



Australian
Orthopaedic
Association
National
Joint
Replacement
Registry

Automated Industry Report 8585

Depuy Synthes Australia

Attune Revision Knee

Report Generated: 6 December 2022

Data Period: 1 September 1999 - 5 December 2022

This report has been prepared by the Australian Orthopaedic Association National Joint Replacement Registry (AOANJRR). The report provides information on the usage and outcomes of the Attune tibial compared to all other revision knee replacements, based on data collected by the AOANJRR.

Disclaimer

The AOANJRR has taken every care to ensure that the data supplied are accurate but does not warrant that the data are error free and does not accept any liability for errors or omissions in the data.

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This report contains the outcomes of prostheses used in revision procedures. Only the 1st revisions of known primary procedures are included. The outcome is the time until subsequent (2nd) revision. The comparator is restricted to other 1st revision procedures where a tibial was inserted. 1st revisions performed for infection are excluded from the analysis.

Catalogue Numbers of Attune Tibial Components included in this analysis

Model	Catalogue Range	Range Description	No. of Revision Procedures
Attune	150660002 - 150660010	Revision Tibial Base Rotating Platform	633

The AOANJRR also reports these catalogue numbers as Attune Tibial Components. These are not included in the analysis.

Model	Catalogue Range	Range Description
Attune	150600001 - 150600010	Fixed Tibial Baseplate
Attune	150610001 - 150610010	Rotating Tibial Baseplate
Attune	150611001 - 150611010	Rotating Tibial Baseplate Porocoat
Attune	150640002 - 150640010	Attune FB Cemented Revision Tibial Base
Attune	150670001 - 150670010	Tibial Base Fixed Bearing Cemented w S+ technology
Attune	150680001 - 150680010	Tibial Baseplate Rotating Platform
Attune	151310060 - 151324060	Attune Revision Pressfit Stem

Table 1: Revision Rates of Attune 1st Revision of Primary Total Knee Replacement by Tibial Catalogue Number Range (Excluding 1st Revision for Infection)

Tibial Range	N Revised	N Total	Obs. Years	Revisions/100 Obs. Yrs (95% CI)
150660002 - 150660010	34	633	1253	2.71 (1.88, 3.79)
TOTAL	34	633	1253	2.71 (1.88, 3.79)

Table 2: Implant Usage of Attune in 1st Revision of Primary Total Knee Replacement (Excluding 1st Revision for Infection)

	N
Implant Usage	
Date First Used	22 May 2018
Date Last Used	31 October 2022
N Procedures	633
N Patients	625
N Hospitals Implanting	115
N Surgeons Implanting*	157
Outcome	
N Revised	34
N Deceased**	6

*19 Attune procedures have unknown surgeon

**N Deceased' does not include patient deaths that occurred after the Attune implant was revised

Table 3: Follow Up Years of Attune in 1st Revision of Primary Total Knee Replacement (Excluding 1st Revision for Infection)

Model	N	Minimum	Maximum	Median	Mean	Std Dev
Attune	633	0.01	4.54	1.96	1.98	1.12
TOTAL	633	0.01	4.54	1.96	1.98	1.12

Table 4: Age and Gender of Attune 1st Revision of Primary Total Knee Replacement (Excluding 1st Revision for Infection)

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Male	254	40.1%	47	93	70	69.4	8.7
Female	379	59.9%	45	91	70	69.5	9.1
TOTAL	633	100.0%	45	93	70	69.4	8.9

Table 5: 1st Revision of Primary Total Knee Replacement by Model and Age (Excluding 1st Revision for Infection)

Age	Attune		Other Revision Knee	
	N	Col%	N	Col%
<55	43	6.8	737	7.0
55-64	127	20.1	2756	26.2
65-74	264	41.7	4115	39.1
≥75	199	31.4	2909	27.7
TOTAL	633	100.0	10517	100.0

Table 6: 1st Revision of Primary Total Knee Replacement by Model and Gender (Excluding 1st Revision for Infection)

Gender	Attune		Other Revision Knee	
	N	Col%	N	Col%
Male	254	40.1	4217	40.1
Female	379	59.9	6300	59.9
TOTAL	633	100.0	10517	100.0

Table 7: 1st Revision of Primary Total Knee Replacement by Model and ASA Grade (Excluding 1st Revision for Infection)

