Australian Orthopaedic Association National Joint Replacement Registry

2024 SUPPLEMENTARY REPORT

Demographics of Hip, Knee and Shoulder Arthroplasty

AOA
AUSTRALIAN ORTHOPAEDIC ASSOCIATION

Australian Orthopaedic Association National Joint Replacement Registry

https://doi.org/10.25310/JHLW9265

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Demographics of Hip, Knee and Shoulder Arthroplasty
2024 Supplementary Report

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The AOANJRR is funded by the Australian Government Department of Health and Aged Care

Cite this report

Lewis PL, Gill DR, McAuliffe MJ, McDougall C, Stoney JD, Vertullo CJ, Wall CJ, Corfield S, Du P, Holder C, Harries D, Edwards S, Xu A, Lorimer MF, Cashman K, Smith PN. Demographics of Hip, Knee and Shoulder Arthroplasty Supplementary Report in *Hip, Knee & Shoulder Arthroplasty: 2024 Annual Report*, Australian Orthopaedic Association National Joint Replacement Registry, AOA, Adelaide; 2024. https://doi.org/10.25310/JHLW9265

Australian Orthopaedic Association
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Demographics of Hip, Knee, and Shoulder Arthroplasty

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Acknowledgements

The Registry continues to receive support and invaluable assistance from the Australian Government, state and territory health departments and orthopaedic companies.

The Registry acknowledges the cooperation and support provided by those undertaking the surgery and completing the data forms, in particular, all orthopaedic surgeons, registrars and nursing staff.

The Registry acknowledges the ongoing support of all hospitals, both public and private, that undertake arthroplasty surgery nationally. The support provided by each hospital through their nominated coordinator(s) is appreciated. A complete list of participating hospitals and coordinators is presented at the end of the Hip, Knee and Shoulder Arthroplasty Annual Report.

The Registry greatly appreciates the participation of all joint replacement patients throughout Australia. Their contribution allows ongoing improvements in arthroplasty outcomes to be achieved.

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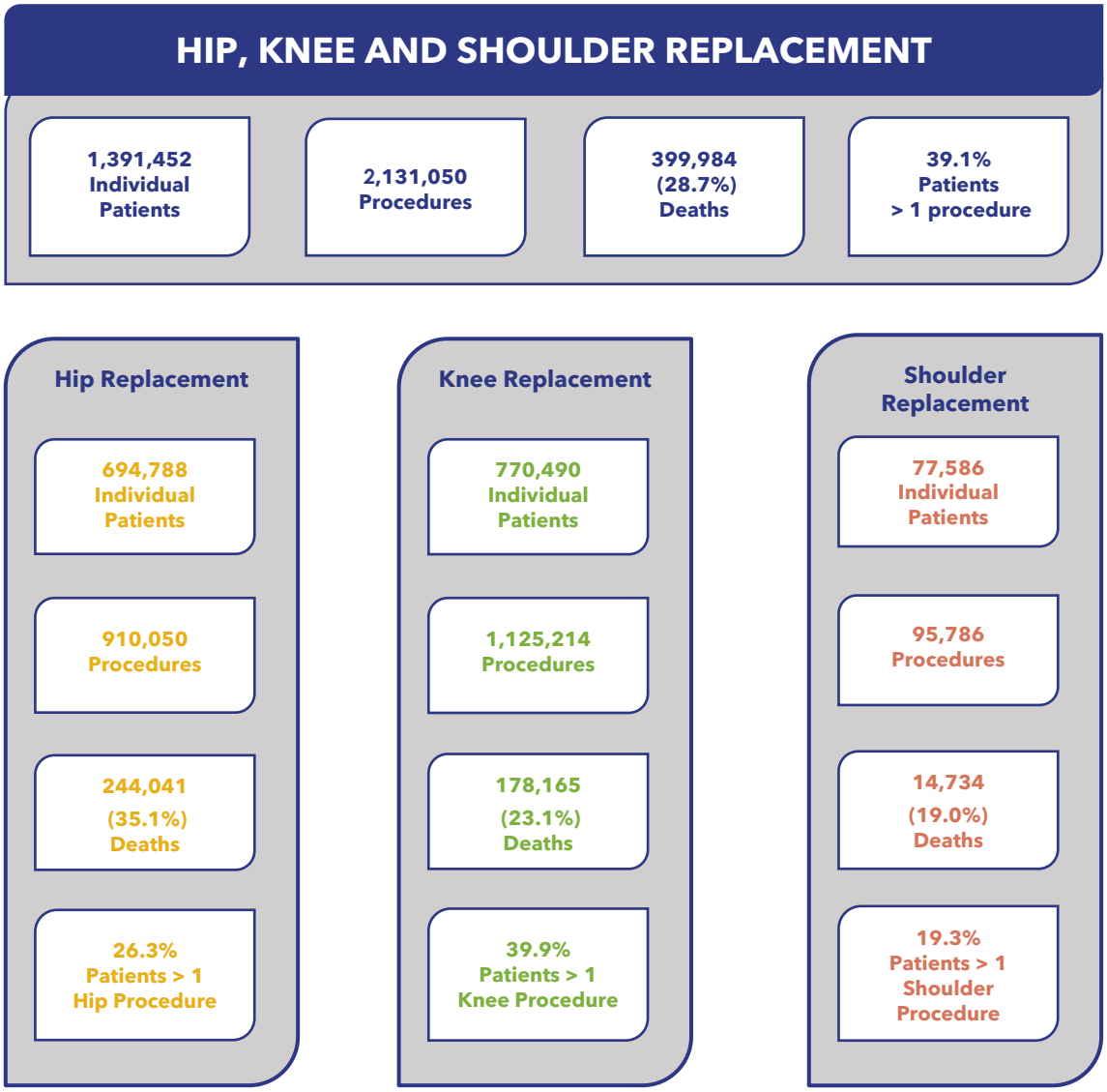
Introduction

Data presented in this report have been submitted to the Registry by both public and private hospitals. Currently, 366 hospitals contribute nationally but this number varies from time to time due to hospital closures, new hospitals or changes to services within hospitals.

The Registry was implemented in a staged manner on a state-by-state basis. Implementation was completed nationally by mid-2002; therefore 2003 was the first year of complete national data.

All hip, knee and shoulder replacement procedures recorded by the Registry from the commencement date to 31 December 2023 have been included in this report.

Number of Patients and Procedures Recorded by the Registry Between 1/9/1999 and 31/12/2023



Hip Replacement

CATEGORIES OF HIP REPLACEMENT

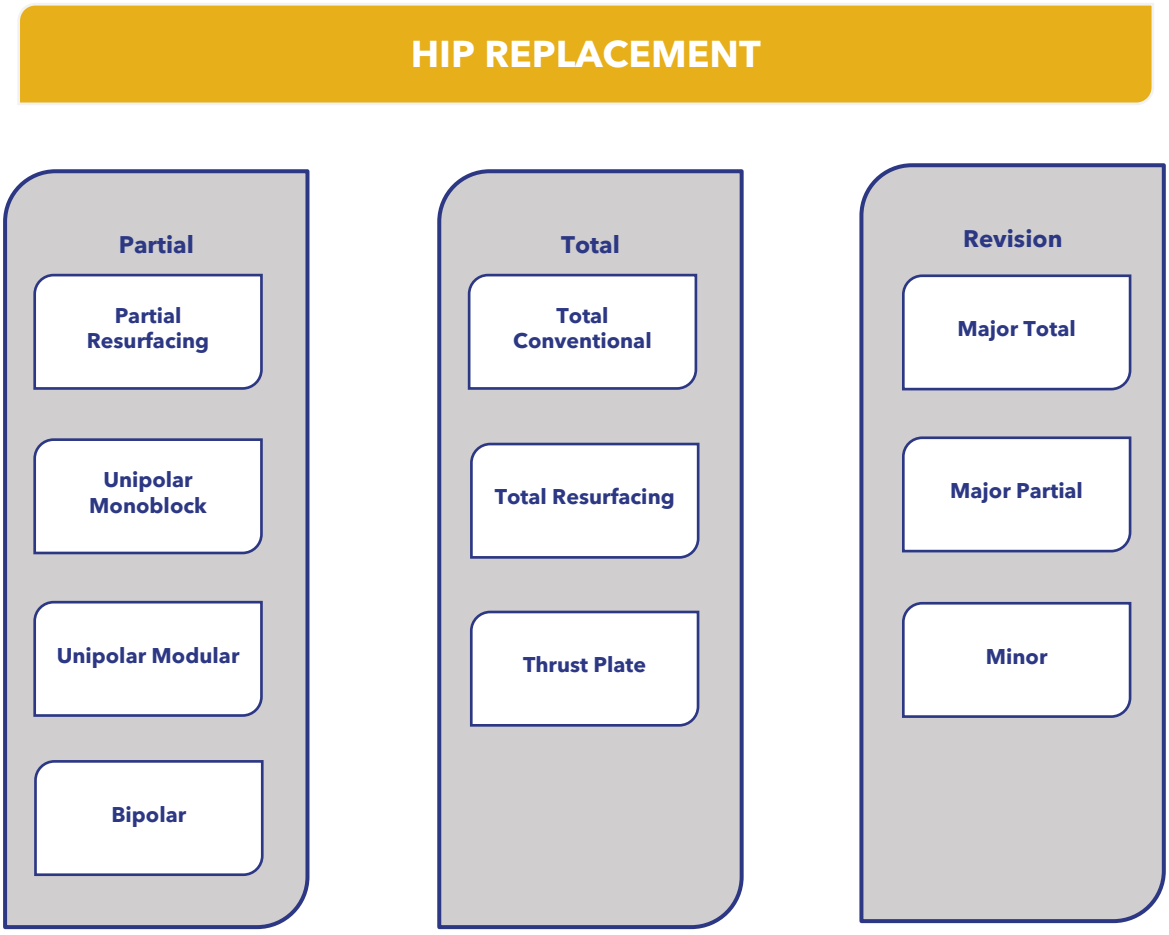
The Registry groups hip replacement into three broad categories, primary partial, primary total and revision hip replacement.

A primary replacement is the initial replacement procedure undertaken on a joint and involves replacing either part (partial) or all (total) of the articular surface.

Primary partial and primary total hip replacement are further subcategorised into classes depending on the type of prostheses used. Partial hip classes are partial resurfacing, unipolar monoblock, unipolar modular and bipolar. Total hip classes are resurfacing, conventional and thrust plate.

Revision hips are re-operations of previous hip replacements where one or more of the prosthetic components are replaced, removed, or another component is added. Revisions include re-operations of primary partial, primary total or previous revision procedures.

Hip revisions are subcategorised into three classes: major total, major partial or minor revisions. These are defined in the chapter on revision outcomes.

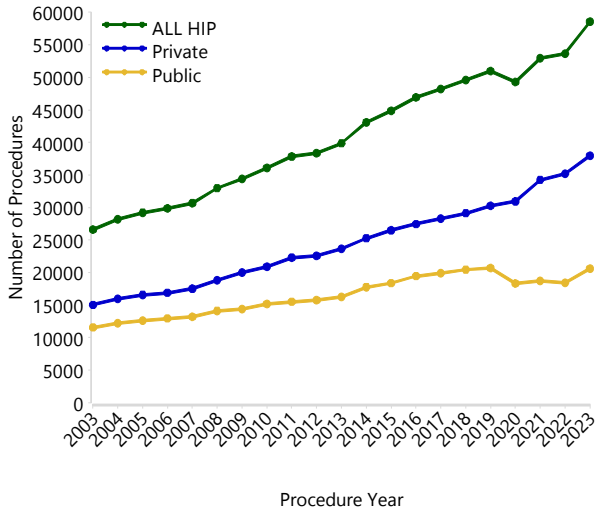


PUBLIC AND PRIVATE SECTOR

Over 60% of all hip replacement procedures reported to the Registry are undertaken in private hospitals (64.8% in 2023).
There were 37,940 private sector hip replacements reported in 2023, an increase of 7.8% compared to 2022. In the public sector, there were 20,589 hip replacements. Since 2003, hip replacement in the private sector has increased by 152.4% compared to 78.0% in the public sector.

Primary partial hip replacement has increased in the public sector since 2022 (0.5%) and decreased in the private sector (-7.9%). In 2023, there were 5,783 primary partial hip replacements reported in the public sector and 805 in the private sector. Since 2003, primary partial hip replacement has increased in the public sector by 61.0 % compared to a decrease of 13.4% in the private sector.

Figure SD1 Hip Replacement by Hospital Sector



In 2023, 35,024 private sector primary total hip replacements were reported; an increase of 8.5% compared to 2022. In the public sector, there were 12,761 primary total hip replacements; an increase of 18.5% compared to 2022. Since 2003, primary total hip replacement has increased in the private sector by 191.0% compared to an increase of 93.2% in the public sector.

There were 2,111 revision hip replacements reported in the private sector in 2023, which is 4.0% more than the number recorded in 2022. In the public sector, there were 2,045 revision hip replacements, an increase of 6.7% compared to 2022. Since 2003, revision hip replacement in the private sector has increased by 2.0% and has increased by 48.8% in the public sector.

Table SD1 All Hip Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Male	400009	44.0%	5	108	69	67.8	12.6
Female	510041	56.0%	9	108	73	71.6	12.3
TOTAL	**910050**	**100.0%**	**5**	**108**	**71**	**69.9**	**12.6**

Table SD2 Number of Hip Replacements by Gender

Hip Replacement	Female		Male		TOTAL	
	N	%	N	%	N	%
Partial Resurfacing	3	20.0	12	80.0	15	0.0
Unipolar Monoblock	21304	72.6	8029	27.4	29333	23.1
Unipolar Modular	40134	69.6	17563	30.4	57697	45.4
Bipolar	27382	68.2	12791	31.8	40173	31.6
All Primary Partial	**88823**	**69.8**	**38395**	**30.2**	**127218**	**100.0**
Total Resurfacing	3714	18.4	16520	81.6	20234	2.9
Total Conventional	368720	55.0	302164	45.0	670884	97.0
Thrust Plate	74	28.7	184	71.3	258	0.0
All Primary Total	**372508**	**53.9**	**318868**	**46.1**	**691376**	**100.0**
Major Total	12093	49.6	12264	50.4	24357	26.6
Major Partial	26895	54.6	22366	45.4	49261	53.9
Minor	9721	54.5	8116	45.5	17837	19.5
All Revisions	**48710**	**53.3**	**42746**	**46.7**	**91456**	**100.0**
ALL HIPS	**510041**	**56.0**	**400009**	**44.0**	**910050**	**100.0**

Figure SD2 Percentage of Females by Type of Hip Replacement and Procedure Year

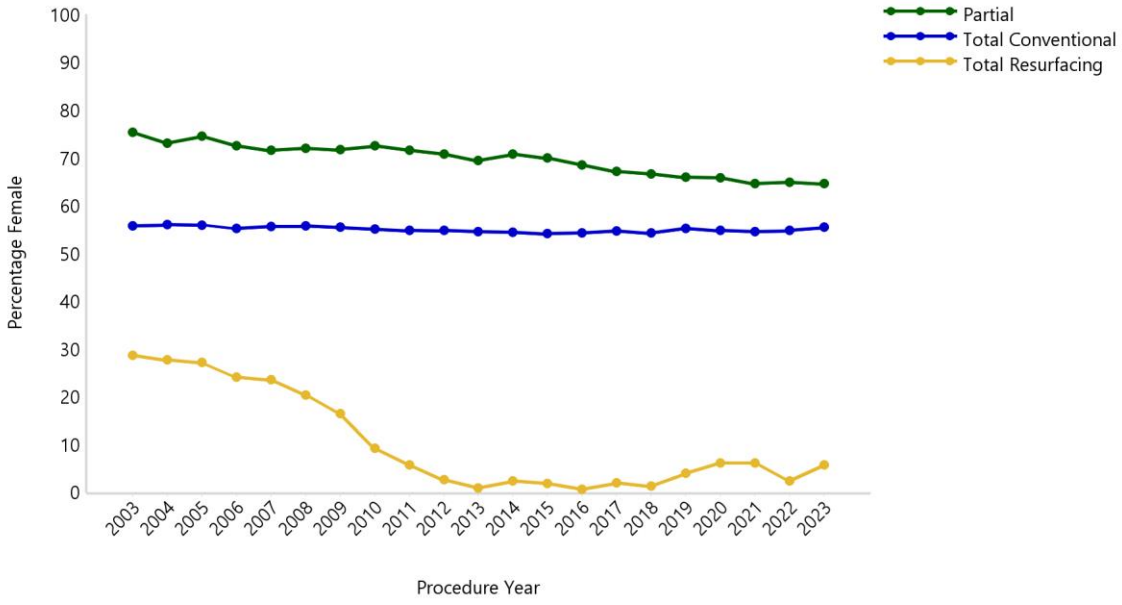


Figure SD3 Percentage of Females by Partial Hip Replacement and Procedure Year (Excluding Partial Resurfacing)

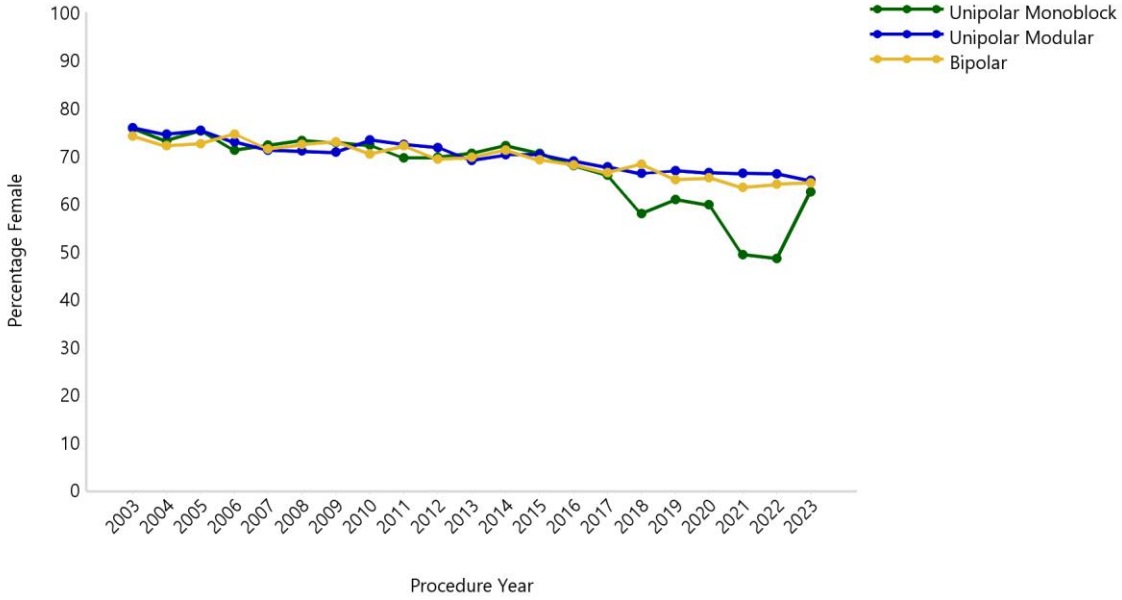


Figure SD4 Percentage of Females by Total Hip Replacement and Procedure Year (Excluding Thrust Plate)

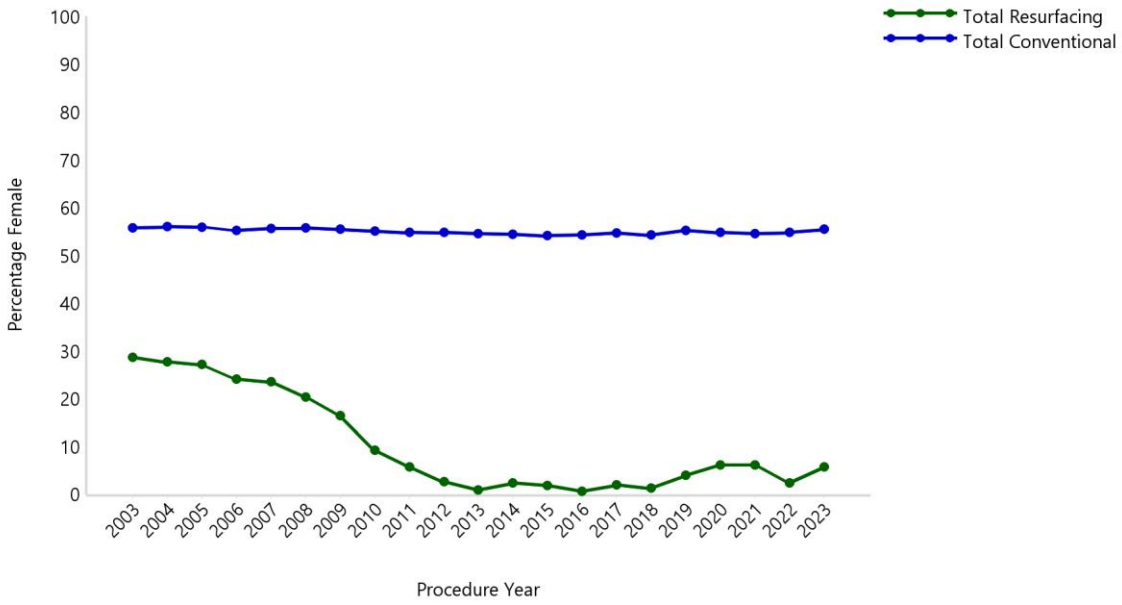


Figure SD5 Percentage of Females by Revision Hip Replacement and Procedure Year

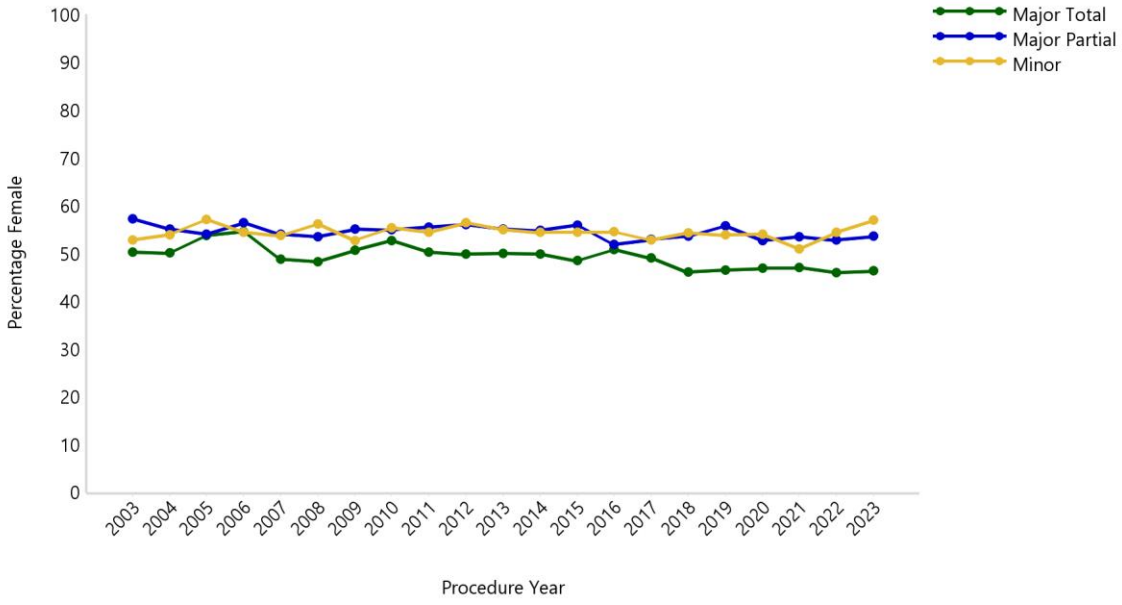


Figure SD6 Percentage of Patients Aged <65 Years by Type of Hip Replacement and Procedure Year

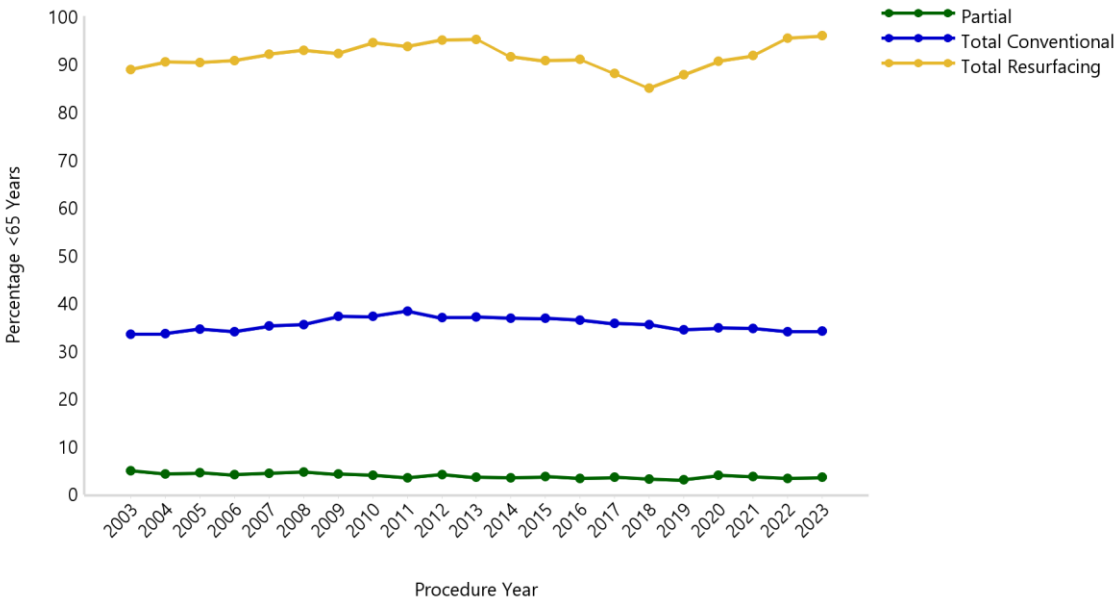


Figure SD7 Percentage of Patients Aged <65 Years by Partial Hip Replacement and Procedure Year (Excluding Partial Resurfacing)

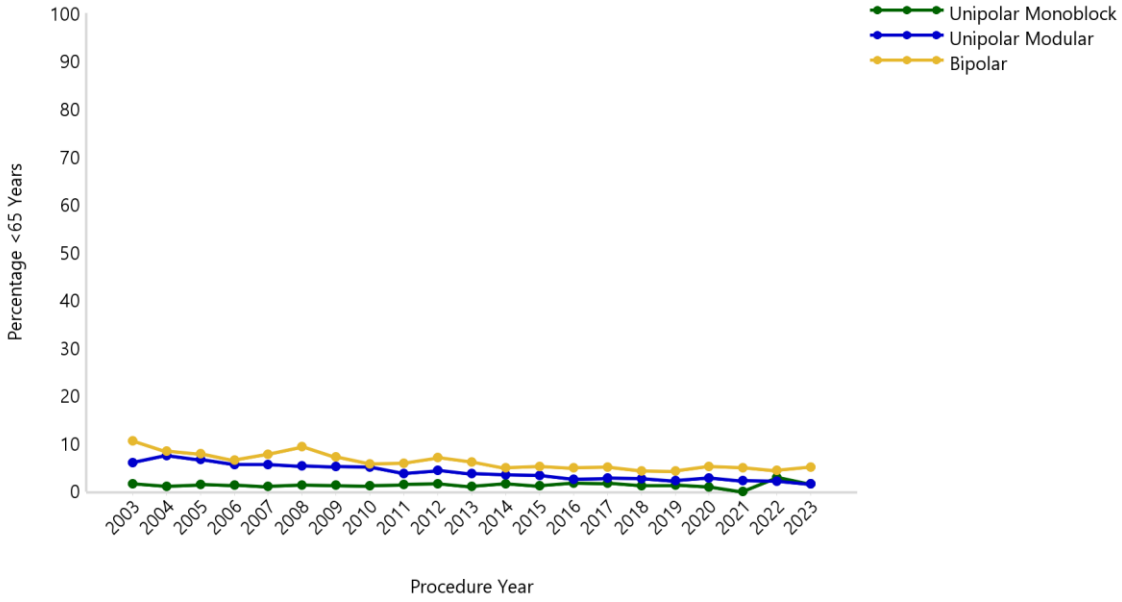


Figure SD8 Percentage of Patients Aged <65 Years by Total Hip Replacement and Procedure Year (Excluding Thrust Plate)

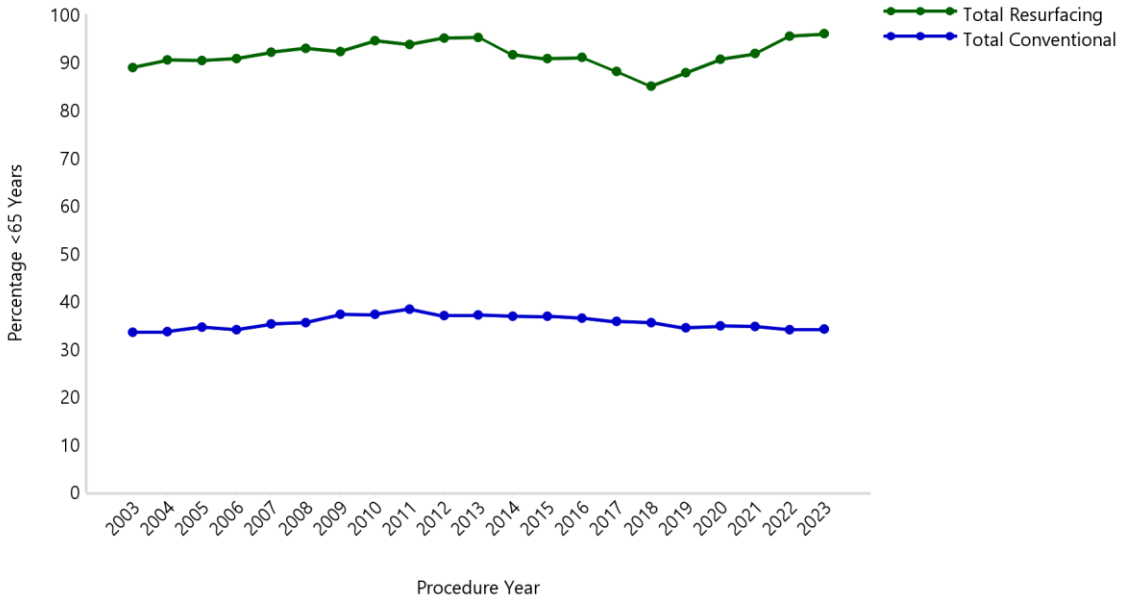


Figure SD9 Percentage of Patients Aged <65 Years by Revision Hip Replacement and Procedure Year

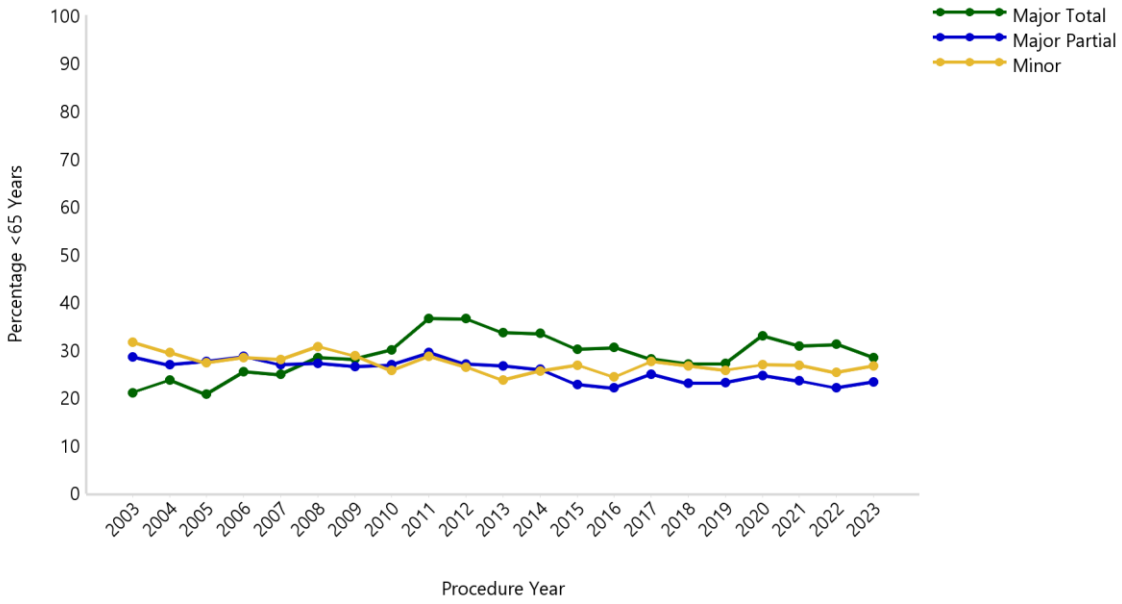


Figure SD10 Trends in Usage of Hip Replacement by Procedure Year

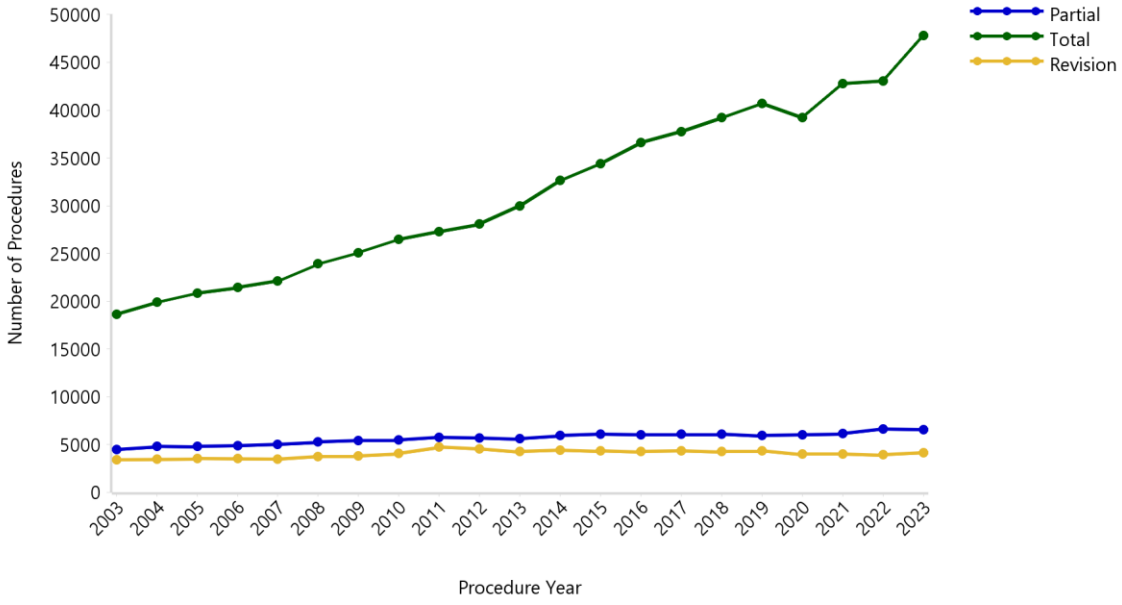


Figure SD11 Trends in Usage of Partial Hip Replacement by Procedure Year (Excluding Partial Resurfacing)

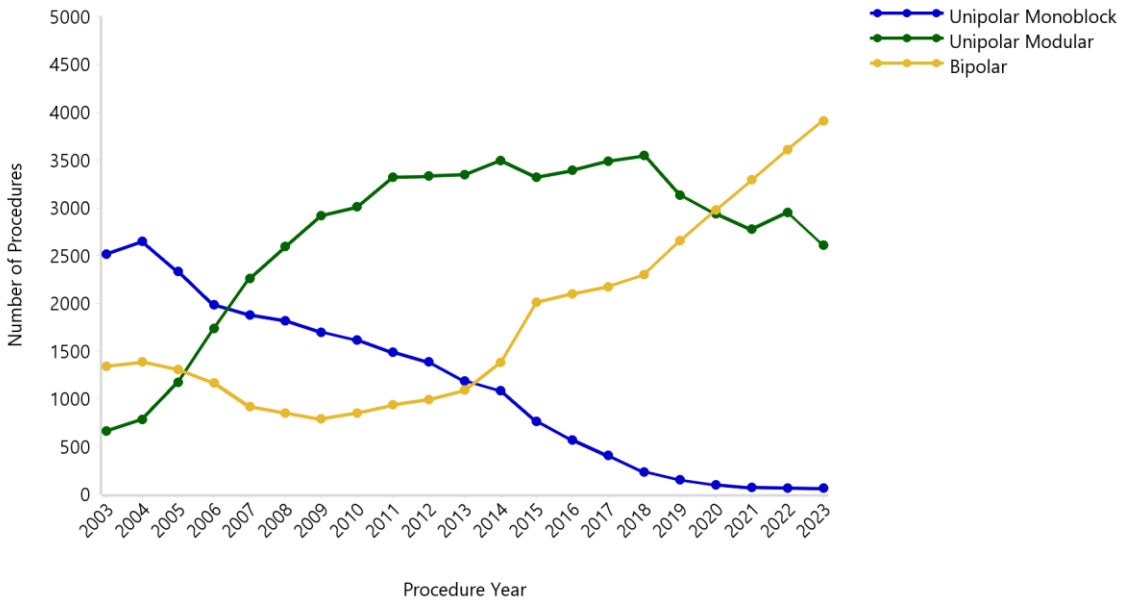


Figure SD12 Trends in Usage of Total Hip Replacement by Procedure Year (Excluding Thrust Plate)

