Australian Orthopaedic Association National Joint Replacement Registry

2022 Demographics of Hip, Knee and Shoulder Arthroplasty Supplementary Report

AOA
AUSTRALIAN ORTHOPAEDIC ASSOCIATION

Australian Orthopaedic Association National Joint Replacement Registry

Director: Professor Stephen Graves
E: admin@aoanjrr.org.au

Manager: Ms Kathy Hill
E: khill@aoanjrr.org.au

AOANJRR
SAHMRI,
North Terrace
ADELAIDE SA 5000
T: +61 8 8128 4280

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National Joint Replacement Registry

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Acknowledgements

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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.

AOA Registry Clinical Director
Professor Stephen Graves

Deputy Clinical Directors
Professor Richard de Steiger
Mr Peter Lewis
Professor Ian Harris

Assistant Deputy Clinical Director
Mr James D Stoney

Clinical Advisors
Professor Richard Page
Mr Peter Stavrou

PROMs Advisor
Professor Ilana Ackerman

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AOA NATIONAL JOINT REPLACEMENT REGISTRY

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Kathy Hill

Administrative Coordinator
Rianne Thompson

Clinical Studies Manager
Durga Bastiras

Clinical Studies Team
Tania Alland
Libby Poole
Dianne Buranyi-Trevarton
Laura Busk

PROMs Manager
Pablo Flores Figuera

PROMs Team
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David Metherell
Marta Jasinska

Publications Manager
Sophie Corfield

Data Linkage
Katherine Duszynski (UNISA)

SOUTH AUSTRALIAN HEALTH AND MEDICAL RESEARCH INSTITUTE (SAHMRI)

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Data Managers
Janey Barrow
Robert Armitage
Primali De Silva

Statisticians
Michelle Lorimer
Alana Cuthbert
Carl Holder
Dylan Harries
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ICT
Andrew Brock
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Nazia Dilnaz
Daina Ross
Vincent Talladira
Anu Bakshi
Peter Weston

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Introduction

Data presented in this report have been submitted to the Registry by both public and private hospitals. Currently, 363 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 2021 have been included in this report

Number of Patients and Procedures Recorded by the Registry Between 1/9/1999 and 31/12/2022

HIP, KNEE AND SHOULDER REPLACEMENT

- 1,226,858 Individual Patients
- 1,853,452 Procedures
- 326,622 (26.6%) Deaths
- 38.0% Patients > 1 procedure

Hip Replacement

- 612,423 Individual Patients
- 796,686 Procedures
- 202,485 (33.1%) Deaths
- 25.5% Patients > 1 Hip Procedure

Knee Replacement

- 676,678 Individual Patients
- 980,419 Procedures
- 140,904 (20.8%) Deaths
- 39.0% Patients > 1 Knee Procedure

Shoulder Replacement

- 62,207 Individual Patients
- 76,347 Procedures
- 10,489 (16.9%) Deaths
- 18.7% Patients > 1 Shoulder Procedure

Hip Replacement

CATEGORIES OF HIP REPLACEMENT

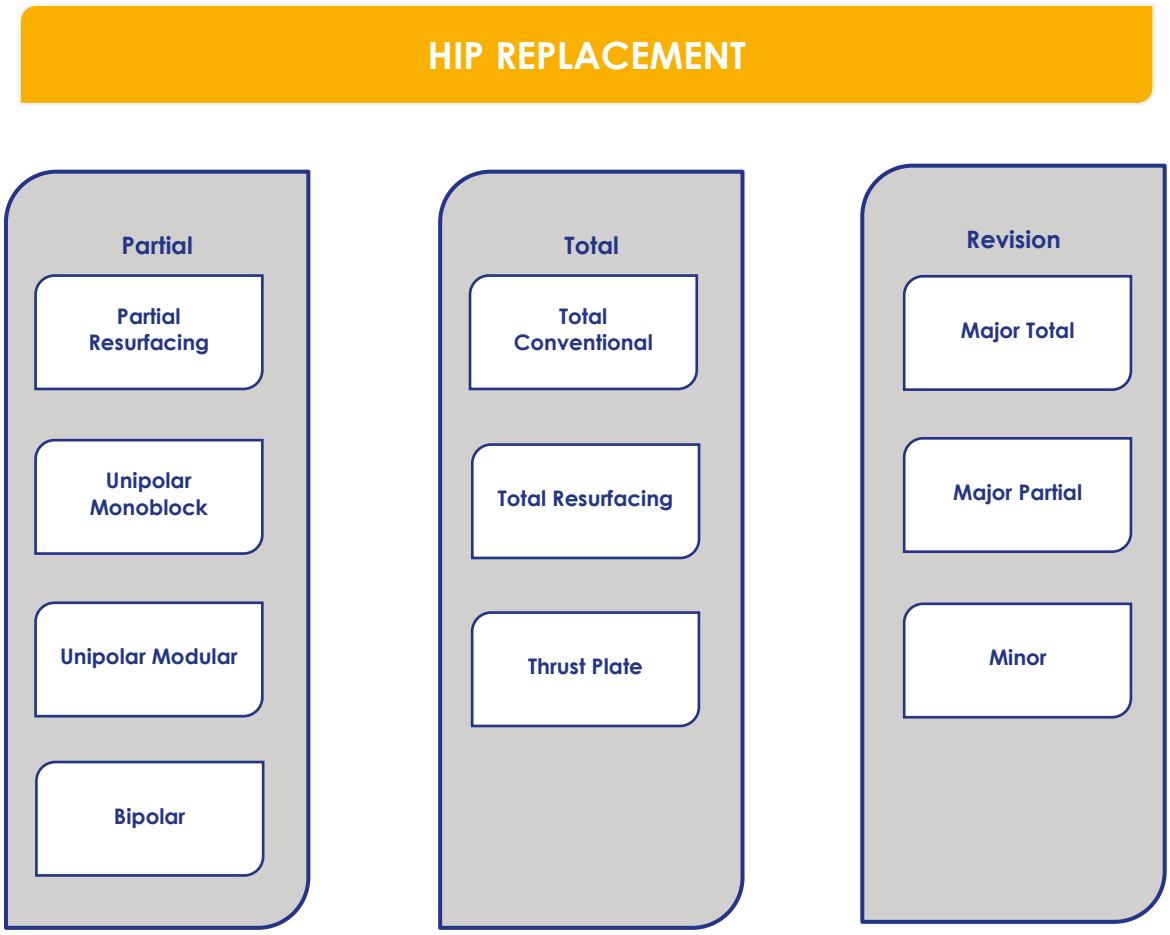
The Registry groups hip replacement into three broad categories, primary partial, primary total and revision hip replacement.

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

More than half of all hip replacement procedures reported to the Registry are undertaken in private hospitals (64.7% in 2021). There were 33,571 private sector hip replacements reported in 2021, an increase of 8.7% compared to 2020. In the public sector, there were 18,323 hip replacements (Figure SH1). Since 2003, hip replacement in the private sector has increased by 123.3% compared to 58.4% in the public sector.

Primary partial hip replacement has increased in the public sector since 2020 (0.9%) and decreased in the private sector (4.9%). In 2021, there were 5,156 primary partial hip replacements reported in the public sector and 840 in the private sector. Since 2003, primary partial hip replacement has increased in the public sector by 43.6% compared to a decrease of 9.7% in the private sector.

In 2021, 30,588 private sector primary total hip replacements were reported; an increase of 9.8% compared to 2020. In the public sector, there were 11,381 primary total hip replacements; an increase of 0.2% compared to 2020. Since 2003, primary total hip replacement has increased in the private sector by 154.2% compared to an increase of 72.3% in the public sector.

There were 2,143 revision hip replacements reported in the private sector in 2021, which is the same as the number recorded in 2020. In the public sector, there were 1,786 revision hip replacements, a decrease of 2.8% compared to 2020. Since 2003, revision hip replacement in the private sector has increased by 3.5% compared to 30.0% in the public sector.

Figure SH1 Hip Replacement by Hospital Sector

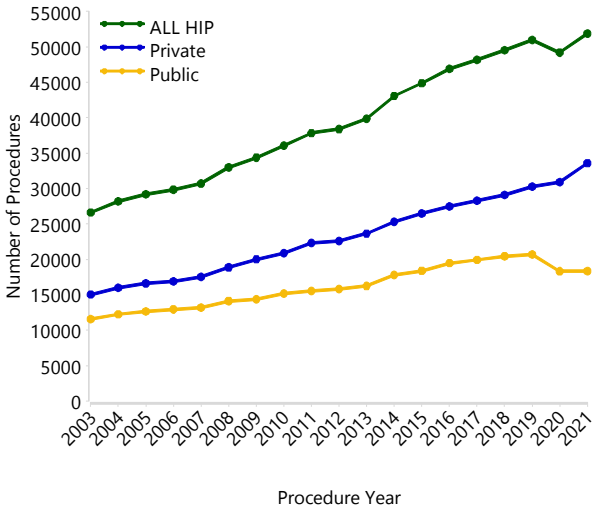


Table SH1 All Hip Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Male	349790	43.9%	5	108	68	67.7	12.6
Female	446896	56.1%	9	108	73	71.6	12.4
TOTAL	**796686**	**100.0%**	**5**	**108**	**71**	**69.9**	**12.6**

Table SH2 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	21222	72.7	7967	27.3	29189	25.6
Unipolar Modular	36427	70.0	15632	30.0	52059	45.7
Bipolar	22489	69.1	10072	30.9	32561	28.6
All Primary Partial	**80141**	**70.4**	**33683**	**29.6**	**113824**	**100.0**
Total Resurfacing	3679	19.0	15690	81.0	19369	3.2
Total Conventional	318609	54.9	261420	45.1	580029	96.7
Thrust Plate	74	28.7	184	71.3	258	0.0
All Primary Total	**322362**	**53.8**	**277294**	**46.2**	**599656**	**100.0**
Major Total	11226	49.9	11251	50.1	22477	27.0
Major Partial	24698	54.7	20447	45.3	45145	54.3
Minor	8469	54.3	7115	45.7	15584	18.7
All Revisions	**44393**	**53.4**	**38813**	**46.6**	**83206**	**100.0**
ALL HIPS	**446896**	**56.1**	**349790**	**43.9**	**796686**	**100.0**

Figure SH2 Percentage of Females by Type of Hip Replacement and Procedure Year

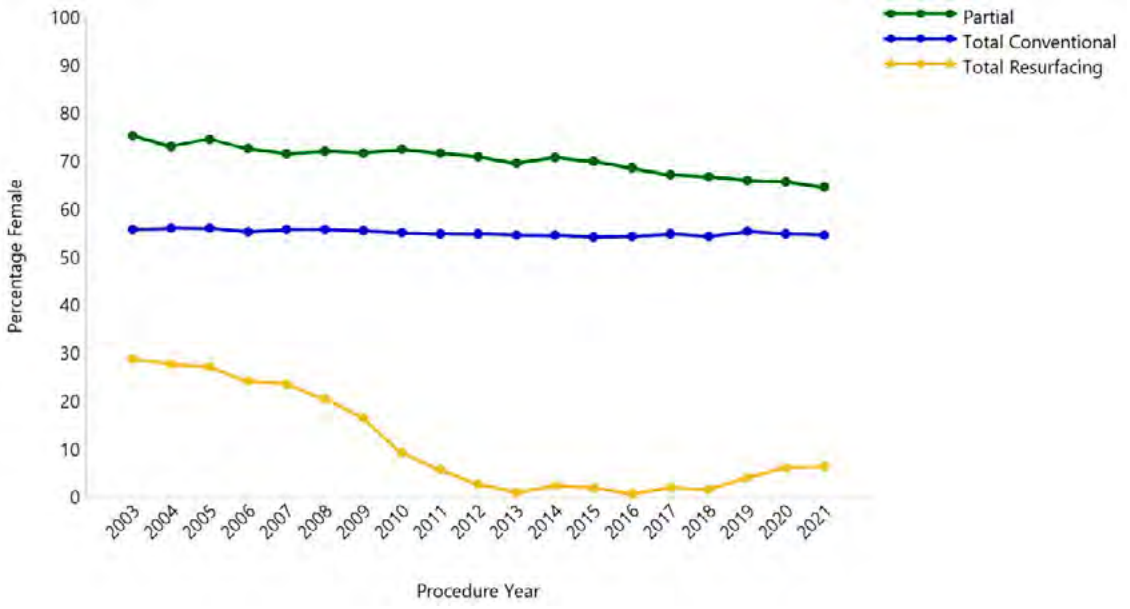


Figure SH3 Percentage of Females by Partial Hip Replacement and Procedure Year (Excluding Partial Resurfacing)

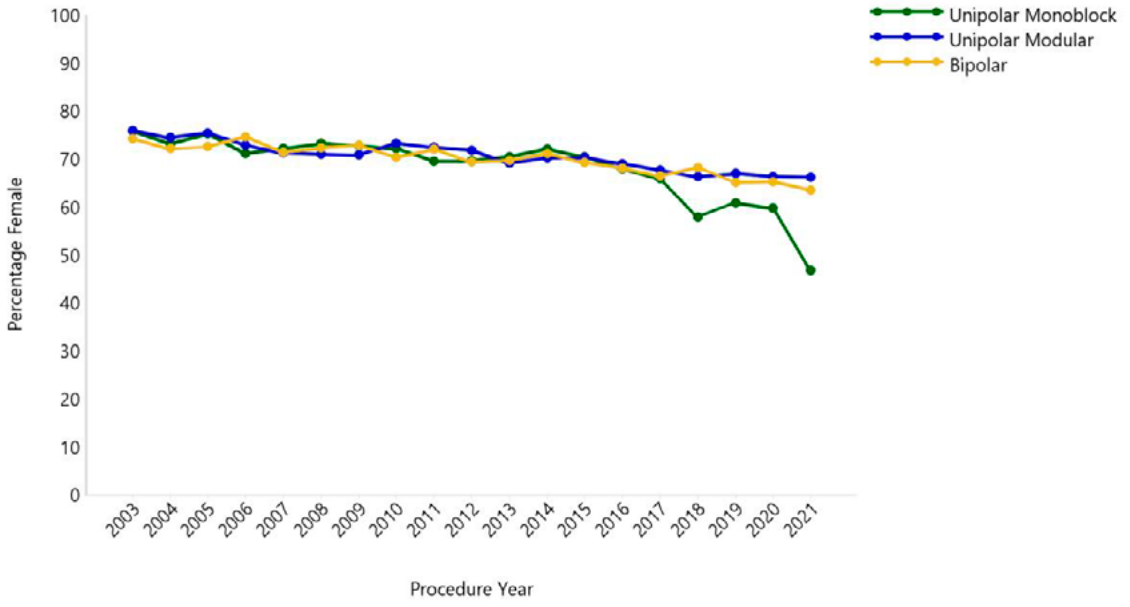


Figure SH4 Percentage of Females by Total Hip Replacement and Procedure Year (Excluding Thrust Plate)

