quarter	42,849,416	27.31	5,645.5
2nd Quarter	37,249,376	23.74	4,907.5
3rd Quarter	38,178,862	24.34	5,031.5
4th Quarter	38,604,858	24.61	5,087.3

The table below shows the quarterly dollar and percentage distribution of the sample HI ACA accrued payroll for 2018 and the resulting distribution of the HI ACA accrued payroll.

	Sample Amount	Percentage Distribution	HI ACA Payroll (millions)
Total	\$1,687,075	100.00	\$403.6
1st Quarter	529,577	31.39	126.7
2nd Quarter	212,019	12.57	50.7
3rd Quarter	379,618	22.50	90.8
4th Quarter	565,862	33.54	135.4

Preliminary estimates were made of the quarterly accrued payroll for the first nine months of 2019 based on presumed employment levels and wage increases. Under the OASDI annual limit of \$132,900 for 2019, estimated accrued payroll for January-September 2019 was \$14,730.2 million. The total HI estimated accrued payroll for January-September 2019 was \$15,283.0 million of which \$357.0 million was subject to the 0.9 percent additional Medicare tax.

Table 1. -- Annual Maximum Taxable Earnings Under the RRA and FICA

Year	RRA Limit ¹	FICA Limits	
		OASDI	HI
1937-1950	\$300	\$3,000	---
1951	300	3,600	---
1952	300	3,600	---
1953	300	3,600	---
1954	300/350 ²	3,600	---
1955	350	4,200	---
1956	350	4,200	---
1957	350	4,200	---
1958	350	4,200	---
1959	350/400 ³	4,800	---
1960	400	4,800	---
1961	400	4,800	---
1962	400	4,800	---
1963	400/450 ⁴	4,800	---
1964	450	4,800	---
1965	450	4,800	---
1966	550	6,600	\$6,600
1967	550	6,600	6,600
1968	650	7,800	7,800
1969	650	7,800	7,800
1970	650	7,800	7,800
1971	650	7,800	7,800
1972	750	9,000	9,000
1973	900	10,800	10,800
1974	1,100	13,200	13,200
1975	1,175	14,100	14,100
1976	1,275	15,300	15,300
1977	1,375	16,500	16,500
1978	1,475	17,700	17,700
1979	1,908	22,900	22,900
1980	2,158	25,900	25,900
1981	2,475	29,700	29,700
1982	2,700	32,400	32,400
1983	2,975	35,700	35,700
1984	3,150	37,800	37,800

See footnotes at the end of table.

Table 1. -- Annual Maximum Taxable Earnings Under the RRA and FICA (Continued)

Year	RRA Limit ¹	FICA Limits	
		OASDI	HI
1985	\$39,600	\$39,600	\$39,600
1986	42,000	42,000	42,000
1987	43,800	43,800	43,800
1988	45,000	45,000	45,000
1989	48,000	48,000	48,000
1990	51,300	51,300	51,300
1991	53,400	53,400	125,000
1992	55,500	55,500	130,200
1993	57,600	57,600	135,000
1994	60,600	60,600	No Limit
1995	61,200	61,200	No Limit
1996	62,700	62,700	No Limit
1997	65,400	65,400	No Limit
1998	68,400	68,400	No Limit
1999	72,600	72,600	No Limit
2000	76,200	76,200	No Limit
2001	80,400	80,400	No Limit
2002	84,900	84,900	No Limit
2003	87,000	87,000	No Limit
2004	87,900	87,900	No Limit
2005	90,000	90,000	No Limit
2006	94,200	94,200	No Limit
2007	97,500	97,500	No Limit
2008	102,000	102,000	No Limit
2009	106,800	106,800	No Limit
2010	106,800	106,800	No Limit
2011	106,800	106,800	No Limit
2012	110,100	110,100	No Limit
2013	113,700	113,700	No Limit
2014	117,000	117,000	No Limit
2015	118,500	118,500	No Limit
2016	118,500	118,500	No Limit
2017	127,200	127,200	No Limit
2018	128,400	128,400	No Limit
2019	132,900	132,900	No Limit

¹ Earnings bases are monthly through 1984 and annual thereafter.

