

# **RRB - SSA - CMS**

# **FINANCIAL INTERCHANGE**

**Calculations for Fiscal Year 2020**  
**With Respect to OASI, DI, and HI Trust Funds**

**Summary and Documentation**

**69th 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  
2021**



## **INTRODUCTION**

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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 2020. 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. 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**

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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 Commissioner of Social Security and the Railroad Retirement Board have determined that, as of the close of the fiscal year ended September 30, 2020, the subtraction of \$4,732,900,000 from the Federal Old-Age and Survivors Insurance Trust Fund and \$105,800,000 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 \$4,732,900,000 for the Federal Old-Age and Survivors Insurance Trust Fund is based on expenditures of \$7,244,300,000 in benefit payments, \$13,900,000 in administrative expenses, less payroll taxes of \$1,906,200,000, net income taxes of \$280,800,000, and an adjustment for pre-1957 military service adjustment of \$409,400,000, plus net interest of \$71,100,000. The amount of \$105,800,000 for the Federal Disability Insurance Trust Fund is based on expenditures of \$422,800,000 in benefit payments, \$4,000,000 in administrative expenses, an adjustment for pre-1957 military service of \$5,300,000, less payroll taxes of \$323,800,000 and net income taxes of \$4,600,000, plus net interest of \$2,100,000.

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 Secretary to the Board, have hereunto set their respective hands and caused, respectively, the seals of the Social Security Administration and the Railroad Retirement Board to be affixed.

**Social Security Administration**

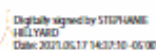
By   
\_\_\_\_\_  
Commissioner of Social Security

05/27/2021

\_\_\_\_\_  
Date signed

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Equivalent of my hand-written signature and  
certification of the contents of the reports.

**Railroad Retirement Board**

By STEPHANIE HILLYARD   
\_\_\_\_\_  
FOR THE BOARD

Secretary to the Board  
May 17, 2021

\_\_\_\_\_  
Date signed

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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, 2020, the addition of \$561,100,000 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 \$561,100,000 for the Federal Hospital Insurance Trust Fund is based on payroll taxes of \$552,400,000 and net income taxes of \$1,400,000, less administrative expenses of \$2,000,000, plus net interest of \$9,300,000.

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 Secretary to the Board, have hereunto set their respective hands and caused, respectively, the seals of the Department of Health and Human Services and the Railroad Retirement Board to be affixed.

**Secretary of Health and Human Services**

By Chig B. Lad  
Administrator of the Centers for  
Medicare & Medicaid Services

June 8, 2021

Date signed

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**Railroad Retirement Board**

By STEPHANIE HILLYARD  
FOR THE BOARD  
Secretary to the Board

May 26, 2021

Date signed

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

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**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, 2020, the amount of \$4,732,900,000 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 \$4,732,900,000 for the Federal Old-Age and Survivors Insurance Trust Fund is based on expenditures of \$7,244,300,000 in benefit payments, \$13,900,000 in administrative expenses, less payroll taxes of \$1,906,200,000, net income taxes of \$280,800,000, and an adjustment for pre-1957 military service of \$409,400,000, plus net interest of \$71,100,000.

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 \$4,792,466,000 including interest of \$59,566,000 for the period October 1, 2020 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 2021.

**IN WITNESS WHEREOF** the Commissioner of Social Security has hereunto set his hand and caused the seal of the Social Security Administration to be affixed.

**Social Security Administration**

By   
\_\_\_\_\_  
Commissioner of Social Security

05/27/2021

\_\_\_\_\_  
Date signed

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certification of the contents of the reports.

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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, 2020, the amount of \$105,800,000, 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 \$105,800,000 for the Federal Disability Insurance Trust Fund is based on expenditures of \$422,800,000 in benefit payments, \$4,000,000 in administrative expenses, and an adjustment for pre-1957 military service adjustment of \$5,300,000, less payroll taxes of \$323,800,000 and net income taxes of \$4,600,000, plus net interest of \$2,100,000.

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 \$107,132,000, including interest of \$1,332,000 for the period October 1, 2020 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 2021.

**IN WITNESS WHEREOF** the Commissioner of Social Security has hereunto set his hand and caused the seal of the Social Security Administration to be affixed.

**Social Security Administration**

By   
\_\_\_\_\_  
Commissioner of Social Security

05/27/2021

\_\_\_\_\_  
Date signed

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certification of the contents of the reports.

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**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, 2020, the amount of \$561,100,000, 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 \$561,100,000 for the Federal Hospital Insurance Trust Fund is based on payroll taxes of \$552,400,000 and net income taxes of \$1,400,000, less administrative expenses of \$2,000,000, plus net interest of \$9,300,000.

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 \$568,162,000, comprised of \$551,800,000 in principal, net interest of \$9,300,000 through September 30, 2020, plus \$7,062,000 in interest for the period October 1, 2020 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 2021.

**IN WITNESS WHEREOF** the 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 and caused the seal of the Railroad Retirement Board to be affixed.

**Railroad Retirement Board**

STEPHANIE  
By HILLYARD

Digitally signed by STEPHANIE  
HILLYARD  
Date: 2021.05.26 14:34:13  
-05'00'

FOR THE BOARD  
Secretary to the Board  
May 26, 2021

Date signed

Applying my electronic signature here is the  
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certification of the contents of the reports.



## RESULTS OF DETERMINATION THROUGH FISCAL YEAR 2020

### RRB-SSA-CMS Financial Interchange Results of Determination through Fiscal Year 2020

As of September 30, 2020, the Social Security Equivalent Benefit Account (Account) was due \$4,732.9 million from the OASI Trust Fund and \$105.8 million from the DI Trust Fund; \$561.1 million was due from the Account to the HI Trust Fund. With the inclusion of interest to June 2, 2021, the anticipated date of transfer, the amounts to be transferred are \$4,792,466,000 from the OASI Trust Fund, \$107,132,000 from the DI Trust Fund and \$568,162,000 to the HI Trust Fund. This will result in a net transfer of \$4,331,436,000 to the Account.

The results of the calculations, including adjustments, for fiscal year 2020 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, 2019.....	\$4,763.7
Plus: Benefit payments.....	7,244.3
Administrative expenses .....	13.9
Interest.....	151.4
Less: Payroll taxes at OASI rates on railroad payroll.....	1,906.2
Pre-1957 military service adjustment.....	409.4
Income taxes (after Treasury reconciliation).....	280.8
Transferred to Social Security Equivalent Benefit Account on June 2, 2020 (principal of \$4,763.7 million plus interest of \$80.3 million).....	4,844.0
Amount due to Social Security Equivalent Benefit Account:	
September 30, 2020.....	\$4,732.9
June 2, 2021 (including interest at 1.875 percent) .....	\$4,792.5
 <u>DI Trust Fund</u>	
Amount due to Social Security Equivalent Benefit Account:	
September 30, 2019.....	\$141.4
Plus: Benefit payments.....	422.8
Administrative expenses .....	4.0
Interest.....	4.5
Less: Payroll taxes at DI rates on railroad payroll.....	323.8
Pre-1957 military service adjustment.....	(5.3)
Income taxes (after Treasury reconciliation).....	4.6
Transferred to Social Security Equivalent Benefit Account on June 2, 2020 (principal of \$141.4 million plus interest of \$2.4 million).....	143.8
Amount due to Social Security Equivalent Benefit Account:	
September 30, 2020.....	\$105.8
June 2, 2021 (including interest at 1.875 percent) .....	\$107.1

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<u>HI Trust Fund</u>	<u>Amount</u> (millions)
Amount due to HI Trust Fund:	
September 30, 2019.....	\$596.4
Plus: Payroll taxes at HI rates on railroad payroll.....	552.4
Income taxes (after Treasury reconciliation).....	1.4
Interest.....	19.3
Less: Administrative expenses .....	2.0
Transferred to HI Trust Fund on June 2, 2020 (principal of \$596.4 million plus interest of \$10.0 million).....	606.4
Amount due to HI Trust Fund:	
September 30, 2020.....	\$561.1
June 2, 2021 (including interest at 1.875 percent) .....	\$568.2

The net payment of \$4,331.4 million due the Social Security Equivalent Benefit Account is \$49.9 million less than the previous determination. This is the result of increases of \$199.4 million in benefit payments and a decrease of \$187.7 million in payroll tax revenues, offset by an increase of \$28.2 million in income tax revenues as well as decreases of \$2.4 million in administrative expenses and \$2.3 million in total interest, and a pre-1957 military service adjustment of \$404.1 million.

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 2.7 percent to \$7,667.1 million from the previous determination amount of \$7,467.7 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 1.6 percent was in effect for 9 months of fiscal year 2020.

### **Payroll Taxes**

The combined payroll tax amount creditable to the OASDHI Trust Funds decreased by 6.3 percent to \$2,782.4 million from the previous determination amount of \$2,970.1 million. This decrease was due primarily to a decline in average employment levels from 221,000 in fiscal year 2019 to 202,000 in fiscal year 2020, which more than offset an increase in the taxable wage limit.