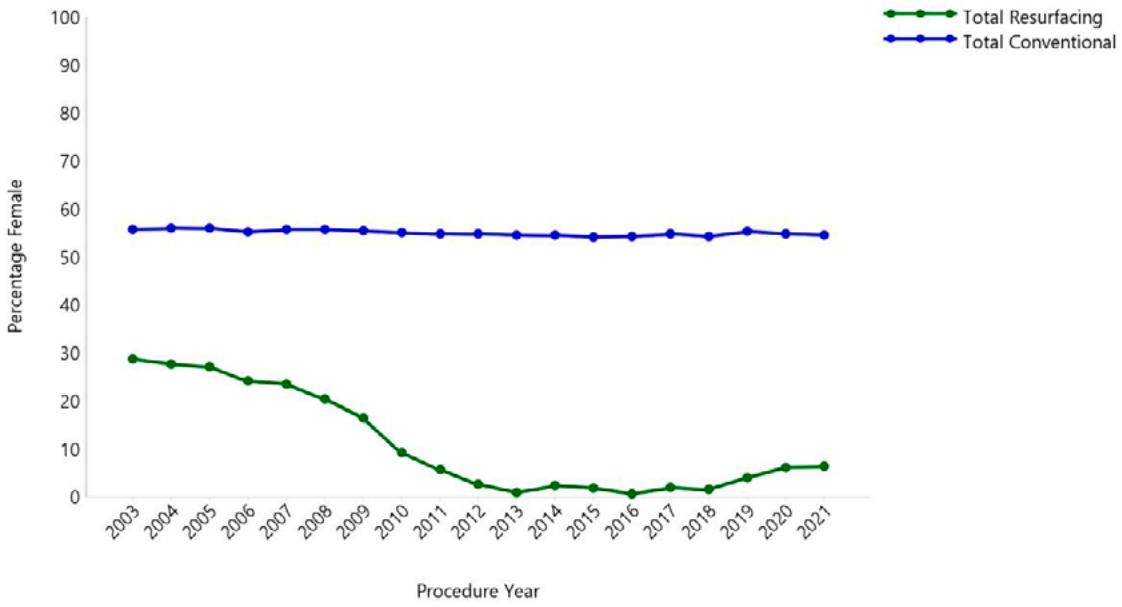


Figure SH5 Percentage of Females by Revision Hip Replacement and Procedure Year

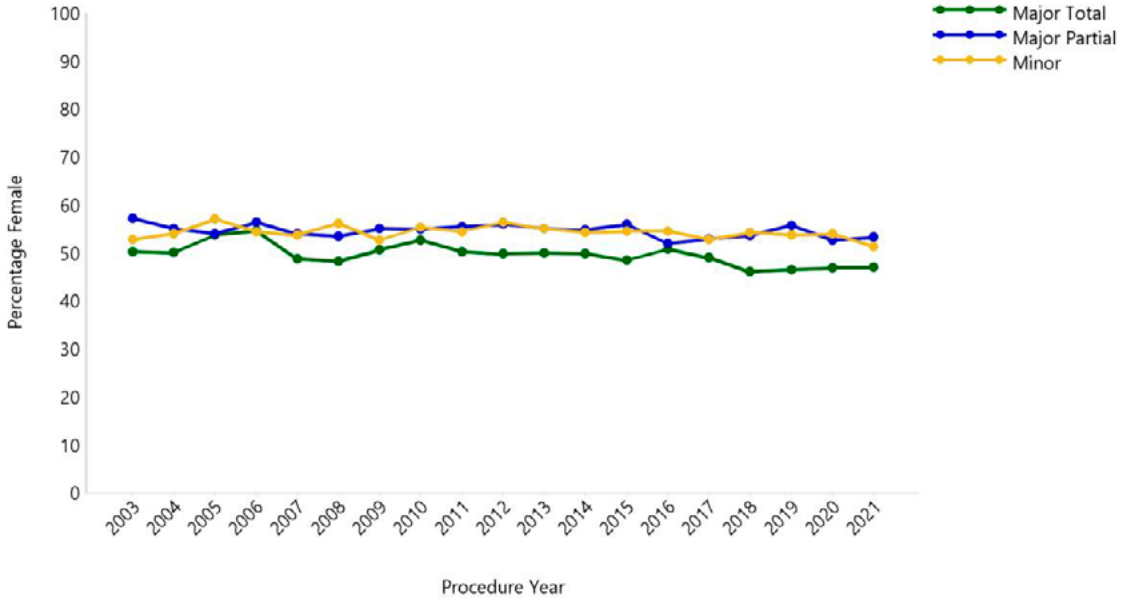


Figure SH6 Percentage of Patients Aged <65 Years by Type of Hip Replacement and Procedure Year

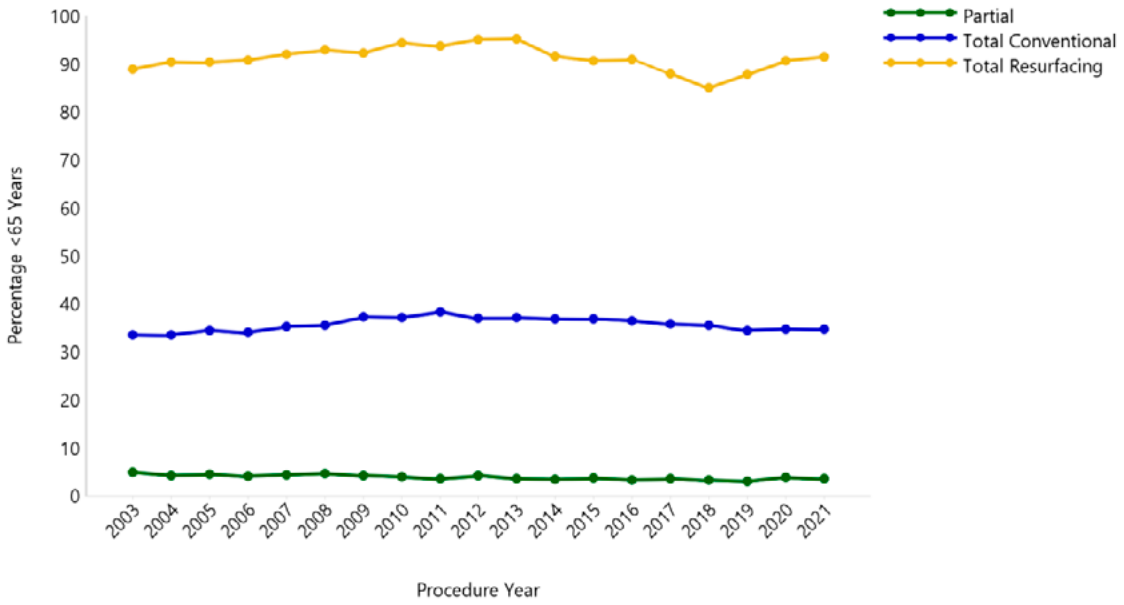


Figure SH7 Percentage of Patients Aged <65 Years by Partial Hip Replacement and Procedure Year (Excluding Partial Resurfacing)

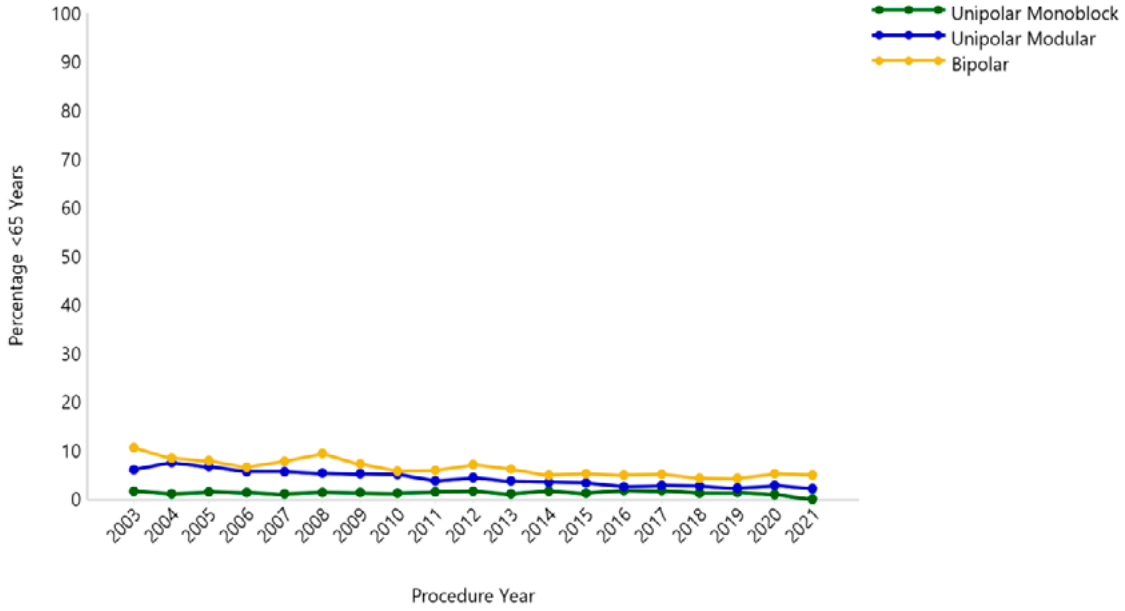


Figure SH8 Percentage of Patients Aged <65 Years by Total Hip Replacement and Procedure Year (Excluding Thrust Plate)

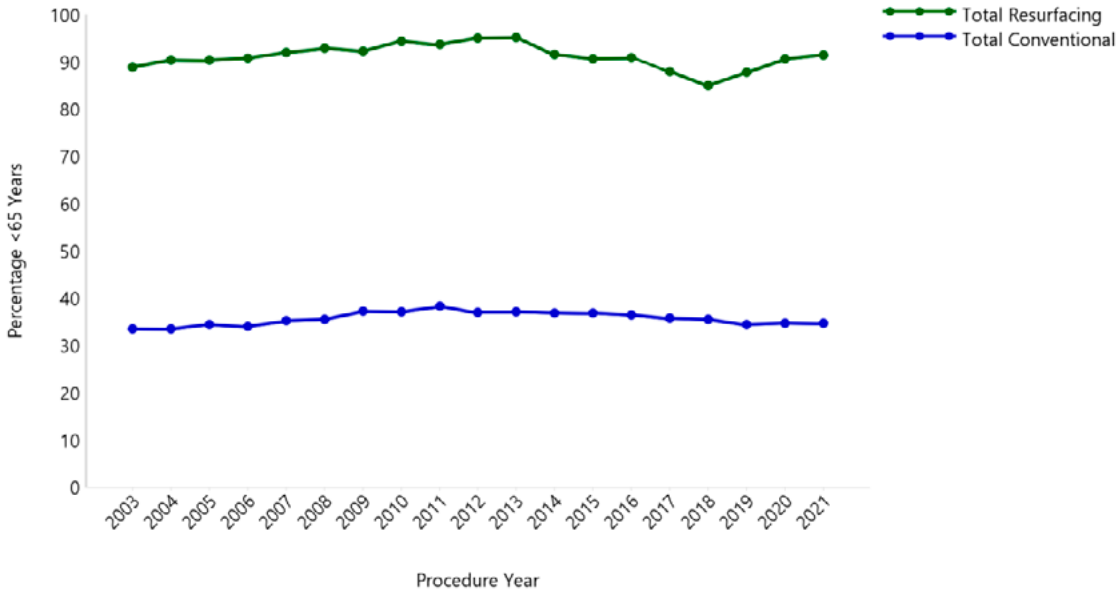


Figure SH9 Percentage of Patients Aged <65 Years by Revision Hip Replacement and Procedure Year