ASA Grade	Attune		Other Revision Knee	
	N	Col%	N	Col%
1	24	3.8	213	3.2
2	270	42.7	2825	43.0
3	325	51.3	3299	50.2
4	14	2.2	237	3.6
TOTAL	633	100.0	6574	100.0

Table 8: 1st Revision of Primary Total Knee Replacement by Model and BMI (Excluding 1st Revision for Infection)

BMI	Attune		Other Revision Knee	
	N	Col%	N	Col%
Underweight (<18.50)	.	.	23	0.5
Normal (18.50-24.99)	72	11.7	517	10.1
Pre Obese (25.00-29.99)	177	28.7	1396	27.4
Obese Class 1 (30.00-34.99)	188	30.5	1550	30.4
Obese Class 2 (35.00-39.99)	112	18.2	950	18.6
Obese Class 3 (≥40.00)	67	10.9	658	12.9
TOTAL	616	100.0	5094	100.0

Note: The AOANJRR commenced collection of BMI data in 2015. 17 Attune procedures with no BMI recorded are excluded from this table

Table 9: 1st Revision of Primary Total Knee Replacement by Model and 1st Revision Diagnosis (Excluding 1st Revision for Infection)

1st Revision Diagnosis	Attune		Other Revision Knee	
	N	Col%	N	Col%
Loosening	345	54.5	5609	53.3
Instability	91	14.4	1114	10.6
Fracture	27	4.3	899	8.5
Malalignment	47	7.4	538	5.1
Pain	35	5.5	523	5.0
Lysis	29	4.6	464	4.4
Arthrofibrosis	33	5.2	448	4.3
Metal Related Pathology	6	0.9	347	3.3
Incorrect Sizing	3	0.5	98	0.9
Prosthesis Dislocation	1	0.2	84	0.8
Implant Breakage Tibial	.	.	80	0.8
Wear Tibial Insert	2	0.3	72	0.7
Implant Breakage Femoral	3	0.5	30	0.3
Osteonecrosis	3	0.5	28	0.3
Tumour	.	.	26	0.2
Synovitis	.	.	23	0.2
Wear Tibial	.	.	16	0.2
Implant Breakage Tibial Insert	4	0.6	11	0.1
Patella Erosion	.	.	10	0.1
Patella Maltracking	.	.	10	0.1
Bearing Dislocation	.	.	9	0.1
Patellofemoral Pain	.	.	8	0.1
Progression Of Disease	1	0.2	6	0.1
Implant Breakage Patella	.	.	3	0.0
Wear Femoral	.	.	3	0.0
Heterotopic Bone	.	.	2	0.0
Patella Dislocation	.	.	2	0.0
Incorrect Side	.	.	1	0.0
Other	3	0.5	53	0.5
TOTAL	633	100.0	10517	100.0

Table 10: 1st Revision of Primary Total Knee Replacement by Model and Type of 1st Revision (Excluding 1st Revision for Infection)

Type of 1st Revision	Attune		Other Revision Knee	
	N	Col%	N	Col%
TKR (Tibial/Femoral)	581	91.8	7945	75.5
Tibial Component	52	8.2	2572	24.5
TOTAL	633	100.0	10517	100.0

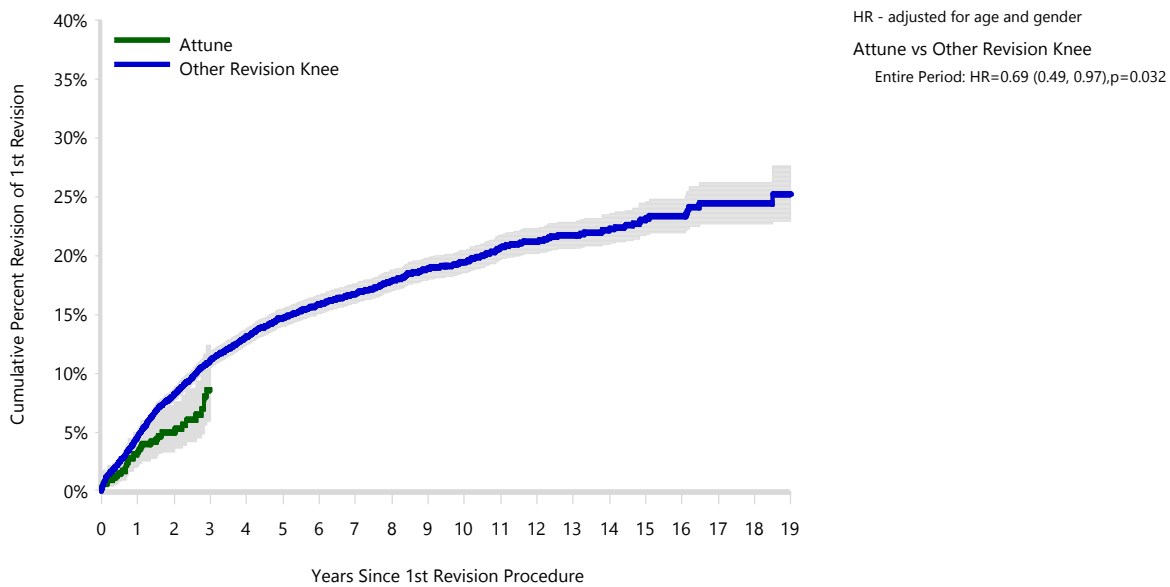
Table 11: Revision Rates of 1st Revision of Primary Total Knee Replacement by Model (Excluding 1st Revision for Infection)