### **Income Taxes**

Federal income taxes credited to the OASDHI Trust Funds increased by 10.9 percent to \$286.8 million from the previous determination amount of \$258.6 million. There were no Treasury OASDI and HI reconciliations in the current determination, while the previous determination reflected Treasury OASDI and HI reconciliations for calendar year 2014.



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### **Administrative Expenses**

Administrative expense reimbursements decreased by 10.8 percent to \$19.9 million from the previous determination amount of \$22.3 million. OASI administrative expense reimbursements decreased from \$15.9 million to \$13.9 million due primarily to a decrease in new OASI enrollments and a decrease in the unit cost for maintenance of benefit rolls. DI administrative expense reimbursements decreased from \$4.2 million to \$4.0 million due primarily to a decrease in new DI employee enrollments and a decrease in the unit cost for maintenance of benefit rolls. HI administrative expense reimbursements decreased from \$2.2 million to \$2.0 million due primarily to a decrease in new OASI and DI employee enrollments.

### **Pre-1957 Social Security Military Service**

The primary source of the reduction in the transfer amount is the adjustment for pre-1957 military service credited to Social Security beneficiaries. Prior to 1957, the Department of the Treasury credited the RRB for military service performed by railroad workers. Due to the 120-month requirement introduced by P.L. 82-234 in October 1951, many of these individuals ultimately never accrued the necessary service to earn a railroad retirement annuity. Treasury had thereby credited the RRB for benefits that were eventually paid by SSA. It was therefore legislated by P.L. 88-133 in October 1963 that SSA should quantify these pre-1957 military service benefit costs and seek reimbursement through the financial interchange.

SSA calculated the amounts due for additional benefits and administrative costs paid and charged them as follows:

<u>Determination No.</u>	<u>Year of Transfer</u>	<u>Period Covered</u>	<u>Prior Periods Adjusted</u>
25	1977	1952-1972	
26	1978	1973-1974	
44	1996	1975-1979	
49	2001	1980-1991	1975-1979
61	2013	1992-1997	1983-1991
65	2017	1998-2005	
69	2021	2006-2018	1983-2005

The military service costs for 2006-2018 and the adjusted military service costs for 1983-2005 totaled \$258.5 million in benefits and \$0.3 million in administrative costs due from the Account to the OASI Trust Fund and \$0.7 million in benefits and \$0 million in administrative costs due from the DI Trust Fund to the Account.

With interest subsequently accruing to September 30, 2020, the total amounts due are \$409.4 million from the Account to the OASI Trust Fund and \$5.3 million due from the DI Trust Fund to the Account.

Table 1. -- RRB-SSA Financial Interchange: Change in Balance of OASI Trust Fund at End of Each Calendar Year 1937-2019, and on September 30, 2020  
(Dollar amounts in millions)

Calendar Year	Appropriations (Payroll Taxes) <sup>1</sup>	Income Taxes	Benefit Payments <sup>2</sup>	Administrative Expenses	Military Service Adjustments	Transfers to SSEB Account <sup>3</sup>	Interest factor <sup>4</sup>		Interest Creditable to SSEB Account <sup>5</sup>	Decrease in Trust Fund Balance at End of Year <sup>6</sup>
							First Semi-Annual %	Second Semi-Annual %		
Total	\$72,747.5	\$4,617.4	\$226,881.0	\$1,013.6	\$1,220.0	\$155,219.4			\$10,642.5	
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 1937-2019, and on September 30, 2020 (Continued)  
(Dollar amounts in millions)

Calendar Year	Appropriations (Payroll Taxes) <sup>1</sup>	Income Taxes	Benefit Payments <sup>2</sup>	Administrative Expenses	Military Service Adjustments	Transfers to SSEB Account <sup>3</sup>	Interest factor <sup>4</sup>		Interest Creditable to SSEB Account <sup>5</sup>	Decrease in Trust Fund Balance at End of Year <sup>6</sup>
							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 1937-2019, and on September 30, 2020 (Continued)  
(Dollar amounts in millions)

Calendar Year	Appropriations (Payroll Taxes) <sup>1</sup>	Income Taxes	Benefit Payments <sup>2</sup>	Administrative Expenses	Military Service Adjustments	Transfers to SSEB Account <sup>3</sup>	Interest factor <sup>4</sup>		Interest Creditable to SSEB Account <sup>5</sup>	Decrease in Trust Fund Balance at End of Year <sup>6</sup>
							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	13.2	\$326.1	3,588.2	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	5,196.4	19.1		3,574.6	2.6010	2.5769	210.2	4,359.1
2008	1,715.5	104.1	5,289.6	18.1		3,632.3	2.5465	2.4784	206.6	4,421.5
2009	1,622.8	128.5	5,645.5	19.1		3,689.7	2.4377	2.3513	207.2	4,852.3
2010	1,634.8	151.5	5,687.1	22.1		3,929.7	2.3340	2.2338	212.5	5,058.0
2011	1,755.6	170.1	5,764.2	19.0		4,109.5	2.2167	2.1109	203.4	5,009.4
2012	1,837.1	273.9	6,051.3	18.7	154.8	4,139.2	2.0820	1.9380	185.9	4,860.3
2013	1,882.8	238.8	6,198.5	20.4		3,948.4	1.9143	1.8135	174.8	5,184.0
2014	2,036.1	244.0	6,364.0	20.3		4,257.1	1.8017	1.7191	169.9	5,201.0
2015	2,117.9	291.7	6,543.0	17.3		4,258.0	1.7046	1.6139	159.9	5,253.6
2016	1,835.2	295.4	6,623.0	20.8	228.9	4,286.9	1.6037	1.5197	155.8	5,406.8
2017	1,854.8	287.7	6,719.6	18.3		4,315.8	1.5130	1.4498	154.6	5,841.0
2018	1,971.0	289.0	6,932.6	16.9		4,768.9	1.4470	1.4274	156.6	5,918.2
2019	2,031.5	264.5	7,148.8	15.2		4,880.4	1.4182	1.3640	154.2	6,060.0
2020 (9 month estimate)	1,432.4	214.3	5,445.4	11.4	409.4	4,844.0	1.3479	1.2630	116.2	4,732.9

<sup>1</sup> Appropriations are net of payroll tax refunds for the calendar year.

<sup>2</sup> Uncollectible benefits overpayments are included in annual benefit payments.

<sup>3</sup> Figures in parentheses represent amounts creditable or transferred to trust fund.

<sup>4</sup> Represents rate derived from a 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.

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

<sup>6</sup> 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 DIT Trust Fund at End of Each Calendar Year 1957-2019, and on September 30, 2020  
(Dollar amounts in millions)

Calendar Year	Appropriations (Payroll Taxes) <sup>1</sup>	Income Taxes	Benefit Payments <sup>2</sup>	Administrative Expenses	Military Service Adjustments	Transfers to SSEB Account <sup>3</sup>	Interest factor <sup>4</sup>		Interest Creditable to SSEB Account <sup>5</sup>	Decrease in Trust Fund Balance at End of Year <sup>6</sup>
							First Semi-Annual %	Second Semi-Annual %		
Total	\$10,974.3	\$125.5	\$18,421.6	\$241.6	\$139.6	\$8,151.2			\$832.9	(\$20.4)
1957	23.2		2.6	0.4			1.0830	1.1680	(0.2)	(23.4)
1958	22.6		19.4	0.7			1.1900	1.2240	(0.5)	2.6
1959	22.7		26.0	0.9		(22.0)	1.2310	1.2560	(0.2)	
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 1957-2019, and on September 30, 2020 (Continued)  
(Dollar amounts in millions)

Calendar Year	Appropriations (Payroll Taxes) <sup>1</sup>	Income Taxes	Benefit Payments <sup>2</sup>	Administrative Expenses	Military Service Adjustments	Transfers to SSEB Account <sup>3</sup>	Interest factor <sup>4</sup>		Interest Creditable to SSEB Account <sup>5</sup>	Decrease in Trust Fund Balance at End of Year <sup>6</sup>
							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	277.7	7.5	738.4	6.1		461.9	2.4392	2.4164	34.1	751.0
2011	298.1	6.7	735.0	7.9		464.7	2.3802	2.3650	34.1	758.5
2012	311.9	4.4	742.4	6.7	(74.5)	511.8	2.3306	2.2930	33.2	787.2
2013	319.7	4.6	718.6	5.2		550.6	2.2281	2.2010	30.5	666.6
2014	345.7	8.0	699.2	4.4		443.7	2.2198	2.2442	26.8	599.6
2015	359.6	6.2	668.8	5.8		418.6	2.2479	2.2560	23.7	513.5
2016	433.9	6.1	623.8	3.7	0.7	375.7	1.9036	1.6935	14.6	339.2
2017	438.3	7.0	538.7	4.4		206.7	1.6224	1.5138	8.8	239.1
2018	465.8	1.2	507.6	4.3		173.5	1.5216	1.5720	5.0	115.5
2019	344.7	4.8	462.8	4.1		66.0	1.5628	1.5167	4.4	171.3
2020 (9 month estimate)	243.2	3.5	313.3	3.1	(5.3)	143.8	1.4966	1.4163	3.3	105.8

<sup>1</sup> Appropriations are net of payroll tax refunds for the calendar year.