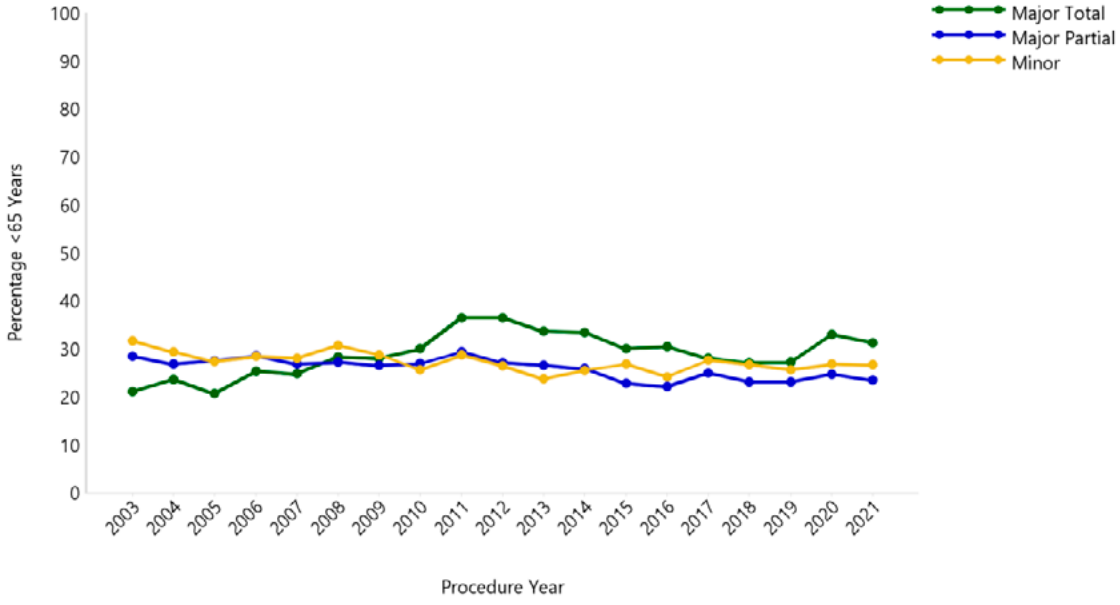


Figure SH10 Trends in Usage of Hip Replacement by Procedure Year

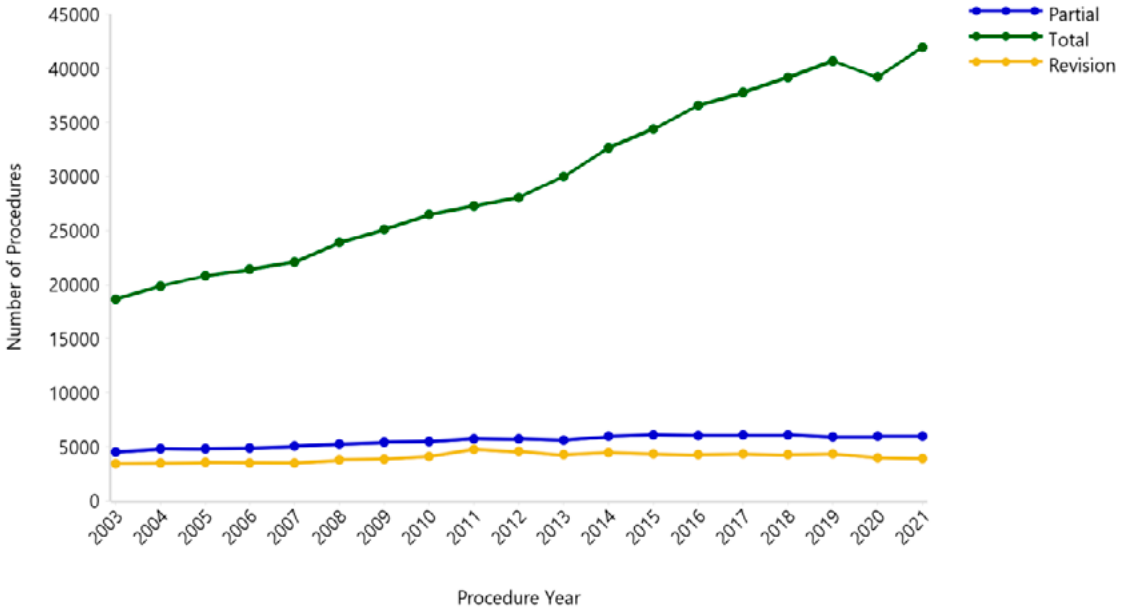


Figure SH11 Trends in Usage of Partial Hip Replacement by Procedure Year (Excluding Partial Resurfacing)

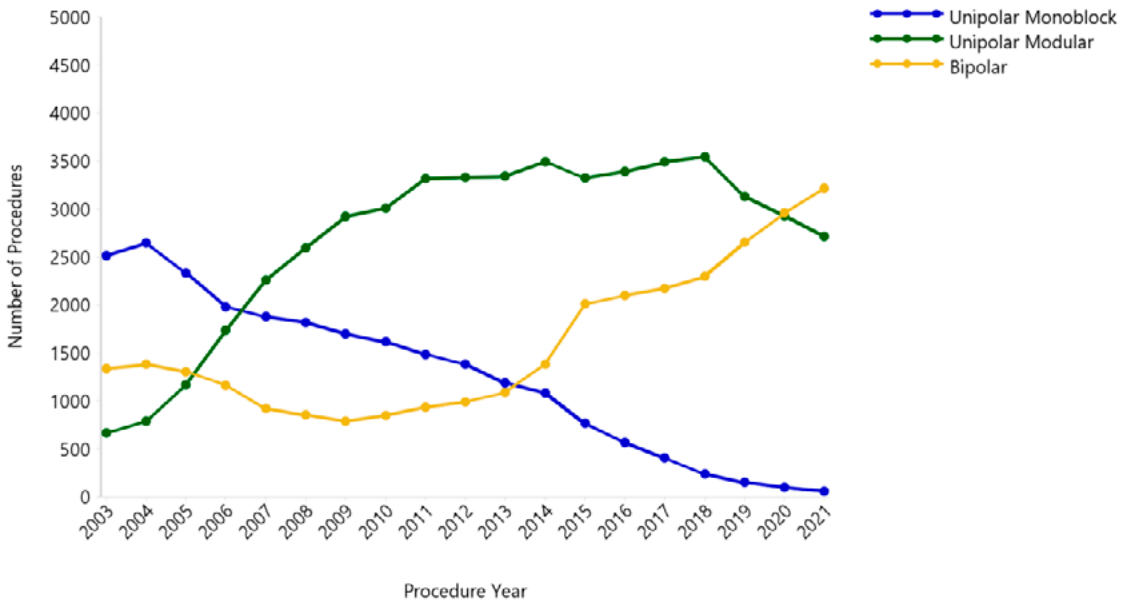


Figure SH12 Trends in Usage of Total Hip Replacement by Procedure Year (Excluding Thrust Plate)

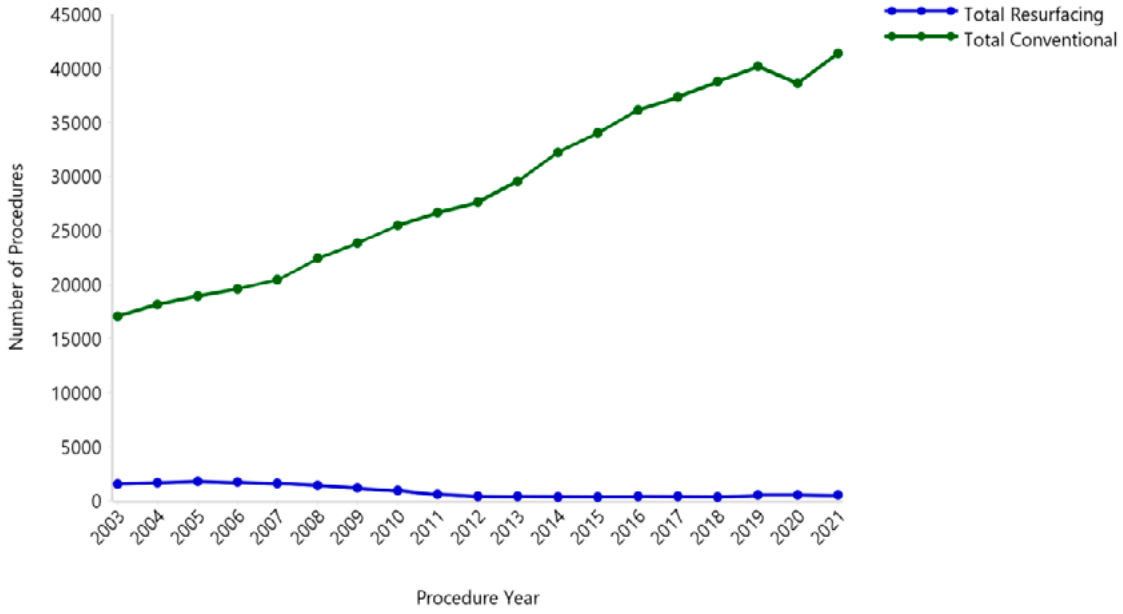
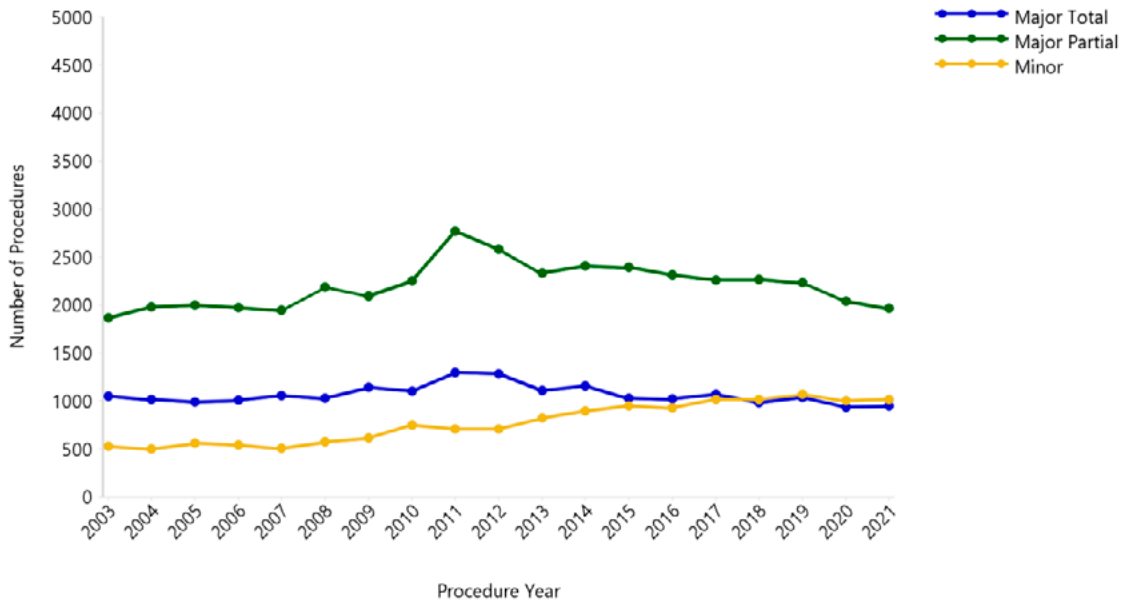


Figure SH13 Trends in Usage of Revision Hip Replacement by Procedure Year



INCIDENCE OF HIP REPLACEMENT

Table SH3 Incidence of Hip Replacement per 100,000 from 2003 to 2021

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	4.0	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	127.8
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**	**123.6**	**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**	**172.3**

Hip Replacement	2014 N	2015 N	2016 N	2017 N	2018 N	2019 N	2020 N	2021 N	TOTAL N
Partial Resurfacing	0.0	.	.	.	.	.	.	.	0.0
Unipolar Monoblock	4.6	3.2	2.3	1.6	1.0	0.6	0.4	0.2	5.5
Unipolar Modular	14.9	13.9	14.0	14.2	14.2	12.3	11.4	10.6	11.8
Bipolar	5.9	8.4	8.7	8.8	9.2	10.5	11.5	12.5	7.0
All Primary Partial	**25.4**	**25.6**	**25.0**	**24.7**	**24.3**	**23.4**	**23.3**	**23.3**	**24.4**
Total Resurfacing	1.6	1.5	1.7	1.6	1.5	2.1	2.2	2.1	4.0
Total Conventional	137.4	142.8	149.5	151.9	155.3	158.5	150.4	160.9	127.0
Thrust Plate	.	.	.	.	.	.	.	.	0.0
All Primary Total	**139.0**	**144.4**	**151.3**	**153.5**	**156.8**	**160.5**	**152.6**	**163.1**	**131.0**
All Revisions	**19.0**	**18.4**	**17.6**	**17.7**	**17.1**	**17.1**	**15.5**	**15.3**	**17.8**
ALL HIPS	**183.4**	**188.4**	**193.9**	**195.9**	**198.2**	**201.0**	**191.4**	**201.6**	**173.2**

Figure SH14 Incidence of Hip Replacement per 100,000 from 2003 to 2021

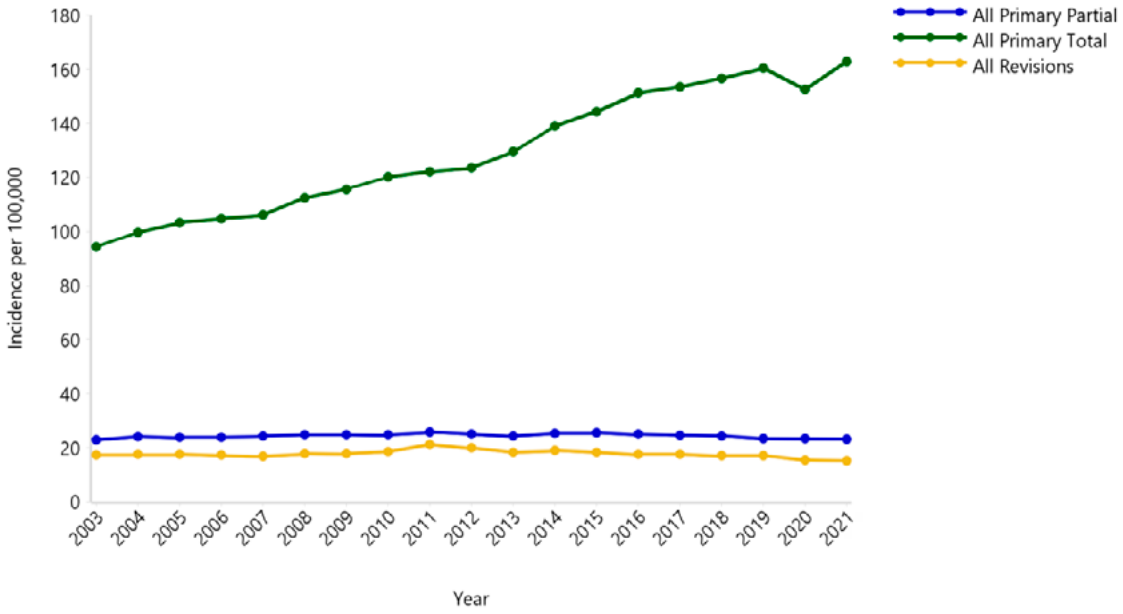


Table SH4 Incidence of Hip Replacement in Patients Aged <55 Years per 100,000 from 2003 to 2021