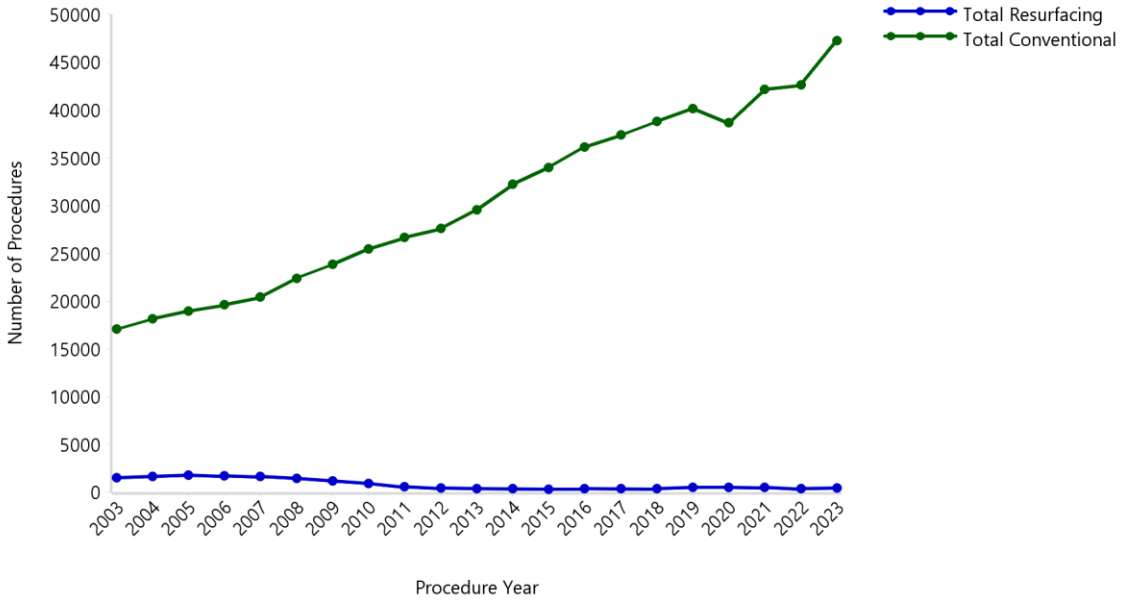
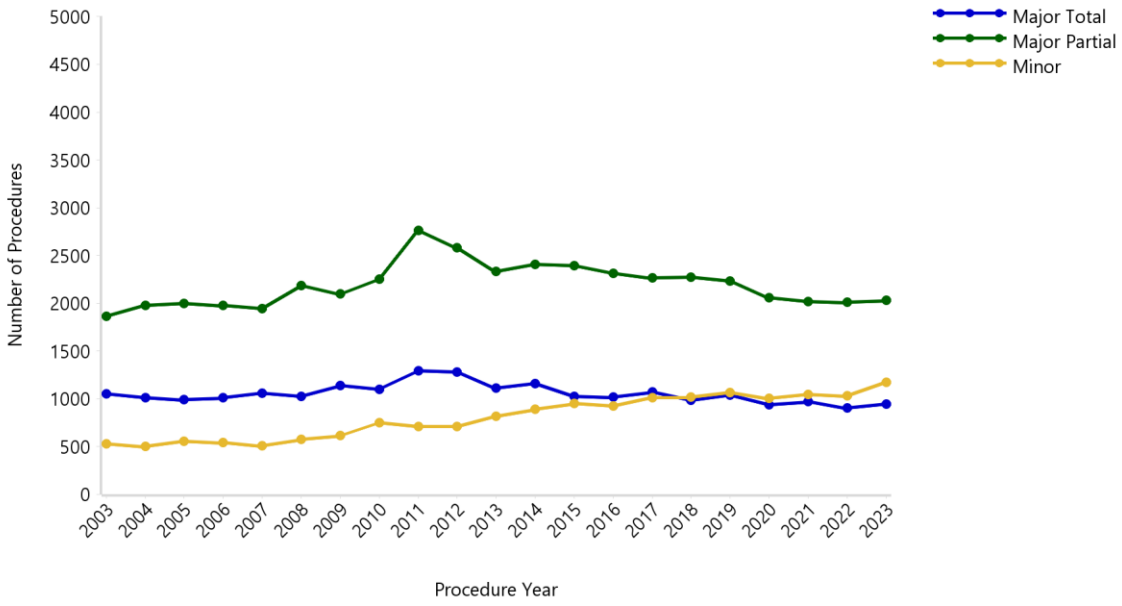


Figure SD13 Trends in Usage of Revision Hip Replacement by Procedure Year



INCIDENCE OF HIP REPLACEMENT

Table SD3 Incidence of Hip Replacement per 100,000 from 2003 to 2023

Hip Replacement	2003 N	2004 N	2005 N	2006 N	2007 N	2008 N	2009 N	2010 N	2011 N	2012 N	2013 N
Partial Resurfacing	.	0.0	0.0	0.0	0.0	0.0	0.0	.	.	.	.
Unipolar Monoblock	12.7	13.3	11.6	9.7	9.0	8.6	7.8	7.3	6.7	6.1	5.1
Unipolar Modular	3.4	3.9	5.8	8.5	10.9	12.2	13.5	13.7	14.9	14.7	14.5
Bipolar	6.8	7.0	6.5	5.7	4.4	4.0	3.6	3.9	4.2	4.4	4.7
All Primary Partial	**22.9**	**24.2**	**23.9**	**23.9**	**24.3**	**24.8**	**25.0**	**24.9**	**25.7**	**25.1**	**24.3**
Total Resurfacing	7.8	8.5	9.1	8.6	7.9	6.9	5.6	4.4	2.6	2.0	1.7
Total Conventional	86.6	91.2	94.1	96.1	98.1	105.5	110.0	115.7	119.5	121.5	127.9
Thrust Plate	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	.
All Primary Total	**94.5**	**99.8**	**103.3**	**104.8**	**106.2**	**112.5**	**115.8**	**120.1**	**122.2**	**123.5**	**129.6**
All Revisions	**17.5**	**17.5**	**17.6**	**17.3**	**16.9**	**17.8**	**17.8**	**18.6**	**21.4**	**20.1**	**18.4**
ALL HIPS	**134.9**	**141.5**	**144.8**	**145.9**	**147.3**	**155.2**	**158.5**	**163.6**	**169.3**	**168.8**	**172.4**

Hip Replacement	2014 N	2015 N	2016 N	2017 N	2018 N	2019 N	2020 N	2021 N	2022 N	2023 N	TOTAL N
Partial Resurfacing	0.0	.	.	.	.	.	.	.	.	.	0.0
Unipolar Monoblock	4.6	3.2	2.3	1.7	1.0	0.6	0.4	0.3	0.3	0.2	5.0
Unipolar Modular	14.9	13.9	14.0	14.2	14.2	12.4	11.4	10.8	11.3	9.8	11.7
Bipolar	5.9	8.4	8.7	8.8	9.2	10.5	11.6	12.8	13.9	14.7	7.8
All Primary Partial	**25.4**	**25.6**	**25.0**	**24.7**	**24.4**	**23.4**	**23.4**	**23.9**	**25.5**	**24.7**	**24.5**
Total Resurfacing	1.6	1.5	1.7	1.6	1.5	2.1	2.2	2.2	1.4	1.8	3.7
Total Conventional	137.4	142.8	149.5	152.0	155.3	158.5	150.5	164.0	164.1	177.5	132.0
Thrust Plate	.	.	.	.	.	.	.	.	.	.	0.0
All Primary Total	**139.0**	**144.4**	**151.3**	**153.6**	**156.9**	**160.6**	**152.7**	**166.2**	**165.5**	**179.2**	**135.7**
All Revisions	**19.0**	**18.4**	**17.6**	**17.7**	**17.1**	**17.1**	**15.6**	**15.7**	**15.2**	**15.6**	**17.6**
ALL HIPS	**183.4**	**188.4**	**193.9**	**195.9**	**198.3**	**201.1**	**191.7**	**205.8**	**206.2**	**219.5**	**177.8**

Figure SD14 Incidence of Hip Replacement per 100,000 from 2003 to 2023

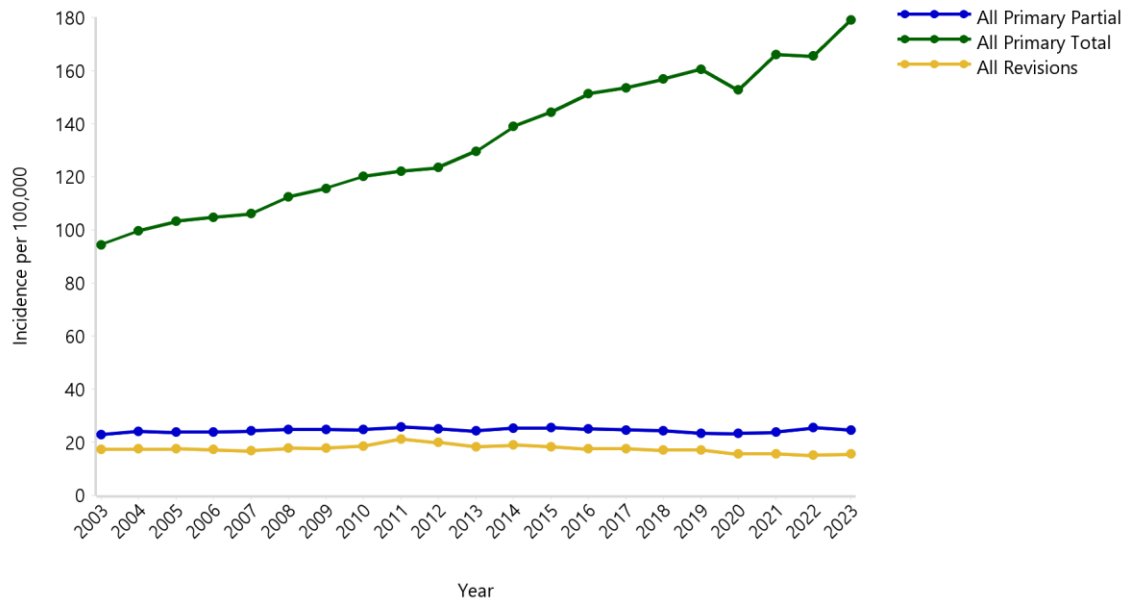


Table SD4 Incidence of Hip Replacement in Patients Aged <55 Years per 100,000 from 2003 to 2023

Hip Replacement	2003 N	2004 N	2005 N	2006 N	2007 N	2008 N	2009 N	2010 N	2011 N	2012 N	2013 N
Partial Resurfacing	.	0.0	0.0	0.0	0.0	0.0	0.0	.	.	.	.
Unipolar Monoblock	0.0	0.0	0.0	.	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unipolar Modular	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1
Bipolar	0.3	0.2	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1
All Primary Partial	**0.4**	**0.4**	**0.4**	**0.3**	**0.4**	**0.4**	**0.3**	**0.3**	**0.4**	**0.3**	**0.3**
Total Resurfacing	5.3	5.7	5.8	6.0	5.3	5.0	4.2	3.5	2.2	1.7	1.5
Total Conventional	13.1	13.0	14.4	14.9	15.3	16.4	18.2	19.9	20.6	21.3	22.9
Thrust Plate	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.
All Primary Total	**18.5**	**18.7**	**20.3**	**20.9**	**20.7**	**21.5**	**22.5**	**23.4**	**22.8**	**23.0**	**24.4**
All Revisions	**2.2**	**2.3**	**2.2**	**2.3**	**2.1**	**2.4**	**2.3**	**2.4**	**3.2**	**3.0**	**2.3**
ALL HIPS	**21.1**	**21.4**	**22.8**	**23.5**	**23.2**	**24.3**	**25.1**	**26.1**	**26.4**	**26.3**	**27.0**

Hip Replacement	2014 N	2015 N	2016 N	2017 N	2018 N	2019 N	2020 N	2021 N	2022 N	2023 N	TOTAL N
Partial Resurfacing	0.0	.	.	.	.	.	.	.	.	.	0.0
Unipolar Monoblock	0.0	0.0	0.0	0.0	.	0.0	.	.	.	.	0.0
Unipolar Modular	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.1
Bipolar	0.1	0.1	0.2	0.1	0.2	0.1	0.2	0.2	0.3	0.2	0.2
All Primary Partial	**0.2**	**0.3**	**0.3**	**0.3**	**0.3**	**0.2**	**0.3**	**0.2**	**0.4**	**0.2**	**0.3**
Total Resurfacing	1.3	1.2	1.4	1.1	1.1	1.6	1.8	1.8	1.3	1.6	2.8
Total Conventional	24.6	25.5	25.8	25.9	26.4	25.5	24.6	26.1	26.3	28.5	21.7
Thrust Plate	.	.	.	.	.	.	.	.	.	.	0.0
All Primary Total	**25.9**	**26.7**	**27.1**	**27.0**	**27.5**	**27.1**	**26.4**	**28.0**	**27.6**	**30.1**	**24.5**
All Revisions	**2.6**	**2.3**	**2.0**	**2.4**	**2.1**	**1.9**	**2.2**	**2.2**	**1.9**	**2.0**	**2.3**
ALL HIPS	**28.8**	**29.3**	**29.5**	**29.7**	**29.8**	**29.2**	**28.8**	**30.4**	**29.8**	**32.3**	**27.1**

Figure SD15 Incidence of Hip Replacement in Patients Aged <55 Years per 100,000 from 2003 to 2023

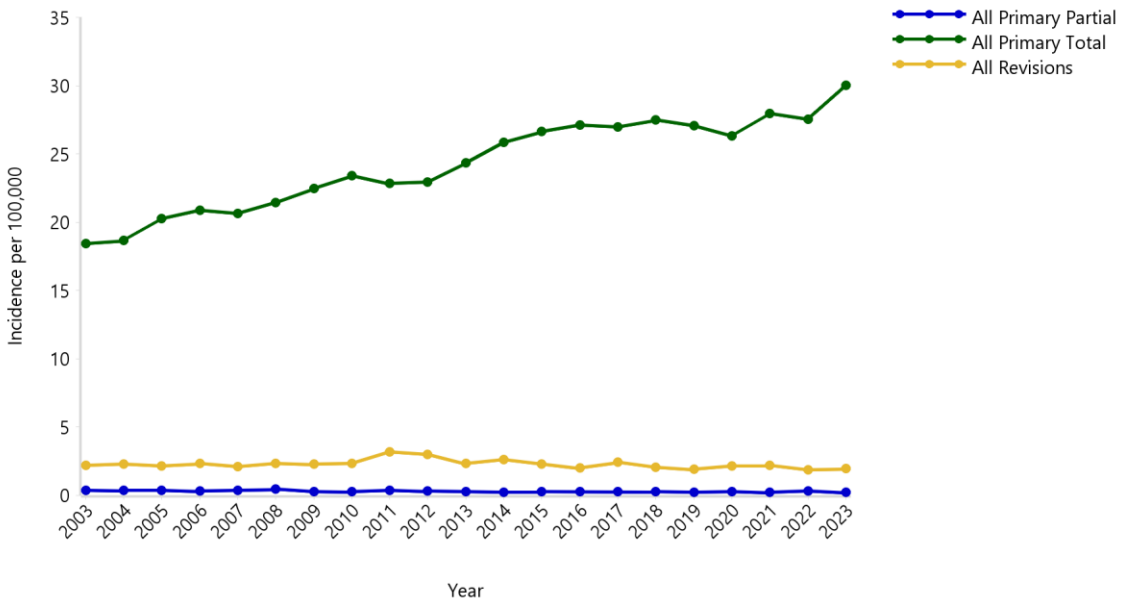


Table SD5 Incidence of Hip Replacement in Patients Aged 55-64 Years per 100,000 from 2003 to 2023

Hip Replacement	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
	N	N	N	N	N	N	N	N	N	N	N
Unipolar Monoblock	1.7	1.2	1.3	1.2	0.6	0.9	0.8	0.7	0.8	0.8	0.3
Unipolar Modular	1.5	2.1	2.8	3.2	4.4	4.4	4.8	4.9	3.4	4.5	3.8
Bipolar	4.9	4.1	3.4	2.4	2.1	2.1	1.8	1.4	1.4	1.9	1.8
All Primary Partial	**8.1**	**7.3**	**7.4**	**6.8**	**7.1**	**7.4**	**7.5**	**7.1**	**5.6**	**7.3**	**5.9**
Total Resurfacing	28.4	32.1	35.2	30.4	29.2	23.5	17.7	13.3	7.2	5.7	4.9
Total Conventional	186.8	197.8	201.1	195.9	207.8	223.9	242.3	247.6	265.7	255.9	268.0
Thrust Plate	0.3	0.5	0.3	0.4	0.4	0.4	0.4	0.2	0.4	0.1	.
All Primary Total	**215.5**	**230.3**	**236.6**	**226.7**	**237.4**	**247.8**	**260.4**	**261.1**	**273.2**	**261.6**	**272.9**
All Revisions	**29.3**	**27.3**	**26.7**	**27.5**	**25.8**	**28.7**	**27.9**	**29.7**	**37.4**	**32.6**	**30.0**
ALL HIPS	**252.9**	**265.0**	**270.8**	**261.0**	**270.3**	**283.9**	**295.8**	**297.9**	**316.2**	**301.5**	**308.8**

Hip Replacement	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	TOTAL
	N	N	N	N	N	N	N	N	N	N	N
Unipolar Monoblock	0.6	0.3	0.3	0.2	0.1	0.0	0.0	.	0.1	0.0	0.5
Unipolar Modular	3.7	3.2	2.6	2.7	2.8	1.8	2.5	1.8	1.8	1.2	3.0
Bipolar	1.9	3.0	2.6	3.0	2.3	2.9	3.6	4.4	3.4	5.2	2.9
All Primary Partial	**6.2**	**6.5**	**5.4**	**5.9**	**5.3**	**4.8**	**6.2**	**6.1**	**5.3**	**6.4**	**6.4**
Total Resurfacing	4.7	4.8	5.0	5.2	4.4	6.0	6.2	5.9	3.9	4.9	12.1
Total Conventional	284.6	295.9	311.0	307.5	311.3	311.8	297.8	328.5	320.0	353.1	273.2
Thrust Plate	.	.	.	.	.	.	.	.	.	.	0.1
All Primary Total	**289.3**	**300.8**	**316.0**	**312.6**	**315.7**	**317.8**	**304.0**	**334.4**	**323.9**	**358.0**	**285.4**
All Revisions	**29.3**	**25.9**	**24.9**	**25.0**	**23.9**	**24.7**	**22.9**	**21.9**	**21.1**	**22.5**	**26.7**
ALL HIPS	**324.8**	**333.1**	**346.3**	**343.6**	**344.9**	**347.3**	**333.1**	**362.4**	**350.4**	**386.9**	**318.4**

Figure SD16 Incidence of Hip Replacement in Patients Aged 55-64 Years per 100,000 from 2003 to 2023

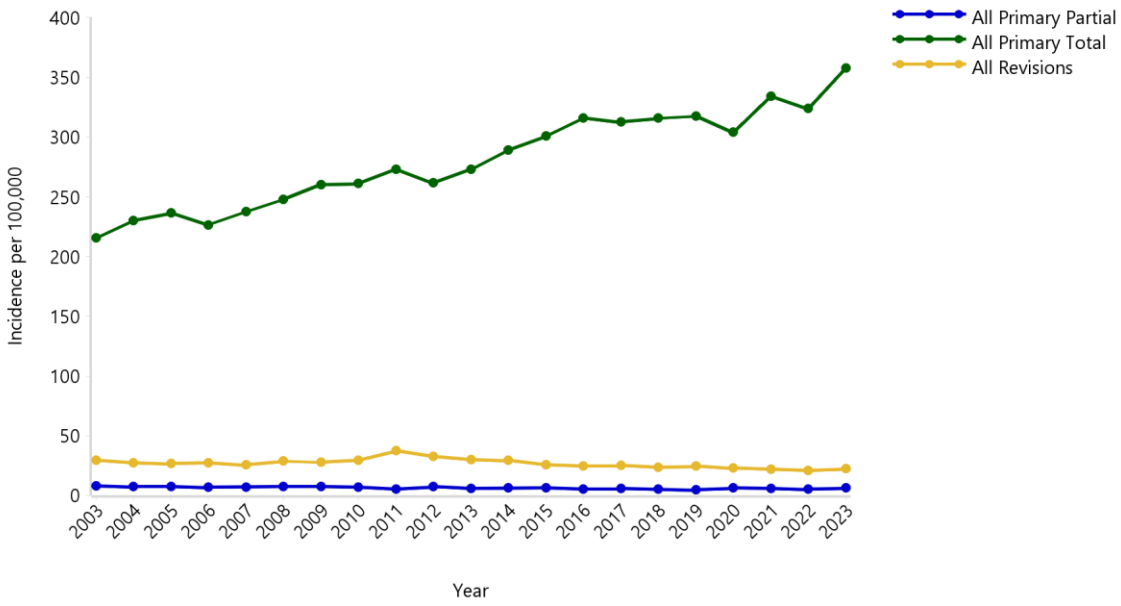


Table SD6 Incidence of Hip Replacement in Patients Aged 65-74 Years per 100,000 from 2003 to 2023

Hip Replacement	2003 N	2004 N	2005 N	2006 N	2007 N	2008 N	2009 N	2010 N	2011 N	2012 N	2013 N
Unipolar Monoblock	13.9	15.8	13.0	9.9	10.1	9.0	6.9	6.1	5.9	4.4	4.0
Unipolar Modular	8.0	10.4	16.2	18.6	22.6	23.4	25.5	21.7	22.7	21.7	18.7
Bipolar	19.1	19.4	15.3	10.7	9.3	8.2	7.8	6.0	7.4	6.2	7.1
All Primary Partial	**41.0**	**45.7**	**44.5**	**39.2**	**42.0**	**40.5**	**40.2**	**33.8**	**35.9**	**32.4**	**29.9**
Total Resurfacing	11.7	11.2	12.4	11.4	8.5	6.5	5.9	3.1	2.1	1.2	0.9
Total Conventional	446.6	457.9	466.8	471.6	464.6	501.4	499.6	524.3	521.1	527.8	549.8
Thrust Plate	0.2	0.4	0.5	0.2	0.5	0.5	0.5	0.3	0.4	0.1	.
All Primary Total	**458.5**	**469.4**	**479.7**	**483.2**	**473.7**	**508.4**	**506.0**	**527.7**	**523.6**	**529.2**	**550.8**
All Revisions	**79.6**	**77.7**	**75.7**	**74.5**	**71.3**	**74.1**	**67.7**	**76.6**	**88.1**	**79.1**	**68.8**
ALL HIPS	**579.1**	**592.8**	**599.9**	**597.0**	**586.9**	**623.0**	**613.8**	**638.1**	**647.6**	**640.7**	**649.4**

Hip Replacement	2014 N	2015 N	2016 N	2017 N	2018 N	2019 N	2020 N	2021 N	2022 N	2023 N	TOTAL N
Unipolar Monoblock	3.4	2.7	1.5	1.3	0.9	0.8	0.3	0.4	0.2	0.3	4.3
Unipolar Modular	19.4	17.3	15.2	15.4	15.5	13.1	11.6	9.9	10.7	10.5	16.1
Bipolar	8.7	13.1	12.1	12.8	13.2	15.4	16.2	16.6	18.8	19.2	12.8
All Primary Partial	**31.5**	**33.1**	**28.8**	**29.5**	**29.6**	**29.3**	**28.0**	**26.9**	**29.7**	**30.0**	**33.3**
Total Resurfacing	1.5	1.7	1.7	2.0	2.5	2.6	2.1	1.7	0.6	0.8	3.7
Total Conventional	578.4	593.7	612.5	609.6	616.4	626.6	580.8	608.1	607.6	654.3	561.4
Thrust Plate	.	.	.	.	.	.	.	.	.	.	0.1
All Primary Total	**579.9**	**595.4**	**614.2**	**611.6**	**618.9**	**629.1**	**582.9**	**609.8**	**608.2**	**655.1**	**565.2**
All Revisions	**68.8**	**68.7**	**65.8**	**61.4**	**60.9**	**57.7**	**50.0**	**50.4**	**47.4**	**50.8**	**65.4**
ALL HIPS	**680.2**	**697.3**	**708.8**	**702.5**	**709.4**	**716.1**	**660.9**	**687.1**	**685.3**	**735.8**	**663.9**

Figure SD17 Incidence of Hip Replacement in Patients Aged 65-74 Years per 100,000 from 2003 to 2023

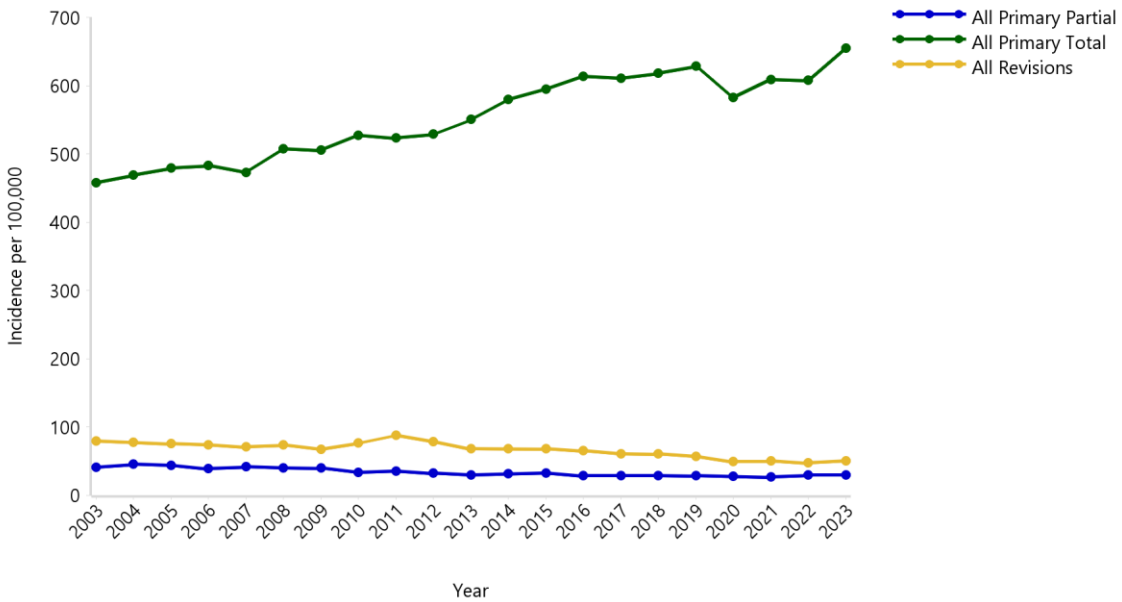


Table SD7 Incidence of Hip Replacement in Patients Aged ≥75 Years per 100,000 from 2003 to 2023

Hip Replacement	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
	N	N	N	N	N	N	N	N	N	N	N
Unipolar Monoblock	194.7	199.3	171.4	143.4	132.2	125.9	116.9	109.1	97.2	89.3	75.0
Unipolar Modular	44.2	48.7	70.5	108.9	139.4	159.7	176.7	182.5	200.1	194.6	195.3
Bipolar	80.4	83.5	80.3	74.4	55.2	49.4	45.7	51.4	54.0	56.5	60.7
All Primary Partial	**319.3**	**331.5**	**322.2**	**326.6**	**326.8**	**335.0**	**339.2**	**343.0**	**351.3**	**340.4**	**330.9**
Total Resurfacing	1.3	0.8	0.5	0.2	0.5	0.5	0.2	0.2	0.1	.	0.1
Total Conventional	456.9	486.8	485.2	502.0	504.3	529.9	538.3	548.9	546.4	558.0	568.9
All Primary Total	**458.2**	**487.6**	**485.7**	**502.2**	**504.8**	**530.5**	**538.5**	**549.1**	**546.5**	**558.0**	**569.0**
All Revisions	**124.1**	**126.3**	**129.4**	**119.4**	**120.2**	**122.9**	**130.2**	**126.5**	**127.8**	**126.2**	**121.9**
ALL HIPS	**901.6**	**945.5**	**937.3**	**948.2**	**951.7**	**988.4**	**1007.9**	**1018.6**	**1025.5**	**1024.7**	**1021.9**

Hip Replacement	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	TOTAL
	N	N	N	N	N	N	N	N	N	N	N
Unipolar Monoblock	66.3	45.4	33.2	22.6	12.8	7.5	5.1	3.3	3.1	2.6	68.8
Unipolar Modular	198.5	184.9	188.0	186.6	183.9	157.6	141.1	129.3	131.9	111.2	150.9
Bipolar	76.0	106.2	109.6	109.3	112.9	124.8	133.3	142.5	150.3	156.0	96.2
All Primary Partial	**340.8**	**336.5**	**330.8**	**318.5**	**309.6**	**289.8**	**279.6**	**275.1**	**285.3**	**269.9**	**315.9**
Total Resurfacing	0.2	.	0.1	0.3	0.1	0.3	0.2	0.2	0.2	.	0.3
Total Conventional	608.1	617.9	641.7	664.4	669.2	685.9	627.3	672.5	666.6	717.4	597.6
All Primary Total	**608.3**	**617.9**	**641.8**	**664.7**	**669.3**	**686.2**	**627.5**	**672.7**	**666.8**	**717.4**	**597.8**
All Revisions	**125.0**	**121.7**	**116.0**	**114.7**	**109.8**	**110.9**	**94.7**	**92.5**	**90.4**	**88.4**	**114.1**
ALL HIPS	**1074.1**	**1076.1**	**1088.6**	**1098.0**	**1088.7**	**1087.0**	**1001.8**	**1040.3**	**1042.4**	**1075.7**	**1027.8**

Figure SD18 Incidence of Hip Replacement in Patients Aged ≥75 Years per 100,000 from 2003 to 2023

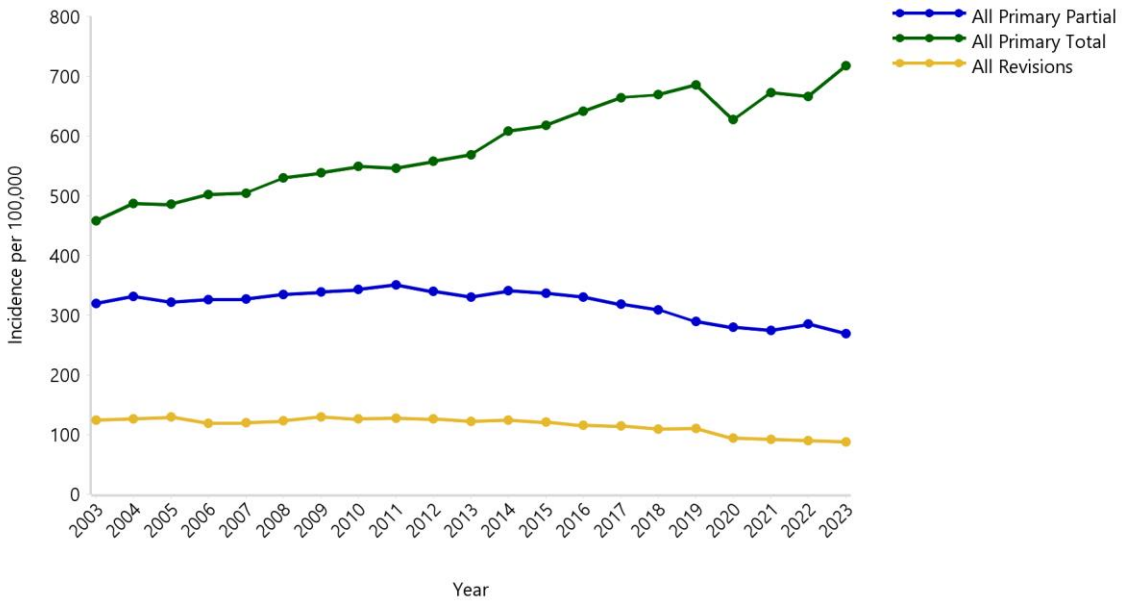


Figure SD19 Trends in Usage of Hip Replacement by State/Territory and Year

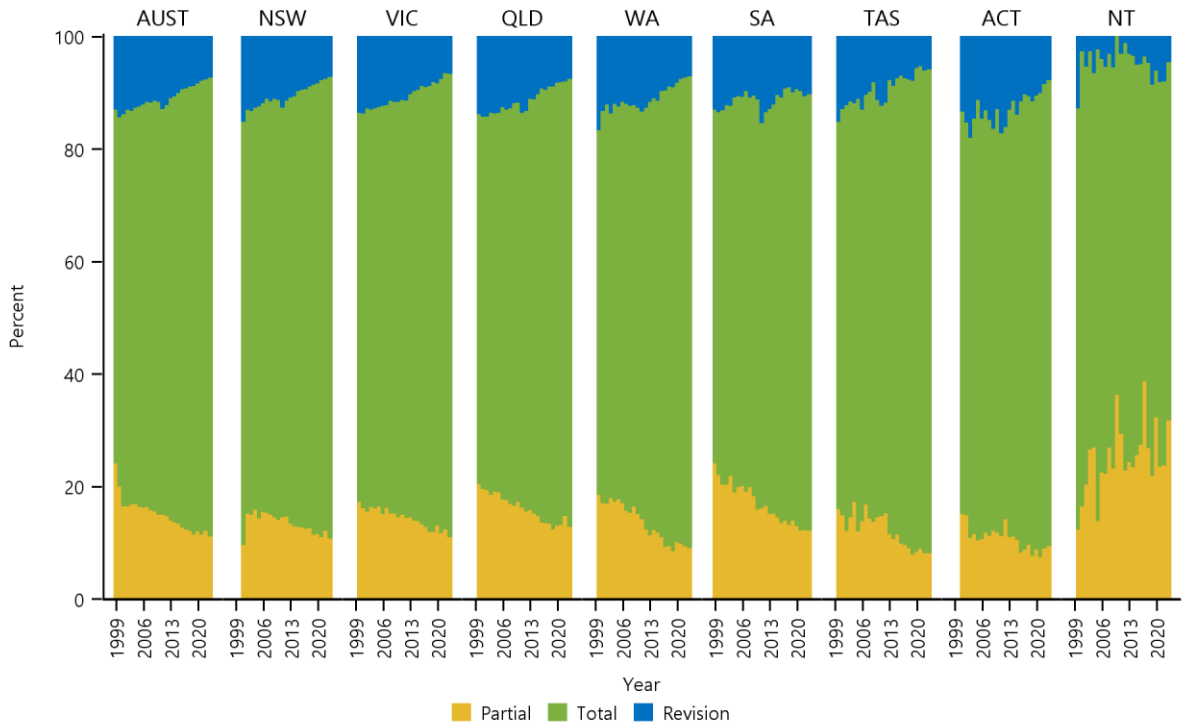


Table SD8 Time between Procedures for Bilateral Primary Hip Replacement

Bilateral Procedures	Same Day			1 day - 3 months			3 months - 6 months			≥6 months			TOTAL		
	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%
Both Partial	54	0.9	0.7	804	14.1	10.4	544	9.6	4.2	4287	75.4	3.6	5689	100.0	3.9
Both Total	7537	5.5	99.2	6816	5.0	88.5	12360	9.0	94.9	110766	80.6	93.6	137479	100.0	93.8
Total/Partial	4	0.1	0.1	86	2.5	1.1	126	3.6	1.0	3237	93.7	2.7	3453	100.0	2.4
TOTAL	**7595**	**5.2**	**100.0**	**7706**	**5.3**	**100.0**	**13030**	**8.9**	**100.0**	**118290**	**80.7**	**100.0**	**146621**	**100.0**	**100.0**

Table SD9 Number of Hip Procedures by Patient

Hip Procedures	Not Revised		1 Revision		2 Revisions		3 or more Revisions		TOTAL	
	N	Row%	N	Row%	N	Row%	N	Row%	N	Row%
Unknown Primary/Primaries	.	.	17012	74.6	4098	18.0	1705	7.5	22815	100.0
Single Primary Procedure	495375	94.3	23745	4.5	4272	0.8	1960	0.4	525352	100.0
2 Primary Procedures	132357	90.3	10292	7.0	2653	1.8	1319	0.9	146621	100.0
TOTAL	**627732**	**90.3**	**51049**	**7.3**	**11023**	**1.6**	**4984**	**0.7**	**694788**	**100.0**

PRIMARY PARTIAL HIP REPLACEMENT

CLASSES OF PARTIAL HIP REPLACEMENT

The Registry identifies four classes of primary partial hip replacement. These are defined by the type of prostheses used.

Partial resurfacing involves the use of one or more button prosthesis to replace part of the natural articulating surface on one or both sides of the hip joint. The last recorded procedure was in 2014.

Unipolar monoblock involves the use of a femoral stem with a fixed large head that replaces the natural femoral head.

Unipolar modular involves the use of a femoral stem and exchangeable large head prosthesis that replaces the natural femoral head.

Bipolar involves the use of a femoral stem and standard head prosthesis that articulates with a non-fixed component that replaces the natural femoral head.