<sup>2</sup> Uncollectible benefits overpayments are included in annual benefit payments.

<sup>3</sup> Figures in parentheses represent amounts creditable or transferred to trust fund.

<sup>4</sup> 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.

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

<sup>6</sup> 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 1966-2019, and on September 30, 2020  
(Dollar amounts in millions)

Calendar Year	Appropriations (Payroll Taxes) <sup>1</sup>	Income Taxes	Administrative Expenses	Transfers to HI Trust Fund	Interest Factor <sup>2</sup>		Interest Creditable to HI Trust Fund <sup>3</sup>	Tax Refunds	Increase in Trust Fund Balance at End of Year
					First Semi-Annual %	Second Semi-Annual %			
Total	\$18,960.9	\$12.3	\$113.6	\$19,718.4	\$1,411.3	\$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 <sup>4</sup>	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 1966-2019, and on September 30, 2020 (Continued)**  
(Dollar amounts in millions)

Calendar Year	Appropriations (Payroll Taxes) <sup>1</sup>	Income Taxes	Administrative Expenses	Transfers to HI Trust Fund	Interest Factor <sup>2</sup>		Interest Creditable to HI Trust Fund <sup>3</sup>	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	517.9	0.3	3.7	477.2	2.3500	2.3700	25.1		603.4
2012	566.2	0.6	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		764.7
2016	571.3	2.2	2.8	656.8	2.0300	1.8800	27.0	\$1.4	707.0
2017	576.9	1.9	2.2	637.4	1.8500	1.8100	23.6	1.7	671.5
2018	603.2	1.8	2.2	596.5	1.8200	1.7800	23.3	1.8	702.9
2019	589.3	1.6	2.1	570.3	1.7400	1.5900	23.0		746.8
2020 (9 month estimate)	406.9	1.6	1.6	606.4	1.4400	0.9300	13.8		561.1

<sup>1</sup> Appropriations are net of payroll tax refunds for the calendar year.

<sup>2</sup> 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.

<sup>3</sup> 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.

<sup>4</sup> Tax refunds ceased after 1994.

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



## **EXHIBIT 1 – BENEFIT, ADMINISTRATION COST, AND INCOME TAX CALCULATIONS AND CORRESPONDENCE**

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### **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 60<sup>th</sup> 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.

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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 66. 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 2019 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 2019 totaled \$72,324,843 and the inflated amount was \$7,156,781,161. The standard error of the OASI inflated amount was \$53,328,731 and the 95-percent confidence interval for the amount of OASI benefits was \$7,052,256,849 to \$7,261,305,473.

The uninflated amount of additional DI benefits accrued in 2019 was \$4,019,912. The inflated amount was \$453,713,065. The standard error of the DI inflated amount was \$14,743,778 and the 95-percent confidence interval for the amount of DI benefits was \$424,815,261 to \$482,610,869.

The preliminary estimates of additional benefit payments in January-September 2020 were made largely on the basis of the net sample amounts in current-payment status at the end of 2019. 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 \$5,446 million in OASI and \$313 million in DI benefits. These figures will be superseded in the next determination by a calendar year 2020 estimate based on the one-percent sample.

Adjustments were made to the benefit calculations for years prior to 2019. 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 increased benefits by \$1,197,000 for calendar years 2007-2018 and DI adjustments increased benefits by \$6,348,000 for calendar year 2018.

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 39<sup>th</sup> 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 46<sup>th</sup> 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

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(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 53<sup>rd</sup> 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 1999-2019.

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, 1998-2005, and 2006-2018 were reimbursed in the 25<sup>th</sup>, 26<sup>th</sup>, 44<sup>th</sup>, 49<sup>th</sup>, 61<sup>st</sup>, 65<sup>th</sup>, and 69<sup>th</sup> determinations, respectively.

### **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 \$21.4 million for 2019 (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 38<sup>th</sup> 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.

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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 is 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 2019 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 36<sup>th</sup> 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 43<sup>rd</sup> 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 1984-2019 and January-September 2020. Table 10a shows the results of the HI calculations for calendar years 1994-2019 and January-September 2020.

### **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 2019  
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	1.0269	.....	.....
63	1.0270	.....	.....
64	1.0237	.....	.....
65	1.0196	1.0119	1.0188
66	1.0165	1.0103	1.0173
67	1.0155	1.0108	1.0166
68	1.0141	1.0101	1.0149
69	1.0131	1.0101	1.0137
70	1.0113	1.0091	1.0123
71	1.0107	1.0098	1.0112
72	1.0097	1.0104	1.0100
73	1.0095	1.0111	1.0096
74	1.0089	1.0122	1.0088
75	1.0085	1.0130	1.0082
76	1.0079	1.0140	1.0075
77	1.0076	1.0153	1.0071
78	1.0073	1.0168	1.0067
79	1.0070	1.0187	1.0063
80-84	1.0061	1.0199	1.0055
85 and over	1.0047	1.0146	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 2. -- Computation of Family Composition Factors and Factors for Child's Benefits for Calendar Year 2019  
Applied to Female Old-Age Employees**

Social Security Data			
Age Last Birthday of Old-Age Beneficiary	(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	1.0063	.....	.....
63	1.0063	.....	.....
64	1.0056	.....	.....
65	1.0046	1.0021	1.0040
66	1.0041	1.0019	1.0039
67	1.0038	1.0030	1.0037
68	1.0035	1.0026	1.0034
69	1.0032	1.0028	1.0031
70	1.0026	1.0022	1.0026
71	1.0024	1.0032	1.0024
72	1.0021	1.0025	1.0021
73	1.0021	1.0019	1.0021
74	1.0018	1.0022	1.0019
75	1.0017	1.0022	1.0018
76	1.0015	1.0022	1.0016
77	1.0014	1.0018	1.0015
78	1.0014	1.0040	1.0015
79	1.0012	1.0026	1.0013
80-84	1.0010	1.0026	1.0011
85 and over	1.0004	1.0009	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 3. -- Analysis of Net Benefit Amounts (Uninflated) for 2019, By Type of Benefit (Accrual Basis)**  
(in thousands)

Type of Benefit	Total			OASI			DI		
	Net Chargeable	Combined <sup>1</sup> Earnings	Actual SSA Offsets	Net Chargeable	Combined <sup>1</sup> Earnings	Actual SSA Offsets	Net Chargeable	Combined <sup>1</sup> Earnings	Actual SSA Offsets
Total	\$76,417	\$84,402	\$7,985	\$72,325	\$80,170	\$7,845	\$4,092	\$4,232	\$140
Retired Employees, Total	51,767	55,542	3,775	47,927	51,571	3,644	3,840	3,971	131
Full Rate	15,038	16,958	1,920	11,198	12,987	1,789	3,840	3,971	131
Reduced Rate	36,729	38,584	1,855	36,729	38,584	1,855	-	-	-
Non-Retired Employees, Total	4	30	25	4	30	25	-	-	-
Presumptives <sup>2</sup>	-	-	-	-	-	-	-	-	-
Regular <sup>3</sup>	4	30	25	4	30	25	-	-	-
Auxiliaries of Retired Employees, Total	9,953	10,007	54	9,701	9,746	46	252	261	8
Spouses, Full Rate, Full Retirement Age and Over	609	617	9	606	615	9	3	3	-
Spouses, Reduced Rate	9,087	9,124	37	8,947	8,984	37	140	140	-
Spouses, Full Rate, Under Full Retirement Age	76	76	-	70	70	-	6	6	-
Children <sup>4</sup>	182	190	8	77	77	-	105	113	8
Auxiliaries of Non-Retired Employees, Total	-	-	-	-	-	-	-	-	-
Survivors, Total	14,693	18,823	4,131	14,693	18,823	4,131	-	-	-
Aged Widow(er)s, Full Rate	2,517	3,483	967	2,517	3,483	967	-	-	-
Aged Widow(er)s, Reduced Rate	10,706	13,636	2,929	10,706	13,636	2,929	-	-	-
Disabled Widow(er)s	541	680	139	541	680	139	-	-	-
Widowed Mothers/Fathers	62	62	-	62	62	-	-	-	-
Children and Parents	853	935	82	853	935	82	-	-	-
Widow(er)s Not on RRB Rolls	1	15	14	1	15	14	-	-	-
Lump Sum	12	12	-	12	12	-	-	-	-

<sup>1</sup> Includes amounts due to child and family composition factors.

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

<sup>3</sup> Benefits paid by SSA, but not RRB.