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**	**22.9**	**23.0**	**24.3**
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	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
Bipolar	0.1	0.1	0.2	0.1	0.2	0.1	0.2	0.2	0.2
All Primary Partial	**0.2**	**0.3**	**0.3**	**0.3**	**0.3**	**0.2**	**0.3**	**0.2**	**0.3**
Total Resurfacing	1.3	1.2	1.4	1.1	1.1	1.6	1.8	1.8	2.9
Total Conventional	24.6	25.5	25.8	25.9	26.4	25.5	24.6	25.7	21.0
Thrust Plate	.	.	.	.	.	.	.	.	0.0
All Primary Total	**25.9**	**26.7**	**27.1**	**27.0**	**27.5**	**27.1**	**26.3**	**27.5**	**24.0**
All Revisions	**2.6**	**2.3**	**2.0**	**2.4**	**2.1**	**1.9**	**2.2**	**2.1**	**2.3**
ALL HIPS	**28.8**	**29.3**	**29.4**	**29.7**	**29.8**	**29.2**	**28.8**	**29.8**	**26.6**

Figure SH15 Incidence of Hip Replacement in Patients Aged <55 Years per 100,000 from 2003 to 2021

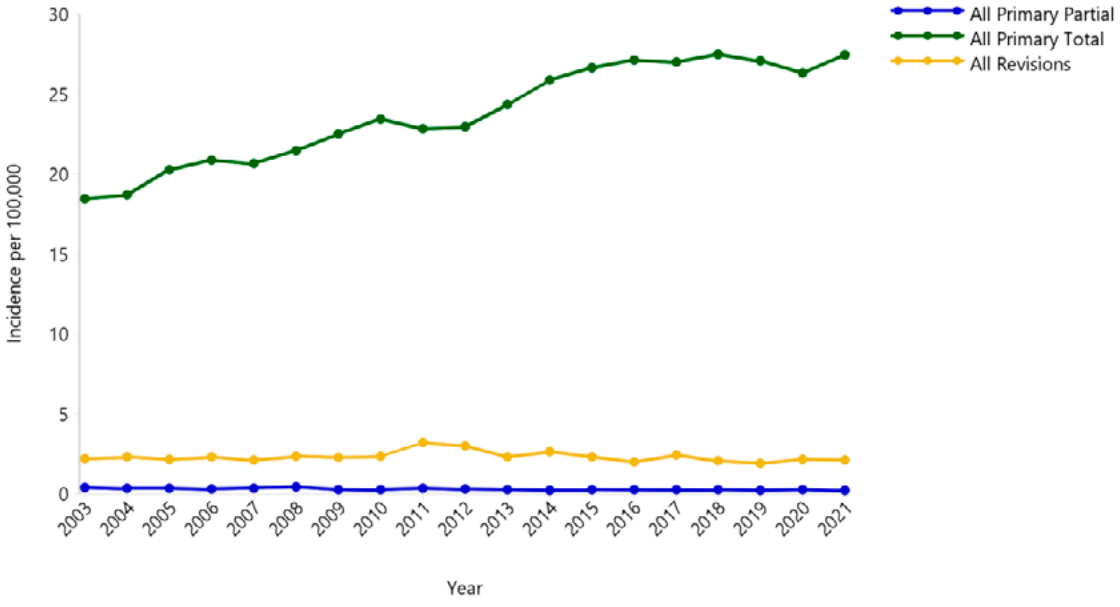


Table SH5 Incidence of Hip Replacement in Patients Aged 55-64 Years per 100,000 from 2003 to 2021

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	242.2	247.6	265.6	255.9	267.9
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**	**273.1**	**261.7**	**272.9**
All Revisions	**29.3**	**27.3**	**26.7**	**27.5**	**25.8**	**28.7**	**27.9**	**29.7**	**37.4**	**32.6**	**29.9**
ALL HIPS	**252.9**	**265.0**	**270.8**	**261.0**	**270.3**	**283.9**	**295.7**	**297.9**	**316.1**	**301.6**	**308.7**

Hip Replacement	2014	2015	2016	2017	2018	2019	2020	2021	TOTAL
	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	.	0.6
Unipolar Modular	3.7	3.2	2.6	2.7	2.8	1.9	2.5	1.7	3.2
Bipolar	1.9	3.0	2.6	3.0	2.3	2.9	3.6	4.2	2.7
All Primary Partial	**6.2**	**6.5**	**5.4**	**5.9**	**5.3**	**4.8**	**6.1**	**5.9**	**6.4**
Total Resurfacing	4.7	4.8	5.0	5.2	4.4	6.0	6.2	5.7	13.0
Total Conventional	284.7	295.9	311.0	307.3	311.2	311.8	297.3	322.6	264.8
Thrust Plate	.	.	.	.	.	.	.	.	0.2
All Primary Total	**289.3**	**300.8**	**316.0**	**312.5**	**315.6**	**317.8**	**303.5**	**328.2**	**278.0**
All Revisions	**29.3**	**25.9**	**24.9**	**25.0**	**23.9**	**24.7**	**22.8**	**21.3**	**27.2**
ALL HIPS	**324.8**	**333.1**	**346.3**	**343.4**	**344.7**	**347.3**	**332.5**	**355.5**	**311.6**

Figure SH16 Incidence of Hip Replacement in Patients Aged 55-64 Years per 100,000 from 2003 to 2021

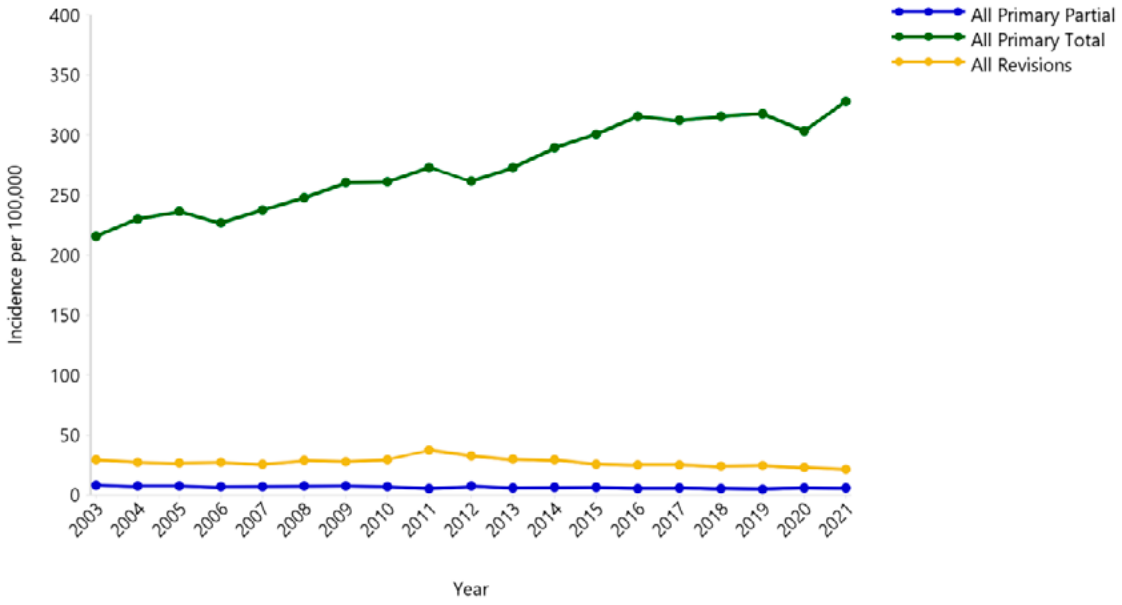


Table SH6 Incidence of Hip Replacement in Patients Aged 65-74 Years per 100,000 from 2003 to 2021

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	446.5	457.9	466.9	471.7	464.6	501.3	499.6	524.4	521.2	527.9	549.7
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	**458.4**	**469.4**	**479.8**	**483.3**	**473.7**	**508.3**	**506.0**	**527.8**	**523.7**	**529.3**	**550.6**
All Revisions	**79.7**	**77.8**	**75.6**	**74.5**	**71.3**	**74.1**	**67.7**	**76.6**	**88.1**	**79.1**	**68.8**
ALL HIPS	**579.1**	**592.9**	**599.9**	**597.0**	**586.9**	**622.9**	**613.8**	**638.2**	**647.6**	**640.8**	**649.3**

Hip Replacement	2014 N	2015 N	2016 N	2017 N	2018 N	2019 N	2020 N	2021 N	TOTAL N
Unipolar Monoblock	3.4	2.7	1.5	1.3	0.9	0.8	0.3	0.3	4.9
Unipolar Modular	19.4	17.3	15.2	15.4	15.4	13.1	11.6	9.8	16.9
Bipolar	8.7	13.1	12.2	12.8	13.2	15.4	16.1	16.1	11.9
All Primary Partial	**31.5**	**33.1**	**28.8**	**29.5**	**29.4**	**29.2**	**28.0**	**26.3**	**33.7**
Total Resurfacing	1.5	1.7	1.7	2.0	2.5	2.6	2.1	1.7	4.1
Total Conventional	578.4	593.7	612.5	609.3	616.2	626.4	580.7	597.1	550.6
Thrust Plate	.	.	.	.	.	.	.	.	0.2
All Primary Total	**580.0**	**595.4**	**614.2**	**611.3**	**618.7**	**629.0**	**582.8**	**598.8**	**554.8**
All Revisions	**68.8**	**68.7**	**65.7**	**61.4**	**60.9**	**57.7**	**49.6**	**49.2**	**67.6**
ALL HIPS	**680.2**	**697.2**	**708.7**	**702.2**	**709.0**	**715.9**	**660.4**	**674.3**	**656.1**

Figure SH17 Incidence of Hip Replacement in Patients Aged 65-74 Years per 100,000 from 2003 to 2021

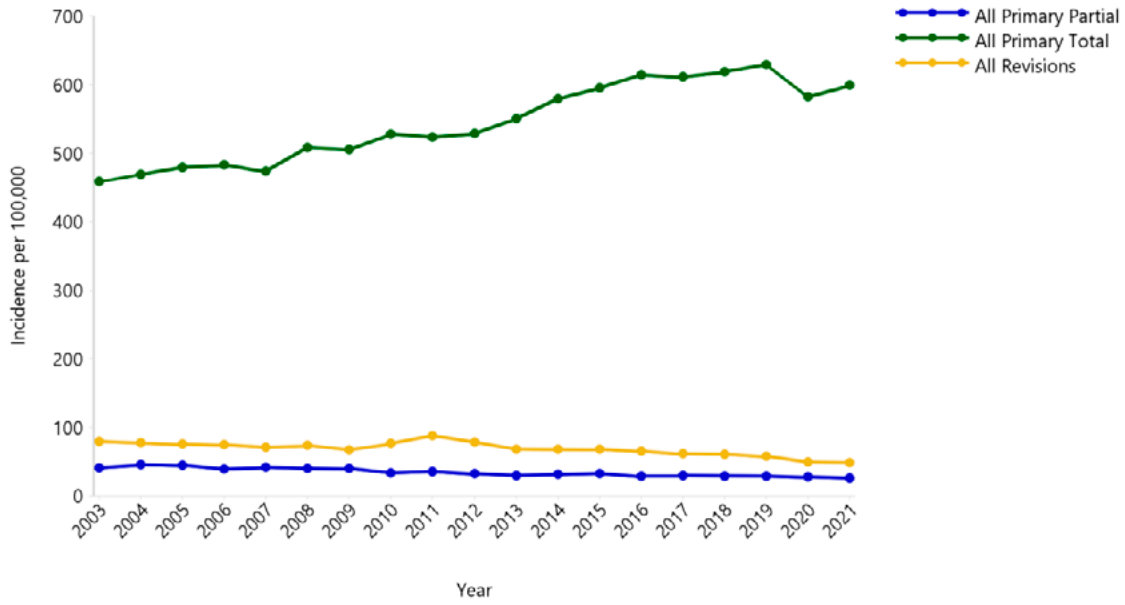


Table SH7 Incidence of Hip Replacement in Patients Aged ≥75 Years per 100,000 from 2003 to 2021

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	48.8	70.4	108.9	139.4	159.7	176.7	182.5	200.1	194.8	195.1
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**	**331.6**	**322.2**	**326.6**	**326.8**	**335.0**	**339.2**	**343.0**	**351.3**	**340.6**	**330.8**
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	501.9	504.3	530.0	538.4	549.0	546.3	558.1	568.8
All Primary Total	**458.2**	**487.6**	**485.7**	**502.1**	**504.8**	**530.6**	**538.6**	**549.2**	**546.4**	**558.1**	**568.9**
All Revisions	**124.1**	**126.3**	**129.4**	**119.4**	**120.2**	**122.9**	**130.2**	**126.5**	**128.0**	**126.1**	**121.9**
ALL HIPS	**901.6**	**945.5**	**937.2**	**948.1**	**951.7**	**988.5**	**1008.0**	**1018.7**	**1025.6**	**1024.8**	**1021.7**

Hip Replacement	2014	2015	2016	2017	2018	2019	2020	2021	TOTAL
	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	2.8	78.3
Unipolar Modular	198.5	184.9	188.0	186.6	183.7	157.3	140.7	126.5	155.0
Bipolar	76.0	106.2	109.6	109.3	112.9	124.8	132.7	139.5	87.7
All Primary Partial	**340.8**	**336.5**	**330.8**	**318.4**	**309.4**	**289.6**	**278.5**	**268.8**	**320.9**
Total Resurfacing	0.2	.	0.1	0.3	0.1	0.3	0.2	0.2	0.3
Total Conventional	608.1	617.9	641.7	664.2	668.8	685.8	626.9	658.6	582.8
All Primary Total	**608.3**	**617.9**	**641.8**	**664.5**	**668.9**	**686.0**	**627.1**	**658.8**	**583.1**
All Revisions	**125.1**	**121.7**	**116.1**	**114.7**	**109.8**	**110.9**	**94.2**	**89.4**	**117.5**
ALL HIPS	**1074.2**	**1076.0**	**1088.7**	**1097.7**	**1088.1**	**1086.5**	**999.8**	**1017.0**	**1021.5**