² The RRA limit was \$300 for the first six months of 1954, raised to \$350 for the last six months of the year.

³ The RRA limit was \$350 for the first six months of 1959, raised to \$400 for the last six months of the year.

⁴ The RRA limit was \$400 for the first six months of 1963, raised to \$450 for the last six months of the year.

Table 2. -- Summary of Accrued Taxable Payroll Calculations, 1937-1965

(in millions)

Year	RRA Creditable Payroll	RRA Payroll Up to FICA Limit ¹	FICA Level Payroll Exceeding RRA Monthly Limit	Multiple RR Employment Adjustment	Dual Coverage Self Employment	Final FICA Accrued Payroll
1937	\$2,264.3	\$2,136.2	\$4.0	\$0.5		\$2,140.7
1938	2,007.5	1,912.1	4.0	0.5		1,916.6
1939	2,145.3	2,118.1	4.0	0.5		2,122.6
1940	2,248.2	2,217.6	3.9	0.6		2,222.1
1941	2,656.9	2,616.8	4.8	0.8		2,622.4
1942	3,301.7	3,228.5	8.3	1.4		3,238.2
1943	3,944.4	3,825.8	13.0	2.3		3,841.1
1944	4,301.4	4,134.2	15.0	3.3		4,152.5
1945	4,340.0	4,181.3	16.4	3.1		4,200.8
1946	4,639.5	4,423.9	22.5	4.3		4,450.7
1947	4,750.3	4,486.8	20.8	5.2		4,512.8
1948	4,951.5	4,592.5	24.8	7.1		4,624.4
1949	4,609.3	4,262.7	26.0	6.8		4,295.5
1950	4,704.3	4,334.1	29.6	7.3		4,371.0
1951	5,111.4	5,111.4	111.9	5.7	\$1.6	5,227.8
1952	5,046.2	5,046.2	118.4	6.5	2.5	5,169.2
1953	4,989.3	4,989.3	106.3	7.9	1.2	5,102.6
1954	4,706.7	4,527.0	55.7	8.4	2.2	4,589.5
1955	4,924.6	4,924.6	116.7	7.0	10.3	5,040.6
1956	5,059.7	5,059.7	126.5	13.1	14.8	5,188.2
1957	4,859.5	4,859.5	127.8	16.7	6.6	4,999.1
1958	4,246.4	4,246.4	149.9	18.4	8.5	4,408.3
1959	4,377.1	4,377.1	321.4	22.7	9.7	4,713.9
1960	4,403.8	4,403.8	137.8	16.8	10.6	4,550.5
1961	4,076.5	4,076.5	127.6	14.7	10.1	4,211.2
1962	3,990.8	3,990.8	129.3	15.3	9.8	4,128.1
1963	3,954.8	3,906.7	113.7	18.1	15.7	4,026.7
1964	4,210.9	3,890.4	75.9	17.4	20.1	3,968.6
1965	4,139.5	3,794.1	63.5	16.2	23.1	3,856.5

¹ Taxable payroll for employees age 65 and over is excluded in 1937-1938.

Table 3. -- Summary of Accrued Taxable Payroll Calculations, 1966-2018
(Dollar amounts in millions)