<sup>4</sup> 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 2019

Stratum Number	Type of RRA Benefit Payable	Age of Beneficiary on		RRA Spouse Annuity Payable in 2019	Criterion Year <sup>1</sup>	Number in Survivor Family
		Birthday in 2019	2019			
<u>OLD-AGE AND SURVIVORS INSURANCE TRUST FUND<sup>2</sup></u>						
1	Employee	62-65	---	---	Before 2020	-
2	Employee	66 or older	Yes	Yes	Before 1991	-
3	Employee	66 or older	Yes	Yes	1991-1997	-
4	Employee	66 or older	Yes	Yes	1998-2003	-
5	Employee	66 or older	Yes	Yes	2004-2006	-
6	Employee	66 or older	Yes	Yes	2007-2019	-
7	Employee	66 or older	No	No	Before 1991	-
8	Employee	66 or older	No	No	1991-1997	-
9	Employee	66 or older	No	No	1998-2003	-
10	Employee	66 or older	No	No	2004-2006	-
11	Employee	66 or older	No	No	2007-2019	-
12	Aged Widow(er)	60-61	---	---	Before 2020	1
13	Aged Widow(er), Parent	62 or older	---	---	Before 1977	1
14	Aged Widow(er), Parent	62 or older	---	---	1977-1980	1
15	Aged Widow(er), Parent	62 or older	---	---	1981-1986	1
16	Aged Widow(er), Parent	62 or older	---	---	1987-1997	1
17	Aged Widow(er), Parent	62 or older	---	---	1998-2003	1
18	Aged Widow(er), Parent	62 or older	---	---	2004-2010	1
19	Aged Widow(er), Parent	62 or older	---	---	2011-2019	1
20	Child	---	---	---	Before 2020	1
21	Disabled Widow(er)	---	---	---	Before 2020	1
22	Monthly Survivor	---	---	---	Before 2020	1
23	Monthly Survivor, Lump Sum	---	---	---	Before 2020	2 or more
24	None <sup>4</sup>	---	---	---	2019 <sup>3</sup>	-
<u>DISABILITY INSURANCE TRUST FUND</u>						
1	Employee Disability	64-FRA <sup>5</sup>	---	---	---	-
2	Employee Disability	60-63	---	---	---	-
3	Employee Disability	55-59	---	---	---	-
4	Employee Disability	Under 55	---	---	---	-

<sup>1</sup> 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.

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

<sup>3</sup> Employee death in 2019 the determination year, without regard to employee's age or annuity accrual date.

<sup>4</sup> 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.

<sup>5</sup> 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, 2019**

Stratum Number <sup>1</sup> <i>i</i>	Universe Number <i>N<sub>i</sub></i>	Sample Number <i>n<sub>i</sub></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 <sup>2</sup>	360,576	3,640	\$72,324,843	\$1,885,971,791,545
1	28,400	311	7,018,410	187,844,655,825
2	7,543	63	1,305,633	29,969,894,161
3	18,334	189	4,200,016	106,202,644,264
4	28,764	277	7,413,131	226,201,268,088
5	17,338	177	4,881,057	153,489,551,020
6	63,476	677	19,004,649	617,314,353,425
7	10,777	104	1,275,520	21,612,282,349
8	15,002	153	2,405,194	44,353,244,163
9	15,014	142	2,571,225	54,435,987,495
10	7,883	78	1,514,534	32,299,132,723
11	33,709	327	6,038,427	133,335,303,486
12	968	9	112,171	1,926,195,761
13	3,411	37	261,098	2,981,360,410
14	2,849	21	199,844	2,948,935,058
15	9,828	112	1,363,065	21,972,289,065
16	38,329	384	4,815,481	82,048,071,947
17	16,360	169	2,265,711	42,865,492,257
18	14,303	142	2,219,577	46,513,079,717
19	8,802	86	1,393,262	30,577,334,878
20	5,070	54	582,215	8,029,963,897
21	3,750	44	527,391	8,370,053,311
22	5,497	33	939,490	30,662,254,940
23	4,969	49	12,495	---
24	200	2	5,246	18,443,304

<sup>1</sup> For description of strata, see Table 4.

<sup>2</sup> Universe and sample numbers exclude 4,592 and 43 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, 2019**

Stratum Number <sup>1</sup> <i>i</i>	Universe Number <i>N<sub>i</sub></i>	Sample Number <i>n<sub>i</sub></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 <sup>2</sup>	19,107	171	\$4,091,912	\$114,263,167,030
1	7,616	62	1,335,787	37,731,417,121
2	6,218	63	1,633,264	44,543,615,658
3	2,724	23	523,595	13,543,278,143
4	2,549	23	599,266	18,444,856,108

<sup>1</sup>. For description of strata, see Table 4.

<sup>2</sup>. Universe and sample exclude 8,099 and 101 disability annuities, respectively, composed largely of annuitants denied a disability freeze. Of these, 4,535 and 66, 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, 1937-2019, Including Adjustments, on an Accrual Basis

Year	Benefit Payments		Adjusted Benefit Payments	
	Before Adjustments (Accrual Basis)	Adjustments <sup>1</sup>		
	Total	\$222,019,997,053	\$1,196,746	\$222,021,193,799
1937-1970 <sup>2</sup>		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		5,083,984,802	---	5,083,984,802
2007		5,203,902,898	(102,066)	5,203,800,832
2008		5,314,012,153	(473,953)	5,313,538,200
2009		5,652,362,311	(541,381)	5,651,820,930
2010		5,688,860,408	(517,261)	5,688,343,147
2011		5,790,943,849	(514,026)	5,790,429,823
2012		6,063,438,444	---	6,063,438,444
2013		6,210,057,569	---	6,210,057,569
2014		6,379,558,067	---	6,379,558,067
2015		6,547,453,882	---	6,547,453,882
2016		6,633,279,250	(1,415,167)	6,631,864,083
2017		6,736,367,750	(181,520)	6,736,186,230
2018		6,949,398,206	4,942,120	6,954,340,326
2019		7,156,781,161	---	7,156,781,161

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

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

**Table 6a. -- DI Benefit Payments, 1957-2019, Including Adjustments, on an Accrual Basis**

Year	Benefit Payments			
	Before Adjustments (Accrual Basis)	Adjustments <sup>1</sup>	Adjusted Benefit Payments	
	Total	\$18,127,118,566	\$6,348,212	\$18,133,466,778
1957-1988 <sup>2</sup>	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	590,583,660	---	590,583,660	
2006	632,599,398	---	632,599,398	
2007	680,728,391	---	680,728,391	
2008	690,356,895	---	690,356,895	
2009	729,250,540	---	729,250,540	
2010	737,328,916	---	737,328,916	
2011	735,230,598	---	735,230,598	
2012	740,333,334	---	740,333,334	
2013	714,910,587	---	714,910,587	
2014	696,828,090	---	696,828,090	
2015	662,578,637	---	662,578,637	
2016	618,406,953	---	618,406,953	
2017	528,836,353	---	528,836,353	
2018	501,889,114	6,348,212	508,237,326	
2019	453,713,065	---	453,713,065	

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

<sup>2</sup> 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, 1997-2020

Year	Cycle 1-4 Payments																
	First Half					Second Half											
	RRB EFT PCT	Percentage OASI DI	Cycle 1		Check Float	Cycles 2-4		RRB EFT PCT	Percentage OASI DI	Cycle 1		Check Float	Cycles 2-4		Combined Float OASI DI		
			EFT PCT	OASI DI		EFT PCT	OASI DI			EFT PCT	OASI DI		EFT PCT	OASI DI			
1997	63.60%	100.00%	63.60%	63.60%	2.8333	7.6333	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%	68.06%	68.04%	2.5000	7.8333	4.5718	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%	72.36%	71.76%	2.3333	7.7667	4.8067	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%	73.22%	72.00%	2.8333	7.6667	5.6883	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%	73.20%	71.91%	2.3333	7.8000	6.3404	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%	74.30%	2.3333	7.6000	6.6432	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%	74.65%	2.8333	7.6333	7.5731	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	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	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	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	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	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	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	7.7667	11.3665	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	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	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	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	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	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	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	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	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	99.30%	24.52%	57.11%	97.15%	98.77%	2.5000	8.0000	18.3196	14.4790	9.3239
2020	99.30%	23.77%	57.19%	97.05%	2.6667	7.8000	13.9602	99.30%	23.03%	57.41%	96.96%	98.78%	2.6667	8.1333	17.5459	14.1577	9.0417

Table 8. -- Summary of Uncollectible Benefit Overpayment Calculations

Year	SSA Equivalent Uncollectible Overpayments	Sample SSEB Percentage <sup>1</sup>	Overpayment		DI Trust Fund Proportion <sup>2</sup>	Amount Charged By Trust Fund		Ratio of Overpayments to FI Benefits <sup>3</sup>
			Amount Charged	Amount		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	0.68957	485,280	1,077,956	0.0266%	
2008	3,612,941	69.08%	2,495,820	0.64570	884,264	1,611,556	0.0418%	
2009	2,979,389	60.85%	1,812,958	0.61578	696,578	1,116,380	0.0285%	
2010	3,205,170	60.85%	1,950,346	0.62430	732,745	1,217,601	0.0304%	
2011	2,246,004	60.85%	1,366,693	0.62376	514,211	852,483	0.0210%	
2012	1,826,605	60.85%	1,111,489	0.63365	407,194	704,295	0.0164%	
2013	1,503,658	60.85%	914,976	0.61118	355,758	559,218	0.0132%	
2014	2,162,281	62.78%	1,357,480	0.59252	553,141	804,339	0.0192%	
2015	2,633,041	62.78%	1,653,023	0.53843	762,988	890,035	0.0229%	
2016	1,225,186	62.78%	769,172	0.48797	393,836	375,336	0.0106%	
2017	924,273	62.78%	580,259	0.45590	315,718	264,540	0.0080%	
2018	817,161	62.78%	513,013	0.40800	303,705	209,308	0.0069%	
2019	804,726	65.26%	525,164	0.47642	274,964	250,200	0.0069%	

<sup>1</sup> 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.