Further information on primary partial resurfacing hip replacement is available in the supplementary report 'Prosthesis Types with No and Minimal Use' on the AOANJRR website: https://aoanjrr.sahmri.com/annual-reports-2024

Table SD10 Primary Partial Hip Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	88823	69.8%	9	108	84	83.3	8.6
Male	38395	30.2%	5	107	83	81.8	9.6
TOTAL	**127218**	**100.0%**	**5**	**108**	**84**	**82.9**	**8.9**

Figure SD20 Primary Partial Hip Replacement by Age and Gender

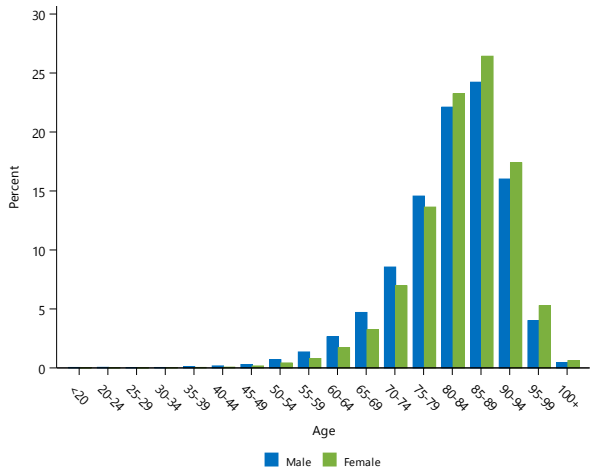
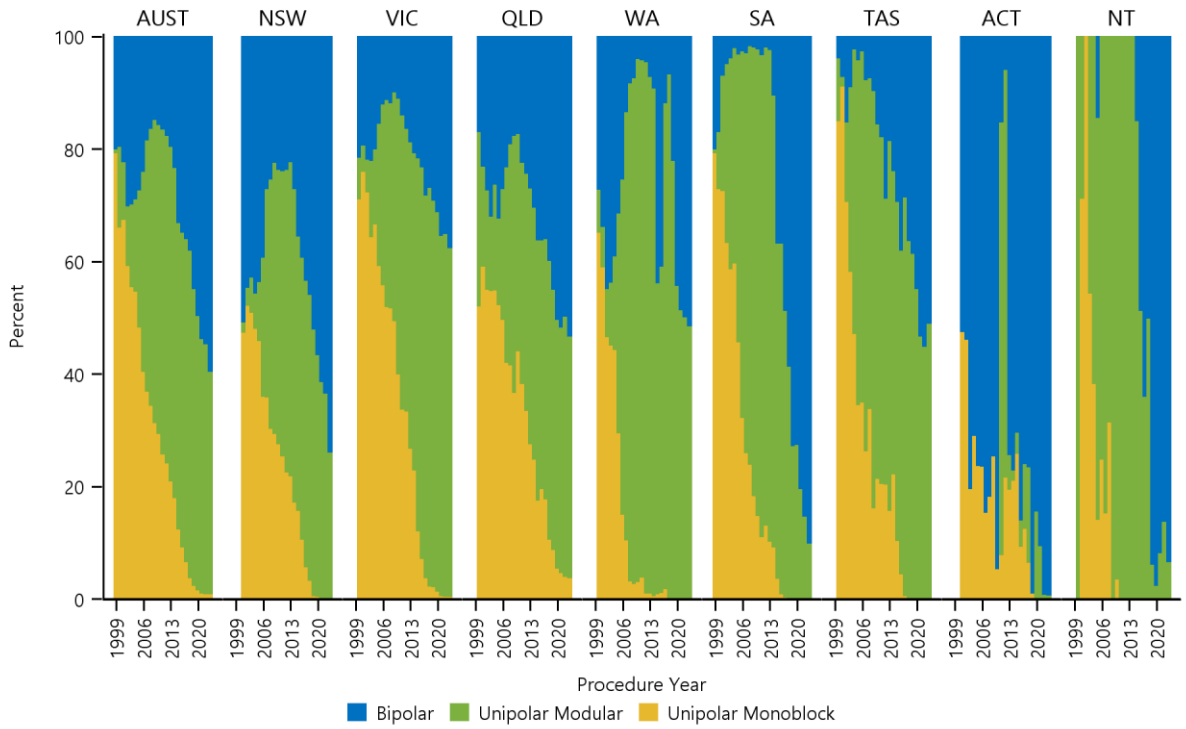


Table SD11 Primary Partial Hip Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Fractured Neck Of Femur	121665	95.6
Osteoarthritis	3094	2.4
Tumour	1388	1.1
Failed Internal Fixation	676	0.5
Osteonecrosis	240	0.2
Rheumatoid Arthritis	59	0.0
Developmental Dysplasia	56	0.0
Osteochondritis Dissecans	1	0.0
Other	39	0.0
TOTAL	**127218**	**100.0**

Figure SD21 Trends in Usage of Primary Partial Hip Replacement by State/Territory and Year



PRIMARY PARTIAL RESURFACING HIP REPLACEMENT

Table SD12 Primary Partial Resurfacing Hip Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	3	20.0%	17	53	23	31.0	19.3
Male	12	80.0%	18	39	27	26.6	6.6
TOTAL	**15**	**100.0%**	**17**	**53**	**25**	**27.5**	**9.5**

Figure SD22 Primary Partial Resurfacing Hip Replacement by Age and Gender

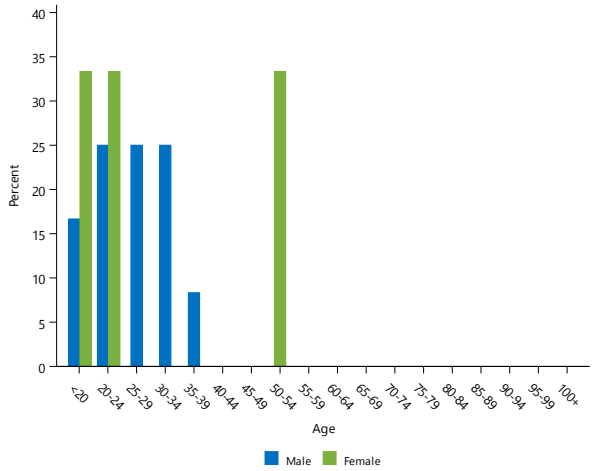


Table SD13 Primary Partial Resurfacing Hip Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Osteonecrosis	7	46.7
Osteoarthritis	5	33.3
Osteochondritis Dissecans	1	6.7
Other	2	13.3
TOTAL	**15**	**100.0**

PRIMARY UNIPOLAR MONOBLOCK HIP REPLACEMENT

Table SD14 Primary Unipolar Monoblock Hip Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	21304	72.6%	16	108	86	85.0	7.2
Male	8029	27.4%	32	107	84	83.5	7.8
TOTAL	**29333**	**100.0%**	**16**	**108**	**85**	**84.5**	**7.4**

Figure SD23 Primary Unipolar Monoblock Hip Replacement by Age and Gender

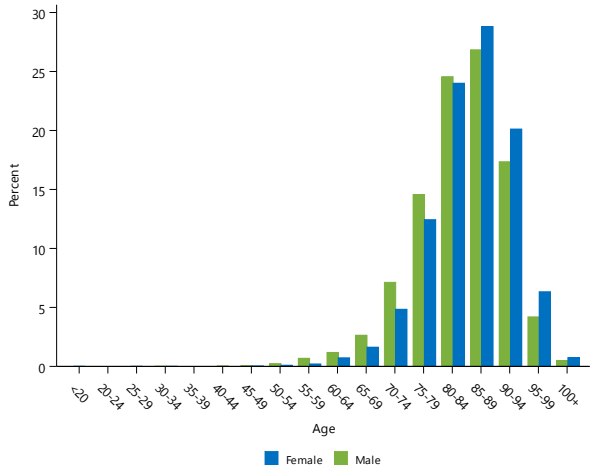
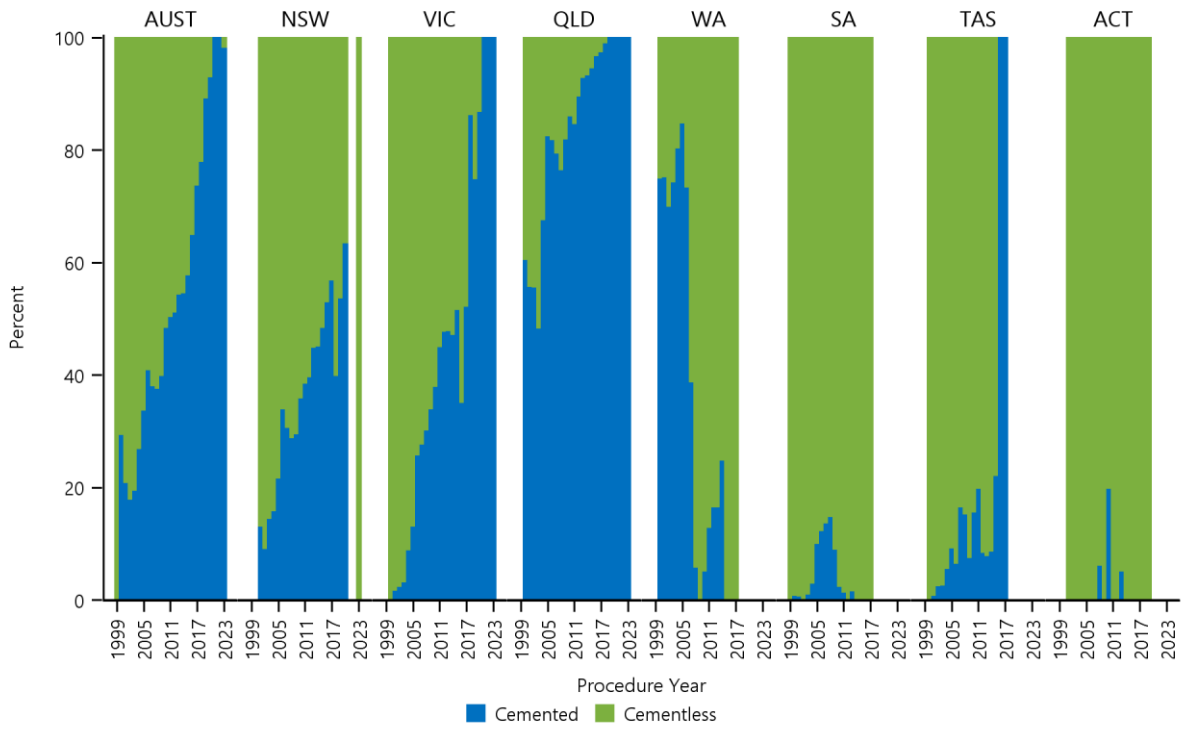


Table SD15 Primary Unipolar Monoblock Hip Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Fractured Neck Of Femur	28647	97.7
Osteoarthritis	497	1.7
Tumour	64	0.2
Osteonecrosis	50	0.2
Failed Internal Fixation	43	0.1
Developmental Dysplasia	15	0.1
Rheumatoid Arthritis	14	0.0
Other	3	0.0
TOTAL	**29333**	**100.0**

Figure SD24 Trends in Fixation of Primary Unipolar Monoblock Hip Replacement by State/Territory and Year



Note: NT is excluded from this graph due to low procedure numbers

PRIMARY UNIPOLAR MODULAR HIP REPLACEMENT

Table SD16 Primary Unipolar Modular Hip Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	40134	69.6%	18	108	84	83.4	8.4
Male	17563	30.4%	5	106	84	82.0	9.3
TOTAL	**57697**	**100.0%**	**5**	**108**	**84**	**82.9**	**8.7**

Figure SD25 Primary Unipolar Modular Hip Replacement by Age and Gender

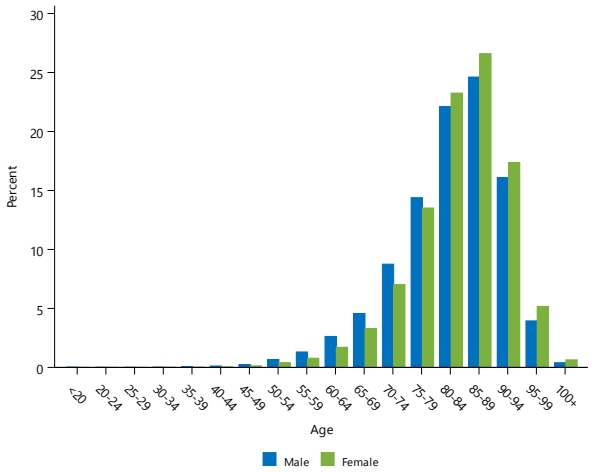
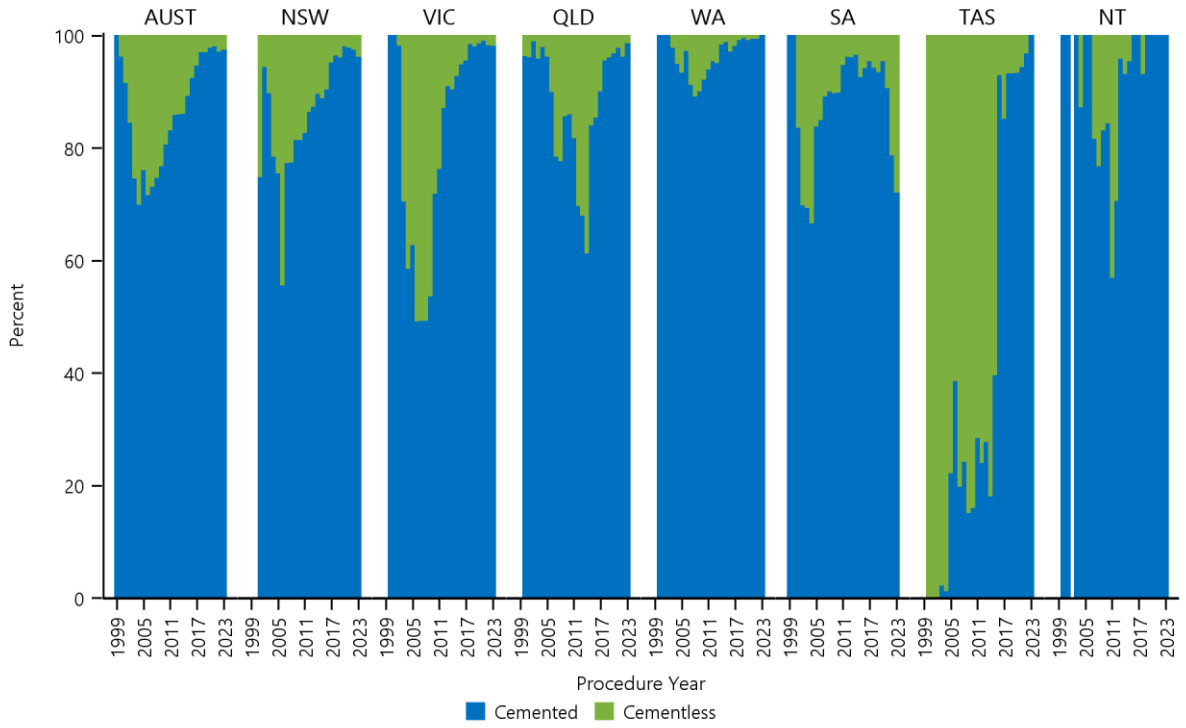


Table SD17 Primary Unipolar Modular Hip Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Fractured Neck Of Femur	55432	96.1
Osteoarthritis	1416	2.5
Tumour	413	0.7
Failed Internal Fixation	301	0.5
Osteonecrosis	69	0.1
Developmental Dysplasia	25	0.0
Rheumatoid Arthritis	22	0.0
Other	19	0.0
TOTAL	**57697**	**100.0**

Figure SD26 Trends in Fixation of Primary Unipolar Modular Hip Replacement by State/Territory and Year



Note: There were no unipolar modular hip replacements in 2002 in NT
ACT is excluded from this graph due to low procedure numbers

PRIMARY BIPOLAR HIP REPLACEMENT

Table SD18 Primary Bipolar Hip Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	27382	68.2%	9	107	83	82.0	9.5
Male	12791	31.8%	9	105	83	80.7	10.7
TOTAL	**40173**	**100.0%**	**9**	**107**	**83**	**81.6**	**9.9**

Figure SD27 Primary Bipolar Hip Replacement by Age and Gender

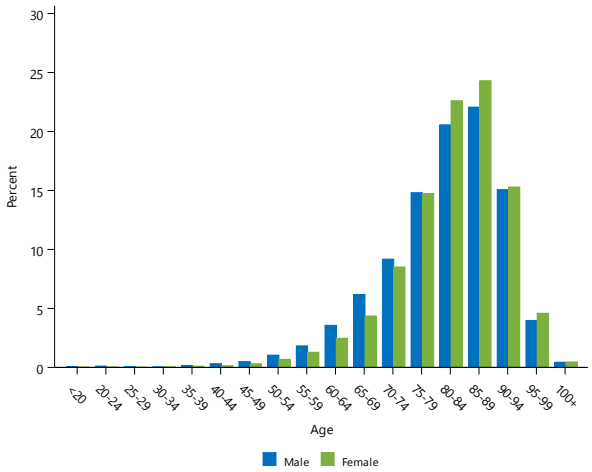
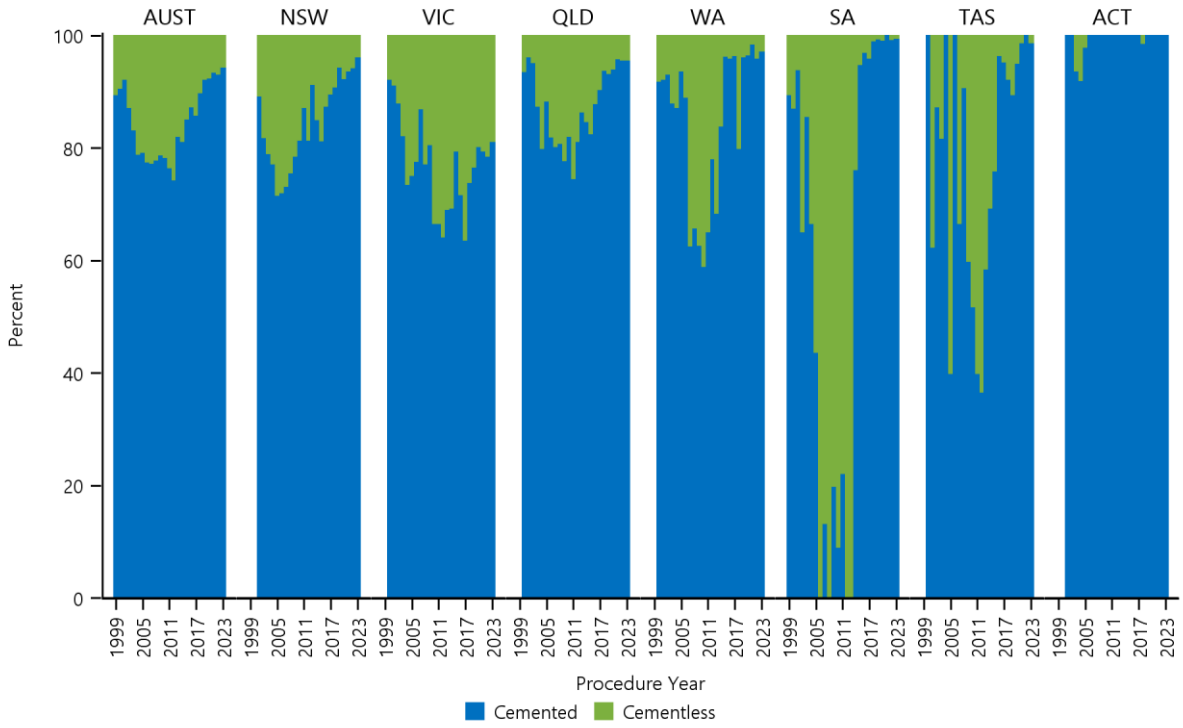


Table SD19 Primary Bipolar Hip Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Fractured Neck Of Femur	37586	93.6
Osteoarthritis	1176	2.9
Tumour	911	2.3
Failed Internal Fixation	332	0.8
Osteonecrosis	114	0.3
Rheumatoid Arthritis	23	0.1
Developmental Dysplasia	16	0.0
Other	15	0.0
TOTAL	**40173**	**100.0**

Figure SD28 Trends in Fixation of Primary Bipolar Hip Replacement by State/Territory and Year



Note: NT is excluded from this graph due to low procedure numbers

PRIMARY TOTAL HIP REPLACEMENT

CLASSES OF TOTAL HIP REPLACEMENT

The Registry subcategorises primary total hip replacement into three classes. These are defined by the type of femoral prosthesis used. A total hip procedure replaces both the femoral and acetabular articular surfaces.

Total conventional includes acetabular replacement combined with resection of the femoral head and replacement with a stemmed femoral prosthesis and femoral head prosthesis.

Total resurfacing includes acetabular replacement and the use of a femoral prosthesis that replaces the femoral articular surface without resecting the head.

Thrust plate includes acetabular replacement combined with resection of the femoral head and replacement with a femoral component that has a lateral fixation plate and femoral head prosthesis. The last recorded procedure was in 2012.

Further information on thrust plate procedures is available in the supplementary report 'Prosthesis Types with No and Minimal Use' on the AOANJRR website: https://aoanjrr.sahmri.com/annual-reports-2024

Table SD20 Primary Total Hip Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	372508	53.9%	11	103	70	68.8	11.4
Male	318868	46.1%	11	108	67	65.7	11.8
TOTAL	**691376**	**100.0%**	**11**	**108**	**68**	**67.4**	**11.7**

Figure SD29 Primary Total Hip Replacement by Age and Gender

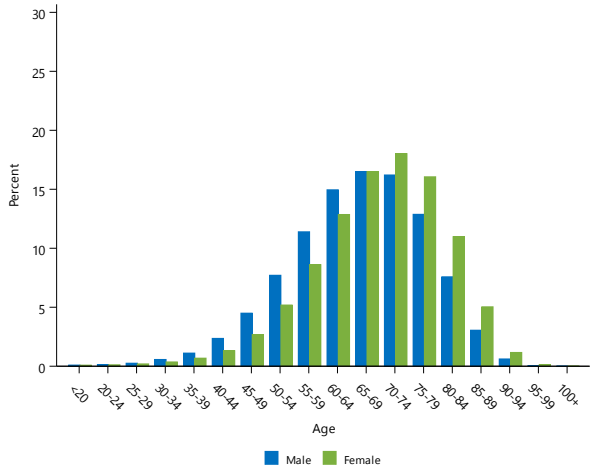
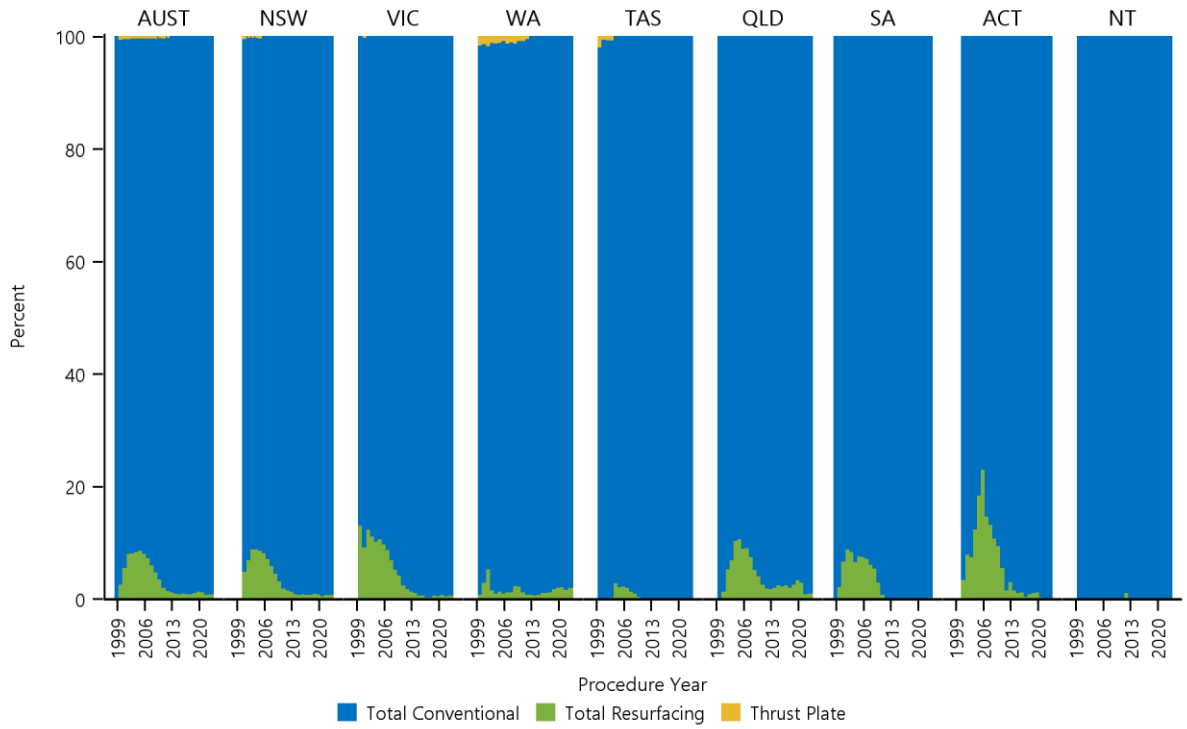


Table SD21 Primary Total Hip Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Osteoarthritis	609556	88.2
Fractured Neck Of Femur	34406	5.0
Osteonecrosis	21963	3.2
Developmental Dysplasia	9511	1.4
Rheumatoid Arthritis	5562	0.8
Tumour	3583	0.5
Other Inflammatory Arthritis	2895	0.4
Failed Internal Fixation	2700	0.4
Fracture/Dislocation	893	0.1
Arthrodesis Takedown	156	0.0
Other	151	0.0
TOTAL	**691376**	**100.0**

Figure SD30 Trends in Usage of Primary Total Hip Replacement by State/Territory and Year



PRIMARY TOTAL CONVENTIONAL HIP REPLACEMENT

Table SD22 Primary Total Conventional Hip Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	368720	55.0%	11	103	70	69.0	11.3
Male	302164	45.0%	11	108	67	66.4	11.5
TOTAL	**670884**	**100.0%**	**11**	**108**	**69**	**67.8**	**11.5**

Figure SD31 Primary Total Conventional Hip Replacement by Age and Gender

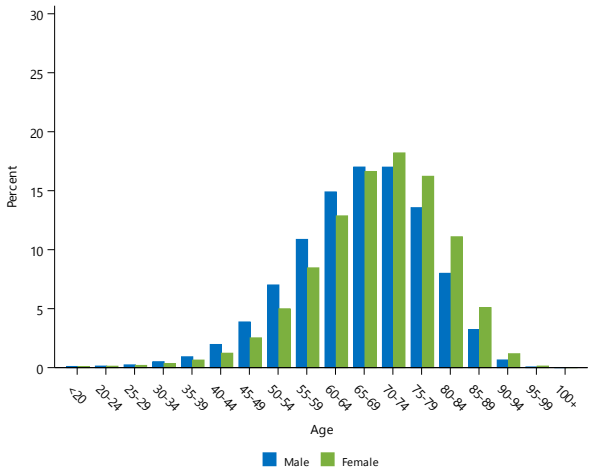
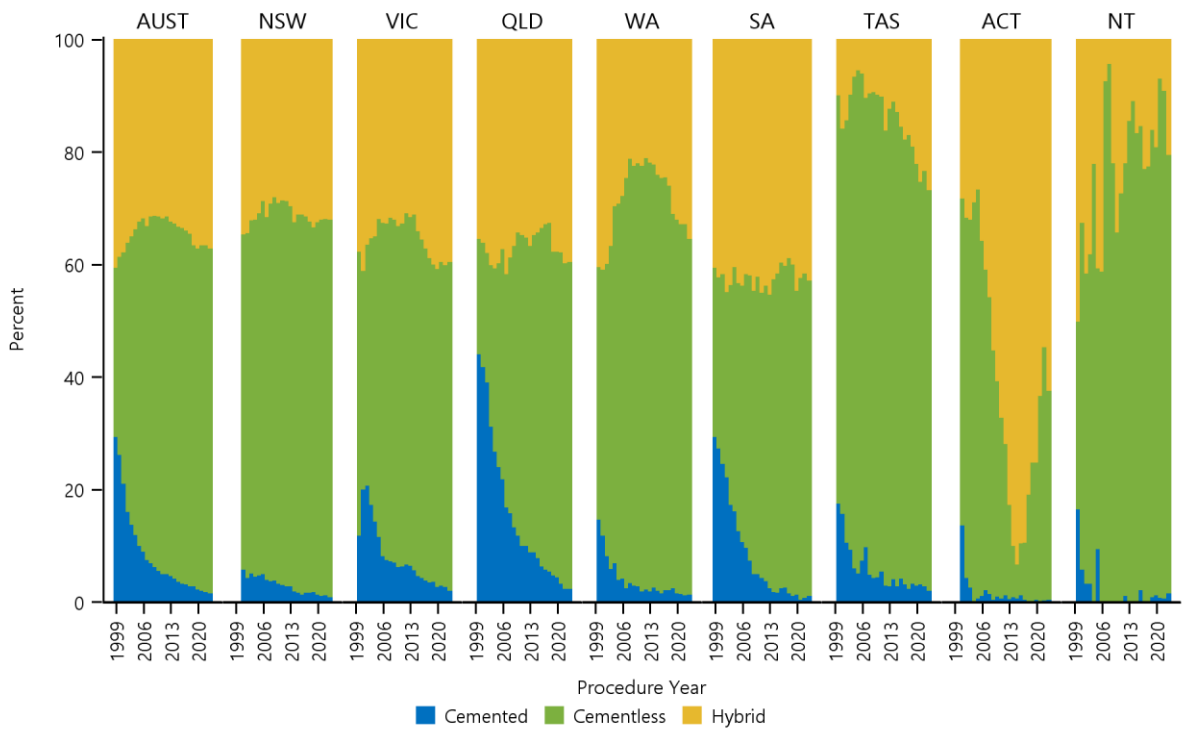


Table SD23 Primary Total Conventional Hip Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Osteoarthritis	589974	87.9
Fractured Neck Of Femur	34406	5.1
Osteonecrosis	21654	3.2
Developmental Dysplasia	9061	1.4
Rheumatoid Arthritis	5497	0.8
Tumour	3581	0.5
Other Inflammatory Arthritis	2820	0.4
Failed Internal Fixation	2700	0.4
Fracture/Dislocation	889	0.1
Arthrodesis Takedown	155	0.0
Other	147	0.0
TOTAL	**670884**	**100.0**

Figure SD32 Trends in Fixation of Primary Total Conventional Hip Replacement by State/Territory and Year



PRIMARY TOTAL RESURFACING HIP REPLACEMENT

Table SD24 Primary Total Resurfacing Hip Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	3714	18.4%	14	81	52	51.5	8.6
Male	16520	81.6%	13	84	54	53.2	9.1
TOTAL	**20234**	**100.0%**	**13**	**84**	**53**	**52.9**	**9.1**

Figure SD33 Primary Total Resurfacing Hip Replacement by Age and Gender

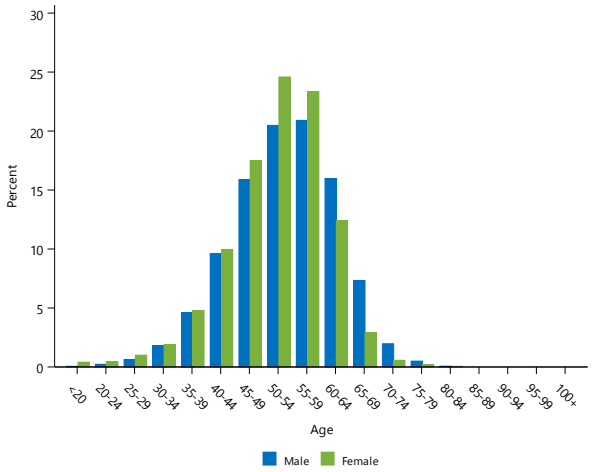
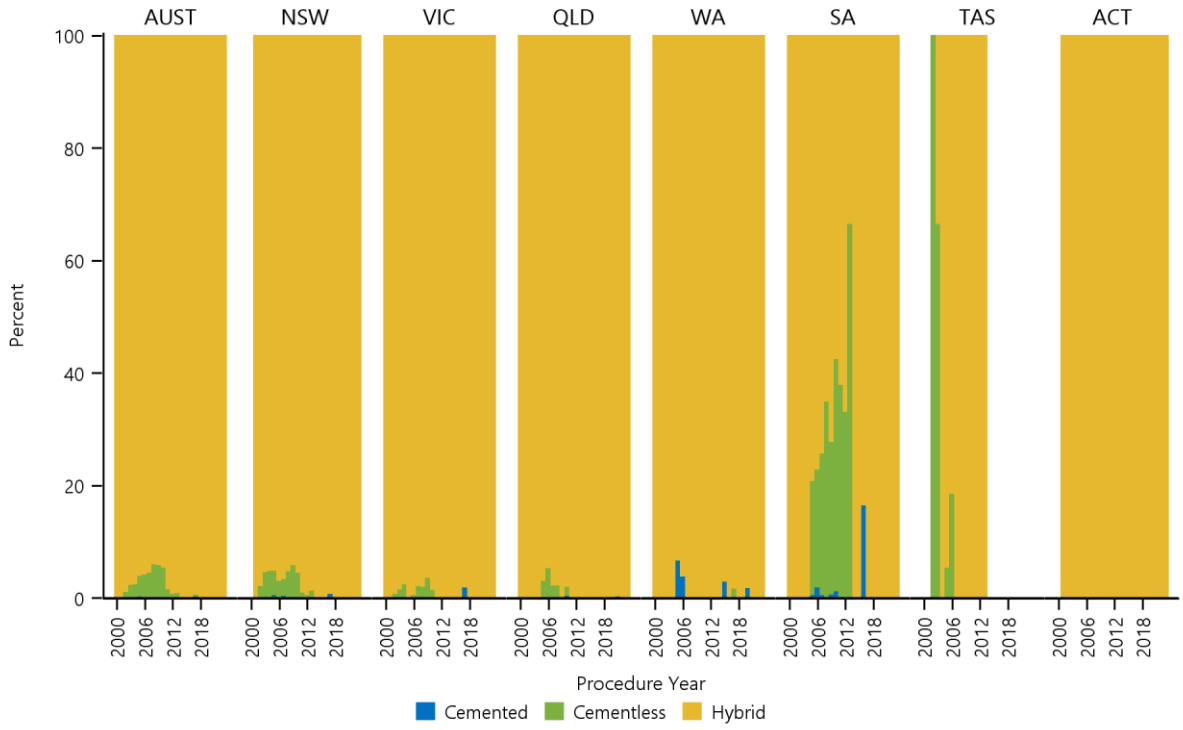


Table SD25 Primary Total Resurfacing Hip Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Osteoarthritis	19339	95.6
Developmental Dysplasia	447	2.2
Osteonecrosis	304	1.5
Other Inflammatory Arthritis	74	0.4
Rheumatoid Arthritis	59	0.3
Fracture/Dislocation	4	0.0
Tumour	2	0.0
Arthrodesis Takedown	1	0.0
Other	4	0.0
TOTAL	**20234**	**100.0**

Figure SD34 Trends in Fixation of Primary Total Resurfacing Hip Replacement by State/Territory and Year



Note: NT is excluded from this graph due to low procedure numbers
The last total resurfacing hip replacement undertaken in Tasmania was 2013

PRIMARY THRUST PLATE HIP REPLACEMENT

Table SD26 Primary Thrust Plate Hip Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	74	28.7%	27	71	56	54.5	9.9
Male	184	71.3%	33	75	59	58.5	8.7
TOTAL	**258**	**100.0%**	**27**	**75**	**58**	**57.3**	**9.2**

Figure SD35 Primary Thrust Plate Hip Replacement by Age and Gender

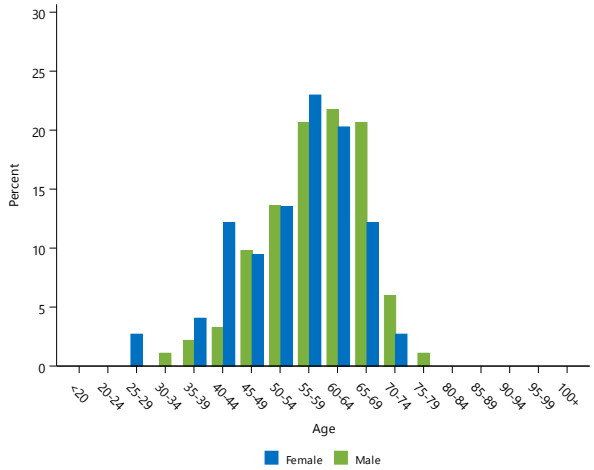


Table SD27 Primary Thrust Plate Hip Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Osteoarthritis	243	94.2
Rheumatoid Arthritis	6	2.3
Osteonecrosis	5	1.9
Developmental Dysplasia	3	1.2
Other Inflammatory Arthritis	1	0.4
TOTAL	**258**	**100.0**

REVISION HIP REPLACEMENT

CLASSES OF REVISION PROCEDURES

The Registry defines revision of a hip replacement as any re-operation of a previous hip replacement procedure that involves the insertion, removal and/or replacement of a prosthesis or implant. Revisions are sub
categorised into three classes: major total, major partial and minor.

Major total revision is the insertion, removal and/or replacement of all major components.

Major partial revision is the insertion, removal and/or replacement of one major component. Major components are prostheses that are fixed to bone. These are the femoral prosthesis and the acetabular shell or cup in hip replacement. Different types of major partial and minor revisions are identified based on the specific prostheses or implants used in the revision.

Minor revision is the insertion removal and/or replacement of any other prostheses or implant.