Year	RRA Creditable Payroll	Prior Year ¹ & Coverage Adjustments	RRA Payroll Up to FICA Limit		Multiple Railroad & Miscellaneous Comp Adjustment		1/2 Tips	Miscellaneous Adjustments ²	Final OASDI		HI Payroll Inflation Factor	Final HI ACA	
			Limit	Comp Adjustment	Comp Adjustment	Miscellaneous Adjustments ²			Accrued Payroll	Accrued Payroll ³		Accrued Payroll ⁴	
1966	\$4,717.0	\$1.8	\$4,834.4	\$11.4	\$0.5	\$20.9	\$4,824.5						
1967	4,611.6	1.4	4,747.4	11.7	0.3		4,758.9						
1968	4,994.8	5.1	5,126.1	8.8	0.2		5,134.7						
1969	4,960.3	6.1	5,122.5	8.8	0.1		5,131.2						
1970	4,893.6	2.1	5,062.2	10.9	0.1		5,073.1						
1971	4,824.4	5.5	5,023.2	12.6	0.0		5,034.5	1.2					
1972	5,346.5	3.1	5,526.3	8.8	0.0		5,532.7	2.4					
1973	6,262.1	2.6	6,471.2	9.2	0.0		6,476.9	3.6					
1974	7,268.0	2.8	7,458.0	11.3	0.0		7,465.7	3.6					
1975	7,105.8	6.3	7,361.0	9.6	0.0		7,365.5	5.1					
1976	7,833.1	15.0	8,115.7	15.2	0.0		8,125.3	5.6					
1977	8,468.3	14.9	8,725.6	4.7	0.0		8,729.2	1.2					
1978	8,991.1	10.6	9,383.4	8.8	0.0		9,392.0	0.3					
1979	11,132.3	36.6	11,557.3	13.5	0.0		11,570.6	0.2					
1980	11,828.3	42.9	12,163.2	9.7	0.0		12,172.8						
1981	12,333.3	(64.4)	12,572.5	6.3	0.0		12,578.8						
1982	11,785.5	(14.8)	12,152.7	6.8	0.0		12,159.5						
1983	11,711.6	(7.0)	11,964.4	13.4	0.0		11,977.8						
1984	12,332.0	(2.1)	12,570.0	5.6	0.0		12,575.6						
1985	12,113.9	(1.8)	12,112.1	14.2	0.2		12,126.1						
1986	11,968.9	(1.4)	11,967.6	14.2	0.0		11,981.8						
1987	11,878.0	(1.9)	11,876.1	35.3	0.0		11,911.4						
1988	11,661.2	(13.2)	11,648.1	20.5			11,668.5						
1989	11,517.8	(5.0)	11,512.8	12.2			11,525.0						
1990	11,390.4	(7.3)	11,383.1	9.9			11,393.0						
1991	11,575.3	(11.4)	11,563.9	12.4			11,576.3			1.0415		\$12,043.9	
1992	11,901.4	(4.9)	11,896.5	15.7			11,912.3			1.0581		12,588.2	
1993	11,719.8	(3.0)	11,716.8	12.3			11,729.1			1.0612		12,434.4	
1994	11,888.5	2.7	11,891.2	9.8			11,901.0			1.0522		12,511.6	
1995	11,918.0	(3.1)	11,914.9	13.5			11,928.3			1.0644		12,682.2	
1996	12,224.1	(3.4)	12,220.7	14.2			12,234.9			1.0585		12,935.7	
1997	12,508.5	(1.7)	12,506.8	17.2			12,524.0			1.0538		13,179.2	
1998	13,166.0	(3.3)	13,162.7	19.6			13,182.3			1.0785		14,195.7	
1999	13,325.6	(3.8)	13,321.8	38.8			13,360.5			1.0777		14,357.3	
2000	13,362.1	(3.8)	13,358.3	9.5			13,367.8			1.0516		14,047.1	

Table 3. -- Summary of Accrued Taxable Payroll Calculations, 1966-2018 (Continue d)
(Dollar amounts in millions)