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

<sup>3</sup> 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 - 2019**

Source	Total cost (thousands)	Number of Items		Unit cost
		Total	Chargeable	
<b>OASI Trust Fund</b>				
Total.....	<u>\$15,231</u>			
Determination of eligibility and benefit computations, OASI.....	7,838	18,200	100	18,100
Retired employees.....	3,824	8,600	100	\$449.89
Dependents of retired employees.....	2,927	7,000	-	418.13
Non-retired employees.....	-	-	-	449.89
Widow(er)s not on RRB rolls.....	-	-	-	418.13
Survivor monthly beneficiaries.....	1,087	2,600	-	418.13
Maintenance of benefit rolls.....	7,275	411,800	-	17.67
Handling compensation reports.....	118	309,200	-	0.38
<b>DI Trust Fund</b>				
Total.....	<u>\$4,064</u>			
Determination of eligibility and benefit computations, DI.....	3,149	1,800	-	1,800
Retired employees.....	1,241	700	-	\$1,772.49
Dependents of retired employees.....	1,908	1,100	-	1,734.55
Maintenance of benefit rolls.....	898	17,800	-	50.44
Handling compensation reports.....	17	309,200	-	0.05

Table 9a. -- Calculation of HI Administrative Expenses - 2019

Source	Total cost (thousands)	Number of Items		Unit cost
		Total	Chargeable	
<b>HI Trust Fund</b>				
Total.....	<u>\$2,139</u>			
Initial enrollment, OASI.....	1,050	100	18,100	
Retired employees.....	512	100	8,500	\$60.29
Dependents of retired employees.....	392	-	7,000	56.03
Non-retired employees.....	-	-	-	60.29
Widow(er)s not on RRB rolls.....	-	-	-	56.03
Survivor monthly beneficiaries.....	146	-	2,600	56.03
Initial enrollment, DI.....	824	-	1,800	
Retired employees.....	325	-	700	\$463.85
Dependents of retired employees.....	499	-	1,100	453.92
Maintenance of benefit rolls, OASI.....	146	-	411,800	0.35
Maintenance of benefit rolls, DI.....	80	-	17,800	4.51
Handling compensation reports.....	39	-	309,200	0.13

**Part IV.****Summary of Income Tax Calculations****Table 10. -- Financial Interchange OASDI Income Tax Transfers, Calendar Years 1984-2019 and January-September 2020**

Year	(in millions)						
	Original Treasury Transfers		Adjusted Accrual Basis		Final FI Adjusted Taxes Due		
	Amount	FI Adjusted <sup>1</sup>	Taxes Due <sup>2</sup>		Cash Basis <sup>3</sup>		
	Amount	FI Adjusted	Amount	FI Adjusted	Total	OASI <sup>4, 5</sup>	DI <sup>4, 5</sup>
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	182.0	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	243.4	238.8	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	284.3			301.5	295.4	6.1
2017	292.0	294.7			294.7	287.7	7.0
2018	255.0	258.0			290.2	289.0	1.2
2019	267.0	269.3			269.3	264.5	4.8
1/2020-9/2020	216.0	217.8			217.8	214.3	3.5

<sup>1</sup> Total amount of quarterly transfers from Treasury originally received for the calendar year.<sup>2</sup> 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.<sup>3</sup> Revised Total Amount and FI Amount based on subsequent reconciliations.<sup>4</sup> 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.<sup>5</sup> 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 1994-2019 and  
January-September 2020  
(in millions)**

Year	Original Treasury Transfers		Treasury Adjustment Accrual Basis <sup>2</sup>		Final FI Adjusted
	Amount	FI Adjusted <sup>1</sup>	Amount	FI Adjusted	Total <sup>3, 4</sup>
	1994	\$14.0	\$14.0	\$1.0	\$0.9
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	121.9	129.0	130.0	0.6
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
2019	165.0	166.6			1.6
1/2020-9/2020	191.0	192.6			1.6

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

<sup>2</sup> 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.

<sup>3</sup> Revised Total Amount and FI Amount based on subsequent reconciliations.

<sup>4</sup> 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



## MEMORANDUM

**Date:** March 10, 2021 **Refer To:** S1NN1

**To:** Supervisory Actuary  
Office of the Chief Actuary

**From:** Director  
Division of Central Accounting and Reporting

**Subject:** Workload Unit Cost Factors for the SSA-Railroad Retirement Board (RRB) Financial Interchange (Your Memo, 01/25/21)—INFORMATION

This memorandum transmits and documents the final calendar year (CY) 2019 and preliminary CY 2020 unit cost factors for use in the SSA-RRB financial interchange. The CY 2019 calculations have not changed from those transmitted last year. The CY 2020 calculations will be revised only if necessitated by any future recalculations of the fiscal year 2020 administrative costs.

The unit costs are as follows:

<u>Workload</u>	<u>CY 2019 Final</u>	<u>CY 2020 Preliminary</u>
OASI Maintenance of Earnings Accounts	\$ 0.381602	\$ 0.339171
DI Maintenance of Earnings Accounts	\$ 0.054906	\$ 0.049306
HI Maintenance of Earnings Accounts	\$ 0.127342	\$ 0.128734
OASI Initial Enrollment – Wage Earners	\$ 449.888165	\$ 460.729914
DI Initial Enrollment – Wage Earners	\$ 1,772.493672	\$ 1,961.843956
HI (OASI Related) Initial Enrollment – Wage Earners	\$ 60.287703	\$ 66.174442
HI (DI Related) Initial Enrollment – Wage Earners	\$ 463.845879	\$ 537.708227
OASI Initial Enrollment – Auxiliaries	\$ 418.134346	\$ 501.698630
DI Initial Enrollment – Auxiliaries	\$ 1,734.553732	\$ 2,124.598534
HI (OASI related) Initial Enrollment – Auxiliaries	\$ 56.032502	\$ 72.058761
HI (DI related) Initial Enrollment – Auxiliaries	\$ 453.917333	\$ 582.316503

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<u>Workload</u>	CY 2019 <u>Final</u>	CY 2020 <u>Preliminary</u>
OASI Maintenance of the Rolls	\$ 17.665921	\$ 19.119700
DI Maintenance of the Rolls	\$ 50.442708	\$ 52.042838
HI (OASI Related) Maintenance of the Rolls	\$ 0.354521	\$ 0.432056
HI (DI Related) Maintenance of the Rolls	\$ 4.509645	\$ 3.664304

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.