Model	N Revised	N Total	Obs. Years	Revisions/100 Obs. Yrs (95% CI)
Attune	34	633	1253	2.71 (1.88, 3.79)
Other Revision Knee	1618	10517	64866	2.49 (2.37, 2.62)
TOTAL	1652	11150	66119	2.50 (2.38, 2.62)

Table 12: Yearly Cumulative Percent Revision of 1st Revision of Primary Total Knee Replacement by Model (Excluding 1st Revision for Infection)

CPR	1 Yr	2 Yrs	3 Yrs	4 Yrs	5 Yrs	6 Yrs	
Attune	3.3 (2.1, 5.2)	4.9 (3.4, 7.2)	8.6 (6.0, 12.3)				
Other Revision Knee	4.6 (4.2, 5.0)	8.1 (7.6, 8.7)	11.1 (10.5, 11.7)	13.1 (12.4, 13.8)	14.7 (14.0, 15.4)	15.8 (15.1, 16.6)	
CPR	7 Yrs	8 Yrs	9 Yrs	10 Yrs	11 Yrs	12 Yrs	
Attune							
Other Revision Knee	16.8 (16.0, 17.6)	17.8 (17.0, 18.7)	18.8 (18.0, 19.8)	19.5 (18.6, 20.4)	20.7 (19.7, 21.7)	21.2 (20.1, 22.3)	
CPR	13 Yrs	14 Yrs	15 Yrs	16 Yrs	17 Yrs	18 Yrs	19 Yrs
Attune							
Other Revision Knee	21.7 (20.6, 22.8)	22.2 (21.0, 23.4)	23.2 (21.8, 24.6)	23.3 (21.9, 24.8)	24.4 (22.7, 26.2)	24.4 (22.7, 26.2)	25.2 (23.0, 27.6)

Figure 1: Cumulative Percent Revision of 1st Revision of Primary Total Knee Replacement by Model (Excluding 1st Revision for Infection)



Number at Risk	0 Yr	1 Yr	2 Yrs	3 Yrs	4 Yrs	5 Yrs	6 Yrs	7 Yrs	8 Yrs	9 Yrs	10 Yrs
Attune	633	489	304	151	21	0	0	0	0	0	0
Other Revision Knee	10517	9439	8344	7389	6457	5552	4758	4021	3337	2704	2161
Number at Risk	11 Yrs	12 Yrs	13 Yrs	14 Yrs	15 Yrs	16 Yrs	17 Yrs	18 Yrs	19 Yrs	20 Yrs	21 Yrs
Attune	0	0	0	0	0	0	0	0	0	0	0
Other Revision Knee	1681	1231	897	668	475	319	192	132	68	23	5

Table 13: Revision Rates of Attune 1st Revision of Primary Total Knee Replacement by 1st Revision Diagnosis (Excluding 1st Revision for Infection)

1st Revision Diagnosis	N Revised	N Total	Obs. Years	Revisions/100 Obs. Yrs (95% CI)
Arthrofibrosis	4	33	77	5.19 (1.41, 13.28)
Fracture	0	27	28	0.00 (0.00, 12.99)
Instability	4	91	189	2.11 (0.58, 5.41)
Loosening	20	345	668	2.99 (1.83, 4.62)
Lysis	1	29	63	1.59 (0.04, 8.87)
Malalignment	2	47	102	1.97 (0.24, 7.11)
Metal Related Pathology	1	6	11	8.82 (0.22, 49.16)
Pain	1	35	82	1.22 (0.03, 6.80)
Other (8)	1	20	32	3.09 (0.08, 17.19)
TOTAL	34	633	1253	2.71 (1.88, 3.79)