Figure SH18 Incidence of Hip Replacement in Patients Aged ≥75 Years per 100,000 from 2003 to 2021

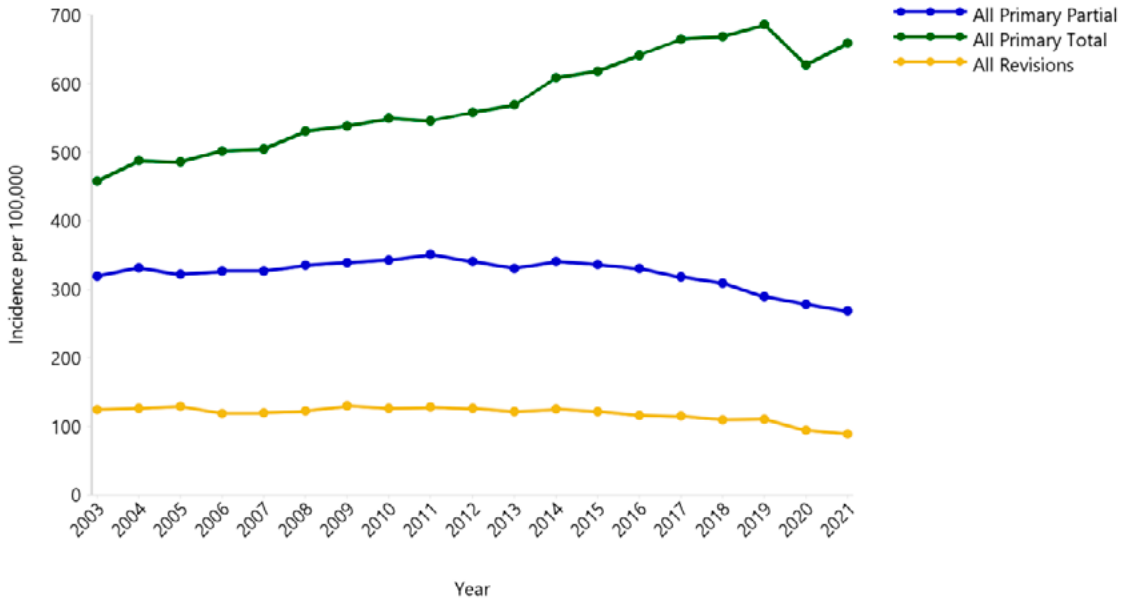


Figure SH19 Trends in Usage of Hip Replacement by State/Territory and Year

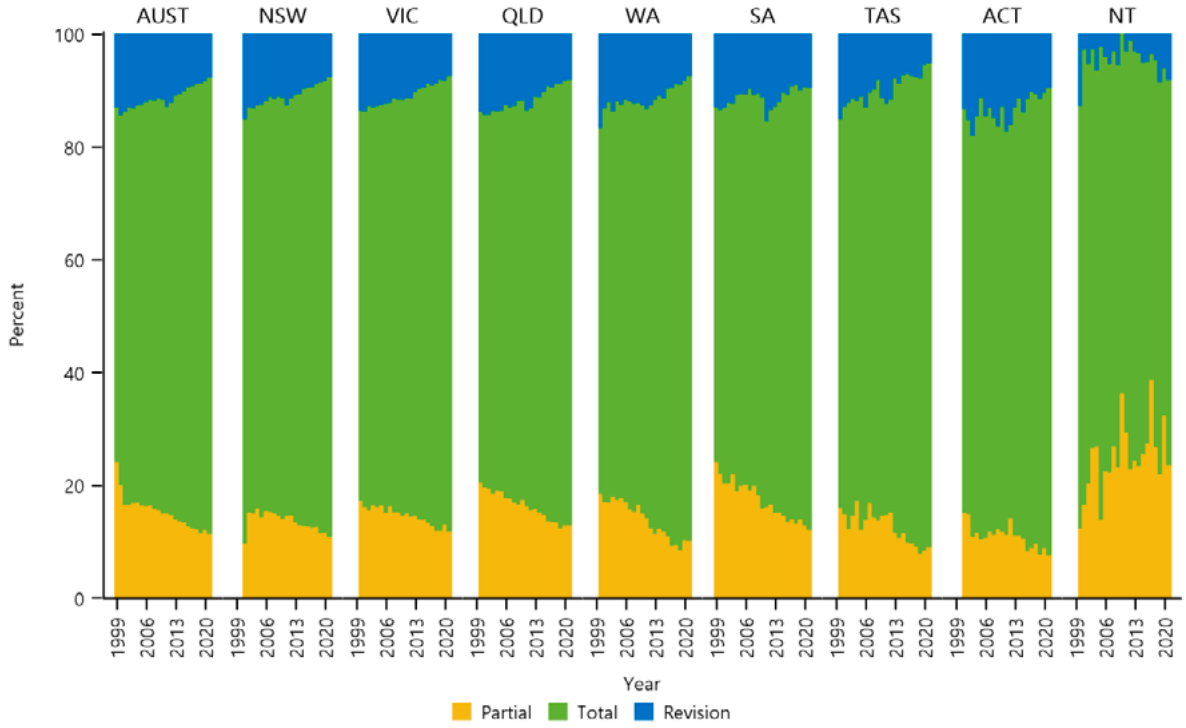


Table SH8 Time between Procedures for Bilateral Primary Hip Replacement

Bilateral Procedures	Same Day			1 day - 3 months			3 – 6 months			≥6 months			TOTAL		
	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%
Both Partial	46	0.9	0.7	713	14.2	10.7	476	9.5	4.2	3798	75.5	3.8	5033	100.0	4.1
Both Total	6259	5.4	99.2	5879	5.1	88.2	10796	9.4	94.8	92462	80.1	93.4	115396	100.0	93.6
Total/Partial	4	0.1	0.1	77	2.7	1.2	114	4.0	1.0	2690	93.2	2.7	2885	100.0	2.3
TOTAL	**6309**	**5.1**	**100.0**	**6669**	**5.4**	**100.0**	**11386**	**9.2**	**100.0**	**98950**	**80.2**	**100.0**	**123314**	**100.0**	**100.0**

Table SH9 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	.	.	16647	74.8	3975	17.9	1635	7.3	22257	100.0
Single Primary Procedure	439707	94.2	21569	4.6	3866	0.8	1710	0.4	466852	100.0
2 Primary Procedures	111324	90.3	8675	7.0	2238	1.8	1077	0.9	123314	100.0
TOTAL	**551031**	**90.0**	**46891**	**7.7**	**10079**	**1.6**	**4422**	**0.7**	**612423**	**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-2022

Table SHP1 Primary Partial Hip Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	80141	70.4%	9	108	84	83.2	8.6
Male	33683	29.6%	5	107	83	81.7	9.6
TOTAL	**113824**	**100.0%**	**5**	**108**	**84**	**82.8**	**8.9**

Figure SHP1 Primary Partial Hip Replacement by Age and Gender

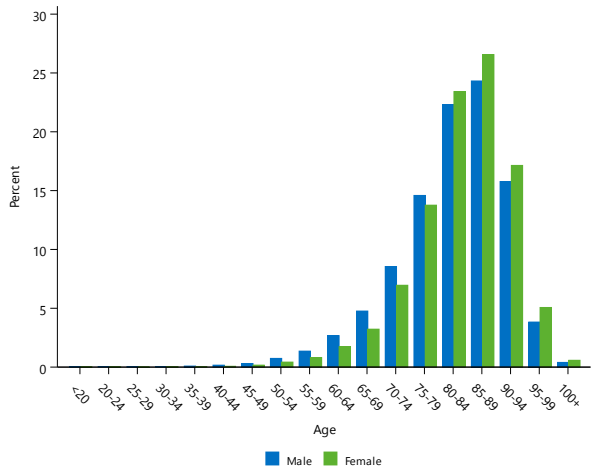
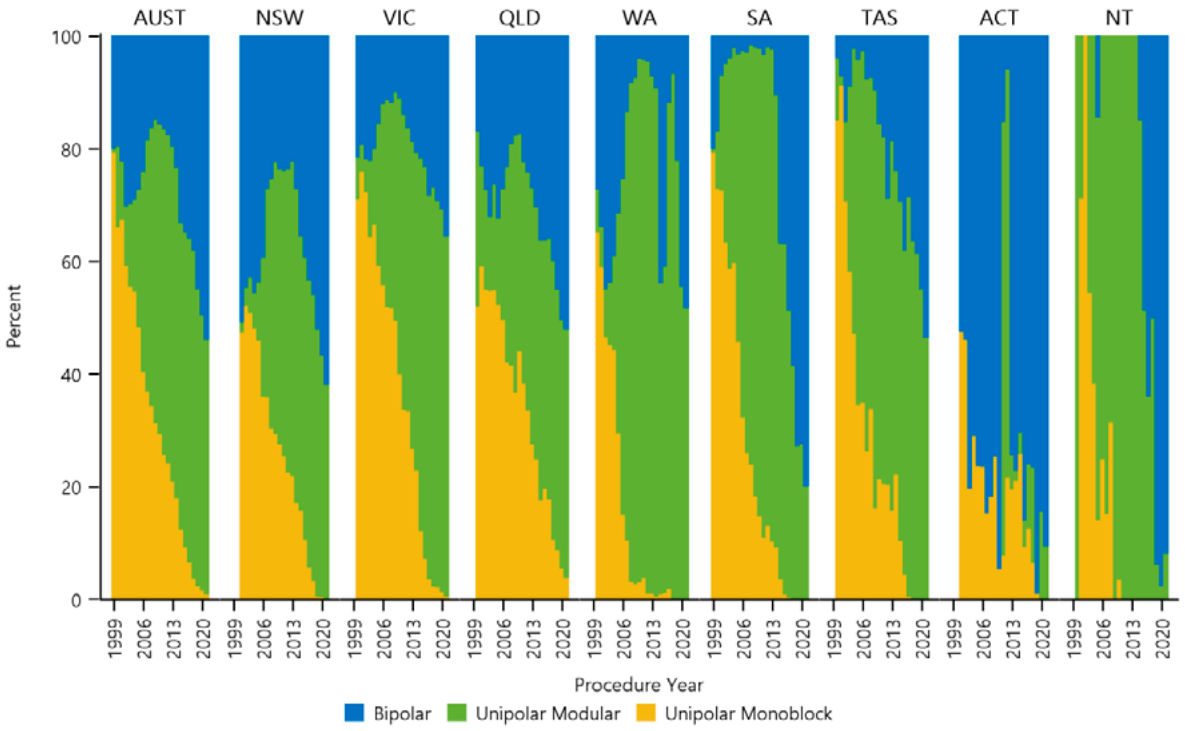


Table SHP2 Primary Partial Hip Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Fractured Neck Of Femur	108699	95.5
Osteoarthritis	2883	2.5
Tumour	1248	1.1
Failed Internal Fixation	613	0.5
Osteonecrosis	231	0.2
Rheumatoid Arthritis	58	0.1
Developmental Dysplasia	53	0.0
Osteochondritis Dissecans	1	0.0
Other	38	0.0
TOTAL	**113824**	**100.0**

Figure SHP2 Trends in Usage of Primary Partial Hip Replacement by State/Territory and Year



PRIMARY PARTIAL RESURFACING HIP REPLACEMENT

Table SHP3 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 SHP3 Primary Partial Resurfacing Hip Replacement by Age and Gender

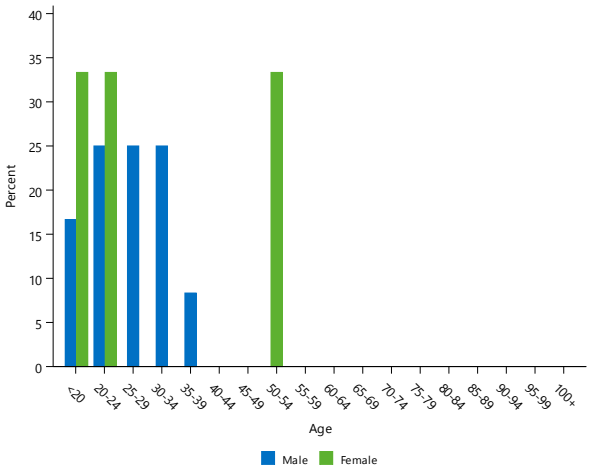


Table SHP4 Primary Partial Resurfacing Hip Replacement by Primary Diagnosis

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 SHP5 Primary Unipolar Monoblock Hip Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	21222	72.7%	16	108	86	85.0	7.2
Male	7967	27.3%	32	107	84	83.5	7.8
TOTAL	**29189**	**100.0%**	**16**	**108**	**85**	**84.5**	**7.4**