*Stephen Hull*

Stephen Hull

## Financial Operations of the OASI and DI Trust Funds, December 2020

Old-Age and Survivors Insurance Trust Fund			
	Current month	Fiscal year to date	Calendar year to date
<b>Total income</b>	\$106,244,392,706.10	\$242,576,089,001.97	\$968,347,950,549.54
Payroll tax contributions	74,356,837,111.78	200,693,837,111.78	859,243,991,678.13
Multi-employer tax refund	-3,264,863,550.00	-3,264,863,550.00	-3,264,863,550.00
Net payroll tax contributions	71,091,973,561.78	197,428,973,561.78	855,979,128,128.13
Reimbursement income tax credits	-1,512.07	-1,512.07	4,181.44
Reimbursement due to P.L. 111-312, 112-78, and 112-96	894,430.94	894,430.94	2,653,805.77
General Fund reimbursement subtotal	892,918.87	892,918.87	2,657,987.21
Income from benefit taxation	19,739,480.60	9,756,192,534.10	39,031,746,140.80
Interest on investments	35,131,634,605.36	35,389,537,148.52	73,332,547,481.84
Interest on reimbursements	934.91	341,414.51	1,688,830.01
Interest subtotal	35,131,635,540.27	35,389,878,563.03	73,334,236,311.85
Gifts & miscellaneous income	151,204.58	151,424.19	181,981.55
<b>Total cost</b>	80,661,217,050.85	242,041,786,136.20	960,954,204,848.04
Benefit payments	80,371,259,784.60	241,128,801,092.21	952,387,964,239.82
Reimbursements (uncashed checks & misc.)	-3,511,892.84	-9,975,400.07	-39,027,846.56
Vocational rehabilitation payments	988,117.53	2,386,266.00	13,473,430.11
Benefits subtotal	80,368,736,009.29	241,121,211,958.14	952,362,409,823.37
SSA-RRB Financial Interchange	0.00	0.00	4,843,965,000.00
Treasury administrative expenses	347,122.37	386,490.63	499,482,808.58
SSA salaries & expenses	286,108,636.00	889,340,826.00	3,083,020,321.05
Construction	7,653,291.00	37,501,126.00	175,377,795.00
Offsetting miscellaneous income	-1,217,321.35	-5,826,232.14	-7,595,363.14
Pension reform reimbursement	0.00	-417,345.97	-1,026,253.93
Reimbursement for SSA expenses	-410,686.46	-410,686.46	-1,429,282.89
Administrative expenses subtotal	292,481,041.56	920,574,178.06	3,747,830,024.67
<b>Net increase in asset reserves</b>	25,583,175,655.25	534,302,865.77	7,393,745,701.50
Undisbursed balance	18,569,550,294.72	18,569,550,294.72	18,569,550,294.72
Invested asset reserves (book value)	2,793,146,100,000.00	2,793,146,100,000.00	2,793,146,100,000.00
<b>Asset reserves at end of month</b>	2,811,715,650,294.72	2,811,715,650,294.72	2,811,715,650,294.72

Disability Insurance Trust Fund			
	Current month	Fiscal year to date	Calendar year to date
<b>Total income</b>	\$13,457,907,120.16	\$35,341,936,991.28	\$149,747,770,250.21
Payroll tax contributions	12,681,096,464.10	34,134,096,464.10	145,845,764,354.33
Multi-employer tax refund	-552,600,450.00	-552,600,450.00	-552,600,450.00
Net payroll tax contributions	12,128,496,014.10	33,581,496,014.10	145,293,163,904.33
Reimbursement income tax credits	-145.33	-145.33	399.76
Reimbursement due to P.L. 111-312, 112-78, and 112-96	151,884.76	151,884.76	450,647.05
General Fund reimbursement subtotal	151,739.43	151,739.43	451,046.81
Income from benefit taxation	294,910.70	425,923,055.60	1,703,829,369.20
Interest on investments	1,328,963,711.40	1,334,174,773.42	2,745,476,553.02
Interest on reimbursements	744.53	191,408.73	4,849,376.85
Interest subtotal	1,328,964,455.93	1,334,366,182.15	2,750,325,929.87
<b>Total cost</b>	11,892,020,616.21	35,834,889,440.13	146,260,164,430.17
Benefit payments	11,653,234,981.37	35,082,870,084.05	143,487,263,056.79
Reimbursements (uncashed checks & misc.)	-1,850,158.28	-5,213,551.45	-20,795,059.22
Vocational rehabilitation payments	6,284,180.77	16,341,794.38	94,850,620.18
Benefits subtotal	11,657,669,003.86	35,093,998,326.98	143,561,318,617.75
SSA-RRB Financial Interchange	0.00	0.00	143,782,000.00
Treasury administrative expenses	77,343.80	116,490.10	90,766,079.63
SSA salaries & expenses	227,908,630.00	708,343,800.00	2,313,940,868.66
Construction	6,094,846.00	29,864,742.00	138,654,229.00
Reimbursement for SSA expenses	-327,057.91	-327,057.91	-1,138,236.39
Demonstration projects	597,850.46	2,893,138.96	12,840,871.52
Administrative expenses subtotal	234,351,612.35	740,891,113.15	2,555,063,812.42
<b>Net increase in asset reserves</b>	1,565,886,503.95	-492,952,448.85	3,487,605,820.04
Undisbursed balance	5,866,964,731.10	5,866,964,731.10	5,866,964,731.10
Invested asset reserves (book value)	90,703,394,000.00	90,703,394,000.00	90,703,394,000.00
<b>Asset reserves at end of month</b>	96,570,358,731.10	96,570,358,731.10	96,570,358,731.10

## 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 <sup>a</sup>	Ratio	Uncollectible overpayments	Total benefit payments <sup>a</sup>	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%
2020	477,569	952,348,936	0.0501%	2,546,309	143,466,468	1.7748%

<sup>a</sup> 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 24, 2021



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



March 3, 2021

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, 2020, and December 31, 2020, were 1.44 percent and 0.93 percent, respectively.

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

Sincerely,

Jennifer Lee  
CMS/OACT



**SOCIAL SECURITY**  
Office of the Chief Actuary

December 15, 2020

Ms. Pat Pruitt  
Acting Chief Actuary  
Railroad Retirement Board  
844 North Rush Street  
Chicago, Illinois 60611-2092

Dear Ms. Pruitt:

The attached tables provide estimated benefits in current-payment status as of December 31, 2019. 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 agreement between our offices in August 2011 to revise the application of child and family composition factors.<sup>1</sup> 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

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<sup>1</sup> 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 12/31/2019

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 PLA	Child benefits	Old-age benefits	Monthly rate of PLA	Child benefits	Old-age benefits	Monthly rate of PLA	Child benefits	Wife benefits
62	\$371,987,767	\$508,833,156	\$10,940,769	\$1,615,230	\$2,209,852	\$24,945	\$1,755,596	\$2,403,812	\$985,240	\$779,834
63	570,239,544	761,921,023	16,906,466	3,127,032	4,167,486	68,001	2,867,123	3,838,206	1,569,816	1,237,947
64	717,753,288	930,303,608	18,589,189	5,285,806	6,757,221	91,682	3,133,447	4,077,504	1,661,626	1,344,507
65	946,233,475	1,165,640,442	20,306,969	10,407,292	12,405,268	147,510	3,623,104	4,519,674	1,843,633	1,495,355
66	2,114,090,367	2,330,895,894	37,641,255	48,785,648	51,547,933	528,448	6,513,360	7,263,332	2,960,670	2,427,165
67	2,295,692,865	2,510,512,202	38,566,366	88,713,502	92,266,957	993,375	6,848,439	7,466,756	3,027,626	2,509,321
68	2,287,298,291	2,492,663,145	34,585,911	115,137,350	118,310,700	1,193,265	5,423,539	5,895,637	2,397,694	1,980,438
69	2,192,257,435	2,384,336,537	30,653,958	122,307,356	124,235,490	1,233,994	4,487,257	4,870,740	2,000,916	1,626,698
70	2,491,718,951	2,624,767,330	30,012,546	179,535,201	167,457,585	1,521,895	4,676,204	4,891,097	2,006,271	1,632,729
71	2,469,512,395	2,621,150,969	27,871,285	166,890,547	156,101,088	1,532,466	3,704,915	3,870,430	1,572,241	1,308,852
72	2,481,367,286	2,657,767,727	25,557,843	147,739,717	139,671,731	1,453,953	3,310,692	3,482,466	1,440,588	1,176,072
73	2,186,791,851	2,359,498,815	21,816,733	118,424,286	113,334,130	1,252,713	2,587,711	2,752,389	1,136,778	914,996
74	1,717,737,219	1,861,540,365	16,060,980	80,572,999	77,794,873	949,948	1,732,938	1,842,897	766,858	617,239
75	1,653,190,317	1,804,177,237	14,659,149	68,143,676	66,737,122	869,070	1,351,088	1,441,858	588,098	487,383
76	1,647,068,849	1,810,429,375	13,539,262	60,667,241	60,039,599	841,984	1,287,666	1,378,847	570,425	463,555
77	1,533,882,316	1,690,763,475	12,054,173	49,640,986	49,937,361	762,183	989,272	1,045,887	435,667	350,795
78	1,311,102,644	1,447,404,399	9,856,333	38,864,761	39,462,612	663,433	759,529	827,613	345,103	281,460
79	1,158,572,339	1,278,737,241	8,316,851	31,913,874	32,676,234	610,431	562,518	604,988	249,755	203,984
80	1,019,899,490	1,123,862,046	7,035,170	25,861,351	26,552,756	547,046	401,822	437,239	178,316	150,126
81	942,829,641	1,037,570,677	6,118,710	22,832,751	23,520,478	486,248	320,650	344,548	142,245	119,663
82	820,979,585	899,450,813	4,950,209	19,524,661	20,098,226	391,256	210,998	228,739	97,694	74,943
83	697,757,709	764,267,790	4,019,471	16,215,842	16,722,503	318,718	146,443	156,206	64,542	53,922
84	616,214,586	674,397,769	3,440,388	14,627,230	15,090,477	288,204	115,135	123,955	50,514	41,479
85	538,653,984	586,323,379	2,887,969	14,010,400	14,250,767	259,946	99,768	106,549	43,080	37,522
86	458,773,862	495,694,561	2,379,703	13,249,410	13,173,702	218,184	64,553	66,930	26,326	23,659
87	422,890,288	455,679,938	2,095,748	13,010,347	12,690,328	201,314	69,301	72,207	28,267	25,358
88	360,595,264	385,216,396	1,708,063	11,726,177	11,181,295	155,250	45,960	46,676	18,407	15,575
89	313,283,057	333,961,484	1,493,214	10,277,182	9,698,044	138,620	36,439	38,194	15,240	13,781
90	251,081,705	266,512,650	1,139,677	8,212,125	7,678,293	92,063	25,471	27,717	10,772	9,904
91	210,521,655	223,965,753	928,716	6,540,055	6,182,611	82,459	27,390	29,117	12,658	10,342
92	171,027,569	181,367,768	720,394	4,817,017	4,531,285	51,335	14,060	15,178	6,432	5,217
93	127,971,991	135,873,973	510,229	3,438,829	3,266,904	31,383	12,331	12,393	5,149	4,648
94	97,294,343	103,064,763	387,217	2,439,961	2,312,966	30,761	7,558	7,253	2,924	2,574
95	70,533,075	74,657,587	261,080	1,755,281	1,664,350	17,272	5,540	5,579	2,376	1,616
96	49,031,269	51,507,437	164,146	1,100,697	1,047,768	10,266	4,418	4,651	1,987	1,614
97	32,844,276	34,367,735	121,508	674,840	638,635	7,456	470	459	184	46
98	22,973,510	23,011,312	71,247	399,030	374,311	2,043	0	0	0	0
99	13,116,064	13,574,468	51,144	222,105	209,261	0	0	0	0	0
100	7,630,433	7,888,263	28,678	110,358	105,947	2,858	0	0	0	0
101+	10,843,648	11,219,737	40,576	156,310	150,727	947	0	0	0	0
Total	37,402,321,199	41,124,779,237	428,509,285	1,528,974,652	1,508,259,873	18,096,619	57,224,707	64,197,721	3,626,618	21,450,318