Table 14: Yearly Cumulative Percent Revision of Attune 1st Revision of Primary Total Knee Replacement by 1st Revision Diagnosis (Excluding 1st Revision for Infection)

CPR	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Arthrofibrosis	9.3 (3.1, 26.1)	9.3 (3.1, 26.1)	15.0 (5.6, 36.7)			
Instability	1.3 (0.2, 9.0)	2.6 (0.7, 10.2)	7.8 (2.8, 20.5)			
Loosening	4.2 (2.5, 7.1)	6.0 (3.7, 9.5)	8.5 (5.3, 13.5)			
Lysis	0.0 (0.0, 0.0)	4.0 (0.6, 25.2)	4.0 (0.6, 25.2)			
Malalignment	0.0 (0.0, 0.0)	3.1 (0.4, 20.2)	11.2 (2.5, 42.2)			
Metal Related Pathology	16.7 (2.5, 72.7)	16.7 (2.5, 72.7)				
Pain	0.0 (0.0, 0.0)	0.0 (0.0, 0.0)	5.0 (0.7, 30.5)			

Table 15: 2nd Revision Diagnosis of 1st Revision of Primary Total Knee Replacement by Model (Excluding 1st Revision for Infection) (Follow-up Limited to 4.5 Years)

2nd Revision Diagnosis	Number	Attune		Number	Other Revision Knee	
		% 1st Revisions Revised	% 2nd Revisions		% 1st Revisions Revised	% 2nd Revisions
Loosening	5	0.8	14.7	412	3.9	32.0
Infection	16	2.5	47.1	401	3.8	31.1
Instability	4	0.6	11.8	124	1.2	9.6
Pain				80	0.8	6.2
Arthrofibrosis	1	0.2	2.9	44	0.4	3.4
Malalignment				36	0.3	2.8
Fracture	5	0.8	14.7	30	0.3	2.3
Patellofemoral Pain				28	0.3	2.2
Bearing Dislocation				17	0.2	1.3
Patella Erosion	2	0.3	5.9	16	0.2	1.2
Patella Maltracking	1	0.2	2.9	15	0.1	1.2
Incorrect Sizing				10	0.1	0.8
Metal Related Pathology				10	0.1	0.8
Implant Breakage Femoral				9	0.1	0.7
Lysis				9	0.1	0.7
Prosthesis Dislocation				8	0.1	0.6
Implant Breakage Tibial				7	0.1	0.5
Wear Tibial Insert				5	0.0	0.4
Wear Patella				4	0.0	0.3
Heterotopic Bone				3	0.0	0.2
Implant Breakage Tibial Insert				3	0.0	0.2
Synovitis				3	0.0	0.2
Implant Breakage Patella				2	0.0	0.2
Implant Breakage Stem				1	0.0	0.1
Other				12	0.1	0.9
N 2nd Revision	34	5.4	100.0	1289	12.3	100.0
N 1st Revision	633			10517		

Note: This table is restricted to revisions within 4.5 years for all groups to allow a time-matched comparison of revisions.

Table 16: Yearly Cumulative Incidence 2nd Revision Diagnosis of 1st Revision of Primary Total Knee Replacement by Model (Excluding 1st Revision for Infection)