Table SD28 All Revision Hip Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Male	42746	46.7%	15	102	72	70.2	12.0
Female	48710	53.3%	11	104	73	71.7	12.2
TOTAL	**91456**	**100.0%**	**11**	**104**	**72**	**71.0**	**12.1**

Figure SD36 All Revision Hip Replacement by Age and Gender

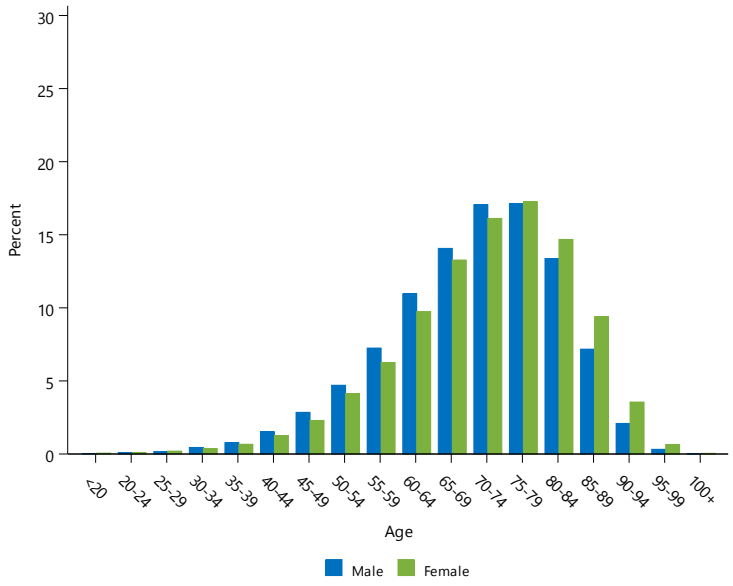


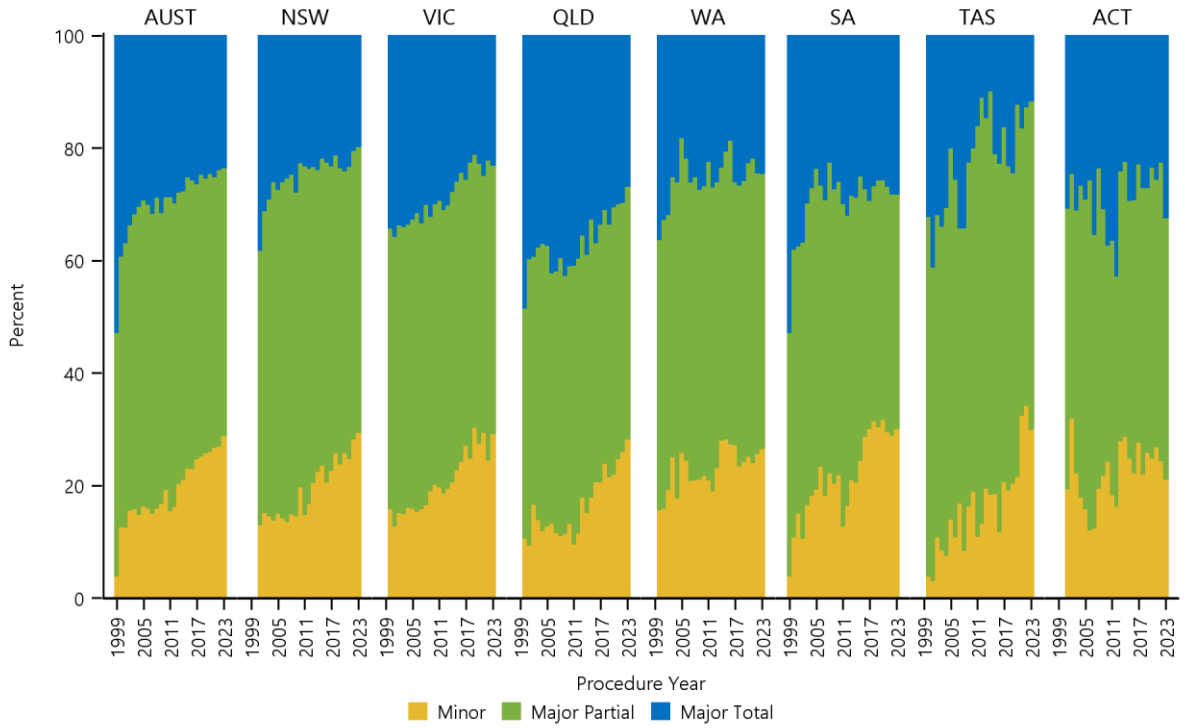
Table SD29 All Revision Hip Replacement by Type of Revision

Type of Revision	Number	Percent
Acetabular Component	25822	28.2
THR (Femoral/Acetabular)	24357	26.6
Femoral Component	18451	20.2
Head/Insert	12886	14.1
Cement Spacer	3355	3.7
Head Only	2480	2.7
Minor Components	1117	1.2
Removal of Prostheses	840	0.9
Insert Only	738	0.8
Bipolar Head and Femoral	717	0.8
Bipolar Only	360	0.4
Head/Neck/Insert	152	0.2
Head/Neck	90	0.1
Reinsertion of Components	69	0.1
Neck Only	9	0.0
Saddle	5	0.0
Cement Only	4	0.0
Thrust Plate	2	0.0
Neck/Insert	1	0.0
Incomplete	1	0.0
TOTAL	**91456**	**100.0**

Table SD30 All Revision Hip Replacement by Reason for Revision

Reason for Revision	Number	Percent
Loosening	30100	32.9
Infection	17575	19.2
Prosthesis Dislocation/Instability	14216	15.5
Fracture	12122	13.3
Lysis	4928	5.4
Metal Related Pathology	3432	3.8
Pain	1716	1.9
Wear Acetabular Insert	1368	1.5
Implant Breakage Stem	974	1.1
Implant Breakage Acetabular	718	0.8
Chondrolysis/Acetab. Erosion	595	0.7
Malposition	579	0.6
Leg Length Discrepancy	522	0.6
Implant Breakage Acetabular Insert	506	0.6
Wear Acetabulum	347	0.4
Incorrect Sizing	214	0.2
Tumour	183	0.2
Osteonecrosis	139	0.2
Implant Breakage Head	124	0.1
Wear Head	118	0.1
Heterotopic Bone	90	0.1
Progression Of Disease	41	0.0
Synovitis	16	0.0
Other	833	0.9
TOTAL	**91456**	**100.0**

Figure SD37 Trends in All Revision Hip Replacement by State/Territory and Year



Note: NT is excluded from this graph due to low procedure numbers

Knee Replacement

CATEGORIES OF KNEE REPLACEMENT

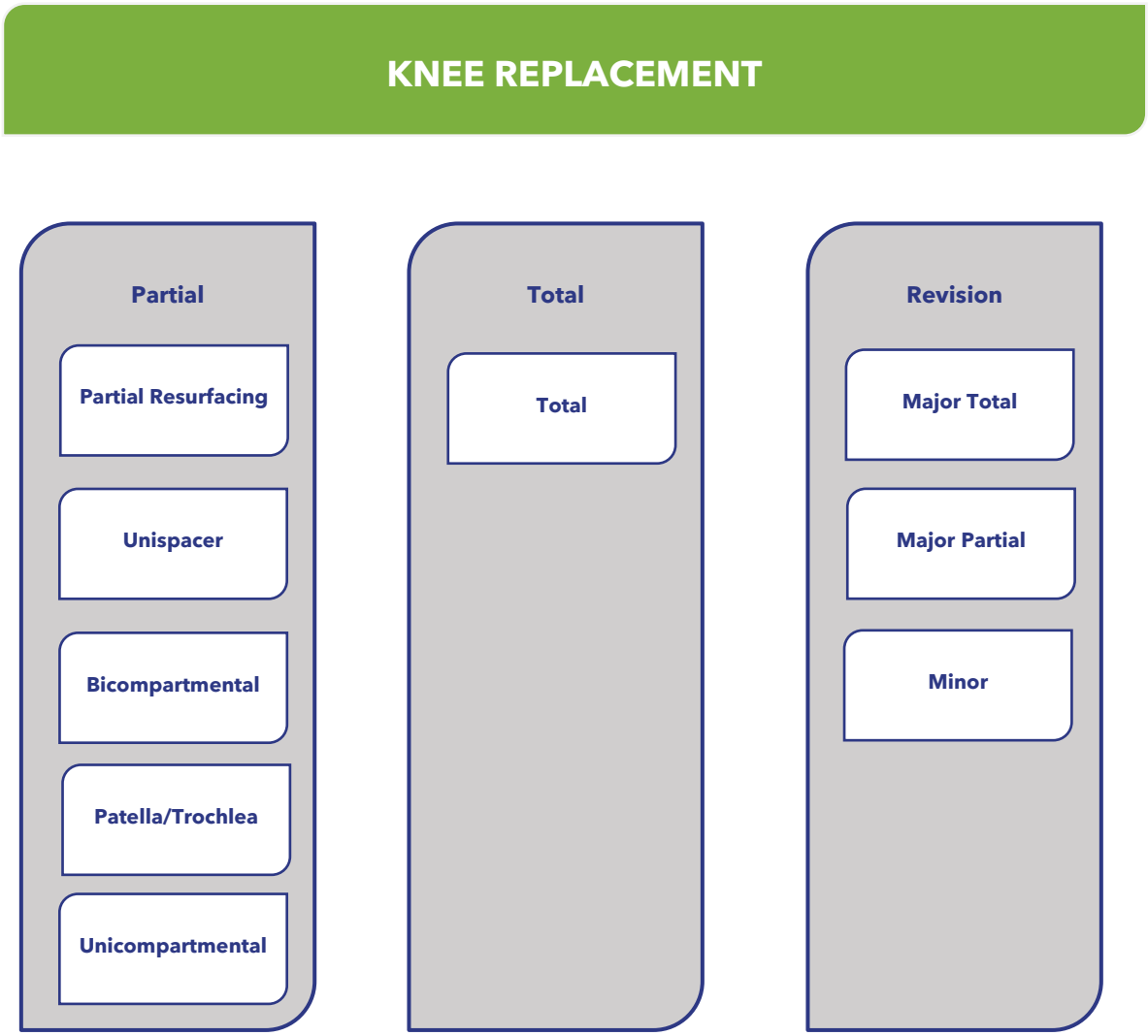
The Registry groups knee replacement into three broad categories, primary partial, primary total and revision knee replacement.

A primary replacement is the initial replacement procedure undertaken on a joint and involves replacing either part (partial) or all (total) of the articular surface.

Primary partial knee replacements are subcategorised into five classes depending on the type of prostheses used. The classes of primary partial knee are partial resurfacing, unispacer, bicompartmental, patella/trochlea and unicompartmental. These are defined in the partial knee arthroplasty chapter in the Annual Report.

Revision knee replacements are re-operations of previous knee replacements where one or more of the prosthetic components are replaced, removed or another component is added. Revisions include re-operations of primary partial, primary total or previous revision procedures.

Knee revisions are subcategorised into three classes: major total, major partial or minor revisions. These are defined in the chapter on revision outcomes.

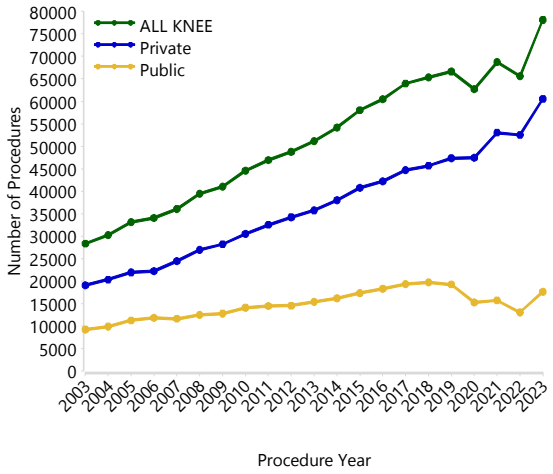


PUBLIC AND PRIVATE SECTOR

In 2023, 77.5% of all knee replacement procedures reported to the Registry were undertaken in private hospitals.

In the last year, there was an increase in the number of knee replacements recorded in both the private and public sectors. The private sector recorded 60,528 procedures, an increase of 15.3% and the public sector recorded 17,597 procedures, an increase of 34.9% compared to 2022.

Figure SD38 Knee Replacement by Hospital Sector



Since 2003, knee replacement has increased by 217.2% in the private sector compared to 90.5% in the public sector.

There were 3,442 primary partial knee replacements reported for the private sector in 2023, an increase of 2.5% compared to 2022 and an increase of 0.9% since 2003. In the public sector, there were 413 partial knee replacements, an increase of 25.5% compared to 2022 and a decrease of 52.0% since 2003.

In 2023, 53,383 primary total knee replacements were reported in the private sector, an increase of 16.5% compared to 2022. In the public sector in 2023, there were 15,551 primary total knee replacements, an increase of 37.7% compared to 2022. Since 2003, primary total knee replacement has increased by 279.3% in the private sector compared to 103.0% in the public sector.

There were 3,703 private sector revision knee replacements reported in 2023. This is an increase of 11.1% compared to 2022. In the public sector, there were 1,633 revision knee replacements, an increase of 14.4% compared to 2022. Since 2003, revision knee replacement has increased by 131.9% in the private sector compared to 127.8% in the public sector.

Table SD31 All Knee Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Male	508086	45.2%	8	101	68	68.0	9.2
Female	617128	54.8%	8	107	69	68.5	9.5
TOTAL	**1125214**	**100.0%**	**8**	**107**	**69**	**68.3**	**9.4**

Table SD32 Number of Knee Replacements by Gender

	Female		Male		TOTAL	
Knee Replacement	N	%	N	%	N	%
Partial Resurfacing	121	49.2	125	50.8	246	0.3
Unispacer	19	47.5	21	52.5	40	0.0
Patella/Trochlear	4149	76.5	1276	23.5	5425	6.7
Unicompartmental	33488	44.9	41018	55.1	74506	92.7
Bicompartmental	100	60.6	65	39.4	165	0.2
All Primary Partial	**37877**	**47.1**	**42505**	**52.9**	**80382**	**100.0**
Total Knee	534205	55.9	421970	44.1	956175	100.0
All Primary Total	**534205**	**55.9**	**421970**	**44.1**	**956175**	**100.0**
Major Total	21938	52.5	19888	47.5	41826	47.2
Major Partial	7110	48.9	7431	51.1	14541	16.4
Minor	15998	49.5	16292	50.5	32290	36.4
All Revision	**45046**	**50.8**	**43611**	**49.2**	**88657**	**100.0**
ALL KNEES	**617128**	**54.8**	**508086**	**45.2**	**1125214**	**100.0**

Figure SD39 Percentage of Females by Type of Primary Knee Replacement and Procedure Year

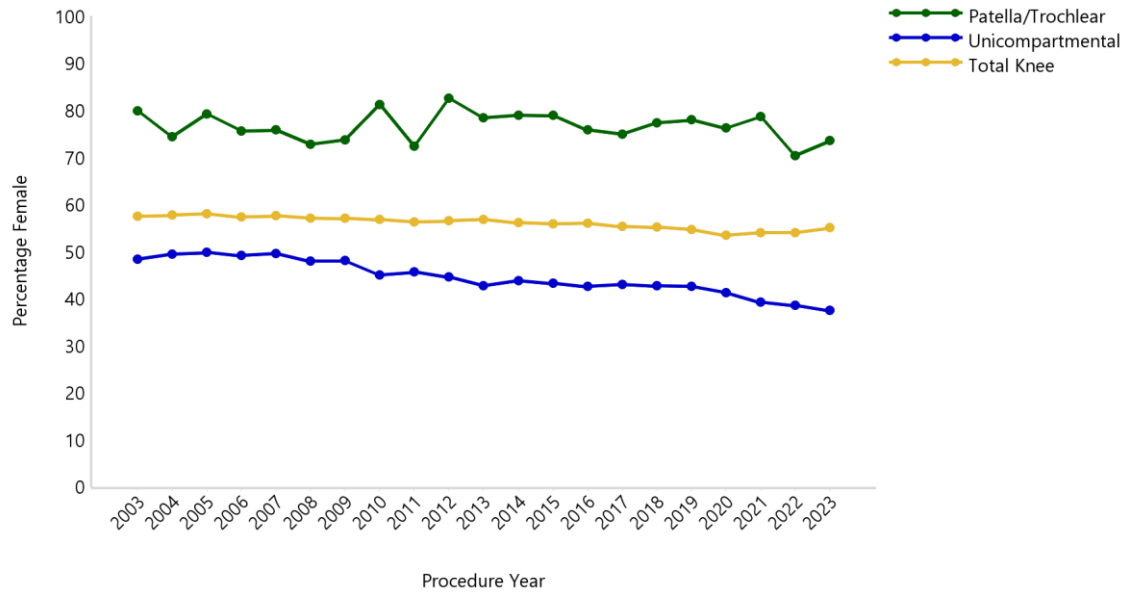


Figure SD40 Percentage of Females by Revision Knee Replacement and Procedure Year

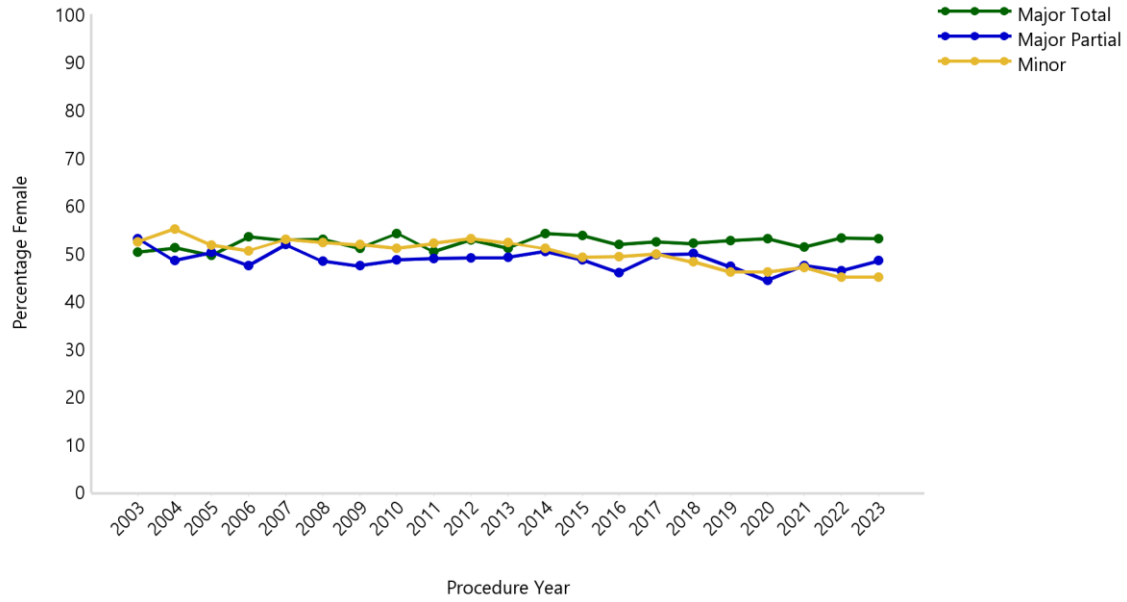


Figure SD41 Percentage of Patients Aged <65 Years by Type of Primary Knee Replacement and Procedure Year

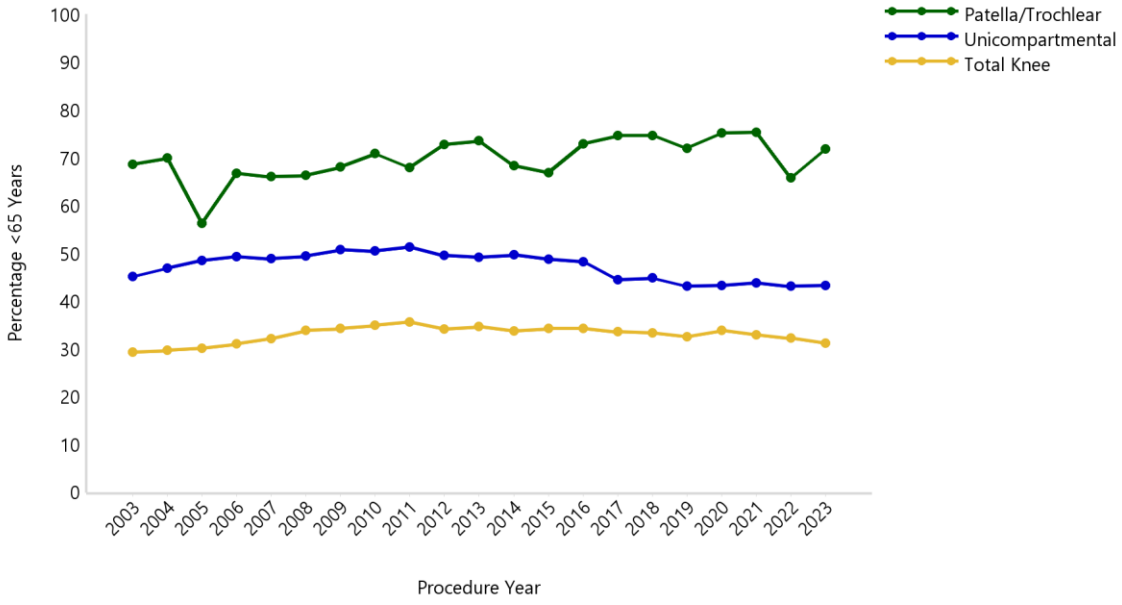


Figure SD42 Percentage of Patients Aged <65 Years by Revision Knee Replacement and Procedure Year

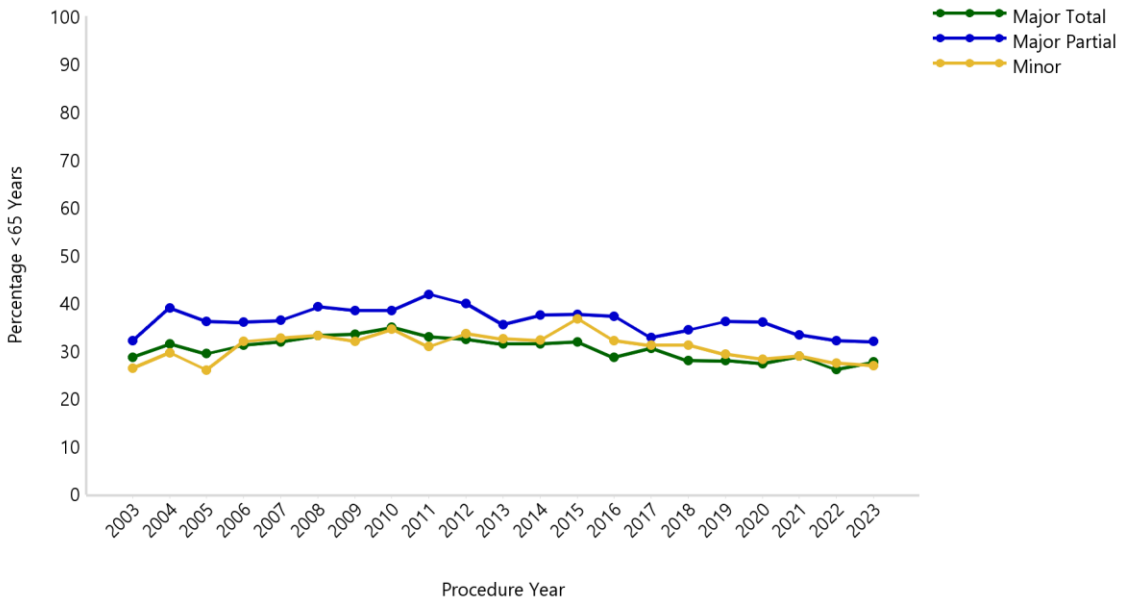


Figure SD43 Trends in Usage of Knee Replacement by Procedure Year

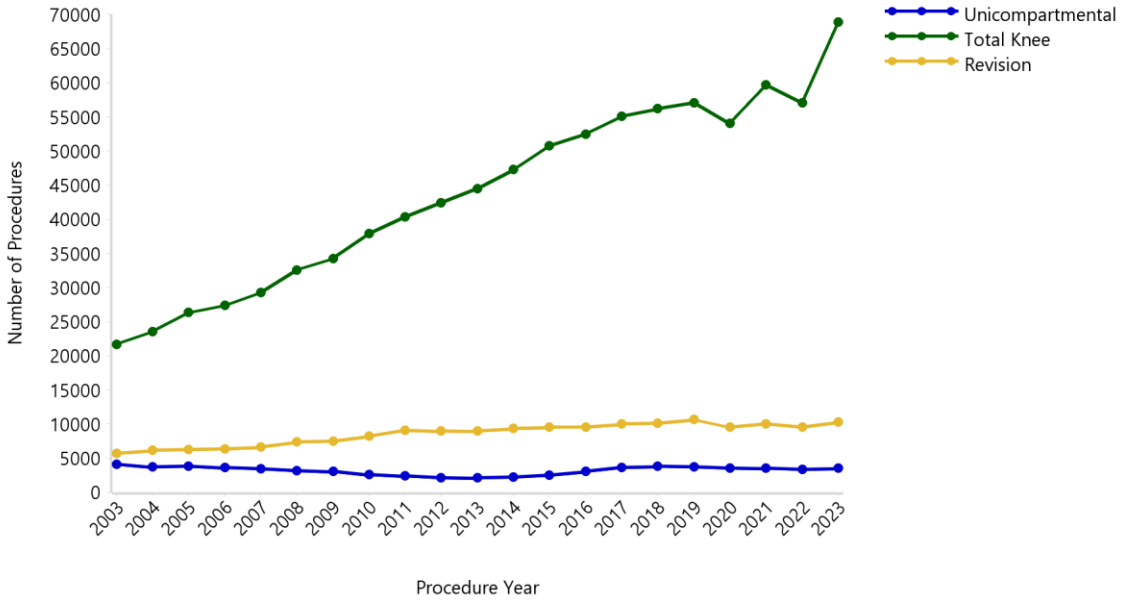


Figure SD44 Trends in Usage of Revision Knee Replacement by Procedure Year

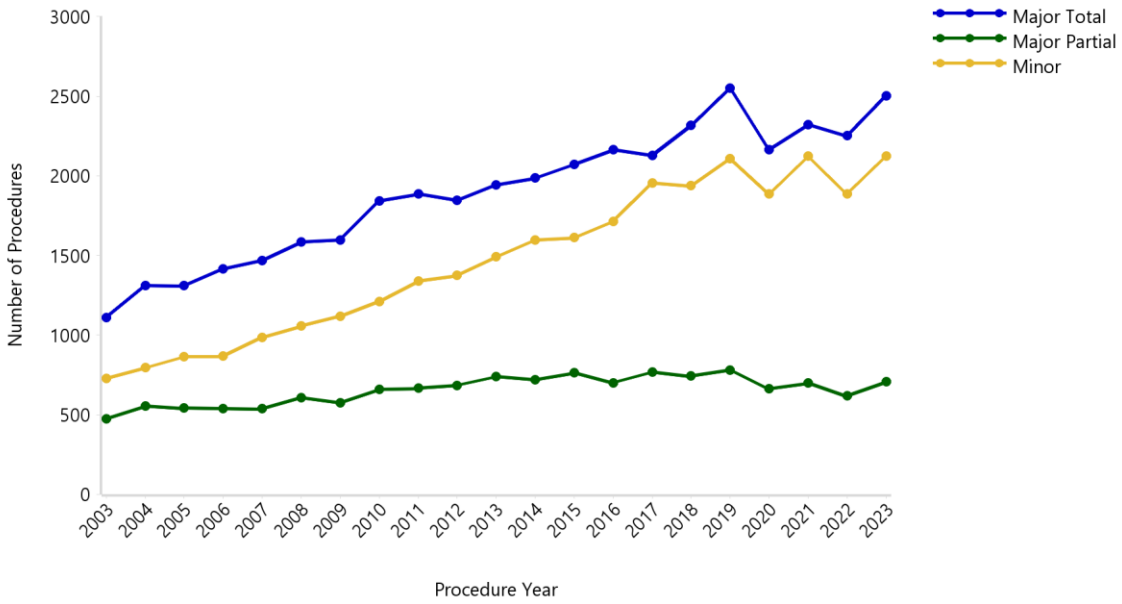


Table SD33 Incidence of Knee Replacement per 100,000 from 2003 to 2023

Knee Replacement	2003 N	2004 N	2005 N	2006 N	2007 N	2008 N	2009 N	2010 N	2011 N	2012 N	2013 N
Partial Resurfacing	.	0.0	0.1	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.1
Unispacer	0.1	0.1	0.0	.	.	.	.	.	.	.	.
Patella/Trochlear	0.8	0.9	0.9	0.9	0.9	1.1	1.1	1.2	1.1	1.0	1.1
Unicompartmental	20.8	18.7	19.2	17.7	16.8	15.2	14.2	11.9	10.8	9.4	9.2
Bicompartmental	.	.	.	0.0	0.2	0.2	0.2	0.1	0.0	0.0	.
All Primary Partial	**21.7**	**19.8**	**20.2**	**18.8**	**18.1**	**16.6**	**15.6**	**13.2**	**12.0**	**10.5**	**10.4**
Total Knee	110.2	118.4	130.5	133.9	140.7	153.5	158.2	172.1	180.7	186.7	192.5
All Primary Total	**110.2**	**118.4**	**130.5**	**133.9**	**140.7**	**153.5**	**158.2**	**172.1**	**180.7**	**186.7**	**192.5**
All Revisions	**11.7**	**13.4**	**13.5**	**13.8**	**14.4**	**15.3**	**15.2**	**16.9**	**17.4**	**17.2**	**18.1**
ALL KNEES	**143.6**	**151.5**	**164.2**	**166.5**	**173.1**	**185.5**	**188.9**	**202.2**	**210.1**	**214.4**	**220.9**

Knee Replacement	2014 N	2015 N	2016 N	2017 N	2018 N	2019 N	2020 N	2021 N	2022 N	2023 N	TOTAL N
Partial Resurfacing	0.1	0.0	0.0	0.0	0.0	.	.	.	0.0	.	0.1
Unispacer	.	.	.	.	.	.	.	.	.	.	0.0
Patella/Trochlear	1.0	1.0	1.3	1.2	1.3	1.2	1.2	1.2	1.1	1.1	1.1
Unicompartmental	9.7	10.7	12.6	14.9	15.2	14.8	13.9	13.8	13.1	13.3	14.0
Bicompartmental	.	.	.	.	.	.	.	.	.	.	0.0
All Primary Partial	**10.8**	**11.8**	**13.9**	**16.1**	**16.6**	**16.0**	**15.1**	**15.0**	**14.2**	**14.5**	**15.1**
Total Knee	201.4	213.2	217.1	224.1	224.9	225.2	210.5	232.0	219.6	258.6	189.6
All Primary Total	**201.4**	**213.2**	**217.1**	**224.1**	**224.9**	**225.2**	**210.5**	**232.0**	**219.6**	**258.6**	**189.6**
All Revisions	**18.3**	**18.7**	**18.9**	**19.7**	**20.0**	**21.5**	**18.4**	**20.0**	**18.3**	**20.0**	**17.4**
ALL KNEES	**230.5**	**243.7**	**250.0**	**259.9**	**261.5**	**262.6**	**243.9**	**267.0**	**252.1**	**293.1**	**222.2**

Figure SD45 Incidence of Knee Replacement per 100,000 from 2003 to 2023

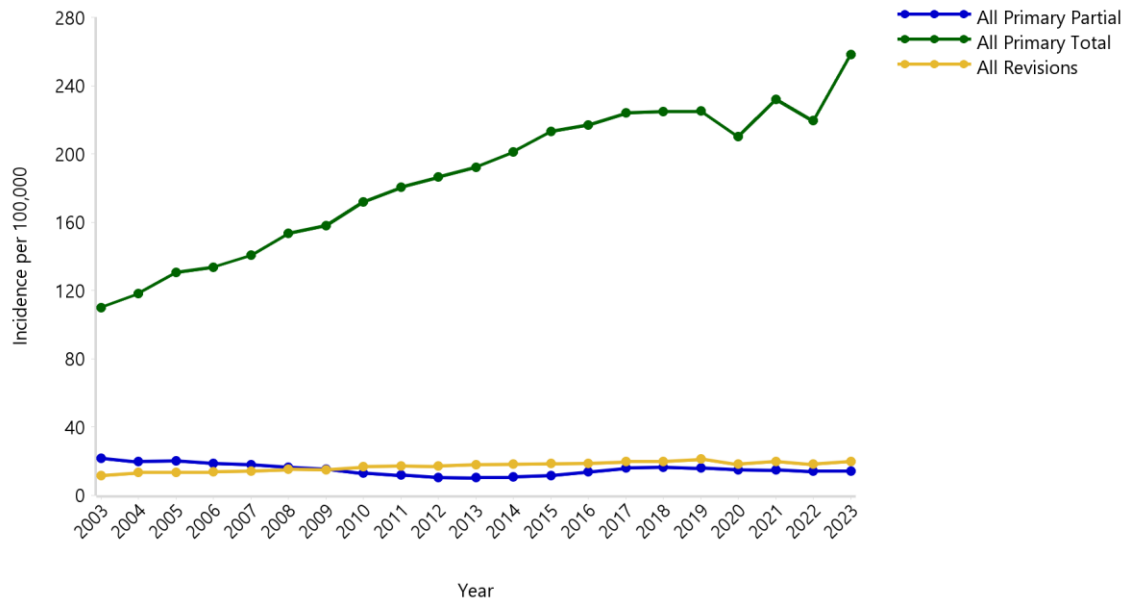


Table SD34 Incidence of Knee Replacement in Patients Aged <55 Years per 100,000 from 2003 to 2023

Knee Replacement	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
	N	N	N	N	N	N	N	N	N	N	N
Partial Resurfacing	.	0.0	0.1	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.1
Unispacer	0.1	0.1	.	.	.	.	.	.	.	.	.
Patella/Trochlear	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.6	0.5	0.5	0.6
Unicompartmental	3.5	3.4	3.6	3.6	3.2	2.9	2.7	2.3	2.4	1.9	1.9
Bicompartmental	.	.	.	.	0.1	0.0	0.0	0.0	0.0	0.0	.
All Primary Partial	**3.9**	**3.8**	**4.1**	**4.2**	**3.8**	**3.6**	**3.4**	**3.0**	**2.9**	**2.4**	**2.6**
Total Knee	10.1	10.5	11.3	11.5	12.9	13.9	14.6	16.3	17.2	17.1	18.5
All Primary Total	**10.1**	**10.5**	**11.3**	**11.5**	**12.9**	**13.9**	**14.6**	**16.3**	**17.2**	**17.1**	**18.5**
All Revisions	**1.4**	**1.8**	**1.5**	**1.6**	**1.7**	**2.0**	**1.7**	**2.1**	**2.0**	**1.9**	**2.0**
ALL KNEES	**15.4**	**16.1**	**16.9**	**17.3**	**18.4**	**19.5**	**19.7**	**21.4**	**22.1**	**21.5**	**23.0**

Knee Replacement	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	TOTAL
	N	N	N	N	N	N	N	N	N	N	N
Partial Resurfacing	0.1	0.0	0.0	0.0	0.0	.	.	.	0.0	.	0.0
Unispacer	.	.	.	.	.	.	.	.	.	.	0.0
Patella/Trochlear	0.6	0.6	0.8	0.8	0.7	0.7	0.7	0.7	0.6	0.6	0.6
Unicompartmental	2.0	2.0	2.4	2.6	2.7	2.5	2.5	2.4	2.4	2.4	2.6
Bicompartmental	.	.	.	.	.	.	.	.	.	.	0.0
All Primary Partial	**2.6**	**2.6**	**3.2**	**3.4**	**3.4**	**3.2**	**3.2**	**3.1**	**2.9**	**3.0**	**3.2**
Total Knee	18.2	19.6	20.4	20.4	20.0	19.5	19.8	21.4	20.1	22.0	17.2
All Primary Total	**18.2**	**19.6**	**20.4**	**20.4**	**20.0**	**19.5**	**19.8**	**21.4**	**20.1**	**22.0**	**17.2**
All Revisions	**2.0**	**2.2**	**2.1**	**2.0**	**2.1**	**2.1**	**1.8**	**1.9**	**1.5**	**1.6**	**1.9**
ALL KNEES	**22.8**	**24.4**	**25.8**	**25.8**	**25.4**	**24.8**	**24.9**	**26.4**	**24.5**	**26.7**	**22.3**

Figure SD46 Incidence of Knee Replacement in Patients Aged <55 Years per 100,000 from 2003 to 2023