Social Security Administration  
Office of the Chief Actuary  
December 15, 2020

Table 2 — Selected benefit estimates relating to female old-age (primary) beneficiary families in current-payment status on 12/31/2019

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			Husband 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	
62	\$331,405,594	\$438,951,140	\$2,091,074	\$2,571,008	\$3,515,979	\$11,902	\$18,564	\$25,452	\$11,309	\$8,420
63	504,901,685	648,971,222	3,214,981	5,347,755	7,070,795	28,309	17,480	23,635	9,362	8,536
64	631,171,214	782,830,008	3,536,237	8,166,631	10,261,446	36,741	21,604	28,230	10,708	9,758
65	847,522,139	988,887,872	3,903,839	13,282,665	15,528,408	32,244	22,295	26,764	9,808	9,195
66	1,614,815,882	1,710,867,151	6,622,529	29,371,213	31,368,801	59,340	33,564	36,647	13,031	13,981
67	1,731,253,272	1,813,422,602	6,607,945	34,628,472	36,198,907	109,284	19,355	21,637	8,282	7,715
68	1,723,208,958	1,786,152,157	6,019,744	30,433,252	31,366,414	82,839	17,417	19,161	7,220	5,936
69	1,653,007,131	1,694,867,359	5,302,598	21,704,319	22,141,135	62,716	14,342	15,896	5,804	6,490
70	1,909,313,205	1,886,636,185	4,904,993	21,056,964	19,725,278	44,346	6,934	7,563	2,955	3,125
71	1,897,426,952	1,872,238,796	4,570,389	15,296,919	14,431,357	45,752	7,115	7,378	3,041	2,600
72	1,895,158,612	1,852,883,127	3,980,421	10,916,776	10,594,430	26,253	3,045	3,677	1,536	1,536
73	1,666,076,596	1,624,786,078	3,477,630	7,781,538	7,660,169	14,175	4,385	5,437	2,182	1,669
74	1,310,988,470	1,259,768,589	2,401,869	4,957,546	4,960,231	11,062	1,741	2,321	871	871
75	1,273,855,235	1,213,131,404	2,125,515	4,067,546	4,107,839	8,942	2,551	2,552	1,276	503
76	1,275,106,686	1,203,411,897	1,912,873	3,269,588	3,348,234	7,404	411	542	135	135
77	1,187,006,773	1,109,329,511	1,695,766	2,842,709	2,913,194	5,272	0	0	0	0
78	1,024,691,180	949,903,564	1,437,648	2,047,813	2,109,260	8,512	0	0	0	0
79	915,779,645	837,209,085	1,073,413	1,716,476	1,772,472	4,694	0	0	0	0
80	823,900,829	737,377,271	941,489	1,443,891	1,492,235	2,834	0	0	0	0
81	772,711,732	679,170,246	777,887	1,176,886	1,197,131	3,187	0	0	0	0
82	686,812,409	589,290,279	681,236	919,956	940,316	1,759	0	0	0	0
83	608,258,343	504,383,625	494,747	678,776	686,338	4,102	0	0	0	0
84	554,419,569	447,348,881	388,956	536,224	532,076	961	0	0	0	0
85	499,076,516	393,514,899	301,792	413,954	417,806	220	0	0	0	0
86	436,870,349	339,092,138	247,818	308,303	302,995	676	0	0	0	0
87	414,289,668	318,831,356	198,917	257,405	252,803	204	0	0	0	0
88	366,799,319	272,066,676	175,344	204,520	200,850	172	0	0	0	0
89	332,137,733	239,768,044	141,875	145,412	137,728	163	0	0	0	0
90	284,887,308	200,372,900	100,428	104,697	101,511	0	0	0	0	0
91	252,664,153	178,267,160	79,141	73,051	65,410	0	0	0	0	0
92	217,947,472	153,173,565	75,366	50,328	47,082	0	0	0	0	0
93	177,380,786	122,331,791	53,766	42,825	39,487	0	0	0	0	0
94	144,865,958	100,684,764	46,919	32,691	28,657	0	0	0	0	0
95	114,018,686	77,682,626	24,934	19,466	17,661	0	0	0	0	0
96	85,149,467	57,177,636	20,372	9,553	8,812	0	0	0	0	0
97	62,483,520	41,363,280	13,798	5,766	3,768	0	0	0	0	0
98	47,013,550	30,746,165	11,867	540	540	0	0	0	0	0
99	31,761,754	20,492,752	7,064	600	522	0	0	0	0	0
100	20,411,366	13,614,646	3,122	867	1,053	0	0	0	0	0
101+	34,069,932	25,050,420	9,902	0	0	0	0	0	0	0
Total	30,360,619,647	29,216,048,863	69,676,203	225,884,900	235,549,128	614,086	190,802	226,891	87,539	80,489

## **EXHIBIT 2 – PAYROLL CALCULATIONS AND GROSS EARNINGS SAMPLE**

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### **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 1966-2019, 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 2019, including sickness payments and miscellaneous compensation, was \$19,180.8 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, \$132,900 in 2019, is the same as FICA.

Prior year adjustments of \$10.58 million were added to the RRA creditable payrolls for 1982-2018. 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 2019, the total sample amounts subject to HI and RRA taxes were, respectively, \$196,972,352 and \$187,181,020. Therefore, the 2019 ratio for inflating OASDI and HI taxable payroll is 1.0523. HI payroll calculations are elaborated upon further in Part II.

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### **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 41<sup>st</sup> 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 69<sup>th</sup> determination incorporated an additional \$0.17 million in payroll adjustments that were effective in calendar years 2014 through 2016 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 2019, the amounts involved for an affected employee would be combined earnings under both systems in excess of \$132,900 but not in excess of \$132,900 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 \$45.3 million for 2019 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 \$15.4 million for 2019 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 \$15.2 million to \$75.5 million for 2019.

Only the employee tax rates apply to dual coverage refunds. For 2019, the OASI inflated tax refund amount was \$2.40 million and the 95 percent confidence interval was \$0.80 million to \$4.00 million, while the DI inflated tax refund amount was \$0.41 million and the 95 percent confidence interval was \$0.14 million to \$0.68 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 2019 is \$19,191.5 million. The HI accrued payroll for 2019 is \$20,184.1 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 \$444.0 million HI ACA payroll for 2019 was derived from gross earnings data reported by employers. A shortfall adjustment of \$2.4 million for 2017 was made in December 2019. Table 4 summarizes the various components that determine the HI ACA payroll and the shortfall adjustment.



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**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 \$132,900 annual limit for 2019 for each employee. The resulting sample quarterly distribution was then applied to the overall population. Beginning with the 39<sup>th</sup> 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 2019 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.