Model	Event	N Events	1 Yr	2 Yrs	3 Yrs	5 Yrs	10 Yrs	15 Yrs
Attune	Loosening	5	0.0 (0.0, 0.0)	0.2 (0.0, 1.1)	1.9 (0.7, 4.2)			
	Infection	16	1.8 (0.9, 3.1)	2.8 (1.6, 4.5)	3.8 (2.1, 6.2)			
	Instability	4	0.5 (0.2, 1.5)	0.7 (0.3, 1.8)	0.7 (0.3, 1.8)			
	Pain	0	0.0 (0.0, 0.0)	0.0 (0.0, 0.0)	0.0 (0.0, 0.0)			
	Arthrofibrosis	1	0.2 (0.0, 1.0)	0.2 (0.0, 1.0)	0.2 (0.0, 1.0)			
	Other	8	0.8 (0.3, 1.8)	1.0 (0.4, 2.1)	1.9 (0.8, 3.9)			
	Deceased	6	0.5 (0.1, 1.4)	1.3 (0.5, 2.7)	1.3 (0.5, 2.7)			
	All Revision	34	3.3 (2.1, 5.0)	4.9 (3.3, 7.0)	8.5 (5.8, 11.9)			
	Other Revision Knee	Loosening	553	1.0 (0.9, 1.3)	2.3 (2.0, 2.6)	3.2 (2.9, 3.6)	4.7 (4.3, 5.2)	6.6 (6.0, 7.2)
Infection		471	2.0 (1.7, 2.3)	2.9 (2.6, 3.3)	3.6 (3.2, 4.0)	4.3 (3.9, 4.8)	5.2 (4.7, 5.7)	5.6 (5.0, 6.1)
Instability		144	0.4 (0.3, 0.6)	0.8 (0.6, 1.0)	1.1 (0.9, 1.3)	1.4 (1.1, 1.6)	1.6 (1.3, 1.9)	1.7 (1.4, 2.0)
Pain		91	0.1 (0.1, 0.2)	0.4 (0.3, 0.6)	0.7 (0.6, 0.9)	0.9 (0.7, 1.1)	1.0 (0.8, 1.3)	1.1 (0.9, 1.3)
Arthrofibrosis		56	0.1 (0.1, 0.2)	0.2 (0.2, 0.3)	0.4 (0.3, 0.5)	0.5 (0.4, 0.6)	0.7 (0.5, 0.9)	0.7 (0.5, 0.9)
Other		303	0.9 (0.7, 1.1)	1.4 (1.2, 1.7)	2.0 (1.7, 2.2)	2.5 (2.2, 2.8)	3.3 (3.0, 3.8)	4.3 (3.7, 4.9)
Deceased		1538	1.3 (1.1, 1.5)	2.5 (2.3, 2.9)	3.8 (3.4, 4.2)	7.1 (6.5, 7.6)	19.1 (18.1, 20.1)	31.5 (29.8, 33.2)
All Revision		1618	4.5 (4.2, 5.0)	8.0 (7.5, 8.6)	10.9 (10.3, 11.5)	14.3 (13.6, 15.0)	18.4 (17.5, 19.3)	21.0 (19.9, 22.1)

Figure 2: Cumulative Incidence 2nd Revision Diagnosis of 1st Revision of Primary Total Knee Replacement by Model (Excluding 1st Revision for Infection)

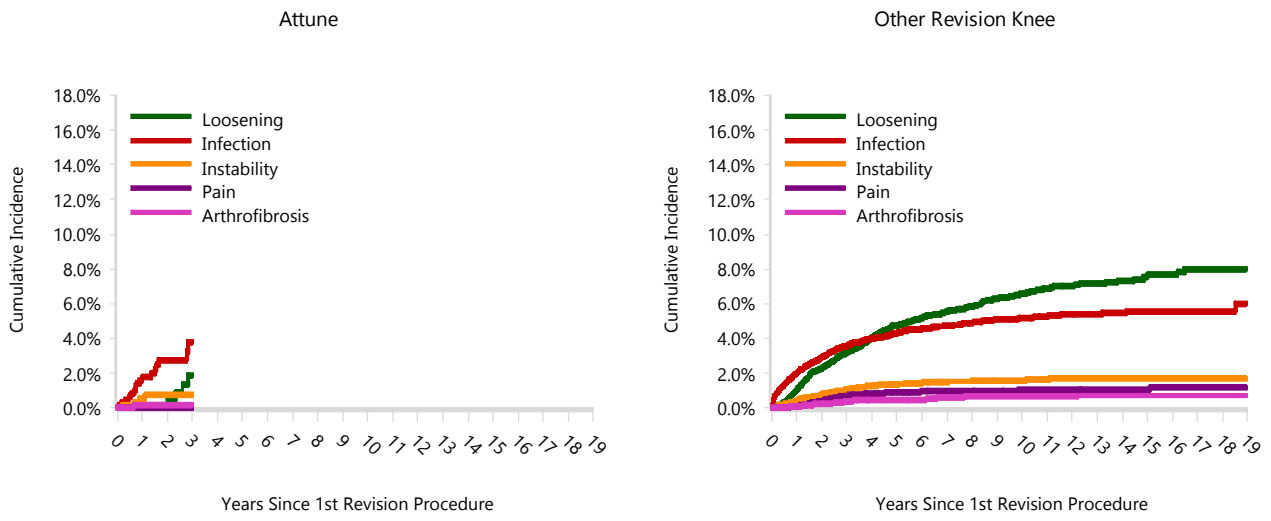


Table 17: Type of 2nd Revision of 1st Revision of Primary Total Knee Replacement by Model (Excluding 1st Revision for Infection) (Follow-up Limited to 4.5 Years)