Figure SHP4 Primary Unipolar Monoblock Hip Replacement by Age and Gender

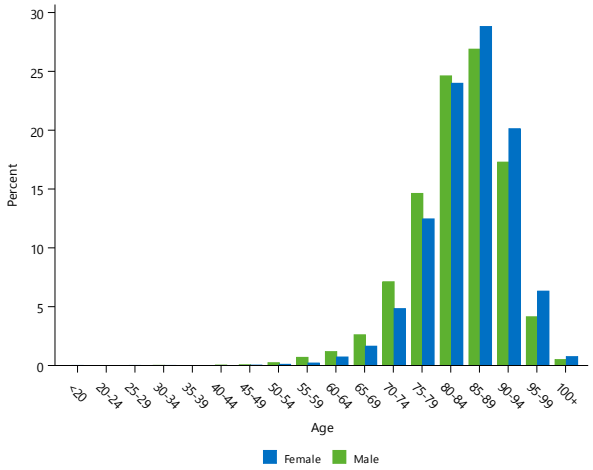
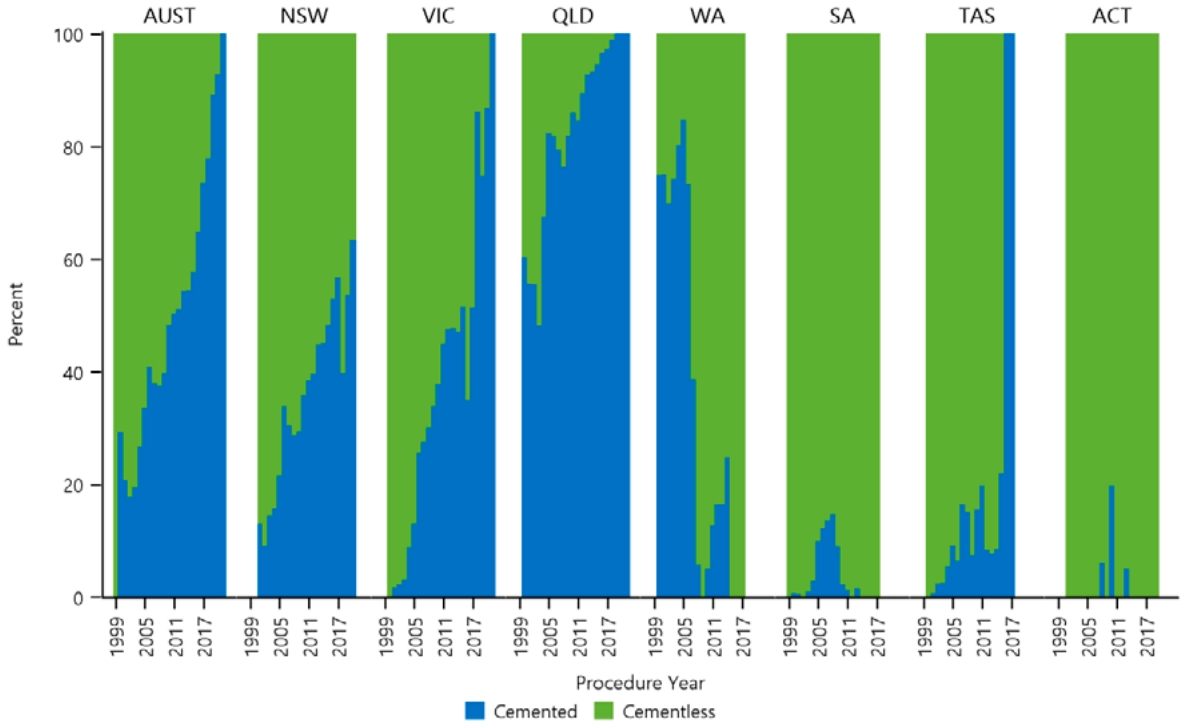


Table SHP6 Primary Unipolar Monoblock Hip Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Fractured Neck Of Femur	28505	97.7
Osteoarthritis	495	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	**29189**	**100.0**

Figure SHP5 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 SHP7 Primary Unipolar Modular Hip Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	36427	70.0%	18	108	84	83.2	8.5
Male	15632	30.0%	5	106	83	81.8	9.4
TOTAL	**52059**	**100.0%**	**5**	**108**	**84**	**82.8**	**8.8**

Figure SHP6 Primary Unipolar Modular Hip Replacement by Age and Gender

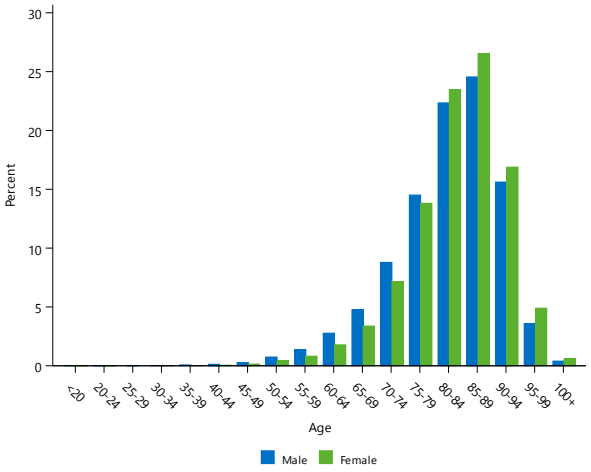
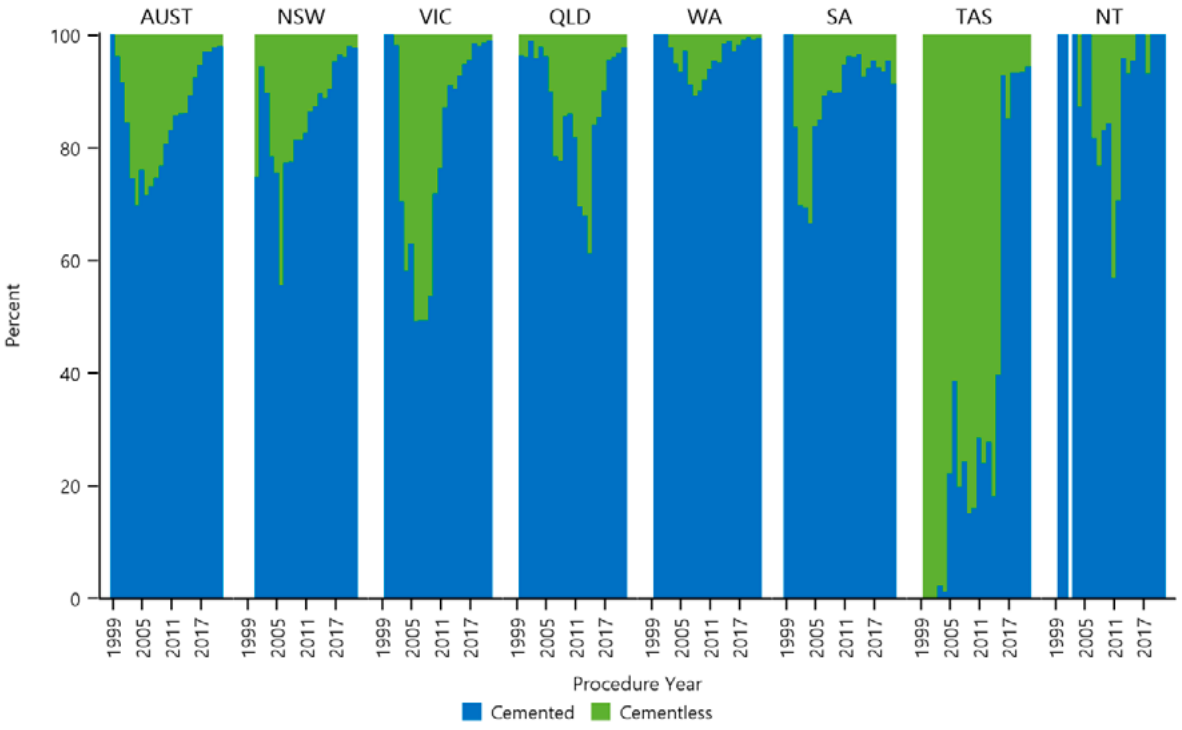


Table SHP8 Primary Unipolar Modular Hip Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Fractured Neck Of Femur	49911	95.9
Osteoarthritis	1347	2.6
Tumour	385	0.7
Failed Internal Fixation	285	0.5
Osteonecrosis	66	0.1
Developmental Dysplasia	24	0.0
Rheumatoid Arthritis	22	0.0
Other	19	0.0
TOTAL	**52059**	**100.0**

Figure SHP7 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 SHP9 Primary Bipolar Hip Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	22489	69.1%	9	107	83	81.7	9.6
Male	10072	30.9%	9	105	82	80.5	10.8
TOTAL	**32561**	**100.0%**	**9**	**107**	**83**	**81.3**	**10.0**

Figure SHP8 Primary Bipolar Hip Replacement by Age and Gender

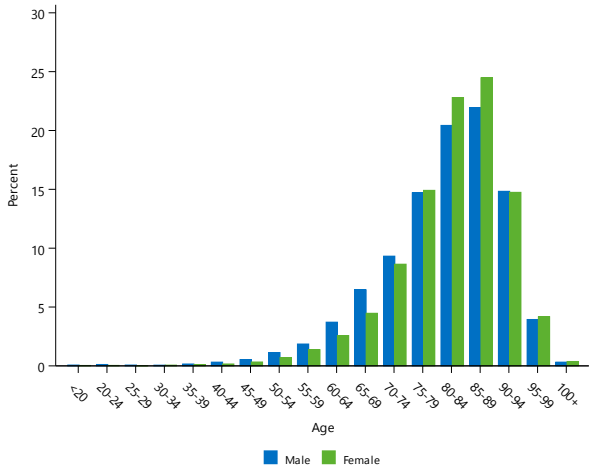
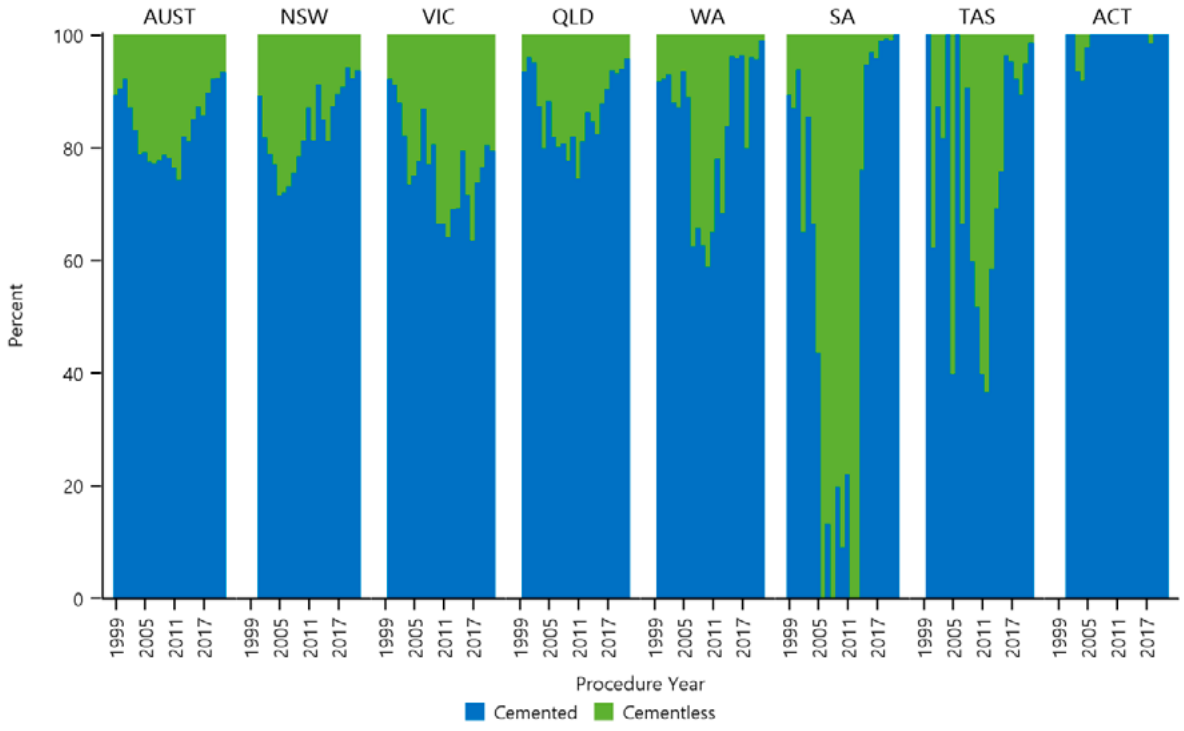


Table SHP10 Primary Bipolar Hip Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Fractured Neck Of Femur	30283	93.0
Osteoarthritis	1036	3.2
Tumour	799	2.5
Failed Internal Fixation	285	0.9
Osteonecrosis	108	0.3
Rheumatoid Arthritis	22	0.1
Developmental Dysplasia	14	0.0
Other	14	0.0
TOTAL	**32561**	**100.0**

Figure SHP9 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-2022

Table SHT1 Primary Total Hip Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	322362	53.8%	11	101	70	68.8	11.4
Male	277294	46.2%	11	108	66	65.6	11.8
TOTAL	**599656**	**100.0%**	**11**	**108**	**68**	**67.3**	**11.7**