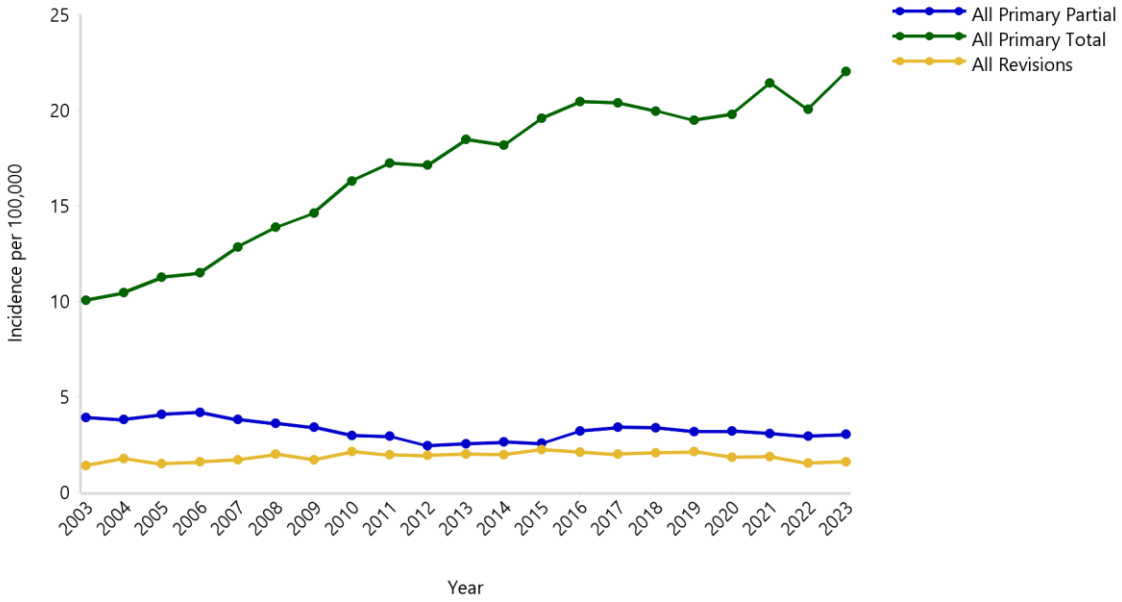


Table SD35 Incidence of Knee Replacement in Patients Aged 55-64 Years per 100,000 from 2003 to 2023

Knee Replacement	2003 N	2004 N	2005 N	2006 N	2007 N	2008 N	2009 N	2010 N	2011 N	2012 N	2013 N
Partial Resurfacing	.	.	0.0	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.2
Unispacer	0.2	0.6	0.0	.	.	.	.	.	.	.	.
Patella/Trochlear	1.9	3.1	1.9	2.4	2.5	3.0	2.9	3.5	3.2	3.2	2.7
Unicompartmental	66.2	59.4	61.5	55.4	52.5	47.2	45.9	37.6	32.9	28.6	27.8
Bicompartmental	.	.	.	.	0.5	0.8	0.6	0.5	0.2	0.1	.
All Primary Partial	**68.4**	**63.1**	**63.5**	**58.0**	**55.7**	**51.1**	**49.5**	**41.7**	**36.5**	**31.9**	**30.7**
Total Knee	242.7	260.1	287.5	300.7	320.5	370.5	383.7	421.8	449.5	449.2	466.1
All Primary Total	**242.7**	**260.1**	**287.5**	**300.7**	**320.5**	**370.5**	**383.7**	**421.8**	**449.5**	**449.2**	**466.1**
All Revisions	**22.5**	**28.4**	**26.6**	**29.7**	**31.0**	**33.3**	**34.3**	**38.5**	**38.6**	**39.0**	**38.7**
ALL KNEES	**333.6**	**351.6**	**377.5**	**388.4**	**407.3**	**455.0**	**467.6**	**502.0**	**524.6**	**520.2**	**535.5**

Knee Replacement	2014 N	2015 N	2016 N	2017 N	2018 N	2019 N	2020 N	2021 N	2022 N	2023 N	TOTAL N
Partial Resurfacing	0.1	0.0	0.1	.	.	.	.	.	.	.	0.1
Unispacer	.	.	.	.	.	.	.	.	.	.	0.0
Patella/Trochlear	2.2	2.5	3.0	3.0	4.4	3.3	2.9	3.2	2.8	3.2	2.9
Unicompartmental	29.5	33.1	37.7	40.8	42.3	39.3	36.5	37.5	34.0	35.6	40.9
Bicompartmental	.	.	.	.	.	.	.	.	.	.	0.1
All Primary Partial	**31.8**	**35.6**	**40.9**	**43.9**	**46.7**	**42.6**	**39.4**	**40.7**	**36.8**	**38.7**	**44.1**
Total Knee	479.2	512.0	518.7	523.6	523.7	513.1	490.6	526.7	488.1	571.5	444.6
All Primary Total	**479.2**	**512.0**	**518.7**	**523.6**	**523.7**	**513.1**	**490.6**	**526.7**	**488.1**	**571.5**	**444.6**
All Revisions	**39.9**	**42.1**	**38.0**	**40.7**	**39.2**	**41.6**	**34.2**	**39.2**	**33.8**	**39.1**	**36.1**
ALL KNEES	**550.9**	**589.7**	**597.6**	**608.1**	**609.6**	**597.2**	**564.3**	**606.5**	**558.7**	**649.3**	**524.8**

Figure SD47 Incidence of Knee Replacement in Patients Aged 55-64 Years per 100,000 from 2003 to 2023

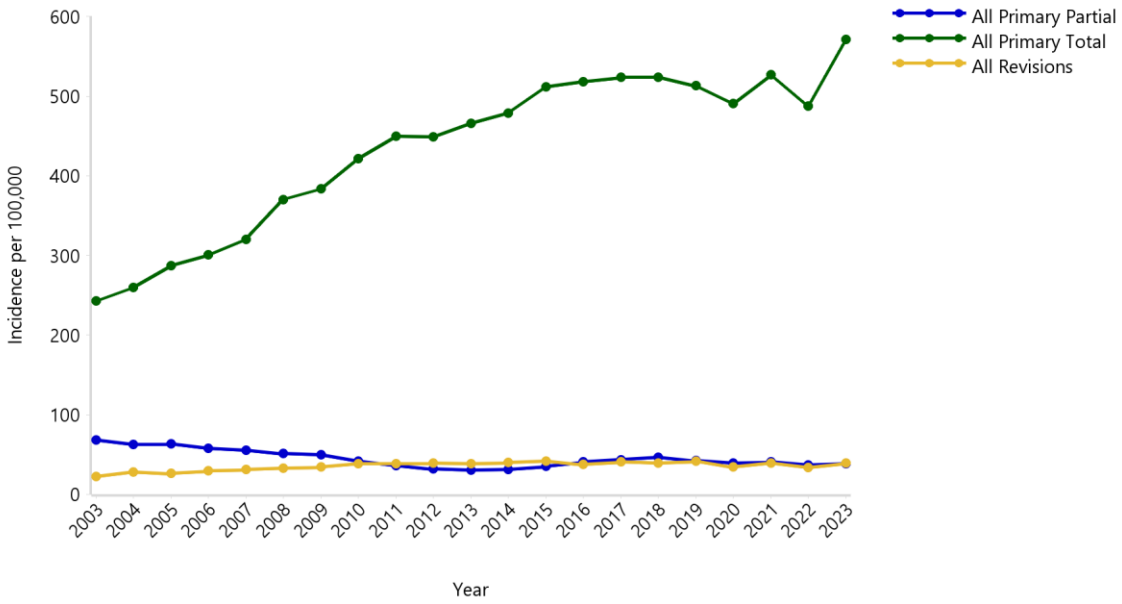


Table SD36 Incidence of Knee Replacement in Patients Aged 65-74 Years per 100,000 from 2003 to 2023

Knee Replacement	2003 N	2004 N	2005 N	2006 N	2007 N	2008 N	2009 N	2010 N	2011 N	2012 N	2013 N
Partial Resurfacing	.	.	.	0.4	0.3	0.3	0.1	.	.	0.1	0.3
Unispacer	.	0.2	.	.	.	.	.	.	.	.	.
Patella/Trochlear	2.2	1.8	3.0	2.6	2.8	2.6	2.5	2.9	2.8	2.1	2.1
Unicompartmental	101.7	84.2	87.5	81.2	73.9	65.7	62.5	52.5	44.5	39.5	37.8
Bicompartmental	.	.	.	0.2	0.6	0.7	0.6	0.2	0.1	.	.
All Primary Partial	**104.0**	**86.2**	**90.5**	**84.3**	**77.7**	**69.2**	**65.8**	**55.7**	**47.4**	**41.7**	**40.2**
Total Knee	616.4	659.7	705.4	726.2	750.5	810.5	835.2	886.6	910.0	944.6	945.2
All Primary Total	**616.4**	**659.7**	**705.4**	**726.2**	**750.5**	**810.5**	**835.2**	**886.6**	**910.0**	**944.6**	**945.2**
All Revisions	**56.3**	**65.8**	**67.2**	**66.3**	**66.4**	**70.8**	**73.4**	**80.5**	**82.4**	**80.7**	**85.4**
ALL KNEES	**776.7**	**811.7**	**863.0**	**876.8**	**894.6**	**950.5**	**974.4**	**1022.8**	**1039.9**	**1066.9**	**1070.8**

Knee Replacement	2014 N	2015 N	2016 N	2017 N	2018 N	2019 N	2020 N	2021 N	2022 N	2023 N	TOTAL N
Partial Resurfacing	0.1	0.1	.	.	.	.	.	.	.	.	0.1
Unispacer	.	.	.	.	.	.	.	.	.	.	0.0
Patella/Trochlear	2.8	2.8	2.6	2.4	2.8	2.4	1.9	2.0	2.8	2.6	2.5
Unicompartmental	38.9	44.1	53.6	64.7	62.2	61.6	57.8	52.8	50.4	49.8	58.3
Bicompartmental	.	.	.	.	.	.	.	.	.	.	0.1
All Primary Partial	**41.8**	**47.0**	**56.3**	**67.1**	**65.0**	**63.9**	**59.8**	**54.8**	**53.1**	**52.5**	**61.0**
Total Knee	994.7	1024.0	1031.0	1065.8	1054.2	1046.5	949.3	1024.9	950.4	1136.7	934.8
All Primary Total	**994.7**	**1024.0**	**1031.0**	**1065.8**	**1054.2**	**1046.5**	**949.3**	**1024.9**	**950.4**	**1136.7**	**934.8**
All Revisions	**86.3**	**83.8**	**84.6**	**88.5**	**91.0**	**93.5**	**81.5**	**80.2**	**76.2**	**82.2**	**79.7**
ALL KNEES	**1122.7**	**1154.8**	**1171.9**	**1221.3**	**1210.2**	**1204.0**	**1090.5**	**1159.9**	**1079.8**	**1271.3**	**1075.4**

Figure SD48 Incidence of Knee Replacement in Patients Aged 65-74 Years per 100,000 from 2003 to 2023

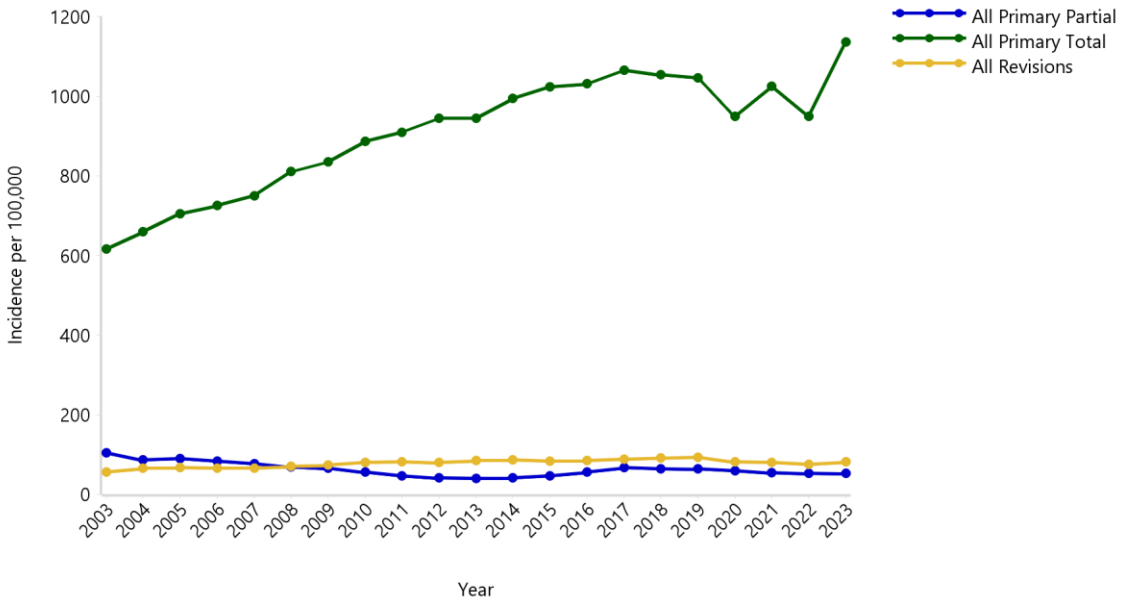


Table SD37 Incidence of Knee Replacement in Patients Aged ≥75 Years per 100,000 from 2003 to 2023

Knee Replacement	2003 N	2004 N	2005 N	2006 N	2007 N	2008 N	2009 N	2010 N	2011 N	2012 N	2013 N
Partial Resurfacing	.	.	.	.	0.1	0.1	.	.	.	0.1	0.4
Unispacer	.	0.1	.	.	.	.	.	.	.	.	.
Patella/Trochlear	1.4	2.5	2.8	1.9	2.0	3.0	2.5	2.3	2.3	1.6	1.8
Unicompartmental	76.0	69.8	64.2	55.3	55.8	49.5	41.1	32.5	30.1	26.5	25.9
Bicompartmental	.	.	.	0.1	0.7	1.1	0.4	0.3	.	.	.
All Primary Partial	**77.5**	**72.3**	**67.0**	**57.3**	**58.6**	**53.7**	**44.0**	**35.1**	**32.4**	**28.2**	**28.1**
Total Knee	604.2	635.4	702.6	688.3	698.5	720.8	715.6	754.8	759.1	774.4	781.9
All Primary Total	**604.2**	**635.4**	**702.6**	**688.3**	**698.5**	**720.8**	**715.6**	**754.8**	**759.1**	**774.4**	**781.9**
All Revisions	**76.4**	**75.2**	**79.9**	**77.8**	**80.9**	**81.9**	**77.4**	**79.9**	**84.7**	**79.2**	**83.4**
ALL KNEES	**758.0**	**782.9**	**849.5**	**823.3**	**838.0**	**856.4**	**837.0**	**869.8**	**876.2**	**881.8**	**893.3**

Knee Replacement	2014 N	2015 N	2016 N	2017 N	2018 N	2019 N	2020 N	2021 N	2022 N	2023 N	TOTAL N
Partial Resurfacing	.	0.1	.	.	.	.	.	.	.	.	0.0
Unispacer	.	.	.	.	.	.	.	.	.	.	0.0
Patella/Trochlear	1.3	1.7	1.8	1.5	1.4	1.7	1.5	1.3	1.5	1.0	1.8
Unicompartmental	25.8	27.3	29.1	38.8	42.4	41.5	35.9	37.5	35.1	37.2	40.5
Bicompartmental	.	.	.	.	.	.	.	.	.	.	0.1
All Primary Partial	**27.2**	**29.1**	**30.8**	**40.3**	**43.7**	**43.2**	**37.4**	**38.8**	**36.6**	**38.2**	**42.4**
Total Knee	799.3	828.2	817.3	834.3	827.8	830.1	726.2	795.5	772.9	920.7	770.6
All Primary Total	**799.3**	**828.2**	**817.3**	**834.3**	**827.8**	**830.1**	**726.2**	**795.5**	**772.9**	**920.7**	**770.6**
All Revisions	**81.3**	**79.2**	**87.1**	**87.6**	**86.5**	**96.3**	**77.8**	**88.1**	**79.8**	**86.8**	**82.7**
ALL KNEES	**907.7**	**936.4**	**935.3**	**962.1**	**958.0**	**969.7**	**841.4**	**922.4**	**889.3**	**1045.7**	**895.7**

Figure SD49 Incidence of Knee Replacement in Patients Aged ≥75 Years per 100,000 from 2003 to 2023

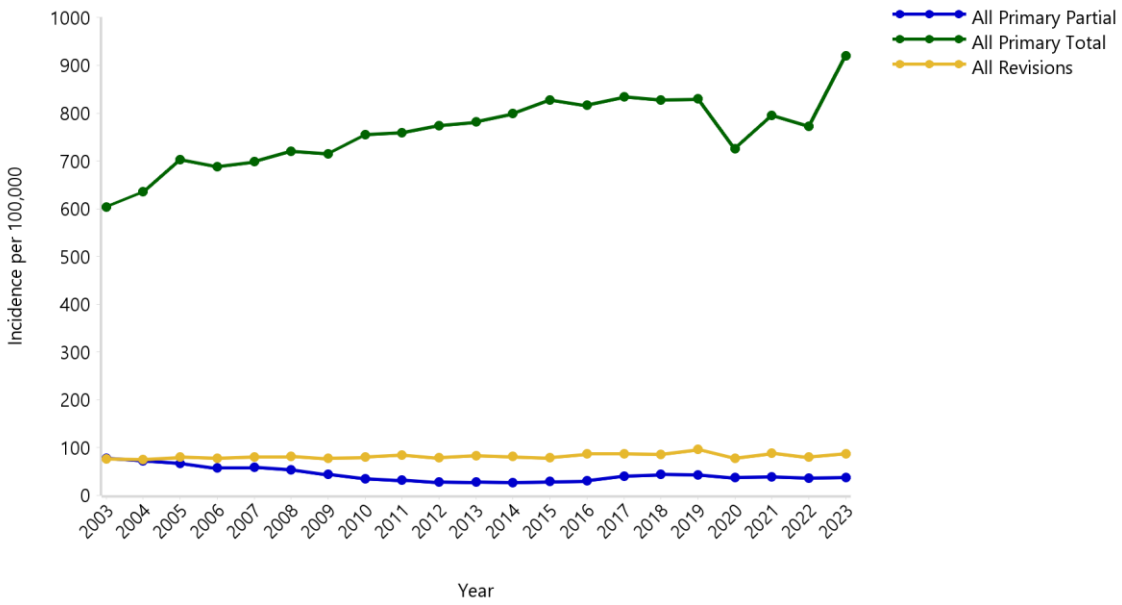


Figure SD50 Trends in Usage of Knee Replacement by State/Territory and Year

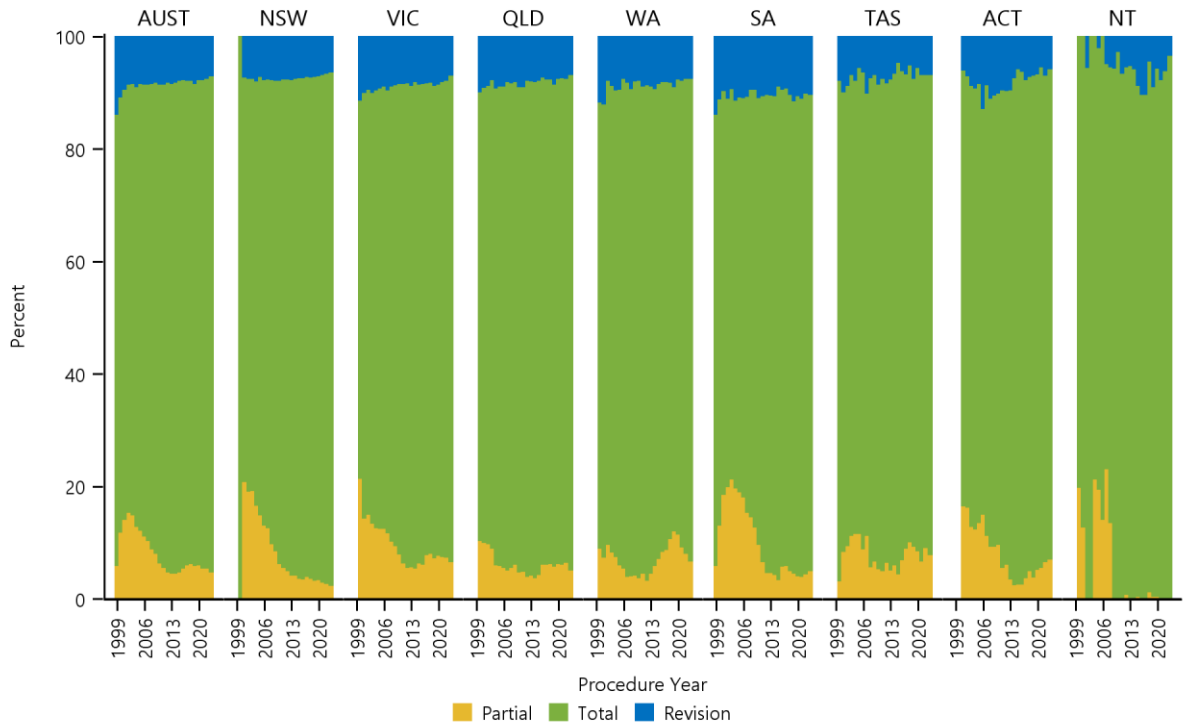


Table SD38 Time between Procedures for Bilateral Primary Knee Replacement

Bilateral Procedures	Same Day			1 day - 3 months			3 months - 6 months			≥6 months			TOTAL		
	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%
Both Partial	5642	39.3	9.5	751	5.2	8.1	1011	7.0	5.1	6948	48.4	3.7	14352	100.0	5.2
Both Total	53374	21.3	89.7	8390	3.4	90.8	18727	7.5	93.8	169675	67.8	90.1	250166	100.0	90.3
Total/Partial	495	3.9	0.8	104	0.8	1.1	234	1.9	1.2	11784	93.4	6.3	12617	100.0	4.6
TOTAL	**59511**	**21.5**	**100.0**	**9245**	**3.3**	**100.0**	**19972**	**7.2**	**100.0**	**188407**	**68.0**	**100.0**	**277135**	**100.0**	**100.0**

Table SD39 Number of Knee Procedures by Patient

Hip Procedures	Not Revised		1 Revision		2 Revisions		3 or more Revisions		TOTAL	
	N	Row%	N	Row%	N	Row%	N	Row%	N	Row%
Unknown Primary/Primaries	.	.	8340	75.4	1990	18.0	738	6.7	11068	100.0
Single Primary Procedure	454580	94.3	21432	4.4	4227	0.9	2048	0.4	482287	100.0
2 Primary Procedures	252407	91.1	17571	6.3	4840	1.7	2317	0.8	277135	100.0
TOTAL	**706987**	**91.8**	**47343**	**6.1**	**11057**	**1.4**	**5103**	**0.7**	**770490**	**100.0**

PRIMARY PARTIAL KNEE REPLACEMENT

CLASSES OF PARTIAL KNEE REPLACEMENT

The Registry subcategorises partial knee replacement into five classes. These are defined by the type of prostheses used.

Partial resurfacing involves the use of one or more button prostheses to replace part of the natural articulating surface on one or more sides of the joint in one or more articular compartments of the knee. The last recorded procedure was in 2022.

Unispacer involves the use of a medial or lateral femorotibial compartment articular spacer. The last recorded procedure was in 2005.

Bicompartmental involves the replacement of the medial femoral and trochlea articular surface of the knee with a single femoral prosthesis, as well as the medial tibial articular surface with a unicompartmental tibial prosthesis. It may also include the use of a patella prosthesis. The last recorded procedure was in 2012.

Patella/trochlea involves the use of a trochlea prosthesis to replace the femoral trochlea articular surface and on most occasions a patella prosthesis.

Unicompartmental involves the replacement of the femoral and tibial articular surface of either the medial or lateral femorotibial compartment using unicompartmental femoral and tibial prostheses.

Detailed information on partial resurfacing, Unispacer and bicompartmental knee replacement is available in the supplementary report 'Prosthesis Types with No or Minimal Use' on the AOANJRR website: https://aoanjrr.sahmri.com/annual-reports-2024

Table SD40 Primary Partial Knee Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	37877	47.1%	13	98	64	64.2	10.6
Male	42505	52.9%	17	98	66	65.6	9.8
TOTAL	**80382**	**100.0%**	**13**	**98**	**65**	**64.9**	**10.2**

Figure SD51 Primary Partial Knee Replacement by Age and Gender

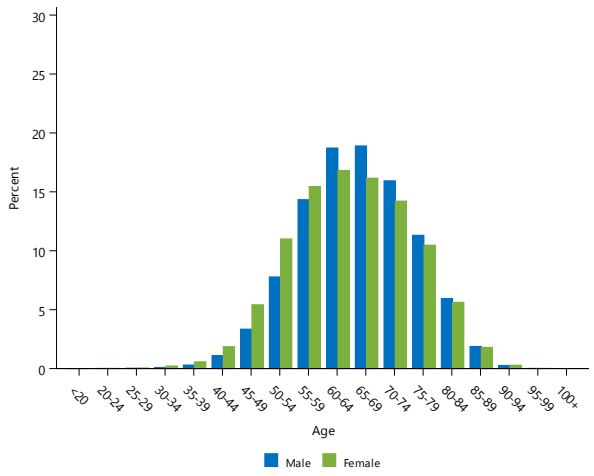
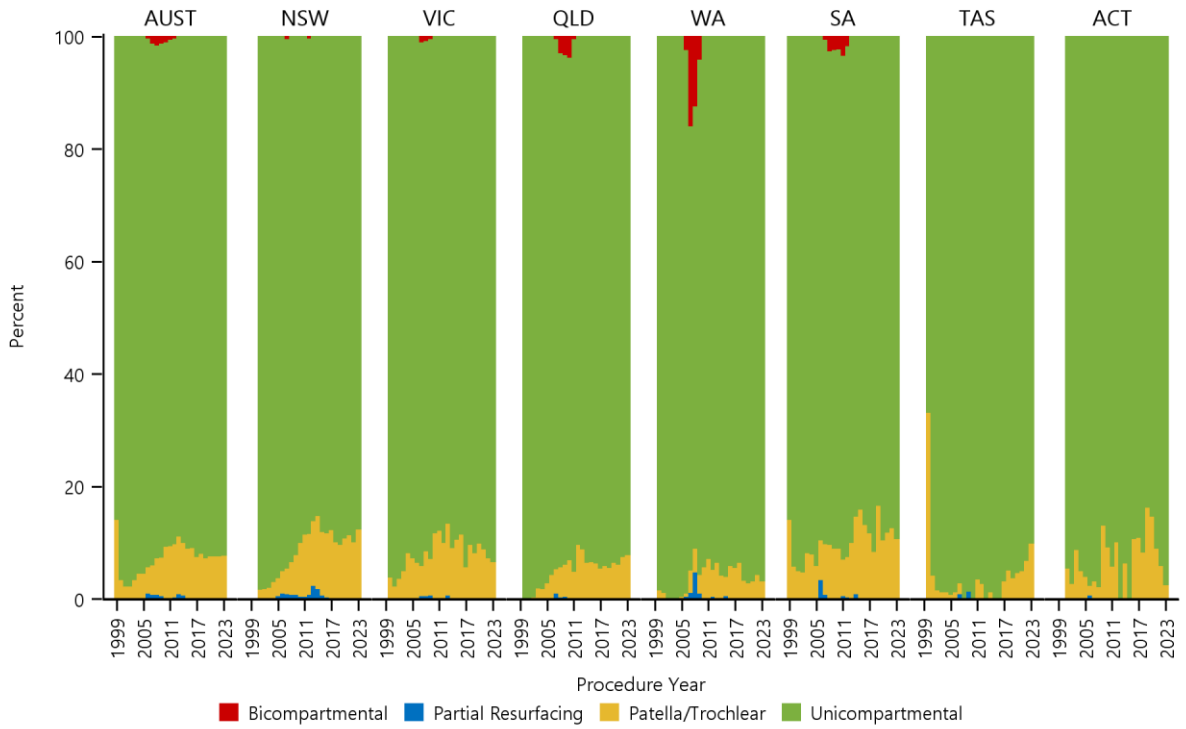


Table SD41 Primary Partial Knee Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Osteoarthritis	79628	99.1
Osteonecrosis	463	0.6
Rheumatoid Arthritis	167	0.2
Other Inflammatory Arthritis	80	0.1
Fracture	9	0.0
Osteochondritis Dissecans	6	0.0
Tumour	3	0.0
Chondrocalcinosis	1	0.0
Other	25	0.0
TOTAL	**80382**	**100.0**

Figure SD52 Trends in Usage of Primary Partial Knee Replacement by State/Territory and Year



Note: NT is excluded from this graph due to low procedure numbers

PRIMARY PARTIAL RESURFACING KNEE REPLACEMENT

Table SD42 Primary Partial Resurfacing Knee Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	121	49.2%	30	88	51	51.3	11.7
Male	125	50.8%	17	85	49	48.9	14.4
TOTAL	**246**	**100.0%**	**17**	**88**	**50**	**50.1**	**13.2**

Figure SD53 Primary Partial Resurfacing Knee Replacement by Age and Gender

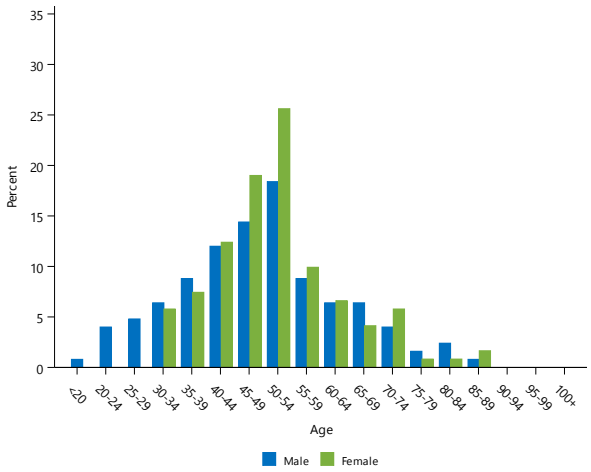


Table SD43 Primary Partial Resurfacing Knee Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Osteoarthritis	225	91.5
Osteonecrosis	11	4.5
Osteochondritis Dissecans	4	1.6
Other Inflammatory Arthritis	2	0.8
Chondrocalcinosis	1	0.4
Other	3	1.2
TOTAL	**246**	**100.0**

PRIMARY UNISPACER KNEE REPLACEMENT

Table SD44 Primary Unispacer Knee Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	19	47.5%	40	69	56	54.1	8.4
Male	21	52.5%	41	75	55	55.2	9.2
TOTAL	**40**	**100.0%**	**40**	**75**	**55**	**54.7**	**8.7**

Figure SD54 Primary Unispacer Knee Replacement by Age and Gender

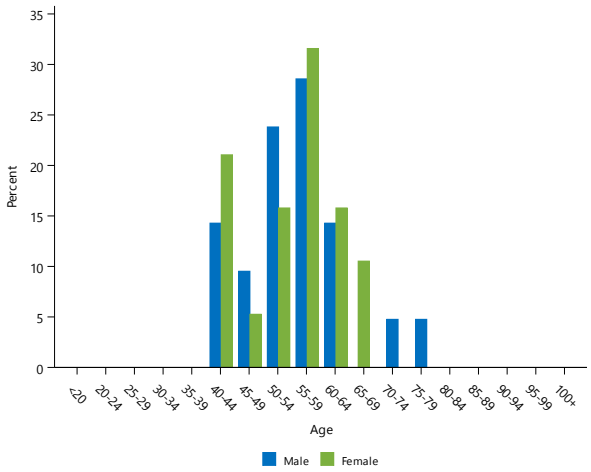


Table SD45 Primary Unispacer Knee Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Osteoarthritis	40	100.0
TOTAL	**40**	**100.0**

PRIMARY BICOMPARTMENTAL KNEE REPLACEMENT

Table SD46 Primary Bicompartmental Knee Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	100	60.6%	46	84	61	63.8	10.6
Male	65	39.4%	45	86	62	65.1	9.9
TOTAL	**165**	**100.0%**	**45**	**86**	**62**	**64.3**	**10.3**

Figure SD55 Primary Bicompartmental Knee Replacement by Age and Gender

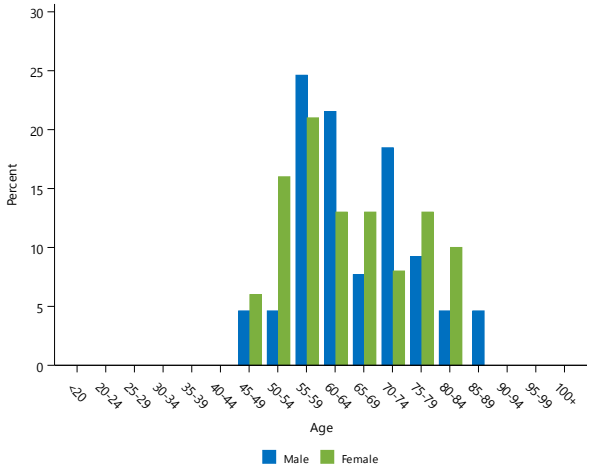


Table SD47 Primary Bicompartmental Knee Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Osteoarthritis	160	97.0
Osteonecrosis	3	1.8
Other Inflammatory Arthritis	1	0.6
Rheumatoid Arthritis	1	0.6
TOTAL	**165**	**100.0**

PRIMARY PATELLA/TROCHLEA KNEE REPLACEMENT

Table SD48 Primary Patella/Trochlea Knee Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	4149	76.5%	21	95	57	57.7	11.7
Male	1276	23.5%	24	95	61	60.9	12.8
TOTAL	**5425**	**100.0%**	**21**	**95**	**58**	**58.4**	**12.1**

Figure SD56 Primary Patella/Trochlea Knee Replacement by Age and Gender

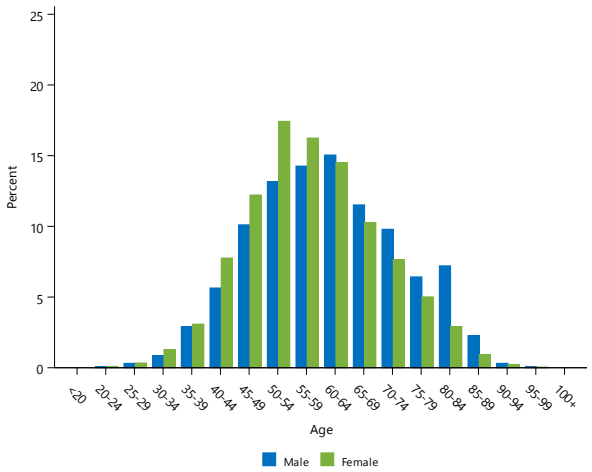


Table SD49 Primary Patella/Trochlea Knee Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Osteoarthritis	5362	98.8
Other Inflammatory Arthritis	23	0.4
Rheumatoid Arthritis	9	0.2
Osteonecrosis	5	0.1
Fracture	4	0.1
Tumour	2	0.0
Other	20	0.4
TOTAL	**5425**	**100.0**

PRIMARY UNICOMPARTMENTAL KNEE REPLACEMENT

Table SD50 Primary Unicompartmental Knee Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	33488	44.9%	13	98	65	65.0	10.2
Male	41018	55.1%	24	98	66	65.9	9.6
TOTAL	**74506**	**100.0%**	**13**	**98**	**65**	**65.5**	**9.9**

Figure SD57 Primary Unicompartmental Knee Replacement by Age and Gender

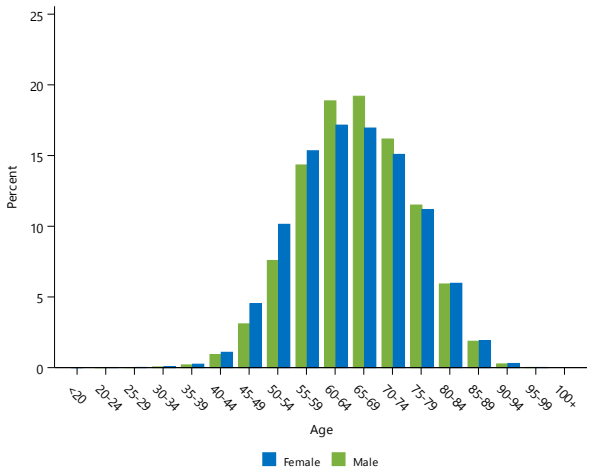
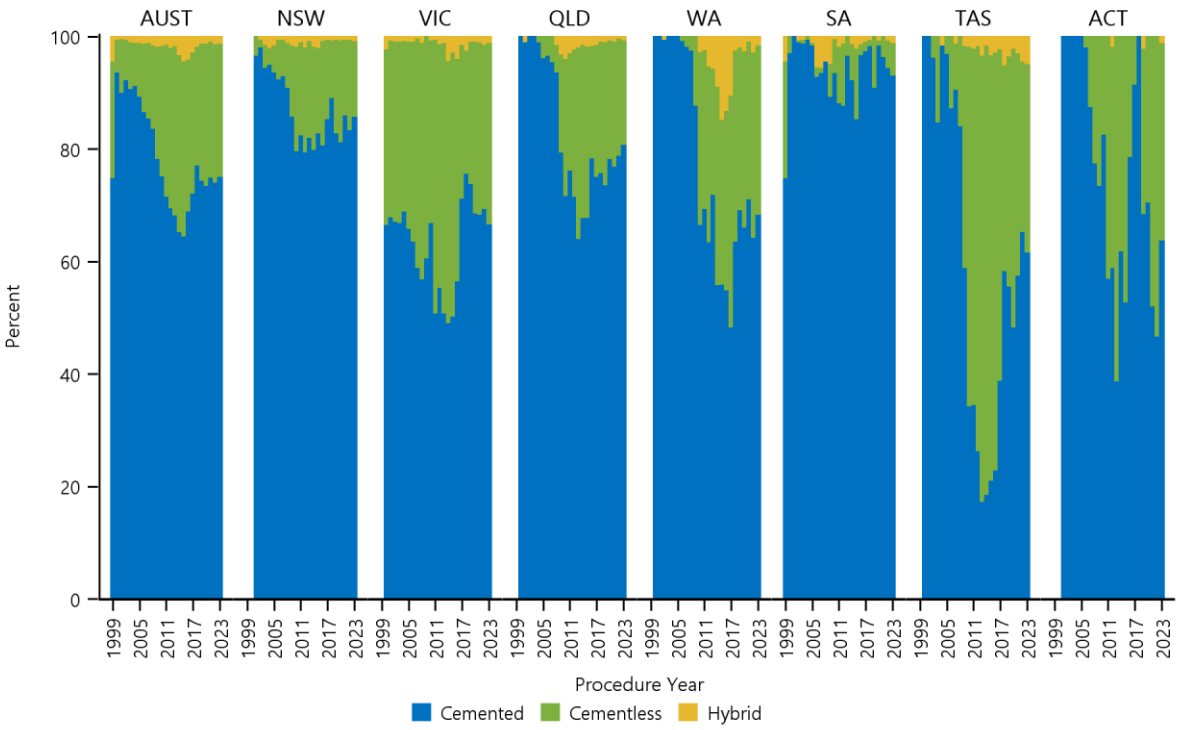


Table SD51 Primary Unicompartmental Knee Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Osteoarthritis	73841	99.1
Osteonecrosis	444	0.6
Rheumatoid Arthritis	157	0.2
Other Inflammatory Arthritis	54	0.1
Fracture	5	0.0
Osteochondritis Dissecans	2	0.0
Tumour	1	0.0
Other	2	0.0
TOTAL	**74506**	**100.0**

Figure SD58 Trends in Fixation of Primary Unicompartmental Knee Replacement by State/Territory and Year



Note: NT is excluded from this graph due to low procedure numbers

PRIMARY TOTAL KNEE REPLACEMENT

The Registry defines a total knee replacement as a replacement of the entire femorotibial articulation using a single femoral and a single tibial prosthesis. This may or may not be combined with a patella replacement.