Year	RRA Creditable Payroll	Prior Year ¹ & Coverage Adjustments	RRA Payroll Up to FICA Limit	Multiple Railroad & Miscellaneous Comp Adjustment	1/2 Tips	Miscellaneous Adjustments ²	Final OASDI Accrued Payroll	HI Payroll Inflation Factor	Final HI Accrued Payroll ³	Final HI ACA Accrued Payroll ⁴
2001	\$13,247.6	(\$3.3)	\$13,244.3	\$8.1			\$13,252.4	1.0352	\$13,711.0	
2002	13,113.6	(3.5)	13,110.0	7.9			13,117.9	1.0345	13,562.6	
2003	13,262.9	(1.5)	13,261.5	9.7			13,271.2	1.0474	13,889.6	
2004	13,871.3	(0.8)	13,870.5	7.8			13,878.3	1.0535	14,612.7	
2005	14,565.0	(0.9)	14,564.1	8.6			14,572.7	1.0588	15,420.6	
2006	15,033.5	(0.4)	15,033.2	9.5			15,042.7	1.0759	16,174.0	
2007	15,619.3	(0.7)	15,618.6	10.7			15,629.3	1.0785	16,844.7	
2008	16,203.1	(0.5)	16,202.6	11.0			16,213.7	1.1057	17,915.7	
2009	15,342.3	(0.5)	15,341.8	7.6			15,349.4	1.0585	16,239.3	
2010	15,439.9	(0.4)	15,439.4	7.7			15,447.1	1.0541	16,274.9	
2011	16,572.8	(0.4)	16,572.4	10.3			16,582.7	1.0775	17,856.6	
2012	17,350.7	(0.3)	17,350.3	11.4			17,361.7	1.1252	19,522.5	
2013	17,772.3	(0.4)	17,771.8	12.7			17,784.5	1.0532	18,717.3	\$593.1
2014	19,217.3	(0.5)	19,216.8	16.9			19,233.7	1.0772	20,699.7	851.6
2015	19,992.3	(0.5)	19,991.8	13.2			20,005.0	1.0684	21,358.2	624.1
2016	18,317.6		18,317.6	9.8			18,327.4	1.0648	19,504.0	629.1
2017	18,509.8		18,509.8	12.7			18,522.5	1.0637	19,689.4	656.8
2018	19,655.7		19,655.7	13.0			19,668.7	1.0517	20,671.8	403.6

¹ Prior year adjustments for 1966-1981. Beginning with 1982, prior year adjustments are reflected in the RRA creditable payroll column.

² Self-employment income in 1966, sickness payments in 1971-1979.

³ RRA payroll up to FICA limit times HI inflation factor. After 1993, HI limit on taxable pay was removed and all compensation is taxable.

⁴ RRA payroll above \$200,000 per individual subject to additional 0.9 percent HI tax under ACA.

Table 4. -- Summary of Accrued Taxable Payroll Calculations Under ACA, 2013-2018
(in millions)

Year	Additional Medicare Tax		Final HI ACA	Shortfall ¹ Amount	Shortfall Adjustment Date ²
	Compensation		Accrued Payroll		
	Regular	Miscellaneous			
2013	\$592.1	\$1.1	\$593.1	\$1.2	Dec 2015
2014	839.5	12.1	851.6	1.4	Dec 2016
2015	624.1	0.0	624.1	1.7	Dec 2017
2016	629.1	0.0	629.1	1.8	Dec 2018
2017	656.8	0.0	656.8		
2018	403.6	0.0	403.6		

¹ Difference between payroll taxes actually collected and the amount that would have been collected under FICA.

² Adjustments are scheduled for December of the second year after the year for which the tax is collected.

Part II.2018 Gross Earnings Sample for Financial
Interchange Payroll Calculations**Design of the Sample**

All railroad employers were asked to report the 2018 gross earnings of a one-percent sample of their employees. Sample employees were those with social security account numbers ending in "30". Employers with 5,000 or more employees were asked to supply monthly or quarterly gross earnings data for the sample employees. Smaller employers could supply monthly, quarterly or annual gross earnings figures. The full 2018 gross earnings one-percent sample consisted of 2,591 records.

The gross earnings sample is used to determine the dual coverage payroll adjustment, the inflation factor for calculating the HI payroll, and the quarterly payroll distribution estimate.