Figure SHT1 Primary Total Hip Replacement by Age and Gender

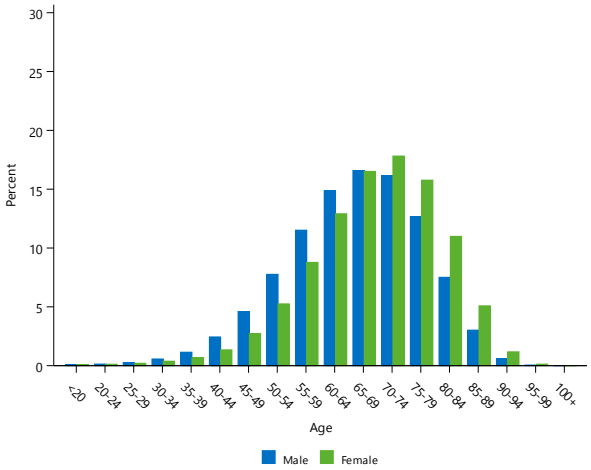
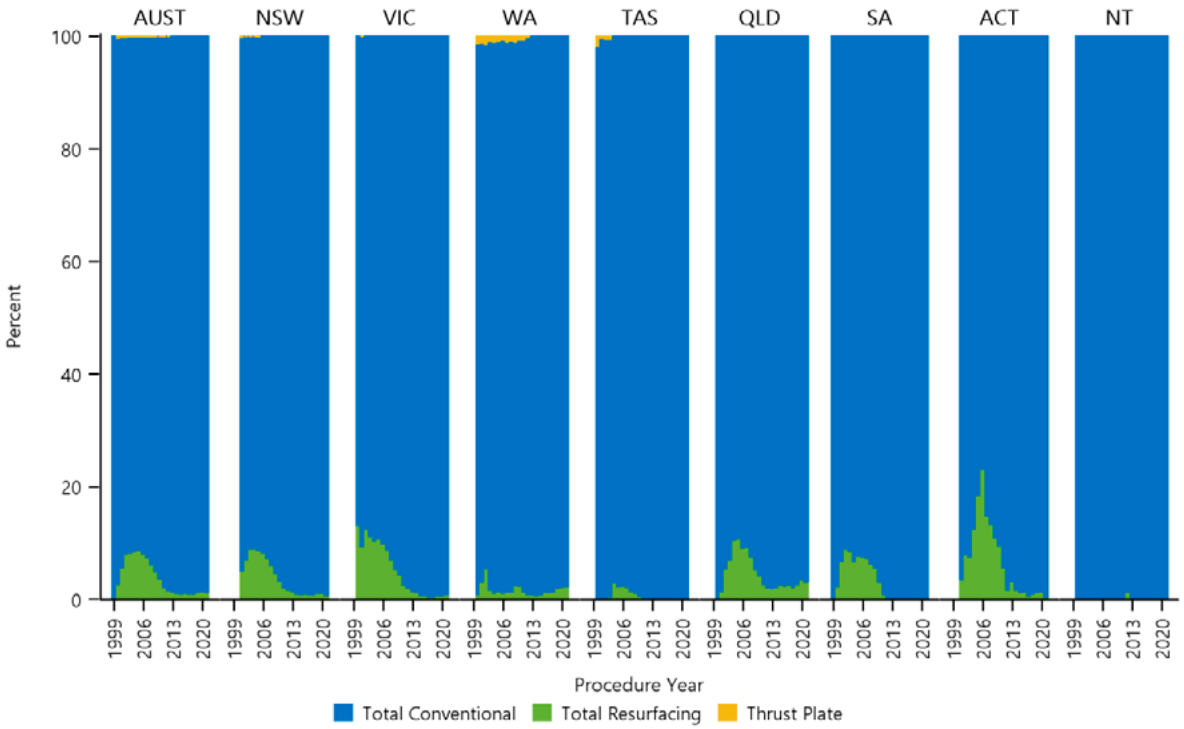


Table SHT2 Primary Total Hip Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Osteoarthritis	529534	88.3
Fractured Neck Of Femur	28699	4.8
Osteonecrosis	19116	3.2
Developmental Dysplasia	8106	1.4
Rheumatoid Arthritis	5057	0.8
Tumour	3159	0.5
Other Inflammatory Arthritis	2565	0.4
Failed Internal Fixation	2407	0.4
Fracture/Dislocation	730	0.1
Arthrodesis Takedown	153	0.0
Other	130	0.0
TOTAL	**599656**	**100.0**

Figure SHT2 Trends in Usage of Primary Total Hip Replacement by State/Territory and Year



PRIMARY TOTAL CONVENTIONAL HIP REPLACEMENT

Table SHT3 Primary Total Conventional Hip Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	318609	54.9%	11	101	70	69.0	11.3
Male	261420	45.1%	11	108	67	66.4	11.5
TOTAL	**580029**	**100.0%**	**11**	**108**	**69**	**67.8**	**11.5**

Figure SHT3 Primary Total Conventional Hip Replacement by Age and Gender

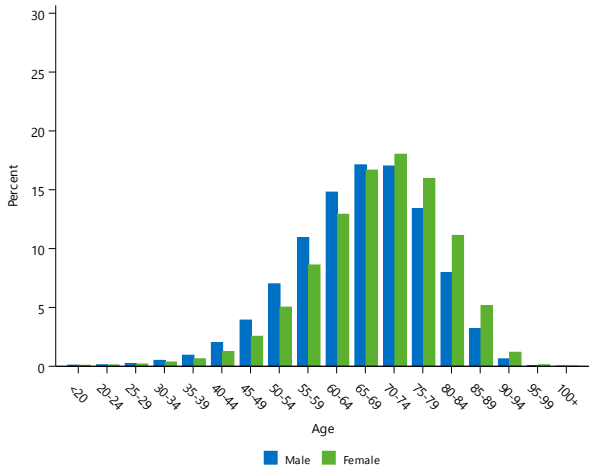
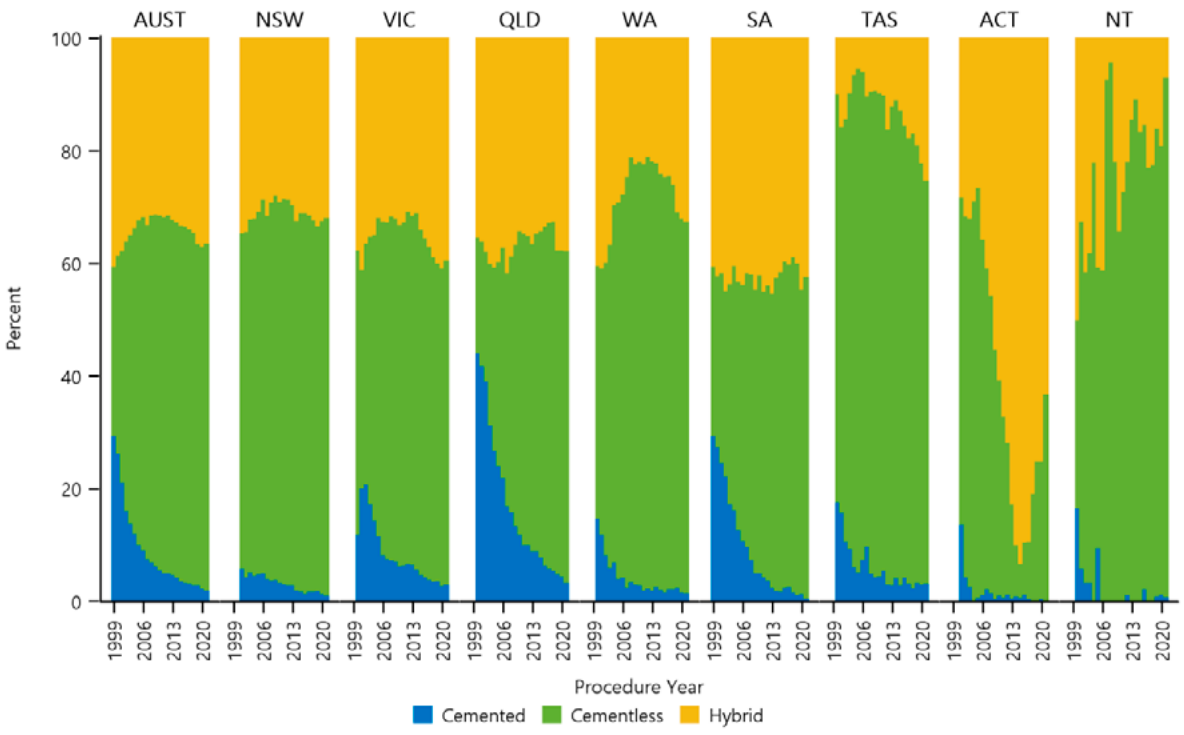


Table SHT4 Primary Total Conventional Hip Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Osteoarthritis	510788	88.1
Fractured Neck Of Femur	28699	4.9
Osteonecrosis	18810	3.2
Developmental Dysplasia	7678	1.3
Rheumatoid Arthritis	4993	0.9
Tumour	3157	0.5
Other Inflammatory Arthritis	2492	0.4
Failed Internal Fixation	2407	0.4
Fracture/Dislocation	726	0.1
Arthrodesis Takedown	152	0.0
Other	127	0.0
TOTAL	**580029**	**100.0**

Figure SHT4 Trends in Fixation of Primary Total Conventional Hip Replacement by State/Territory and Year



PRIMARY TOTAL RESURFACING HIP REPLACEMENT

Table SHT5 Primary Total Resurfacing Hip Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	3679	19.0%	14	81	53	51.5	8.6
Male	15690	81.0%	13	82	54	53.3	9.1
TOTAL	**19369**	**100.0%**	**13**	**82**	**54**	**53.0**	**9.1**

Figure SHT5 Primary Total Resurfacing Hip Replacement by Age and Gender

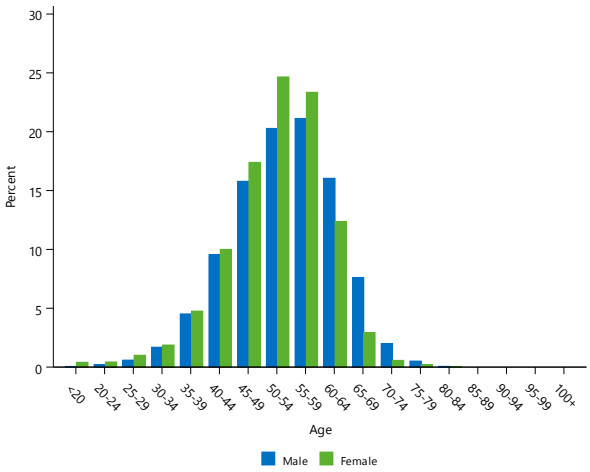
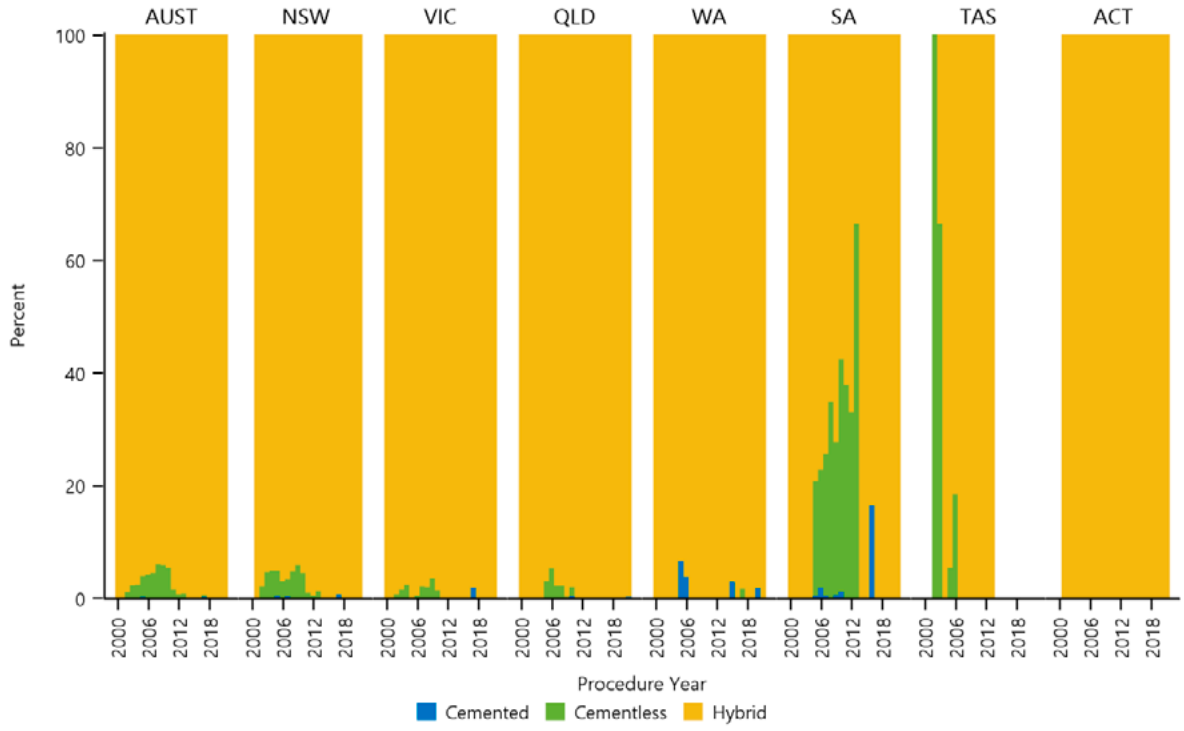


Table SHT6 Primary Total Resurfacing Hip Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Osteoarthritis	18503	95.5
Developmental Dysplasia	425	2.2
Osteonecrosis	301	1.6
Other Inflammatory Arthritis	72	0.4
Rheumatoid Arthritis	58	0.3
Fracture/Dislocation	4	0.0
Tumour	2	0.0
Arthrodesis Takedown	1	0.0
Other	3	0.0
TOTAL	**19369**	**100.0**

Figure SHT6 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 SHT7 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 SHT7 Primary Thrust Plate Hip Replacement by Age and Gender

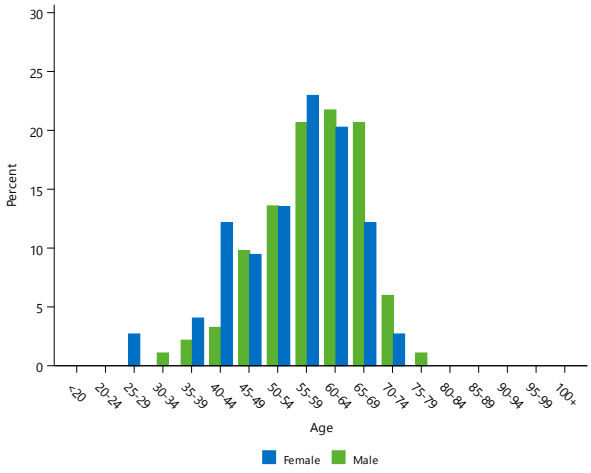


Table SHT8 Primary Thrust Plate Hip Replacement by Primary Diagnosis

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 SHR1 All Revision Hip Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Male	38797	46.6%	15	102	72	70.1	12.0
Female	44377	53.4%	11	104	73	71.7	12.2
TOTAL	**83174**	**100.0%**	**11**	**104**	**72**	**70.9**	**12.1**