Table SD52 Primary Total Knee Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	534205	55.9%	8	107	69	68.8	9.3
Male	421970	44.1%	8	101	68	68.1	9.0
TOTAL	**956175**	**100.0%**	**8**	**107**	**69**	**68.5**	**9.2**

Figure SD59 Primary Total Knee Replacement by Age and Gender

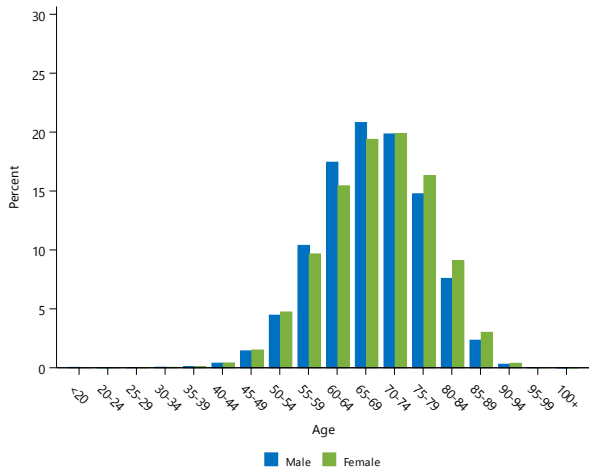
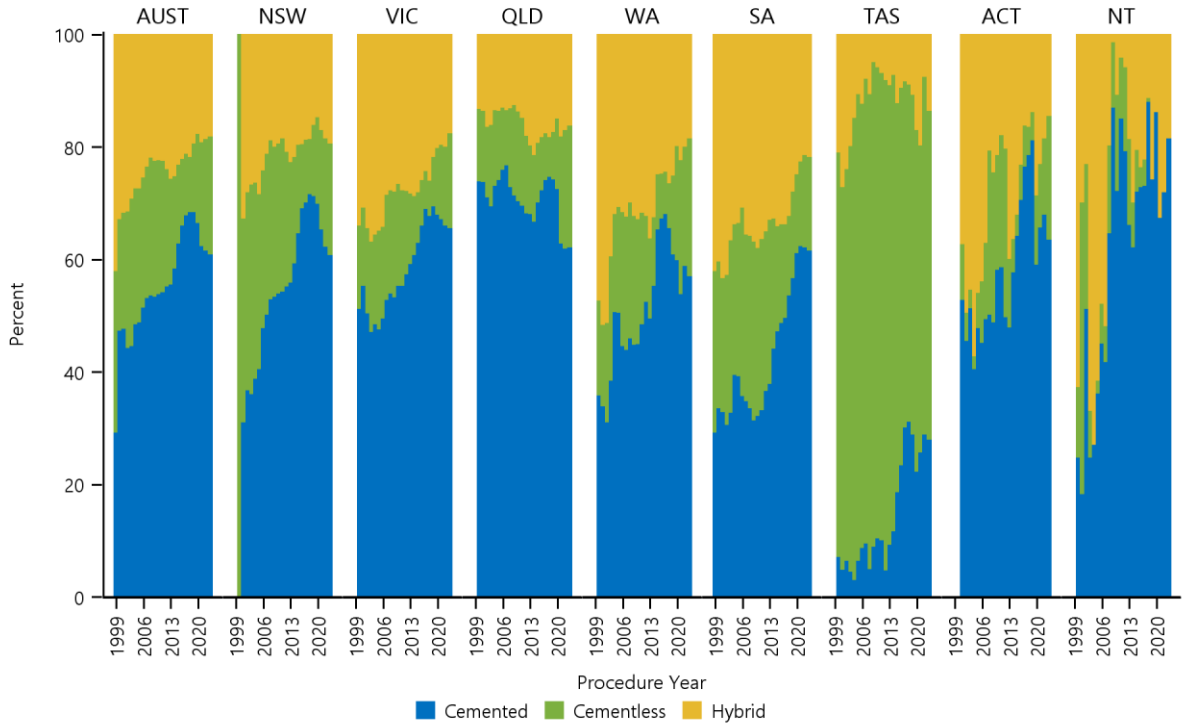


Table SD53 Primary Total Knee Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Osteoarthritis	935614	97.8
Rheumatoid Arthritis	10724	1.1
Other Inflammatory Arthritis	4793	0.5
Osteonecrosis	2792	0.3
Tumour	1133	0.1
Fracture	830	0.1
Chondrocalcinosis	15	0.0
Other	274	0.0
TOTAL	**956175**	**100.0**

Figure SD60 Trends in Fixation of Primary Total Knee Replacement by State/Territory and Year



ALL REVISION KNEE REPLACEMENT

CLASSES OF REVISION PROCEDURES

The Registry defines revision of a joint replacement as any re-operation of a previous joint replacement procedure that involves the insertion, removal and/or replacement of a prosthesis or implant. Revisions are sub categorised into three classes: major total, major partial and minor.

Major total revision is the insertion, removal and/or replacement of all major components.

Major partial revision is the insertion, removal and/or replacement of one major component.

Minor revision is the insertion removal and/or replacement of any other prostheses or implant including patellar prostheses in knee replacement.

Major components are prostheses that are fixed to bone. These are the femoral and tibial prostheses in either partial or total knee replacement. Although a patella prosthesis is fixed to bone it is not considered a major component.

Different types of major partial and minor revisions are identified based on the specific prostheses or implants used in the revision.

Table SD54 All Revision Knee Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Male	43611	49.2%	13	101	70	69.0	10.1
Female	45046	50.8%	10	99	70	69.2	10.4
TOTAL	**88657**	**100.0%**	**10**	**101**	**70**	**69.1**	**10.3**

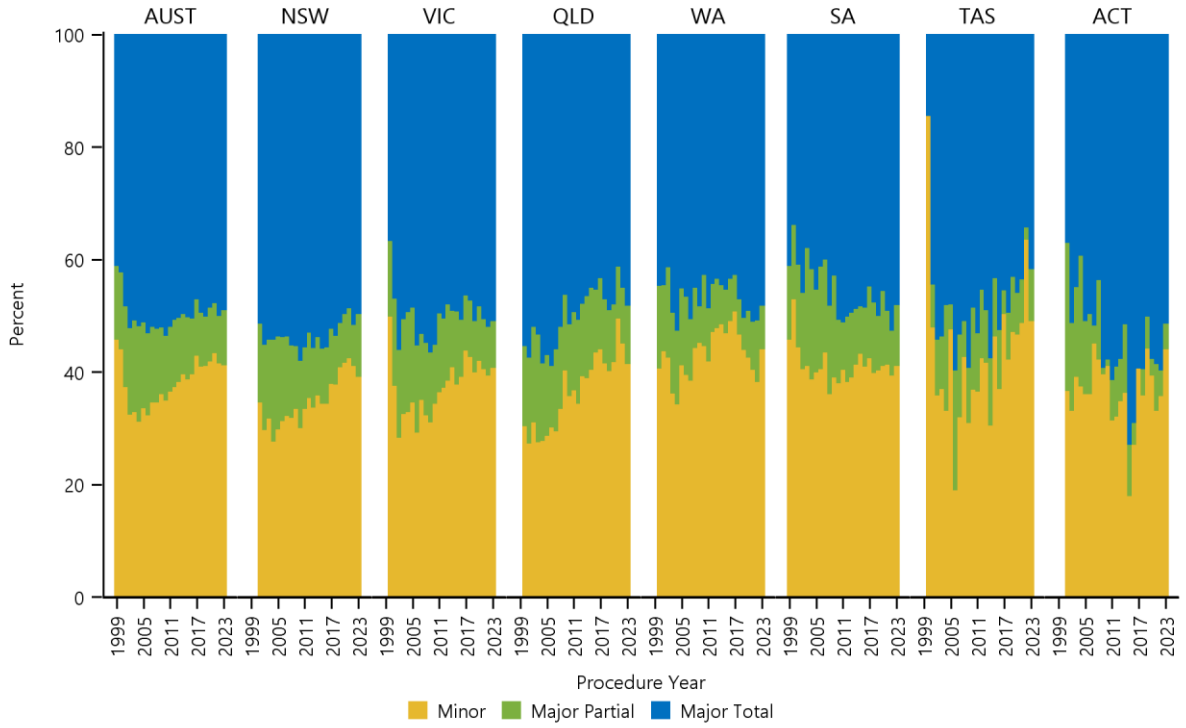
Table SD55 Reason for Revision of All Knee Replacement

Reason for Revision	Number	Percent
Loosening	24661	27.8
Infection	23000	25.9
Progression Of Disease	5850	6.6
Instability	5359	6.0
Pain	5244	5.9
Patellofemoral Pain	3780	4.3
Patella Erosion	2916	3.3
Wear Tibial Insert	2814	3.2
Lysis	2699	3.0
Fracture	2517	2.8
Arthrofibrosis	1899	2.1
Malalignment	1312	1.5
Implant Breakage Tibial Insert	847	1.0
Metal Related Pathology	711	0.8
Bearing Dislocation	658	0.7
Incorrect Sizing	516	0.6
Implant Breakage Tibial	497	0.6
Wear Tibial	491	0.6
Implant Breakage Patella	469	0.5
Patella Maltracking	433	0.5
Prosthesis Dislocation	311	0.4
Wear Patella	293	0.3
Implant Breakage Femoral	264	0.3
Synovitis	207	0.2
Osteonecrosis	137	0.2
Tumour	81	0.1
Heterotopic Bone	48	0.1
Wear Femoral	22	0.0
Patella Dislocation	6	0.0
Incorrect Side	3	0.0
Other	612	0.7
TOTAL	**88657**	**100.0**

Table SD56 Type of Revision of All Knee Replacement

Type of Revision	Number	Percent
TKR (Tibial/Femoral)	41826	47.2
Insert Only	15648	17.7
Patella Only	9059	10.2
Insert/Patella	6293	7.1
Tibial Component	5008	5.6
Cement Spacer	4584	5.2
Femoral Component	3748	4.2
Uni Insert Only	822	0.9
Removal of Prostheses	454	0.5
Minor Components	397	0.4
Uni Tibial Component	285	0.3
UKR (Uni Tibial/Uni Femoral)	206	0.2
Uni Femoral Component	113	0.1
Patella/Trochlear Resurfacing	102	0.1
Cement Only	51	0.1
Reinsertion of Components	41	0.0
Removal of Patella	8	0.0
Partial Resurfacing	7	0.0
Unispacer	4	0.0
Uni Insert/Patella	1	0.0
TOTAL	**88657**	**100.0**

Figure SD61 Trends in Usage of All Revision Knee Replacement by State/Territory and Year



Note: NT is excluded from this graph due to low procedure numbers

Shoulder Replacement

CATEGORIES OF SHOULDER REPLACEMENT

The Registry groups shoulder replacement into three broad categories: primary partial, primary total and revision shoulder replacement.

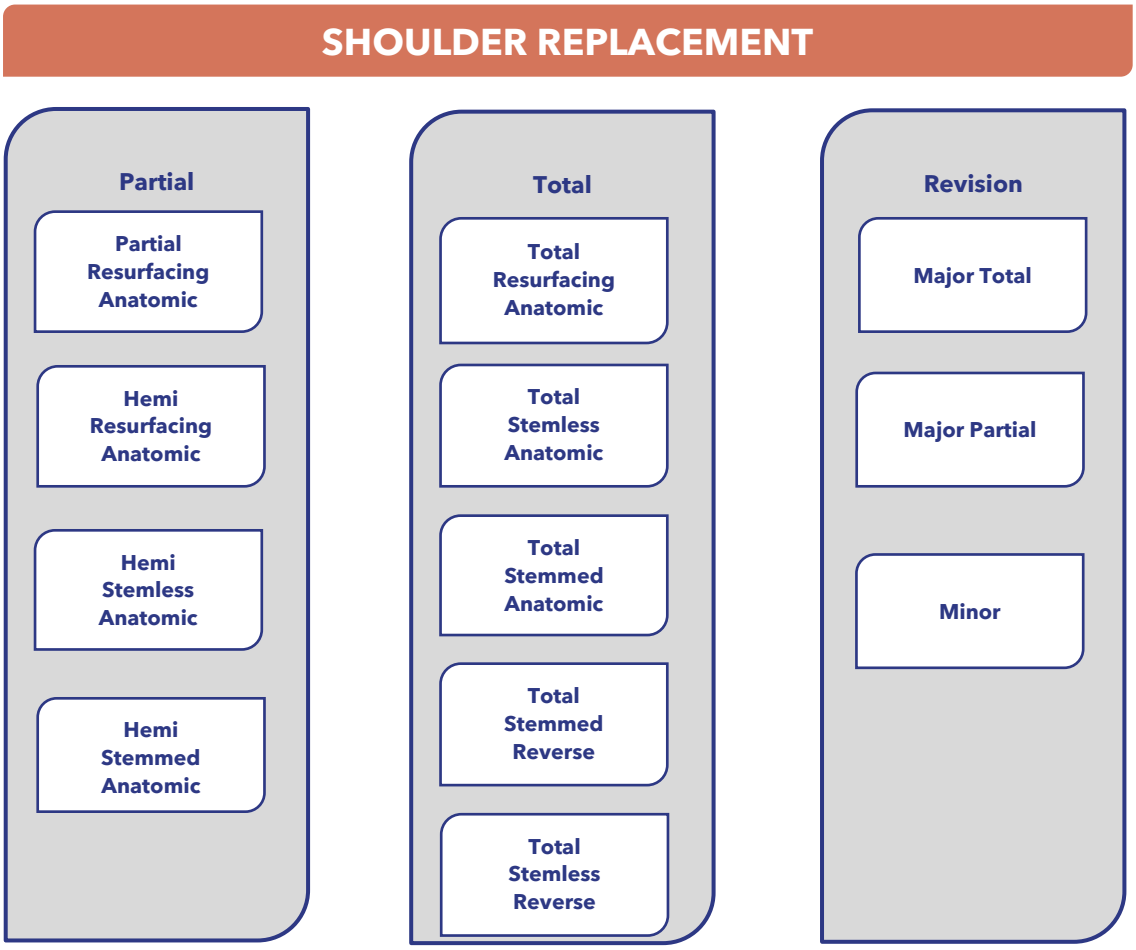
A primary replacement is the initial joint replacement procedure and involves replacing either part (partial) or all (total) of the articular surface.
Primary partial and primary total shoulder replacements are further categorised into subclasses depending on the type of prosthesis used. Partial shoulder subclasses include partial resurfacing anatomic, hemi resurfacing anatomic, hemi stemless anatomic and hemi stemmed anatomic.

Primary total shoulder replacement is subcategorised into five classes. These are defined by the type of prosthesis used. The use of stemless anatomic shoulder replacement has been growing considerably. As such mid head humeral prostheses are now classified as stemless anatomic and stemless reverse to reflect their differing polarity.

Total shoulder subclasses include total resurfacing anatomic, total stemless anatomic, total stemmed anatomic, total stemmed reverse and total stemless reverse. Definitions for each of these classes are detailed in the subsequent sections.

Revision procedures are re-operations of previous shoulder replacements where one or more of the prosthetic components are replaced, removed, or another component is added. Revision procedures include re-operations of primary partial, primary total, or previous revision procedures.

Shoulder revision procedures are sub-categorised into three classes: minor, major partial and major total.

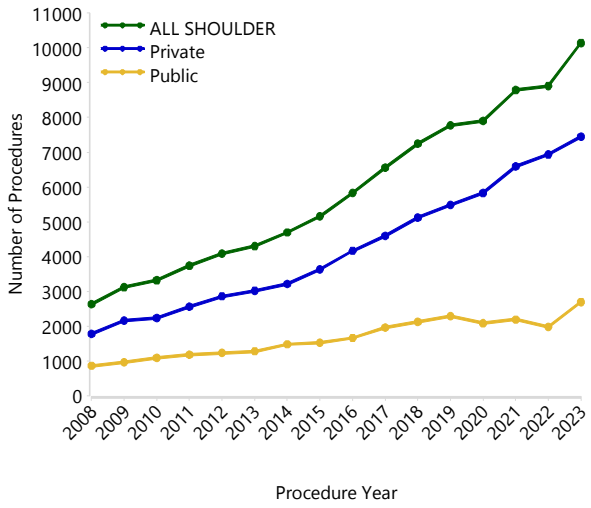


PUBLIC AND PRIVATE SECTOR

In 2023, 73.4% of all shoulder replacement procedures reported to the Registry were undertaken in private hospitals.

In the last year, there was an increase in the number of shoulder replacements recorded in the private and the public sector. There were 7,448 private sector procedures (an increase of 7.5% compared to number of private sector procedures in 2022) and 2,693 public sector procedures (an increase of 36.4% in the number of public sector procedures since 2022) (Figure SD62).

Figure SD62 Shoulder Replacement by Hospital Sector



Since 2008, shoulder replacement has increased by 319.1% in the private sector compared to 213.5% in the public sector.

There were 132 primary partial shoulder replacements reported for the private sector in 2023; a decrease of 33.3% compared to 2022 and a decrease of 69.8% since 2008. In the public sector, there were 82 partial shoulder replacements; an increase of 51.9% compared to 2022 and a decrease of 80.6% since 2008.

In 2023, 6,856 primary total shoulder replacements were reported in the private sector, an increase of 9.3% compared to 2022. In the public sector in 2023, there were 2,372 primary total shoulder replacements, an increase of 41.3% compared to 2022. Since 2008, primary total shoulder replacement has increased by 492.1% in the private sector compared to 558.9% in the public sector.

There were 460 private sector revision shoulder replacements reported in 2023. This is a decrease of 0.2% compared to 2022. In the public sector, there were 239 revision shoulder replacements, a decrease of 1.2% compared to 2022. Since 2008, revision shoulder replacement has increased by 152.7% in the private sector compared to 210.4% in the public sector.

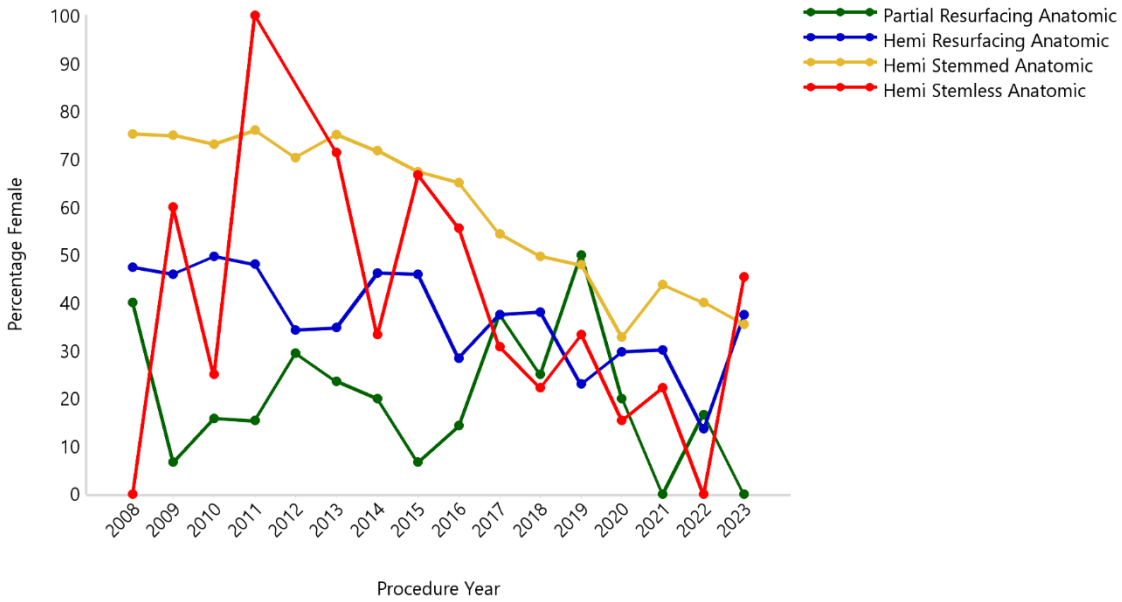
Table SD57 All Shoulder Replacements by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Male	39079	40.8%	14	96	70	69.1	10.1
Female	56707	59.2%	12	103	74	73.0	8.9
TOTAL	**95786**	**100.0%**	**12**	**103**	**72**	**71.4**	**9.6**

Table SD58 Number of Shoulder Replacements by Gender

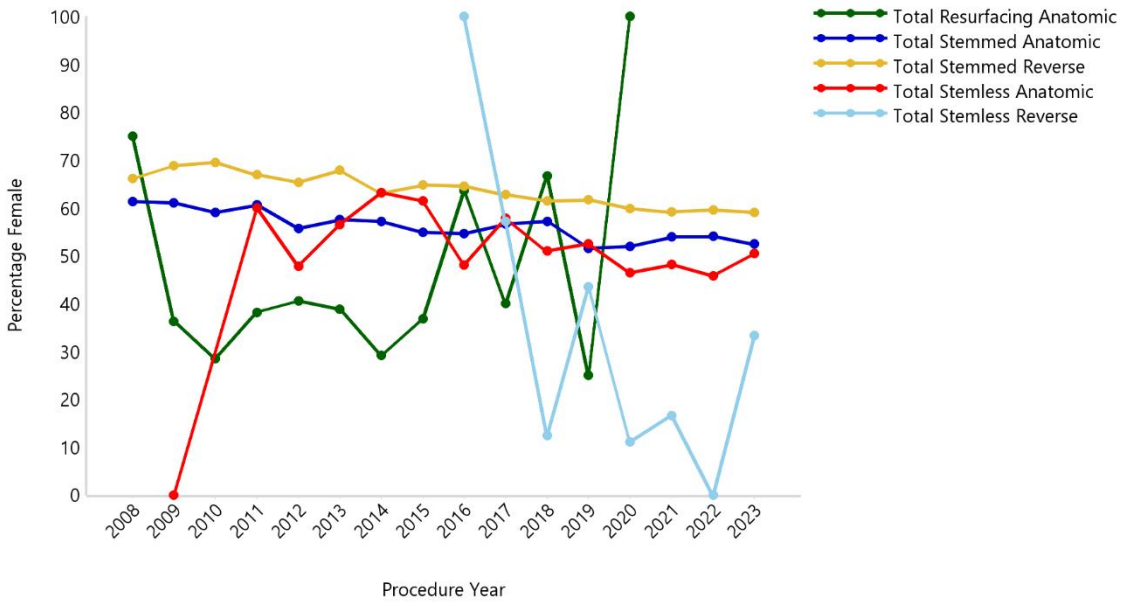
	Female		Male		TOTAL	
Shoulder Replacement	N	%	N	%	N	%
Partial Resurfacing Anatomic	48	22.0	170	78.0	218	2.7
Hemi Resurfacing Anatomic	748	39.9	1126	60.1	1874	23.1
Hemi Stemmed Anatomic	3939	66.7	1968	33.3	5907	72.9
Hemi Stemless Anatomic	37	34.3	71	65.7	108	1.3
All Primary Partial	**4772**	**58.9**	**3335**	**41.1**	**8107**	**100.0**
Total Resurfacing Anatomic	95	40.4	140	59.6	235	0.3
Total Stemmed Anatomic	9404	56.9	7115	43.1	16519	20.9
Total Stemmed Reverse	35447	61.8	21903	38.2	57350	72.5
Total Stemless Anatomic	2497	50.5	2449	49.5	4946	6.3
Total Stemless Reverse	20	29.9	47	70.1	67	0.1
All Primary Total	**47463**	**60.0**	**31654**	**40.0**	**79117**	**100.0**
Major Total	1717	55.6	1370	44.4	3087	36.1
Major Partial	1849	51.4	1747	48.6	3596	42.0
Minor	906	48.2	973	51.8	1879	21.9
All Revision	**4472**	**52.2**	**4090**	**47.8**	**8562**	**100.0**
ALL SHOULDERS	**56707**	**59.2**	**39079**	**40.8**	**95786**	**100.0**

Figure SD63 Percentage of Females by Type of Partial Shoulder Replacement and Procedure Year



Note: There were no hemi stemless anatomic procedures recorded in 2012

Figure SD64 Percentage of Females by Type of Total Shoulder Replacement and Procedure Year



Note: There were no total stemless anatomic procedures recorded in 2008 and 2010
There were no total resurfacing anatomic procedures recorded in 2021 and 2023

Figure SD65 Percentage of Females by Revision Shoulder Replacement and Procedure Year

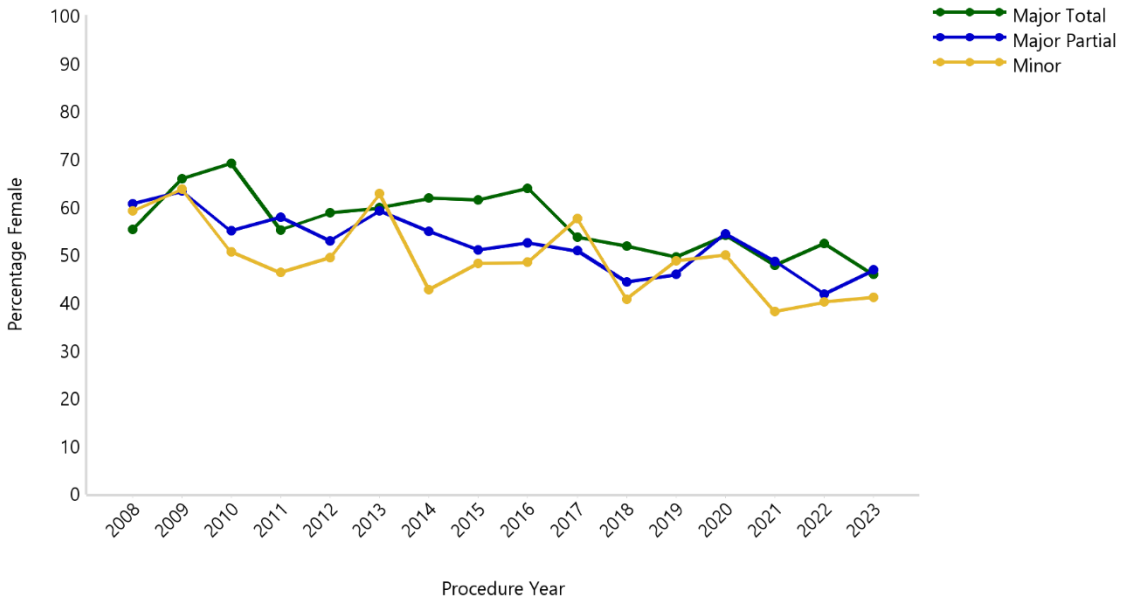
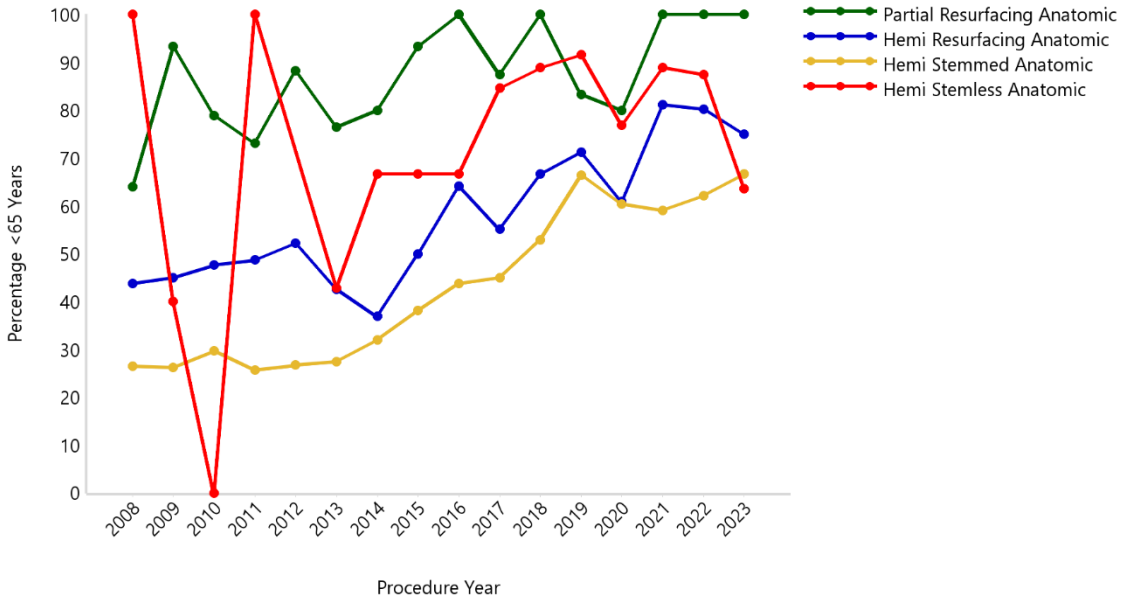
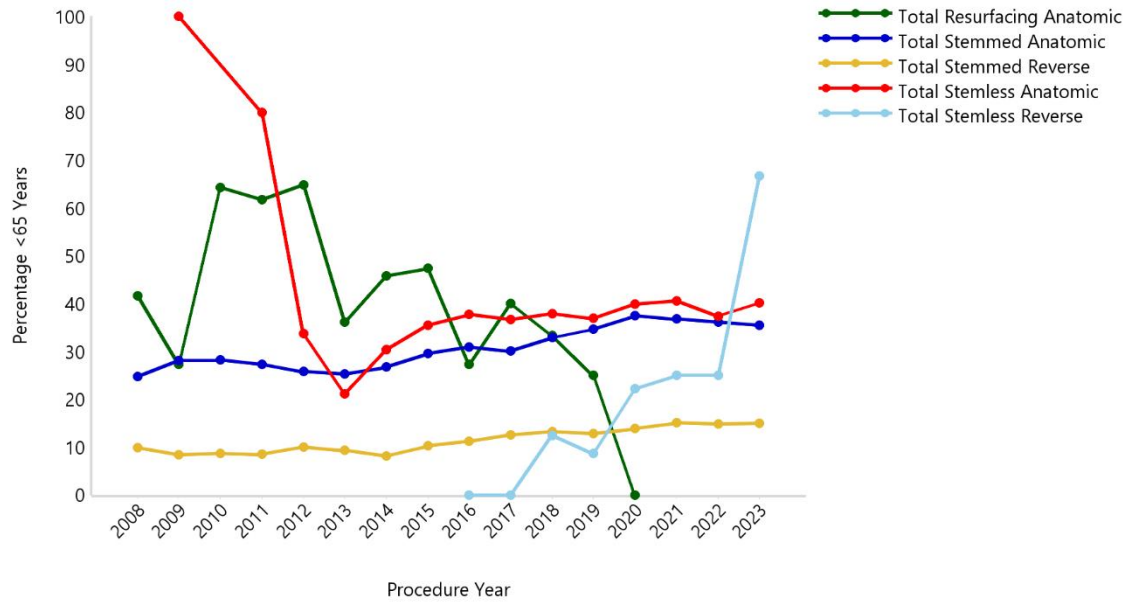


Figure SD66 Percentage of Patients Aged <65 Years by Type of Partial Shoulder Replacement and Procedure Year



Note: There were no hemi stemless anatomic procedures recorded in 2012

Figure SD67 Percentage of Patients Aged <65 Years by Type of Total Shoulder Replacement and Procedure Year



Note: There were no total stemless anatomic procedures recorded in 2008
There were no total resurfacing anatomic procedures recorded in 2021 and 2023

Figure SD68 Percentage of Patients Aged <65 Years by Revision Shoulder Replacement and Procedure Year