A comparison of the average RRA creditable compensation (exclusive of miscellaneous compensation) and average service months for all employees based on the tabulation of all 2018 creditable earnings records and the gross earnings sample is as follows:

	Number of Employees	Average Compensation	Average Months of Service
All employees.....	265,601	\$73,353	10.13
Gross earnings sample.....	2,591	\$73,674	10.22

In addition, the representation of the universe by the sample was checked by means of Chi-square tests applied to distributions of employees by service months and by compensation (excluding miscellaneous compensation) creditable under the RRA. The Chi-square statistics of the gross earnings sample versus the expected numbers based on 100-percent data were tested at a 95 percent credibility level.

Results are shown in the following table.

Service months	Gross earnings sample	Expected number	Taxable compensation	Gross earnings sample	Expected number
Total	2,591	2,591		2,591	2,591
0	142	162	Under \$5,000	168	184
1	37	38	\$5,000-\$9,999	60	60
2	38	43	\$10,000-\$14,999	37	47
3	37	45	\$15,000-\$19,999	50	40
4	52	43	\$20,000-\$24,999	42	37
5	47	41	\$25,000-\$29,999	19	35
6	51	44	\$30,000-\$34,999	35	35
7	39	43	\$35,000-\$39,999	41	37
8	39	44	\$40,000-\$44,999	56	45
9	54	50	\$45,000-\$49,999	57	56
10	76	58	\$50,000-\$54,999	88	74
11	78	77	\$55,000-\$59,999	85	95
12	1,901	1,903	\$60,000-\$64,999	150	140
			\$65,000-\$69,999	178	198
			\$70,000-\$74,999	176	173
			\$75,000-\$79,999	171	157
			\$80,000-\$84,999	156	150
			\$85,000-\$89,999	153	143
			\$90,000-\$94,999	135	132
			\$95,000-\$99,999	115	119
			\$100,000-\$104,999	100	108
			\$105,000-\$109,999	97	98
			\$110,000-\$114,999	63	76
			\$115,000-\$119,999	68	63
			\$120,000-\$124,999	52	51
			\$125,000-\$128,399	47	38
			\$128,400	192	200
Degrees of freedom		12			26
Chi-square		15.236			31.721
95% Threshold		21.026			38.885

The above Chi-square values are below the acceptable limit defined by the 95 percent credibility level. From this, and the comparison of averages, it may be concluded that the 2018 gross earnings sample adequately represents the universe of employee data, and should produce valid estimates.

Sampling Errors in Financial Interchange HI Tax Calculation

It is estimated that accrued HI taxes (excluding ACA amounts) on railroad payrolls in calendar year 2018, had railroad employment been covered under HI, would have amounted to \$599.5 million. The estimate was obtained by applying the HI tax rate to the RRA taxable payroll after it was adjusted to include compensation in excess of the OASDI limit. The estimated 95 percent confidence interval for this adjustment was +/- \$9.5 million. Since the RRA total taxable payroll is available on a 100-percent basis, this is the only error inherent in the estimate. Thus, the 95 percent confidence interval for 2018 HI taxes was \$590.0 million to \$609.0 million.

The adjustment calculation uses the following definitions:

- A = estimated difference between payroll under the RRA annual creditable limit and total HI taxable payroll
- X_i = HI taxable payroll for sample account i
- Y_i = RRA creditable payroll for sample account i
- N = universe number
- n = sample number
- B = universe amount of RRA creditable payroll

The formula for the adjustment amount, A, is:

$$A = \left[\frac{\sum_{i=1}^n X_i}{\sum_{i=1}^n Y_i} - 1 \right] B$$

This calculation gave $A = \$1,016.1$ million.

The standard error S_A associated with this estimate is computed from the formula:

$$S_A^2 = \frac{N(N-n)}{n(n-1)} \left\{ \sum_{i=1}^n X_i^2 + R^2 \sum_{i=1}^n Y_i^2 - 2R \sum_{i=1}^n X_i Y_i \right\}$$

where

$$R = \frac{\sum_{i=1}^n X_i}{\sum_{i=1}^n Y_i}$$

The standard error computed by the formula was \$167.4 million. The 95 percent confidence interval was \$688.0 million to \$1,344.1 million.