Type of 2nd Revision	Number	Attune		Number	Other Revision Knee	
		% 1st Revisions Revised	% 2nd Revisions		% 1st Revisions Revised	% 2nd Revisions
TKR (Tibial/Femoral)	7	1.1	20.6	409	3.9	31.7
Insert Only	12	1.9	35.3	332	3.2	25.8
Femoral Component	2	0.3	5.9	143	1.4	11.1
Patella Only	7	1.1	20.6	118	1.1	9.2
Tibial Component	2	0.3	5.9	114	1.1	8.8
Cement Spacer	3	0.5	8.8	106	1.0	8.2
Insert/Patella				37	0.4	2.9
Minor Components				15	0.1	1.2
Removal of Prostheses				9	0.1	0.7
Cement Only				3	0.0	0.2
Total Femoral				3	0.0	0.2
Reinsertion of Components	1	0.2	2.9			
N 2nd Revision	34	5.4	100.0	1289	12.3	100.0
N 1st Revision	633			10517		

Note: This table is restricted to revisions within 4.5 years for all groups to allow a time-matched comparison of revisions.

Table 18: Number of Revisions of Attune 1st Revision of Primary Total Knee Replacement by Year of Implant (Excluding 1st Revision for Infection)

Year of Implant	Number Revised	Total Number
2018	3	29
2019	10	148
2020	13	166
2021	6	172
2022	2	118
TOTAL	34	633

Table 19: Revision Rates of Attune 1st Revision of Primary Total Knee Replacement by Femoral Component (Excluding 1st Revision for Infection)

Femoral	N Revised	N Total	Obs. Years	Revisions/100 Obs. Yrs (95% CI)
Attune	0	3	6	0.00 (0.00, 57.78)
Attune CR	1	2	2	58.25 (1.47, 324.6)
Attune CRS	29	549	1116	2.60 (1.74, 3.73)
Attune PS	0	3	6	0.00 (0.00, 61.95)
LPS	0	9	5	0.00 (0.00, 71.44)
No Femoral Inserted	4	52	109	3.67 (1.00, 9.41)
S-Rom	0	15	9	0.00 (0.00, 40.67)
TOTAL	34	633	1253	2.71 (1.88, 3.79)

Table 20: Revision Rates of Attune 1st Revision of Primary Total Knee Replacement by Patella Usage in Primary and 1st Revision Procedure (Excluding 1st Revision for Infection)

Primary Patella	Revision Patella	N Revised	N Total	Obs. Years	Revisions/100 Obs. Yrs (95% CI)
Patella Used	Patella Used	9	123	247	3.64 (1.67, 6.92)
	No Patella	13	289	554	2.35 (1.25, 4.01)
No Patella	Patella Used	8	185	389	2.06 (0.89, 4.05)
	No Patella	4	36	63	6.37 (1.73, 16.30)
TOTAL		34	633	1253	2.71 (1.88, 3.79)

Table 21: Revision Rates of Attune 1st Revision of Primary Total Knee Replacement by Tibial Catalogue Number (Excluding 1st Revision for Infection)

Tibial Catalogue Number	N Revised	N Total	Obs. Years	Revisions/100 Obs. Yrs (95% CI)
150660002	0	10	15	0.00 (0.00, 23.84)
150660003	6	116	213	2.82 (1.04, 6.14)
150660004	8	149	303	2.64 (1.14, 5.20)
150660005	4	132	265	1.51 (0.41, 3.86)
150660006	7	107	205	3.42 (1.38, 7.05)
150660007	7	76	164	4.27 (1.72, 8.81)
150660008	2	38	80	2.49 (0.30, 9.01)
150660009	0	5	8	0.00 (0.00, 44.57)
TOTAL	34	633	1253	2.71 (1.88, 3.79)