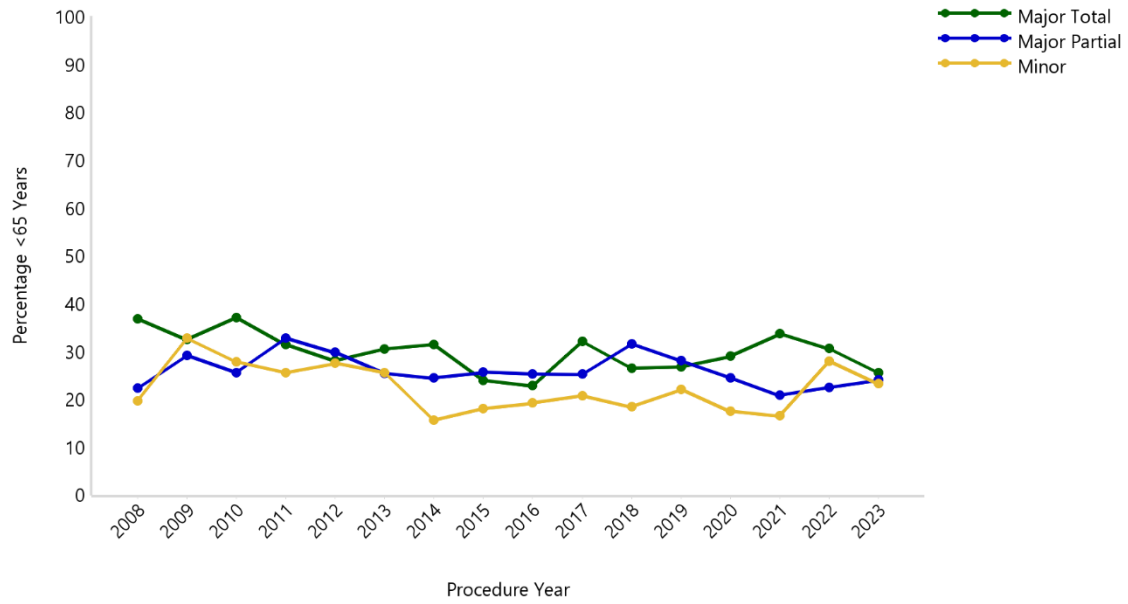


Figure SD69 Trends in Usage of Partial Shoulder Replacement by Procedure Year

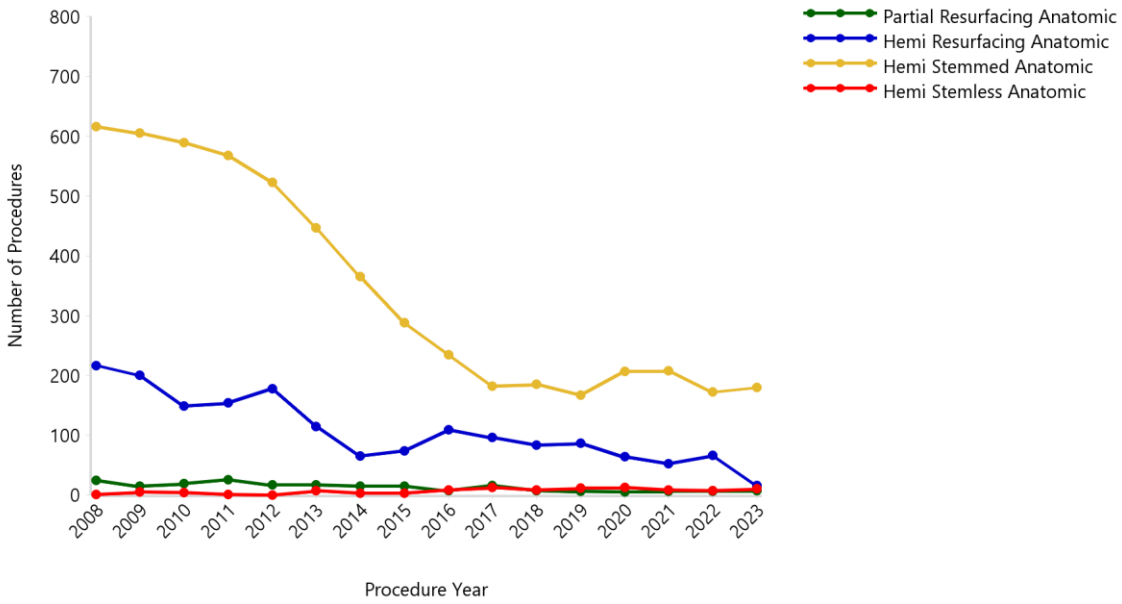


Figure SD70 Trends in Usage of Total Shoulder Replacement by Procedure Year

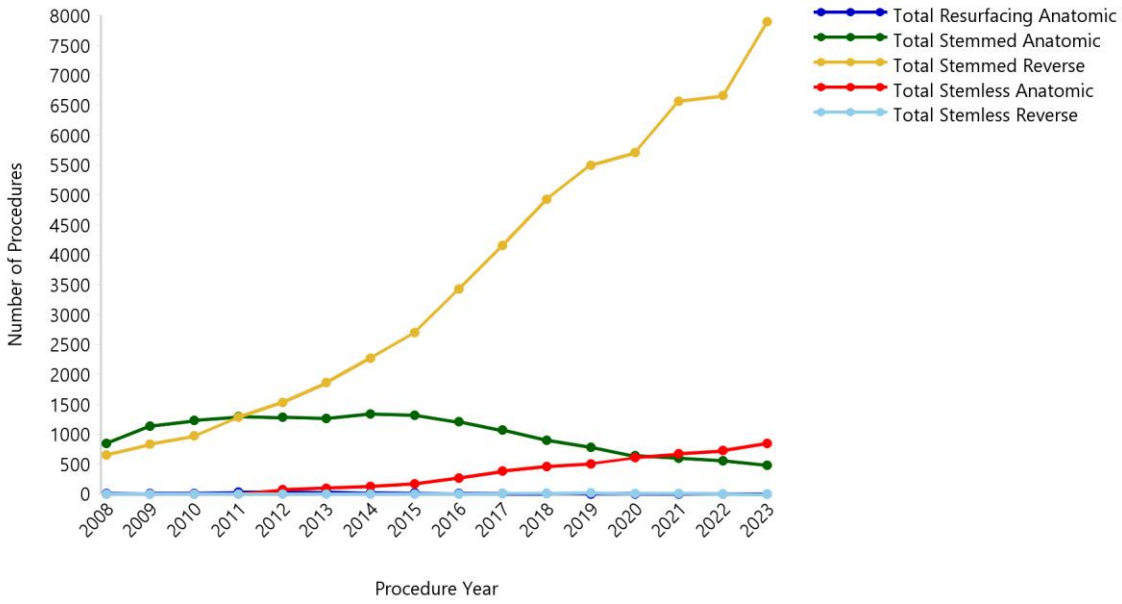


Figure SD71 Trends in Usage of Revision Shoulder Replacement by Procedure Year

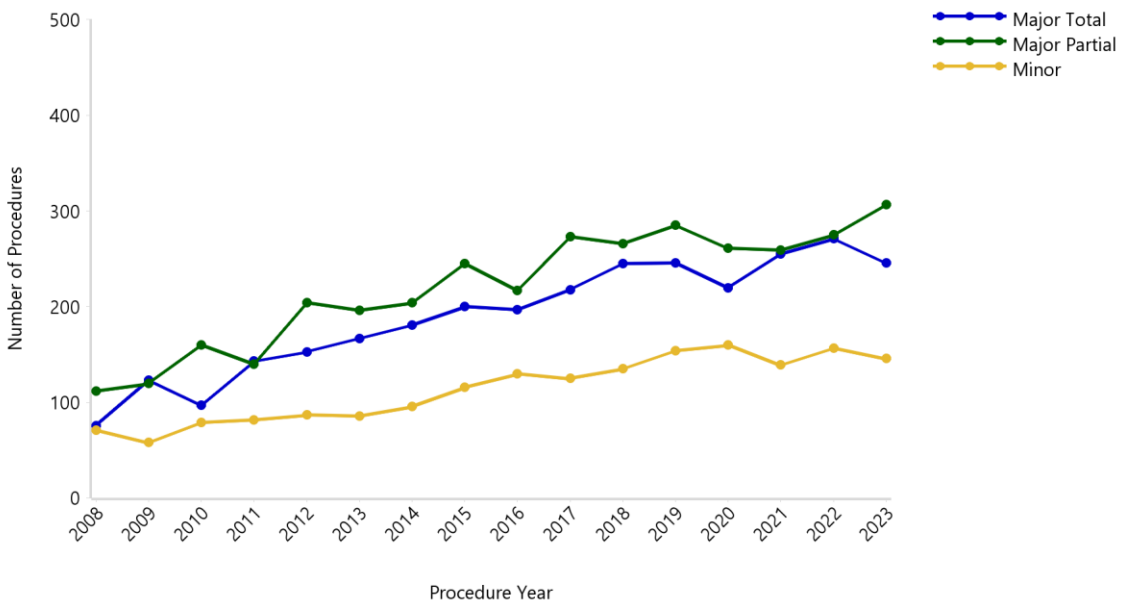


Table SD59 Incidence of Shoulder Replacement per 100,000 from 2008 to 2023

Shoulder Replacement	2008	2009	2010	2011	2012	2013	2014	2015	2016
	N	N	N	N	N	N	N	N	N
Partial Resurfacing Anatomic	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0
Hemi Resurfacing Anatomic	1.0	0.9	0.7	0.7	0.8	0.5	0.3	0.3	0.5
Hemi Stemmed Anatomic	2.9	2.8	2.7	2.5	2.3	1.9	1.6	1.2	1.0
Hemi Stemless Anatomic	0.0	0.0	0.0	0.0	.	0.0	0.0	0.0	0.0
All Primary Partial	**4.0**	**3.8**	**3.5**	**3.4**	**3.2**	**2.5**	**1.9**	**1.6**	**1.5**
Total Resurfacing Anatomic	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.0
Total Stemmed Anatomic	4.0	5.2	5.6	5.8	5.6	5.5	5.7	5.6	5.0
Total Stemmed Reverse	3.1	3.9	4.4	5.8	6.7	8.1	9.7	11.3	14.2
Total Stemless Anatomic	.	0.0	.	0.0	0.3	0.4	0.5	0.7	1.1
Total Stemless Reverse	.	.	.	.	.	.	.	.	0.0
All Primary Total	**7.1**	**9.2**	**10.1**	**11.7**	**12.9**	**14.1**	**16.0**	**17.7**	**20.3**
All Revisions	**1.2**	**1.4**	**1.5**	**1.6**	**2.0**	**1.9**	**2.0**	**2.4**	**2.2**
ALL SHOULDERS	**12.4**	**14.4**	**15.1**	**16.7**	**18.0**	**18.6**	**20.0**	**21.6**	**24.1**

Shoulder Replacement	2017	2018	2019	2020	2021	2022	2023	TOTAL
	N	N	N	N	N	N	N	N
Partial Resurfacing Anatomic	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hemi Resurfacing Anatomic	0.4	0.3	0.3	0.2	0.2	0.3	0.1	0.4
Hemi Stemmed Anatomic	0.7	0.7	0.7	0.8	0.8	0.7	0.7	1.1
Hemi Stemless Anatomic	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0
All Primary Partial	**1.2**	**1.1**	**1.1**	**1.1**	**1.1**	**1.0**	**0.8**	**1.6**
Total Resurfacing Anatomic	0.0	0.0	0.0	0.0	.	.	.	0.0
Total Stemmed Anatomic	4.3	3.6	3.1	2.5	2.3	2.1	1.8	3.3
Total Stemmed Reverse	16.9	19.7	21.7	22.2	25.5	25.6	29.6	11.8
Total Stemless Anatomic	1.6	1.8	2.0	2.4	2.6	2.8	3.2	1.0
Total Stemless Reverse	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
All Primary Total	**22.9**	**25.2**	**26.9**	**27.1**	**30.5**	**30.6**	**34.6**	**16.1**
All Revisions	**2.5**	**2.6**	**2.7**	**2.5**	**2.5**	**2.7**	**2.6**	**1.7**
ALL SHOULDERS	**26.6**	**29.0**	**30.7**	**30.7**	**34.1**	**34.2**	**38.0**	**19.4**

Figure SD72 Incidence of Shoulder Replacement per 100,000 from 2008 to 2023

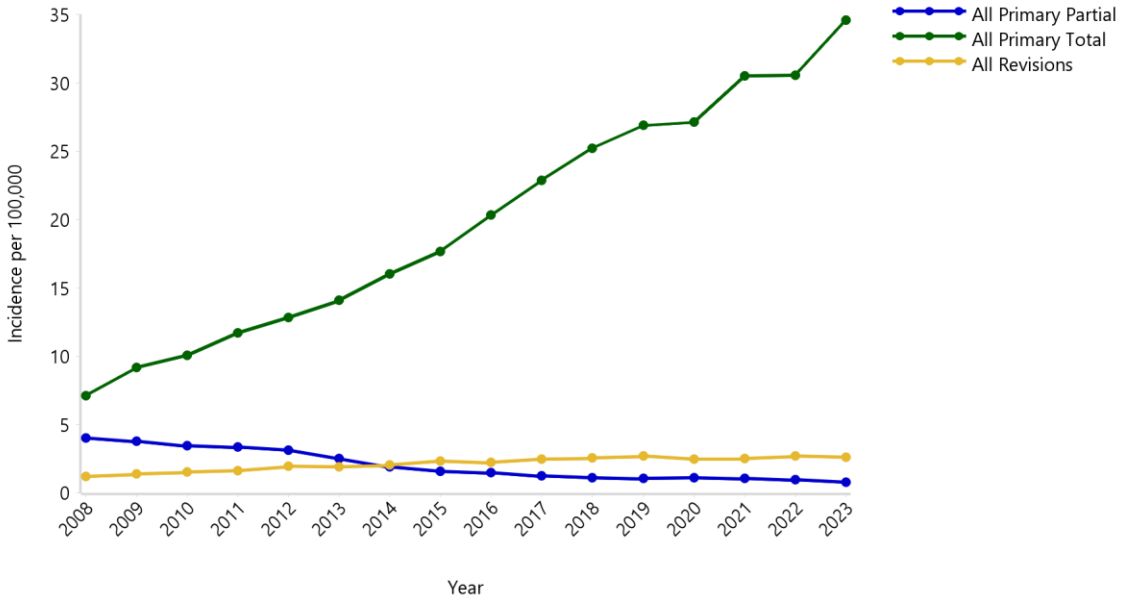


Table SD60 Incidence of Shoulder Replacement in Patients Aged <55 Years per 100,000 from 2008 to 2023

Shoulder Replacement	2008	2009	2010	2011	2012	2013	2014	2015	2016
	N	N	N	N	N	N	N	N	N
Partial Resurfacing Anatomic	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0
Hemi Resurfacing Anatomic	0.2	0.2	0.2	0.2	0.2	0.1	0.0	0.1	0.2
Hemi Stemmed Anatomic	0.2	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.3
Hemi Stemless Anatomic	0.0	.	.	.	.	0.0	0.0	0.0	0.0
All Primary Partial	**0.6**	**0.6**	**0.6**	**0.6**	**0.5**	**0.4**	**0.4**	**0.4**	**0.5**
Total Resurfacing Anatomic	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Total Stemmed Anatomic	0.3	0.4	0.4	0.4	0.4	0.3	0.3	0.4	0.5
Total Stemmed Reverse	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.3	0.2
Total Stemless Anatomic	.	0.0	.	.	0.0	0.0	0.0	0.1	0.1
Total Stemless Reverse	.	.	.	.	.	.	.	.	.
All Primary Total	**0.3**	**0.4**	**0.5**	**0.6**	**0.6**	**0.5**	**0.5**	**0.8**	**0.8**
All Revisions	**0.1**	**0.1**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**
ALL SHOULDERS	**1.0**	**1.2**	**1.2**	**1.4**	**1.4**	**1.1**	**1.1**	**1.4**	**1.5**

Shoulder Replacement	2017	2018	2019	2020	2021	2022	2023	TOTAL
	N	N	N	N	N	N	N	N
Partial Resurfacing Anatomic	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hemi Resurfacing Anatomic	0.2	0.2	0.2	0.1	0.1	0.2	0.0	0.1
Hemi Stemmed Anatomic	0.3	0.3	0.3	0.4	0.3	0.3	0.4	0.2
Hemi Stemless Anatomic	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All Primary Partial	**0.5**	**0.5**	**0.6**	**0.6**	**0.5**	**0.5**	**0.5**	**0.4**
Total Resurfacing Anatomic	.	0.0	.	.	.	.	.	0.0
Total Stemmed Anatomic	0.3	0.4	0.3	0.3	0.3	0.2	0.2	0.3
Total Stemmed Reverse	0.4	0.4	0.5	0.6	0.7	0.7	0.8	0.3
Total Stemless Anatomic	0.2	0.2	0.2	0.4	0.4	0.5	0.5	0.1
Total Stemless Reverse	.	.	.	.	.	.	0.0	0.0
All Primary Total	**0.9**	**1.0**	**1.1**	**1.3**	**1.4**	**1.5**	**1.5**	**0.7**
All Revisions	**0.3**	**0.2**	**0.3**	**0.2**	**0.2**	**0.3**	**0.3**	**0.2**
ALL SHOULDERS	**1.7**	**1.8**	**1.9**	**2.0**	**2.1**	**2.2**	**2.3**	**1.3**

Figure SD73 Incidence of Shoulder Replacement in Patients Aged <55 Years per 100,000 from 2008 to 2023

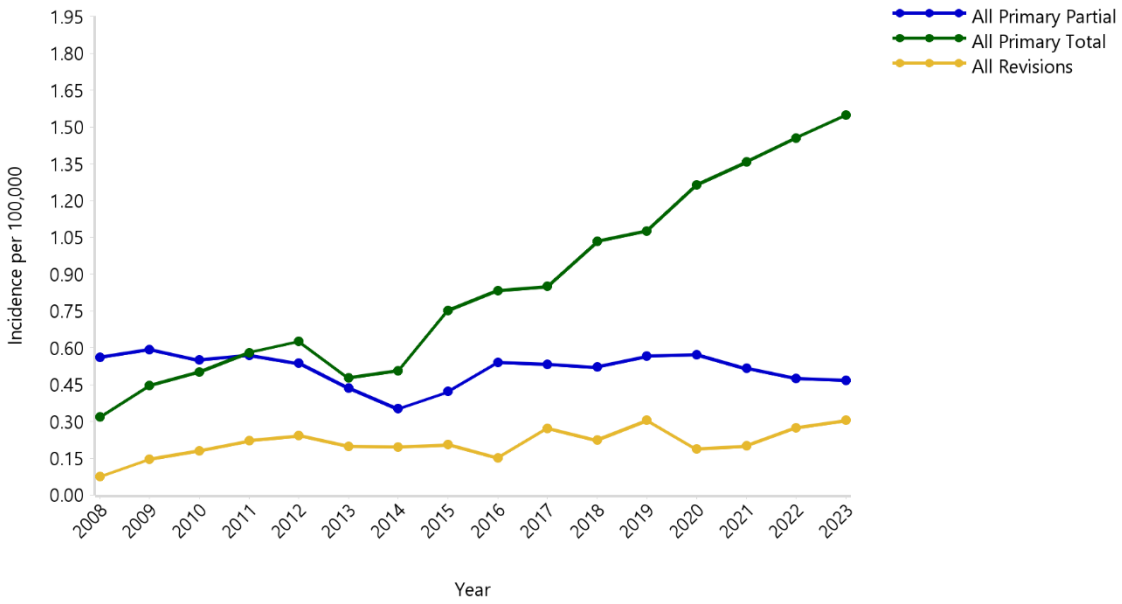


Table SD61 Incidence of Shoulder Replacement in Patients Aged 55-64 Years per 100,000 from 2008 to 2023

Shoulder Replacement	2008	2009	2010	2011	2012	2013	2014	2015	2016
	N	N	N	N	N	N	N	N	N
Partial Resurfacing Anatomic	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.0	.
Hemi Resurfacing Anatomic	2.4	2.3	1.7	1.6	2.3	1.1	0.6	0.7	1.1
Hemi Stemmed Anatomic	5.2	4.4	5.0	4.0	3.7	3.2	2.8	2.5	2.0
Hemi Stemless Anatomic	.	0.1	.	0.0	.	.	0.0	0.0	0.1
All Primary Partial	**7.8**	**6.9**	**6.8**	**5.7**	**6.1**	**4.3**	**3.5**	**3.3**	**3.2**
Total Resurfacing Anatomic	0.2	.	0.2	0.5	0.8	0.4	0.3	0.3	0.1
Total Stemmed Anatomic	7.1	10.6	11.2	11.1	10.1	10.4	11.2	11.9	10.5
Total Stemmed Reverse	2.3	2.5	3.0	3.6	4.9	5.6	6.1	8.5	12.3
Total Stemless Anatomic	.	.	.	0.2	0.7	0.6	1.3	1.5	2.8
Total Stemless Reverse	.	.	.	.	.	.	.	.	.
All Primary Total	**9.6**	**13.2**	**14.3**	**15.3**	**16.5**	**16.9**	**18.9**	**22.2**	**25.7**
All Revisions	**2.3**	**2.9**	**2.8**	**2.9**	**3.4**	**3.4**	**3.3**	**3.5**	**3.5**
ALL SHOULDERS	**19.7**	**22.9**	**23.9**	**23.9**	**25.9**	**24.6**	**25.7**	**29.0**	**32.5**

Shoulder Replacement	2017	2018	2019	2020	2021	2022	2023	TOTAL
	N	N	N	N	N	N	N	N
Partial Resurfacing Anatomic	.	.	.	.	0.0	0.0	0.0	0.0
Hemi Resurfacing Anatomic	0.8	0.7	0.8	0.5	0.8	0.8	0.2	0.9
Hemi Stemmed Anatomic	1.3	1.8	2.0	1.9	2.0	1.9	1.6	2.2
Hemi Stemless Anatomic	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.0
All Primary Partial	**2.3**	**2.6**	**2.9**	**2.4**	**2.8**	**2.8**	**1.9**	**3.2**
Total Resurfacing Anatomic	0.1	0.0	0.0	.	.	.	.	0.1
Total Stemmed Anatomic	9.4	7.9	7.2	6.1	5.7	5.2	4.2	6.9
Total Stemmed Reverse	16.2	19.9	21.0	22.9	29.0	28.5	33.9	11.7
Total Stemless Anatomic	3.7	4.7	4.9	5.8	6.5	5.8	8.1	2.5
Total Stemless Reverse	.	0.0	0.1	0.1	0.1	0.0	.	0.0
All Primary Total	**29.5**	**32.6**	**33.2**	**35.0**	**41.3**	**39.5**	**46.2**	**21.2**
All Revisions	**4.1**	**4.6**	**4.2**	**4.0**	**4.2**	**4.6**	**3.7**	**2.9**
ALL SHOULDERS	**35.9**	**39.8**	**40.3**	**41.4**	**48.4**	**46.9**	**51.8**	**27.3**

Figure SD74 Incidence of Shoulder Replacement in Patients Aged 55-64 Years per 100,000 from 2008 to 2023

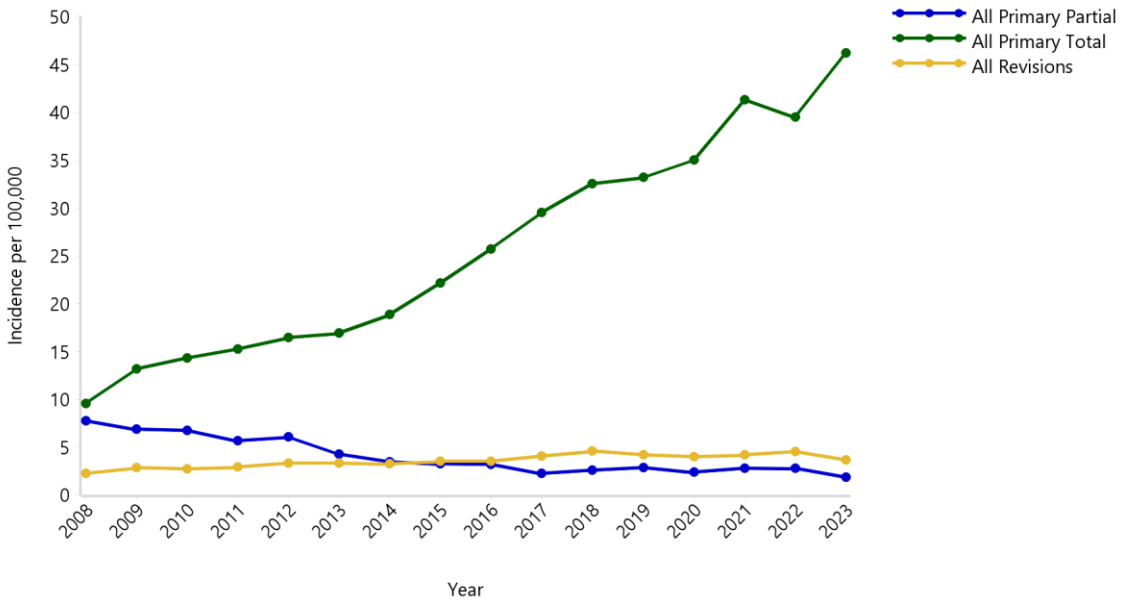


Table SD62 Incidence of Shoulder Replacement in Patients Aged 65-74 Years per 100,000 from 2008 to 2023

Shoulder Replacement	2008	2009	2010	2011	2012	2013	2014	2015	2016
	N	N	N	N	N	N	N	N	N
Partial Resurfacing Anatomic	0.3	.	0.2	0.2	0.1	0.2	0.2	0.0	.
Hemi Resurfacing Anatomic	3.6	3.9	2.9	3.2	3.0	2.4	1.2	1.0	1.4
Hemi Stemmed Anatomic	11.6	11.3	9.8	10.5	9.5	8.1	6.3	4.6	3.0
Hemi Stemless Anatomic	.	0.1	0.1	.	.	0.2	0.1	.	0.1
All Primary Partial	**15.5**	**15.3**	**13.0**	**13.9**	**12.6**	**10.9**	**7.7**	**5.7**	**4.6**
Total Resurfacing Anatomic	0.4	0.4	0.3	0.6	0.7	1.0	0.6	0.5	0.4
Total Stemmed Anatomic	24.4	29.9	30.9	32.1	31.3	33.1	32.3	29.6	26.7
Total Stemmed Reverse	13.7	17.3	18.0	25.4	30.7	34.9	43.5	50.8	68.7
Total Stemless Anatomic	.	.	.	0.1	2.0	2.4	2.8	4.0	5.5
Total Stemless Reverse	.	.	.	.	.	.	.	.	0.0
All Primary Total	**38.5**	**47.6**	**49.3**	**58.2**	**64.6**	**71.4**	**79.2**	**84.9**	**101.3**
All Revisions	**6.1**	**6.3**	**7.0**	**8.4**	**9.4**	**8.7**	**9.4**	**10.9**	**11.4**
ALL SHOULDERS	**60.1**	**69.3**	**69.2**	**80.4**	**86.6**	**91.0**	**96.3**	**101.5**	**117.4**

Shoulder Replacement	2017	2018	2019	2020	2021	2022	2023	TOTAL
	N	N	N	N	N	N	N	N
Partial Resurfacing Anatomic	0.1	.	0.0	0.0	.	.	.	0.1
Hemi Resurfacing Anatomic	1.3	0.9	0.9	0.9	0.4	0.5	0.2	1.3
Hemi Stemmed Anatomic	2.2	1.7	0.9	2.2	2.1	1.5	1.4	4.0
Hemi Stemless Anatomic	0.1	0.0	0.0	0.1	.	0.0	0.0	0.1
All Primary Partial	**3.8**	**2.6**	**1.8**	**3.3**	**2.5**	**2.0**	**1.6**	**5.4**
Total Resurfacing Anatomic	0.3	0.2	0.1	0.0	.	.	.	0.3
Total Stemmed Anatomic	23.9	18.8	16.0	11.8	10.8	9.2	8.1	18.0
Total Stemmed Reverse	78.4	87.1	96.1	100.7	111.0	110.6	125.4	57.0
Total Stemless Anatomic	7.9	9.0	9.8	11.6	11.2	13.3	14.2	5.5
Total Stemless Reverse	0.1	0.2	0.8	0.3	0.3	0.1	0.0	0.1
All Primary Total	**110.6**	**115.4**	**122.7**	**124.5**	**133.4**	**133.2**	**147.8**	**80.9**
All Revisions	**11.4**	**12.2**	**12.2**	**10.5**	**10.3**	**11.2**	**10.3**	**8.2**
ALL SHOULDERS	**125.8**	**130.2**	**136.7**	**138.4**	**146.3**	**146.5**	**159.7**	**94.5**

Figure SD75 Incidence of Shoulder Replacement in Patients Aged 65-74 Years per 100,000 from 2008 to 2023

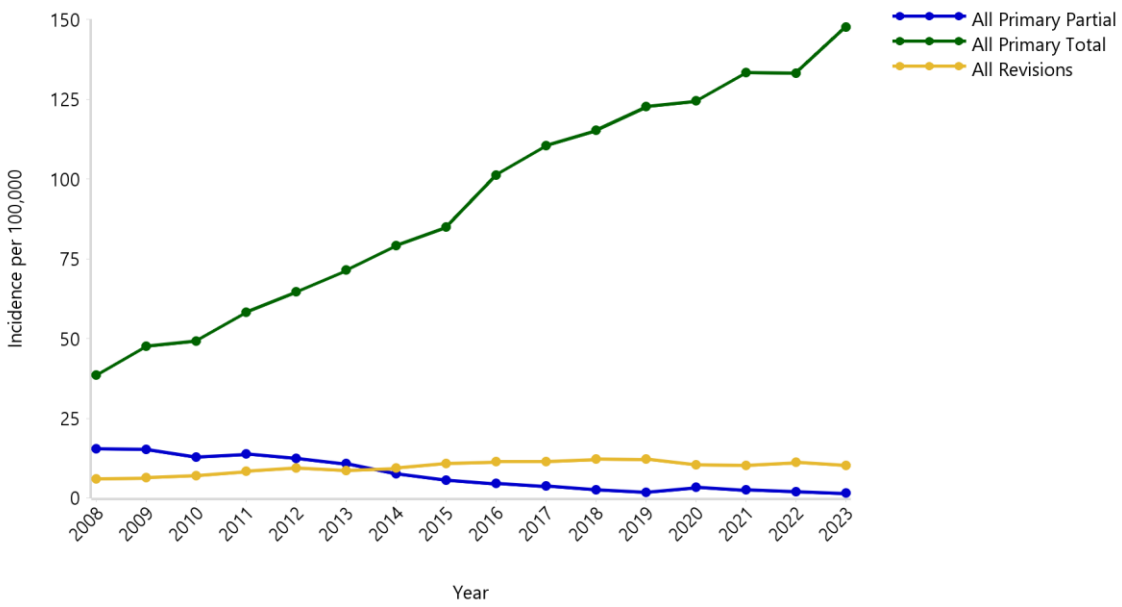


Table SD63 Incidence of Shoulder Replacement in Patients Aged ≥75 Years per 100,000 from 2008 to 2023

Shoulder Replacement	2008 N	2009 N	2010 N	2011 N	2012 N	2013 N	2014 N	2015 N	2016 N
Partial Resurfacing Anatomic	0.4	0.1	0.1	0.3	0.1	0.1	.	.	.
Hemi Resurfacing Anatomic	5.2	3.6	2.3	1.8	2.2	1.4	1.2	1.0	0.6
Hemi Stemmed Anatomic	21.2	20.2	18.6	17.5	15.0	11.8	8.4	5.6	4.3
Hemi Stemless Anatomic	.	0.1	0.1	.	.	0.1	.	0.1	.
All Primary Partial	**26.8**	**24.0**	**21.2**	**19.6**	**17.2**	**13.3**	**9.6**	**6.7**	**4.9**
Total Resurfacing Anatomic	0.1	0.1	.	0.2	0.1	0.3	0.1	.	.
Total Stemmed Anatomic	20.8	26.5	28.2	28.6	27.5	22.2	23.7	21.8	17.6
Total Stemmed Reverse	29.5	37.3	43.3	53.1	58.0	70.8	82.7	90.8	101.4
Total Stemless Anatomic	.	.	.	.	0.8	2.2	2.2	1.9	3.4
Total Stemless Reverse	.	.	.	.	.	.	.	.	.
All Primary Total	**50.4**	**63.9**	**71.5**	**81.9**	**86.3**	**95.5**	**108.7**	**114.5**	**122.4**
All Revisions	**7.7**	**8.1**	**9.0**	**8.0**	**10.4**	**11.2**	**11.7**	**13.6**	**11.4**
ALL SHOULDERS	**84.9**	**96.0**	**101.7**	**109.5**	**113.9**	**120.0**	**130.0**	**134.7**	**138.7**

Shoulder Replacement	2017 N	2018 N	2019 N	2020 N	2021 N	2022 N	2023 N	TOTAL N
Partial Resurfacing Anatomic	.	.	.	.	.	.	.	0.0
Hemi Resurfacing Anatomic	0.9	0.5	0.3	0.2	.	0.1	.	0.9
Hemi Stemmed Anatomic	3.2	2.9	2.1	1.6	1.8	1.5	1.3	6.2
Hemi Stemless Anatomic	.	.	.	.	0.1	.	0.1	0.0
All Primary Partial	**4.0**	**3.4**	**2.3**	**1.7**	**1.8**	**1.5**	**1.4**	**7.2**
Total Resurfacing Anatomic	.	0.1	0.1	.	.	.	.	0.0
Total Stemmed Anatomic	14.3	10.9	8.3	6.6	6.1	6.5	5.3	13.0
Total Stemmed Reverse	119.0	138.4	148.0	138.4	151.5	149.3	173.1	85.0
Total Stemless Anatomic	4.5	5.1	5.6	5.0	6.7	6.4	7.4	2.9
Total Stemless Reverse	0.2	0.1	0.2	.	0.1	.	.	0.0
All Primary Total	**138.0**	**154.6**	**162.1**	**150.1**	**164.3**	**162.2**	**185.7**	**100.9**
All Revisions	**12.5**	**11.8**	**12.9**	**12.9**	**12.5**	**12.0**	**13.1**	**9.2**
ALL SHOULDERS	**154.5**	**169.9**	**177.3**	**164.7**	**178.7**	**175.7**	**200.2**	**117.2**

Figure SD76 Incidence of Shoulder Replacement in Patients Aged ≥75 Years per 100,000 from 2008 to 2023

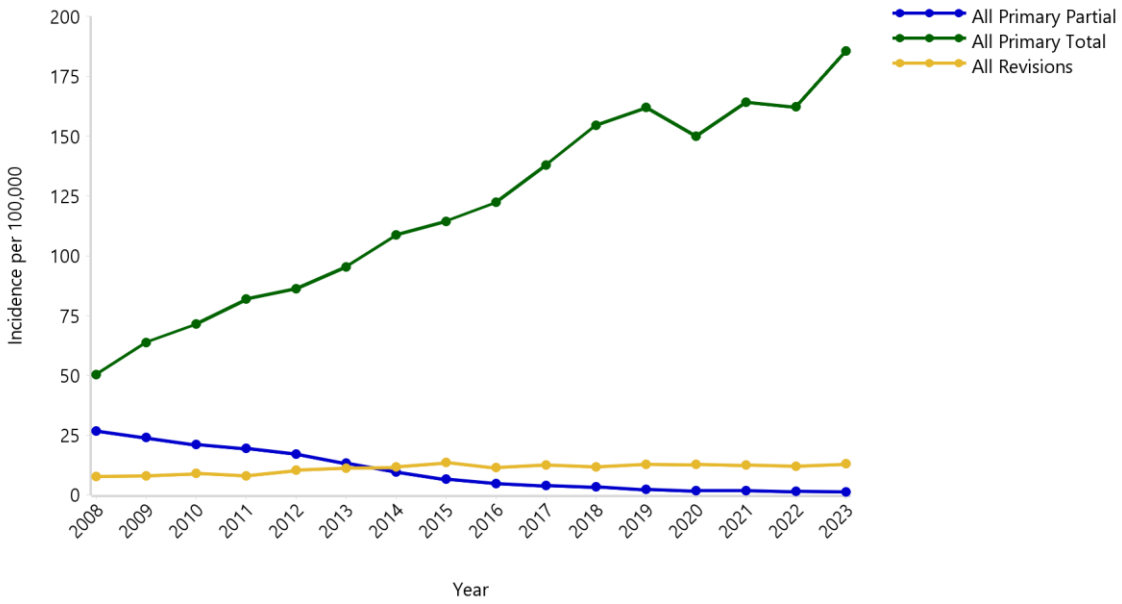
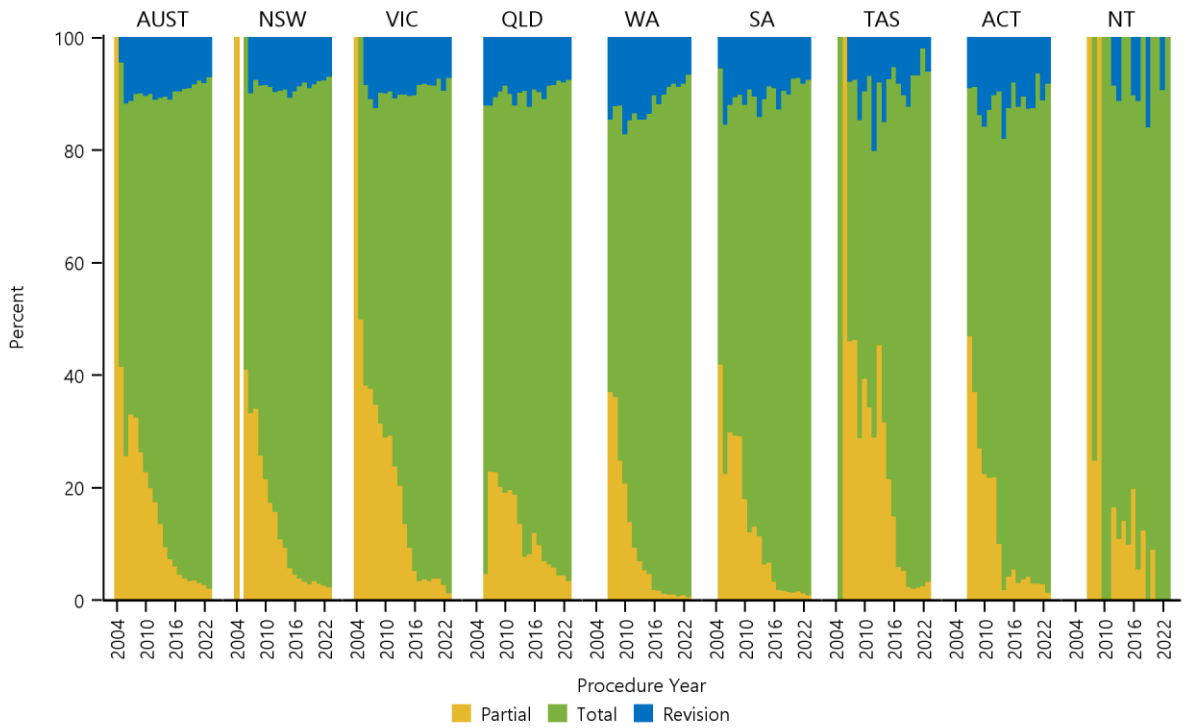


Figure SD77 Trends in Usage of Shoulder Replacement by State/Territory and Year



Note: There were no shoulder replacements undertaken in 2005 in NSW

Table SD64 Time between Procedures for Bilateral Primary Shoulder Replacement

Bilateral Procedures	Same Day			1 day - 3 months			3 months - 6 months			≥6 months			TOTAL		
	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%
Both Partial	17	5.1	50.0	22	6.5	9.4	40	11.9	4.4	257	76.5	2.6	336	100.0	3.1
Both Total	17	0.2	50.0	206	2.1	88.4	845	8.4	93.5	8959	89.3	92.1	10027	100.0	92.0
Total/Partial	.	.	.	5	0.9	2.1	19	3.6	2.1	511	95.5	5.3	535	100.0	4.9
TOTAL	**34**	**0.3**	**100.0**	**233**	**2.1**	**100.0**	**904**	**8.3**	**100.0**	**9727**	**89.3**	**100.0**	**10898**	**100.0**	**100.0**

Table SD65 Number of Shoulder Procedures by Patient

Hip Procedures	Not Revised		1 Revision		2 Revisions		3 or more Revisions		TOTAL	
	N	Row%	N	Row%	N	Row%	N	Row%	N	Row%
Unknown Primary/Primaries	.	.	972	77.3	189	15.0	97	7.7	1258	100.0
Single Primary Procedure	61603	94.2	2933	4.5	621	0.9	273	0.4	65430	100.0
2 Primary Procedures	9659	88.6	915	8.4	243	2.2	81	0.7	10898	100.0
TOTAL	**71262**	**91.8**	**4820**	**6.2**	**1053**	**1.4**	**451**	**0.6**	**77586**	**100.0**

PRIMARY PARTIAL SHOULDER REPLACEMENT

CLASSES OF PARTIAL SHOULDER REPLACEMENT

The Registry subcategorises primary partial shoulder replacement into four main classes. These are defined as:

Partial resurfacing anatomic involves the use of one or more button prostheses to replace part of the natural articulating surface, on one or both sides of the shoulder joint.

Hemi resurfacing anatomic involves the use of a humeral prosthesis that replaces the humeral articular surface only, without resecting the humeral head.

Hemi stemless anatomic involves resection of part of the humeral head and replacement with a humeral head and an epiphyseal fixation prosthesis.

Hemi stemmed anatomic involves the resection of the humeral head and replacement with a humeral head and a humeral stem prosthesis. A humeral stem prosthesis may have either metaphyseal or diaphyseal fixation.