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	Sample Amount	Percentage Distribution	OASDI Payroll (millions)
Total .....	\$148,513,955	100.00	\$19,191.5
1st Quarter .....	42,656,554	28.72	5,511.8
2nd Quarter .....	36,427,718	24.53	4,707.7
3rd Quarter .....	35,939,202	24.20	4,644.3
4th Quarter .....	33,490,481	22.55	4,327.7

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

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	Sample Amount	Percentage Distribution	HI Payroll (millions)
Total .....	\$154,635,661	100.00	\$20,184.1
1st Quarter .....	43,563,605	28.17	5,685.9
2nd Quarter .....	36,875,825	23.85	4,813.9
3rd Quarter .....	37,105,749	24.00	4,844.2
4th Quarter .....	37,090,481	23.98	4,840.1

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The table below shows the quarterly dollar and percentage distribution of the sample HI ACA accrued payroll for 2019 and the resulting distribution of the HI ACA accrued payroll.

	Sample Amount	Percentage Distribution	HI ACA Payroll (millions)
Total .....	\$2,044,939	100.00	\$444.0
1st Quarter .....	524,481	25.65	113.9
2nd Quarter .....	216,723	10.60	47.1
3rd Quarter .....	383,299	18.74	83.2
4th Quarter .....	920,437	45.01	199.8

Preliminary estimates were made of the quarterly accrued payroll for the first nine months of 2020 based on presumed employment levels and wage increases. Under the OASDI annual limit of \$137,700 for 2020, estimated accrued payroll for January-September 2020 was \$13,513.5 million. The total HI estimated accrued payroll for January-September 2020 was \$13,937.9 million of which \$300.7 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 <sup>1</sup>	FICA Limits	
		OASDI	HI
1937-1950	\$300	\$3,000	---
1951	300	3,600	---
1952	300	3,600	---
1953	300	3,600	---
1954	300/350 <sup>2</sup>	3,600	---
1955	350	4,200	---
1956	350	4,200	---
1957	350	4,200	---
1958	350	4,200	---
1959	350/400 <sup>3</sup>	4,800	---
1960	400	4,800	---
1961	400	4,800	---
1962	400	4,800	---
1963	400/450 <sup>4</sup>	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 <sup>1</sup>	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
2020	137,700	137,700	No Limit

<sup>1</sup> Earnings bases are monthly through 1984 and annual thereafter.

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

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

<sup>4</sup> 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 <sup>1</sup>	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

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

**Table 3. -- Summary of Accrued Taxable Payroll Calculations, 1966-2019**  
(Dollar amounts in millions)

Year	RRA Creditable Payroll	Prior Year <sup>1</sup> & Coverage Adjustments	RRA Payroll Up to FICA Limit		Multiple Railroad & Miscellaneous Comp Adjustment		1/2 Tips	Miscellaneous Adjustments <sup>2</sup>	Final OASDI Accrued Payroll		HI Payroll Inflation Factor	Final HI Accrued Payroll <sup>3</sup>		Final HI ACA Accrued Payroll <sup>4</sup>	
			Limit	Comp Adjustment	Comp Adjustment	Miscellaneous Adjustments <sup>2</sup>			Payroll	Payroll		Payroll <sup>3</sup>	Payroll <sup>4</sup>		
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		1.2	5,034.5							
1972	5,346.5	3.1	5,526.3	8.8	0.0		2.4	5,532.7							
1973	6,262.1	2.6	6,471.2	9.2	0.0		3.6	6,476.9							
1974	7,268.0	2.8	7,458.0	11.3	0.0		3.6	7,465.7							
1975	7,105.8	6.3	7,361.0	9.6	0.0		5.1	7,365.5							
1976	7,833.1	15.0	8,115.7	15.2	0.0		5.6	8,125.3							
1977	8,468.3	14.9	8,725.6	4.7	0.0		1.2	8,729.2							
1978	8,991.1	10.6	9,383.4	8.8	0.0		0.3	9,392.0							
1979	11,132.3	36.6	11,557.3	13.5	0.0		0.2	11,570.6							
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				11,576.4		1.0415			\$12,044.0		
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				13,360.6		1.0777			14,357.4		
2000	13,362.1	(3.8)	13,358.3	9.5				13,367.8		1.0516			14,047.1		

See footnotes at the end of table.

**Table 3. -- Summary of Accrued Taxable Payroll Calculations, 1966-2019 (Continued)**  
(Dollar amounts in millions)

Year	RRA Creditable Payroll	Prior Year <sup>1</sup> & Coverage Adjustments	RRA Payroll Up to FICA Limit	Multiple Railroad & Miscellaneous Comp Adjustment	1/2 Tips	Miscellaneous Adjustments <sup>2</sup>	Final OASDI Accrued Payroll	HI Payroll Inflation Factor	Final HI Accrued Payroll <sup>3</sup>	Final HI ACA Accrued Payroll <sup>4</sup>
2001	\$13,247.7	(\$3.3)	\$13,244.3	\$8.2			\$13,252.5	1.0352	\$13,711.0	
2002	13,113.6	(3.5)	13,110.1	8.0			13,118.0	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	15,619.5	(0.7)	15,618.8	10.7			15,629.5	1.0785	16,845.0	
2008	16,203.1	(0.5)	16,202.7	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	15,440.3	(0.4)	15,439.9	7.7			15,447.6	1.0541	16,275.4	
2011	16,573.2	(0.4)	16,572.8	10.3			16,583.1	1.0775	17,857.0	
2012	17,351.0	(0.3)	17,350.7	11.4			17,362.0	1.1252	19,522.9	
2013	17,772.7	(0.4)	17,772.3	12.7			17,785.0	1.0532	18,717.8	\$593.1
2014	19,217.8	(0.5)	19,217.3	16.9			19,234.2	1.0772	20,700.2	851.6
2015	19,993.1	(0.6)	19,992.5	13.2			20,005.8	1.0684	21,359.0	624.1
2016	18,318.5	(0.1)	18,318.5	9.8			18,328.3	1.0648	19,504.9	629.1
2017	18,510.8		18,510.8	12.7			18,523.5	1.0637	19,690.5	656.8
2018	19,660.9		19,660.9	13.2			19,674.1	1.0517	20,677.2	403.6
2019	19,180.8		19,180.8	10.7			19,191.5	1.0523	20,184.1	444.0

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

<sup>2</sup> Self-employment income in 1966, sickness payments in 1971-1979.

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

<sup>4</sup> 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, 2013-2019**  
(in millions)

Year	Additional Medicare Tax		Final HI ACA	Shortfall <sup>1</sup> Amount	Shortfall Adjustment Date <sup>2</sup>
	Compensation		Accrued		
	Regular	Miscellaneous	Payroll		
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	2.4	Dec 2019
2018	403.6	0.0	403.6		
2019	444.0	0.0	444.0		

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

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



**Part II.**2019 Gross Earnings Sample for Financial  
Interchange Payroll Calculations**Design of the Sample**

All railroad employers were asked to report the 2019 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 2019 gross earnings one-percent sample consisted of 2,410 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 2019 creditable earnings records and the gross earnings sample is as follows:

	Number of Employees	Average Compensation	Average Months of Service
All employees.....	246,335	\$77,165	10.60
Gross earnings sample.....	2,410	\$77,002	10.61

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	2,410	2,410		2,410	2,410
0	73	72	Under \$5,000	94	90
1	39	34	\$5,000-\$9,999	46	42
2	44	37	\$10,000-\$14,999	36	40
3	34	33	\$15,000-\$19,999	23	32
4	26	35	\$20,000-\$24,999	35	30
5	29	35	\$25,000-\$29,999	31	33
6	36	37	\$30,000-\$34,999	24	32
7	40	38	\$35,000-\$39,999	31	38
8	40	43	\$40,000-\$44,999	54	47
9	40	54	\$45,000-\$49,999	57	60
10	54	60	\$50,000-\$54,999	79	74
11	83	79	\$55,000-\$59,999	112	98
12	1,872	1,853	\$60,000-\$64,999	143	141
			\$65,000-\$69,999	188	186
			\$70,000-\$74,999	147	169
			\$75,000-\$79,999	160	154
			\$80,000-\$84,999	168	146
			\$85,000-\$89,999	150	137
			\$90,000-\$94,999	115	125
			\$95,000-\$99,999	109	113
			\$100,000-\$104,999	97	105
			\$105,000-\$109,999	102	93
			\$110,000-\$114,999	71	75
			\$115,000-\$119,999	60	62
			\$120,000-\$124,999	49	49
			\$125,000-\$129,999	40	42
			\$130,000-\$132,899	27	27
			\$132,900	162	170
Degrees of freedom		12			27
Chi-square		10.415			21.756
95% Threshold		21.026			40.113

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 2019 gross earnings sample adequately represents the universe of employee data and should produce valid estimates.

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### **Sampling Errors in Financial Interchange HI Tax Calculation**

It is estimated that accrued HI taxes (excluding ACA amounts) on railroad payrolls in calendar year 2019, had railroad employment been covered under HI, would have amounted to \$585.3 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 +/- \$11.4 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 2019 HI taxes was \$573.9 million to \$596.7 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  $A = \$1,003.3$  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 \$200.7 million. The 95-percent confidence interval was \$609.9 million to \$1,396.8 million.