Table SD66 Primary Partial Shoulder Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	48	22.0%	16	88	55	55.1	19.4
Male	170	78.0%	14	87	35	38.7	17.2
TOTAL	**218**	**100.0%**	**14**	**88**	**40**	**42.3**	**18.9**

Figure SD78 Primary Partial Shoulder Replacement by Age and Gender

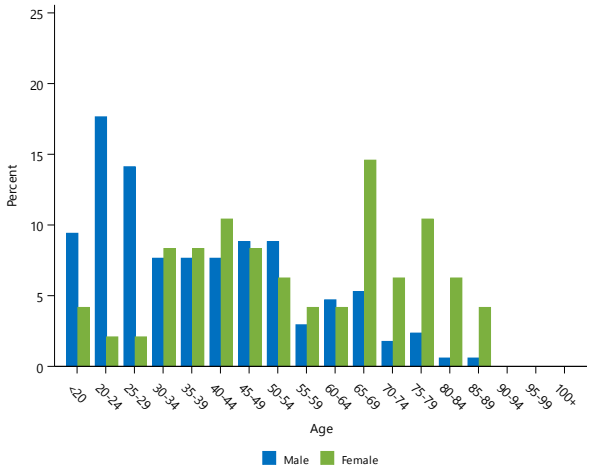
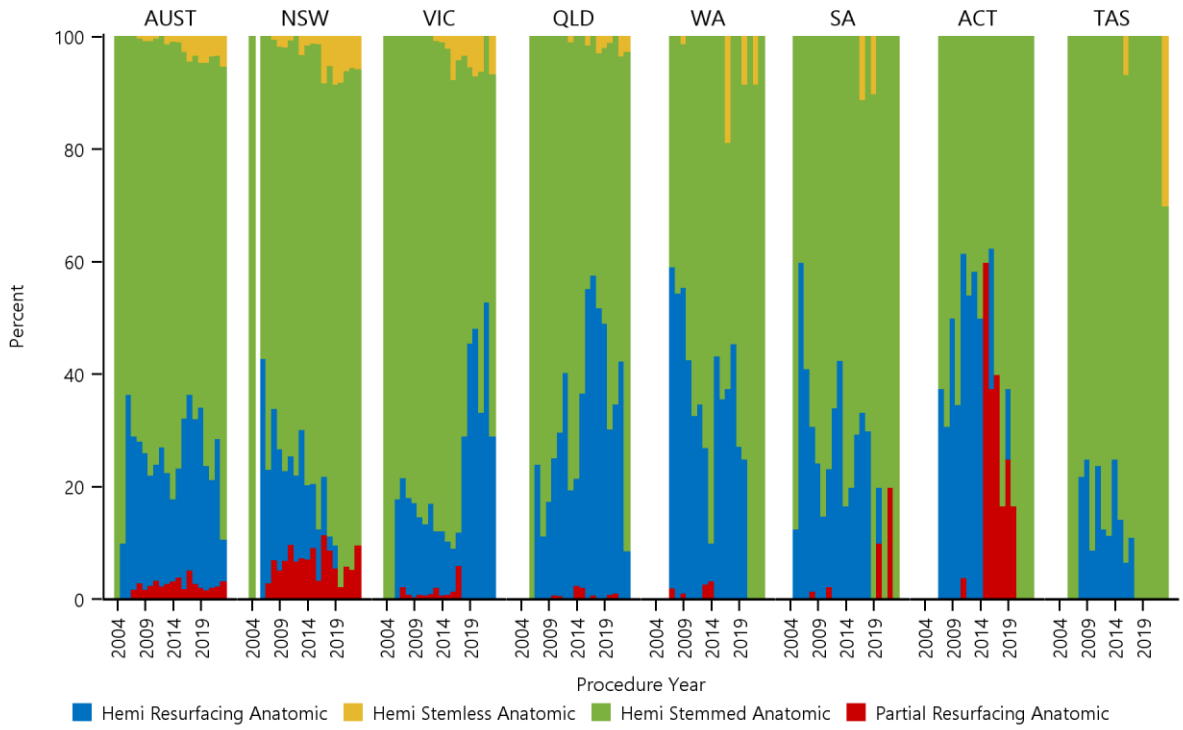


Table SD67 Primary Partial Shoulder Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Instability	117	53.7
Osteoarthritis	73	33.5
Fracture	18	8.3
Osteonecrosis	5	2.3
Osteochondritis Dissecans	2	0.9
Rotator Cuff Arthropathy	2	0.9
Rheumatoid Arthritis	1	0.5
TOTAL	**218**	**100.0**

Figure SD79 Trends in Usage of Partial Shoulder Replacement by State/Territory and Year



Note: NT is excluded from this graph due to low procedure numbers

PRIMARY PARTIAL RESURFACING ANATOMIC SHOULDER REPLACEMENT

Table SD68 Primary Partial Resurfacing Anatomic Shoulder Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	48	22.0%	16	88	55	55.1	19.4
Male	170	78.0%	14	87	35	38.7	17.2
TOTAL	**218**	**100.0%**	**14**	**88**	**40**	**42.3**	**18.9**

Figure SD80 Primary Partial Resurfacing Anatomic Shoulder Replacement by Age and Gender

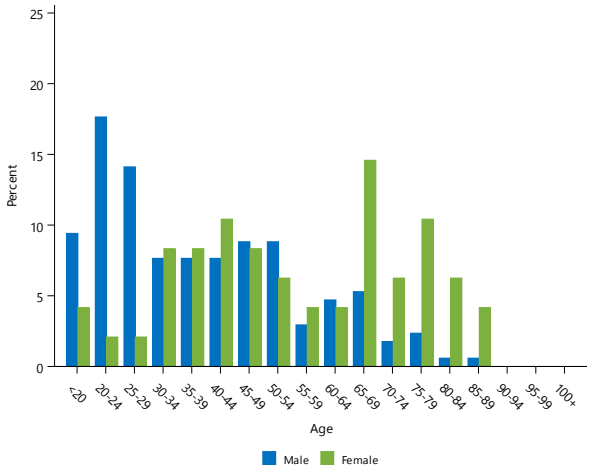


Table SD69 Primary Partial Resurfacing Anatomic Shoulder Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Instability	117	53.7
Osteoarthritis	73	33.5
Fracture	18	8.3
Osteonecrosis	5	2.3
Osteochondritis Dissecans	2	0.9
Rotator Cuff Arthropathy	2	0.9
Rheumatoid Arthritis	1	0.5
TOTAL	**218**	**100.0**

PRIMARY HEMI RESURFACING ANATOMIC SHOULDER REPLACEMENT

Table SD70 Primary Hemi Resurfacing Anatomic Shoulder Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	748	39.9%	27	93	68	67.5	11.4
Male	1126	60.1%	19	90	60	59.6	12.0
TOTAL	**1874**	**100.0%**	**19**	**93**	**64**	**62.8**	**12.4**

Figure SD81 Primary Hemi Resurfacing Anatomic Shoulder Replacement by Age and Gender

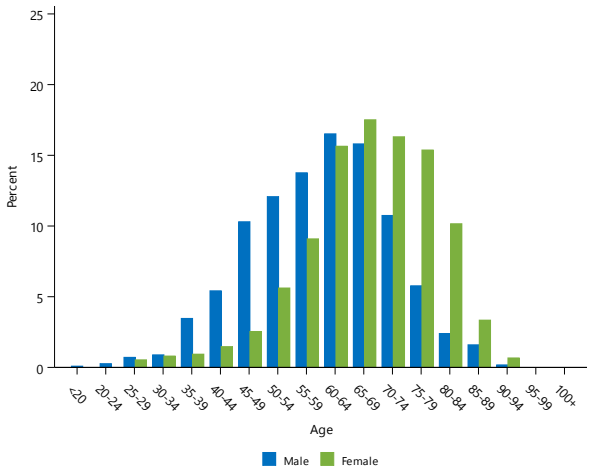


Table SD71 Primary Hemi Resurfacing Anatomic Shoulder Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Osteoarthritis	1659	88.5
Rotator Cuff Arthropathy	86	4.6
Instability	38	2.0
Osteonecrosis	37	2.0
Rheumatoid Arthritis	28	1.5
Fracture	14	0.7
Other Inflammatory Arthritis	12	0.6
TOTAL	**1874**	**100.0**

PRIMARY HEMI STEMMED ANATOMIC SHOULDER REPLACEMENT

Table SD72 Primary Hemi Stemmed Anatomic Shoulder Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	3939	66.7%	13	101	73	71.6	11.6
Male	1968	33.3%	14	94	63	62.2	13.8
TOTAL	**5907**	**100.0%**	**13**	**101**	**70**	**68.5**	**13.2**

Figure SD82 Primary Hemi Stemmed Anatomic Shoulder Replacement by Age and Gender

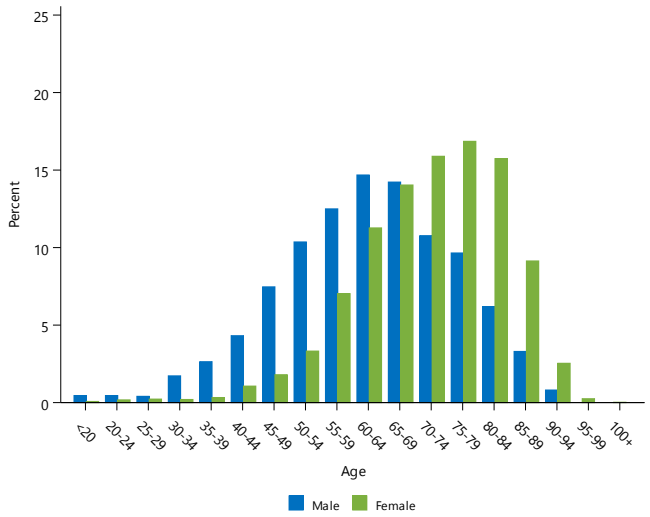


Table SD73 Primary Hemi Stemmed Anatomic Shoulder Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Fracture	3181	53.9
Osteoarthritis	1822	30.8
Rotator Cuff Arthropathy	267	4.5
Osteonecrosis	225	3.8
Tumour	201	3.4
Rheumatoid Arthritis	99	1.7
Instability	82	1.4
Other Inflammatory Arthritis	28	0.5
Other	2	0.0
TOTAL	**5907**	**100.0**

PRIMARY HEMI STEMLESS ANATOMIC SHOULDER REPLACEMENT

Table SD74 Primary Hemi Stemless Anatomic Shoulder Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	37	34.3%	30	86	66	63.6	13.9
Male	71	65.7%	18	83	51	50.7	12.4
TOTAL	**108**	**100.0%**	**18**	**86**	**54**	**55.1**	**14.3**

Figure SD83 Primary Hemi Stemless Anatomic Shoulder Replacement by Age and Gender

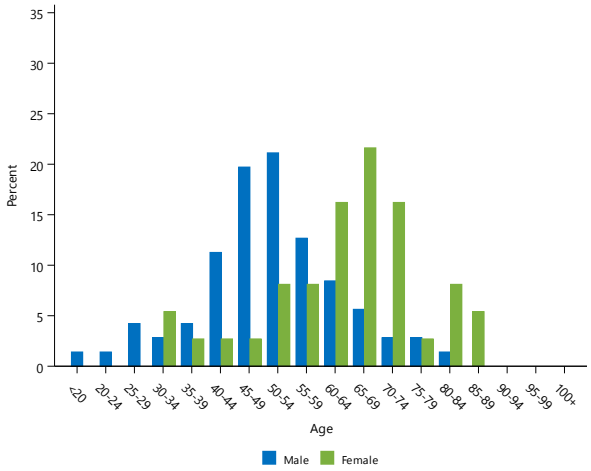


Table SD75 Primary Hemi Stemless Anatomic Shoulder Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Osteoarthritis	68	63.0
Osteonecrosis	26	24.1
Fracture	6	5.6
Rotator Cuff Arthropathy	3	2.8
Instability	2	1.9
Rheumatoid Arthritis	1	0.9
Other Inflammatory Arthritis	1	0.9
Other	1	0.9
TOTAL	**108**	**100.0**

PRIMARY TOTAL SHOULDER REPLACEMENT

CLASSES OF TOTAL SHOULDER REPLACEMENT

The Registry subcategorises primary total shoulder replacement into five classes. These are defined by the type of prostheses used.

Total resurfacing anatomic involves glenoid replacement and the use of a humeral prosthesis that replaces the humeral articular surface without resecting the humeral head.
Total stemless anatomic involves glenoid replacement combined with resection of the humeral head and replacement with a humeral head and an epiphyseal fixation prosthesis.
Total stemmed anatomic involves glenoid replacement combined with resection of the humeral head and replacement with humeral head and humeral stem prostheses. A humeral stem prosthesis may have metaphyseal or diaphyseal fixation.

Total stemmed reverse involves glenoid replacement with a glenosphere prosthesis combined with resection of the humeral head and replacement with humeral cup and humeral stem prosthesis. A humeral stem prosthesis may have metaphyseal or diaphyseal fixation.
Total stemless reverse involves glenoid replacement with a glenosphere prosthesis combined with resection of the humeral head and replacement with a humeral cup and an epiphyseal fixation humeral prosthesis.

Table SD76 Primary Total Shoulder Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	47463	60.0%	12	103	74	73.4	8.3
Male	31654	40.0%	14	96	71	70.1	9.0
TOTAL	**79117**	**100.0%**	**12**	**103**	**73**	**72.1**	**8.7**

Figure SD84 Primary Total Shoulder Replacement by Age and Gender

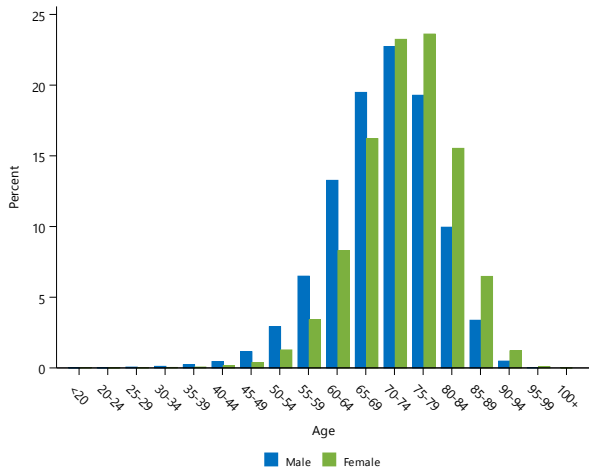
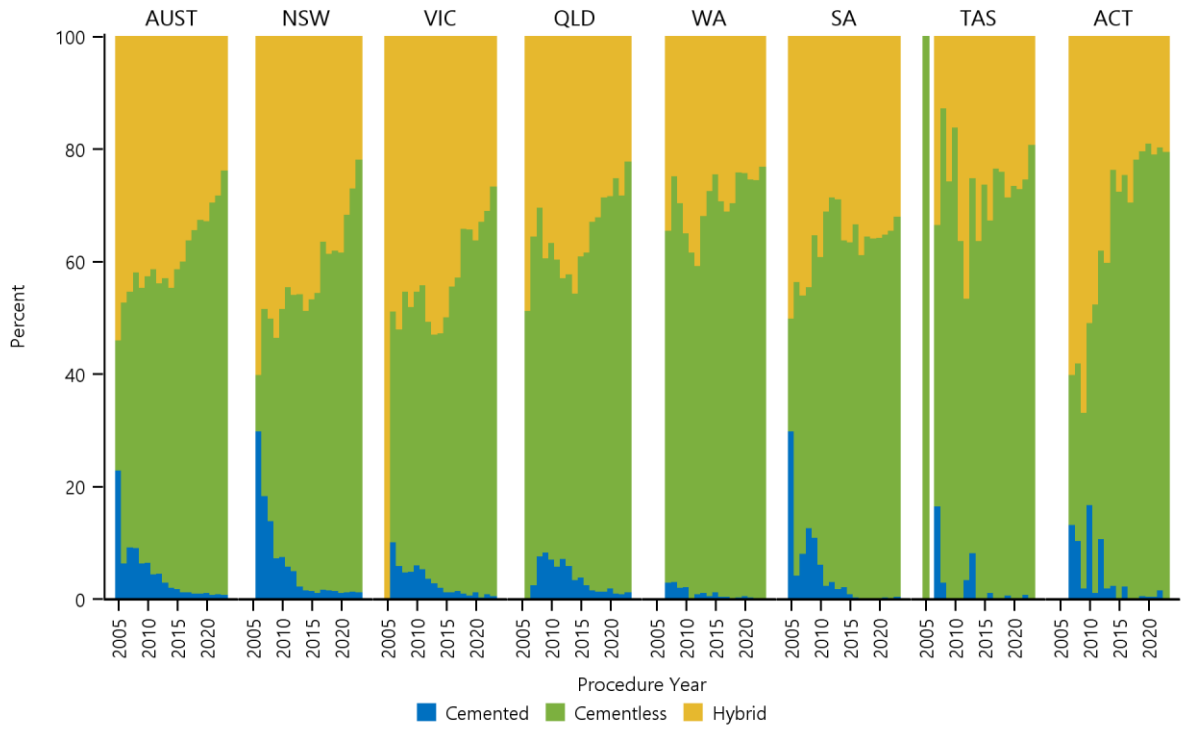


Table SD77 Primary Total Shoulder Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Osteoarthritis	45350	57.3
Rotator Cuff Arthropathy	21326	27.0
Fracture	8786	11.1
Rheumatoid Arthritis	1284	1.6
Osteonecrosis	1013	1.3
Instability	642	0.8
Other Inflammatory Arthritis	419	0.5
Tumour	278	0.4
Other	19	0.0
TOTAL	**79117**	**100.0**

Figure SD85 Trends in Fixation of Primary Total Shoulder Replacement by State/Territory and Year



Note: There were no primary total shoulder replacements undertaken in 2006 in TAS
NT is excluded from this graph due to low procedure numbers

PRIMARY TOTAL RESURFACING ANATOMIC SHOULDER REPLACEMENT

Table SD78 Primary Total Resurfacing Anatomic Shoulder Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	95	40.4%	46	86	67	67.0	6.7
Male	140	59.6%	35	83	63	62.2	9.8
TOTAL	**235**	**100.0%**	**35**	**86**	**65**	**64.1**	**9.0**

Figure SD86 Primary Total Resurfacing Anatomic Shoulder Replacement by Age and Gender

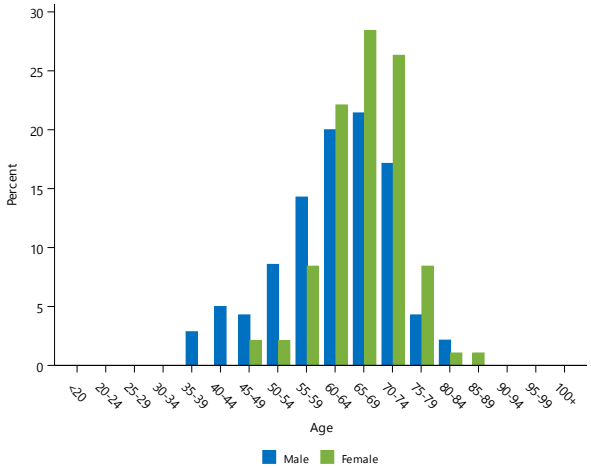


Table SD79 Primary Total Resurfacing Anatomic Shoulder Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Osteoarthritis	226	96.2
Rheumatoid Arthritis	3	1.3
Fracture	2	0.9
Other Inflammatory Arthritis	1	0.4
Instability	1	0.4
Rotator Cuff Arthropathy	1	0.4
Osteonecrosis	1	0.4
TOTAL	**235**	**100.0**

PRIMARY TOTAL STEMMED ANATOMIC SHOULDER REPLACEMENT

Table SD80 Primary Total Stemmed Anatomic Shoulder Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	9404	56.9%	19	96	71	70.3	8.5
Male	7115	43.1%	21	93	67	66.6	9.0
TOTAL	**16519**	**100.0%**	**19**	**96**	**69**	**68.7**	**8.9**

Figure SD87 Primary Total Stemmed Anatomic Shoulder Replacement by Age and Gender

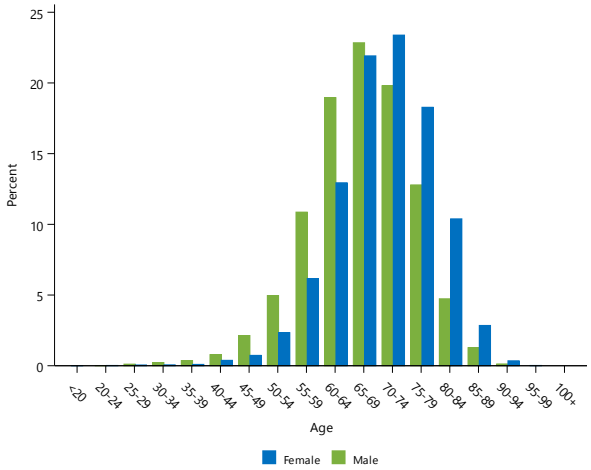
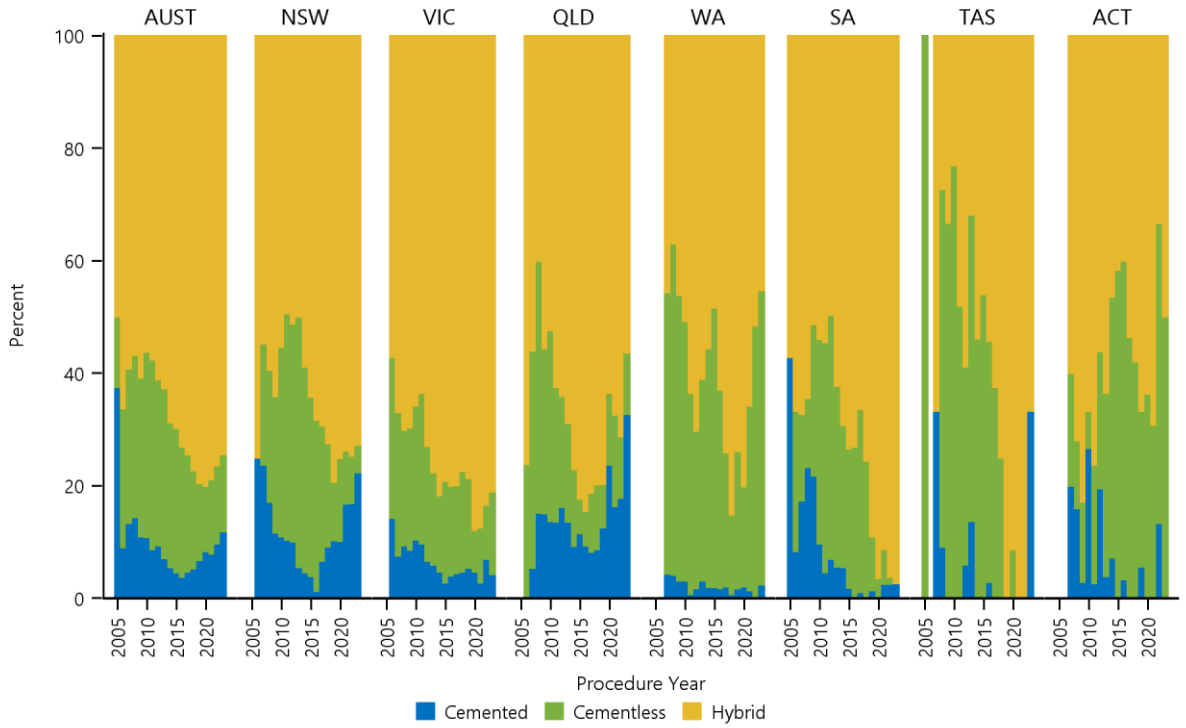


Table SD81 Primary Total Stemmed Anatomic Shoulder Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Osteoarthritis	15574	94.3
Osteonecrosis	285	1.7
Rheumatoid Arthritis	276	1.7
Fracture	135	0.8
Other Inflammatory Arthritis	98	0.6
Rotator Cuff Arthropathy	86	0.5
Instability	47	0.3
Tumour	12	0.1
Other	6	0.0
TOTAL	**16519**	**100.0**

Figure SD88 Trends in Fixation of Primary Total Stemmed Anatomic Shoulder Replacement by State/Territory and Year



Note: There were no primary total stemmed anatomic shoulder replacements undertaken in 2006 in TAS
NT is excluded from this graph due to low procedure numbers

PRIMARY TOTAL STEMMED REVERSE SHOULDER REPLACEMENT

Table SD82 Primary Total Stemmed Reverse Shoulder Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	35447	61.8%	12	103	75	74.5	7.9
Male	21903	38.2%	14	96	73	72.0	8.3
TOTAL	**57350**	**100.0%**	**12**	**103**	**74**	**73.6**	**8.2**

Figure SD89 Primary Total Stemmed Reverse Shoulder Replacement by Age and Gender

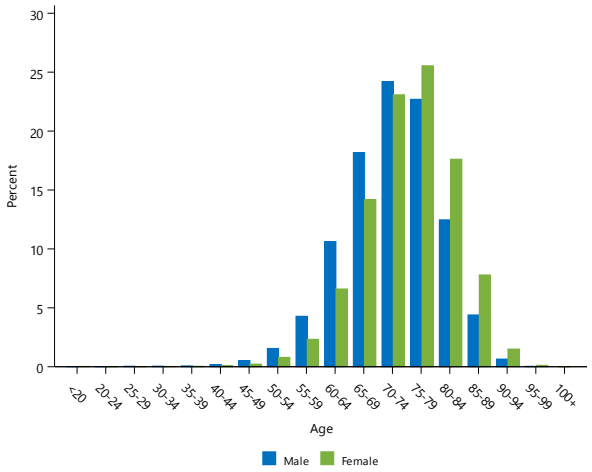
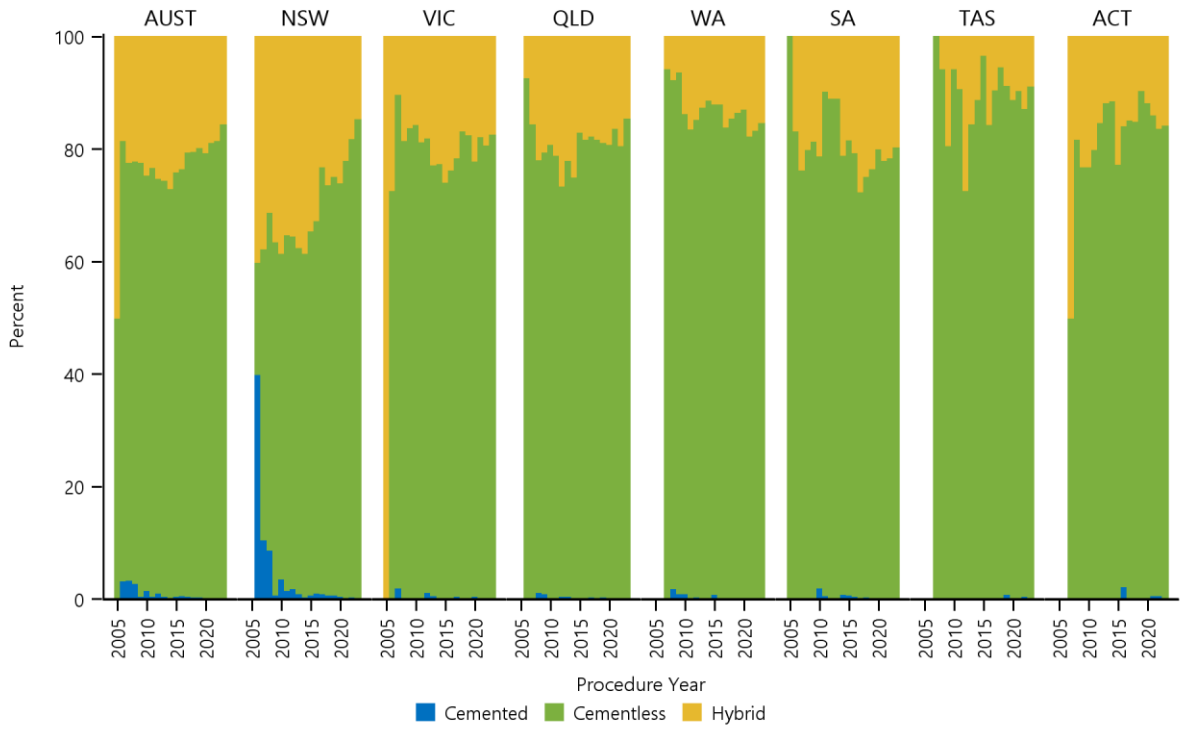


Table SD83 Primary Total Stemmed Reverse Shoulder Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Osteoarthritis	24775	43.2
Rotator Cuff Arthropathy	21193	37.0
Fracture	8640	15.1
Rheumatoid Arthritis	964	1.7
Osteonecrosis	640	1.1
Instability	565	1.0
Other Inflammatory Arthritis	294	0.5
Tumour	266	0.5
Other	13	0.0
TOTAL	**57350**	**100.0**

Figure SD90 Trends in Fixation of Primary Total Stemmed Reverse Shoulder Replacement by State/Territory and Year



Note: NT is excluded from this graph due to low procedure numbers

PRIMARY TOTAL STEMLESS ANATOMIC SHOULDER REPLACEMENT

Table SD84 Primary Total Stemless Anatomic Shoulder Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	2497	50.5%	32	94	69	68.7	8.3
Male	2449	49.5%	31	95	65	64.2	9.4
TOTAL	**4946**	**100.0%**	**31**	**95**	**67**	**66.5**	**9.2**

Figure SD91 Primary Total Stemless Anatomic Shoulder Replacement by Age and Gender

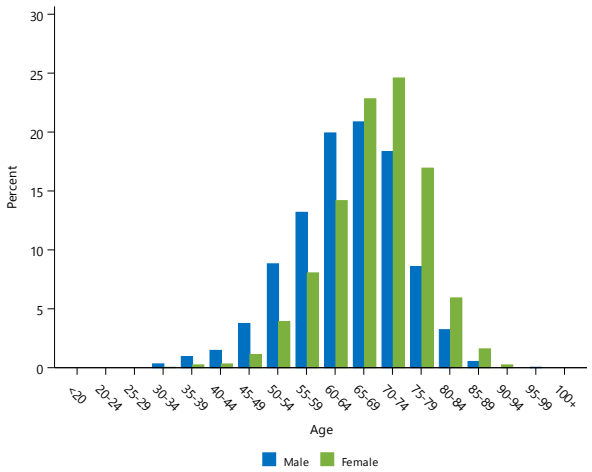


Table SD85 Primary Total Stemless Anatomic Shoulder Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Osteoarthritis	4740	95.8
Osteonecrosis	87	1.8
Rheumatoid Arthritis	40	0.8
Instability	29	0.6
Other Inflammatory Arthritis	26	0.5
Rotator Cuff Arthropathy	16	0.3
Fracture	8	0.2
TOTAL	**4946**	**100.0**

PRIMARY TOTAL STEMLESS REVERSE SHOULDER REPLACEMENT

Table SD86 Primary Total Stemless Reverse Shoulder Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	20	29.9%	52	82	70	69.7	6.2
Male	47	70.1%	44	79	69	68.3	6.0
TOTAL	**67**	**100.0%**	**44**	**82**	**69**	**68.7**	**6.1**

Figure SD92 Primary Total Stemless Reverse Shoulder Replacement by Age and Gender

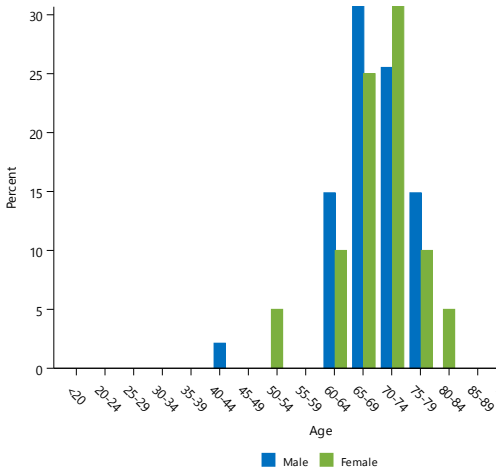


Table SD87 Primary Total Stemless Reverse Shoulder Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Osteoarthritis	35	52.2
Rotator Cuff Arthropathy	30	44.8
Fracture	1	1.5
Rheumatoid Arthritis	1	1.5
TOTAL	**67**	**100.0**

ALL REVISION SHOULDER REPLACEMENT

Table SD88 Age and Gender of All Revision Shoulder Replacement

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Male	4090	47.8%	19	96	70	68.5	10.3
Female	4472	52.2%	15	98	72	71.4	10.1
TOTAL	**8562**	**100.0%**	**15**	**98**	**71**	**70.0**	**10.3**

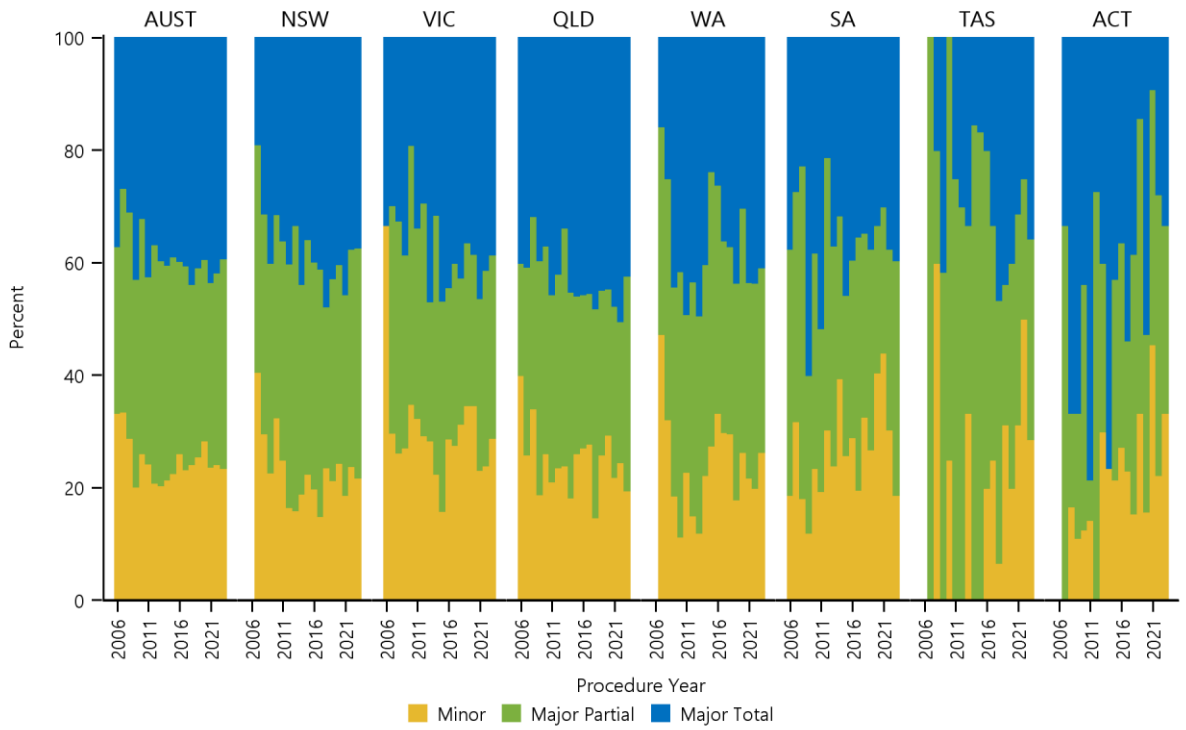
Table SD89 Reason for Revision of All Shoulder Replacement

Reason for Revision	Number	Percent
Instability/Dislocation	2006	23.4
Infection	1786	20.9
Loosening	1537	18.0
Rotator Cuff Insufficiency	871	10.2
Fracture	610	7.1
Pain	346	4.0
Glenoid Erosion	287	3.4
Dissociation	205	2.4
Lysis	137	1.6
Implant Breakage Glenoid Insert	131	1.5
Implant Breakage Glenoid	80	0.9
Arthrofibrosis	71	0.8
Malposition	63	0.7
Metal Related Pathology	63	0.7
Incorrect Sizing	55	0.6
Wear Glenoid Insert	48	0.6
Wear Glenoid	37	0.4
Progression Of Disease	24	0.3
Implant Breakage Humeral	22	0.3
Implant Breakage Head	22	0.3
Wear Humeral Cup	19	0.2
Tumour	15	0.2
Heterotopic Bone	14	0.2
Osteonecrosis	12	0.1
Synovitis	2	0.0
Other	99	1.2
TOTAL	**8562**	**100.0**

Table SD90 Type of Revision of All Shoulder Replacement

Type of Revision	Number	Percent
Humeral/Glenoid	3087	36.1
Humeral Component	2218	25.9
Head Only	609	7.1
Cup/Head	601	7.0
Cement Spacer	584	6.8
Glenoid Component	582	6.8
Cup Only	516	6.0
Removal of Prostheses	159	1.9
Head/Insert	62	0.7
Minor Components	47	0.5
Reoperation	40	0.5
Cement Only	35	0.4
Reinsertion of Components	13	0.2
Insert Only	6	0.1
Partial Resurfacing	3	0.0
TOTAL	**8562**	**100.0**

Figure SD93 Trends in Usage of All Revision Shoulder Replacement by State/Territory and Year



Note: NT is excluded from this graph due to low procedure numbers

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The AOANJRR is funded by the Australian Government Department of Health and Aged Care