Figures SHR1 All Revision Hip Replacement by Age and Gender

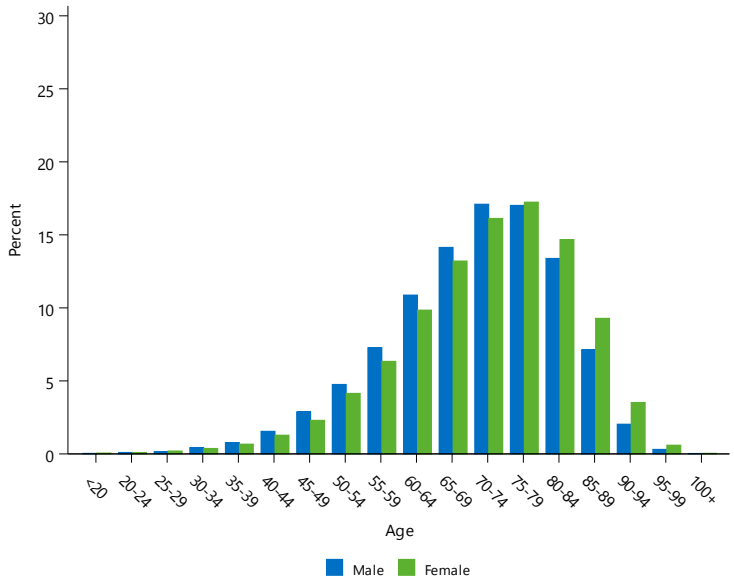


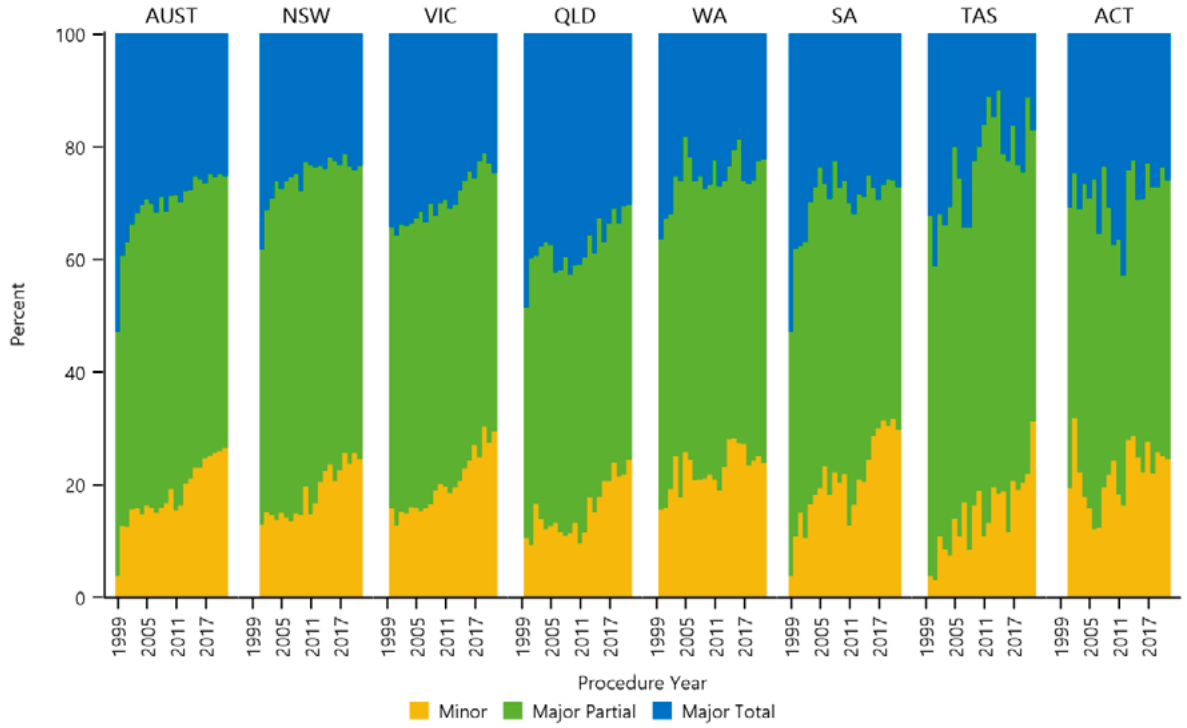
Table SHR2 All Revision Hip Replacement by Type of Revision

Type for Revision	Number	Percent
Acetabular Component	24292	29.2
THR (Femoral/Acetabular)	22477	27.0
Femoral Component	16225	19.5
Head/Insert	11182	13.4
Cement Spacer	3136	3.8
Head Only	2169	2.6
Minor Components	1026	1.2
Removal of Prostheses	782	0.9
Insert Only	697	0.8
Bipolar Head and Femoral	609	0.7
Bipolar Only	255	0.3
Head/Neck/Insert	150	0.2
Head/Neck	90	0.1
Reinsertion of Components	62	0.1
Neck Only	8	0.0
Saddle	5	0.0
Cement Only	5	0.0
Thrust Plate	2	0.0
Neck/Insert	1	0.0
Incomplete	1	0.0
TOTAL	**83174**	**100.0**

Table SHR3 All Revision Hip Replacement by Reason for Revision

Reason of Revision	Number	Percent
Loosening	28693	34.5
Infection	15024	18.1
Prosthesis Dislocation/Instability	12741	15.3
Fracture	10517	12.6
Lysis	4676	5.6
Metal Related Pathology	3227	3.9
Pain	1604	1.9
Wear Acetabular Insert	1289	1.5
Implant Breakage Stem	853	1.0
Implant Breakage Acetabular	675	0.8
Chondrolysis/Acetab. Erosion	554	0.7
Malposition	510	0.6
Leg Length Discrepancy	476	0.6
Implant Breakage Acetabular Insert	456	0.5
Wear Acetabulum	337	0.4
Incorrect Sizing	198	0.2
Tumour	147	0.2
Osteonecrosis	128	0.2
Implant Breakage Head	117	0.1
Wear Head	106	0.1
Heterotopic Bone	76	0.1
Progression Of Disease	28	0.0
Synovitis	16	0.0
Other	726	0.9
TOTAL	**83174**	**100.0**

Figures SHR2 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

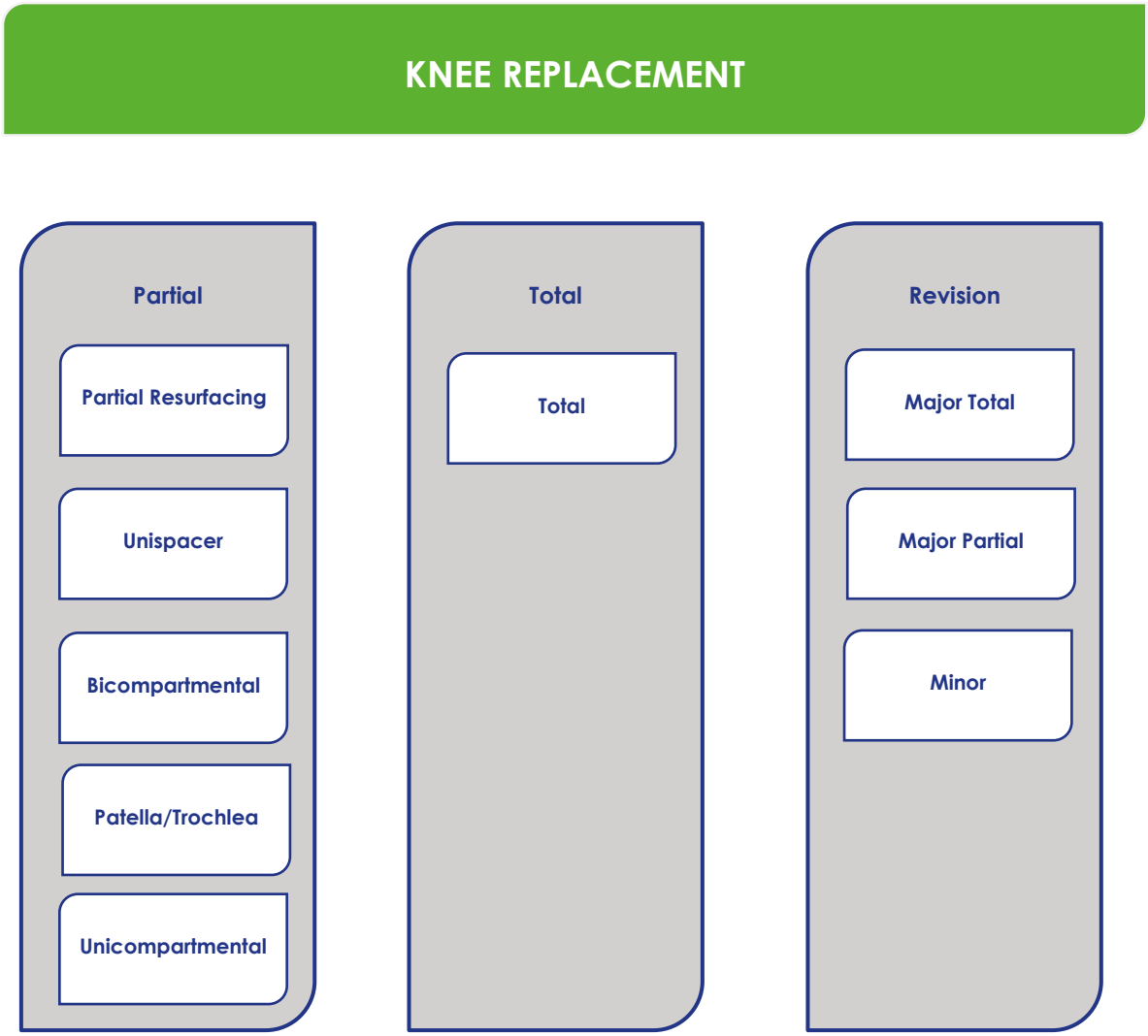
The Registry groups knee replacement into three broad categories, primary partial, primary total and revision knee replacement.

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.

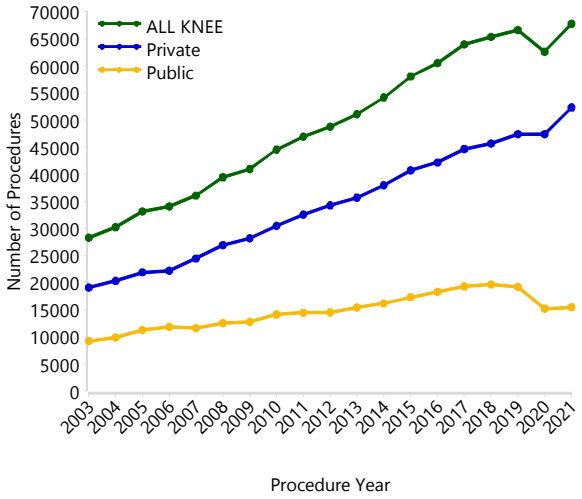


PUBLIC AND PRIVATE SECTOR

In 2021, 77.2% 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 the private sector and a smaller increase in the public sector. The private sector recorded 52,285 procedures, an increase of 10.3% and the public sector recorded 15,457 procedures, an increase of 1.6% compared to 2020 (Figure SK1).

Figure SK1 Knee Replacement by Hospital Sector



Since 2003, knee replacement has increased by 174.0% in the private sector compared to 67.3% in the public sector.

There were 3,368 primary partial knee replacements reported for the private sector in 2021, a decrease of 0.1% compared to 2020 and a decrease of 1.2% since 2003. In the public sector, there were 424 partial knee replacements, a decrease of 15.2% compared to 2020 and a decrease of 50.8% since 2003.

In 2021, 45,353 primary total knee replacements were reported in the private sector, an increase of 11.1% compared to 2020. In the public sector in 2021, there were 13,575 primary total knee replacements, an increase of 2.6% compared to 2020. Since 2003, primary total knee replacement has increased by 222.3% in the private sector compared to 77.2% in the public sector.

There were 3,564 private sector revision knee replacements reported in 2021. This is an increase of 12.1% compared to 2020. In the public sector, there were 1,458 revision knee replacements, a decrease of 1.5% compared to 2020. Since 2003, revision knee replacement has increased by 123.2% in the private sector compared to 103.3% in the public sector.

Table SK1 All Knee Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Male	440806	45.0%	8	101	68	67.9	9.3
Female	539613	55.0%	8	103	69	68.5	9.6
TOTAL	**980419**	**100.0%**	**8**	**103**	**69**	**68.2**	**9.4**

Table SK2 Number of Knee Replacements by Gender

Knee Replacement	Female		Male		TOTAL	
	N	%	N	%	N	%
Partial Resurfacing	120	49.0	125	51.0	245	0.3
Unispacer	19	47.5	21	52.5	40	0.1
Patella/Trochlear	3719	77.0	1108	23.0	4827	6.6
Unicompartmental	30823	45.7	36674	54.3	67497	92.7
Bicompartmental	100	60.6	65	39.4	165	0.2
All Primary Partial	**34781**	**47.8**	**37993**	**52.2**	**72774**	**100.0**
Total Knee	464841	56.1	364431	43.9	829272	100.0
All Primary Total	**464841**	**56.1**	**364431**	**43.9**	**829272**	**100.0**
Major Total	19372	52.4	17632	47.6	37004	47.2
Major Partial	6458	49.0	6710	51.0	13168	16.8
Minor	14161	50.2	14040	49.8	28201	36.0
All Revision	**39991**	**51.0**	**38382**	**49.0**	**78373**	**100.0**
ALL KNEES	**539613**	**55.0**	**440806**	**45.0**	**980419**	**100.0**

Figure SK2 **Percentage of Females by Type of Primary Knee Replacement and Procedure Year**

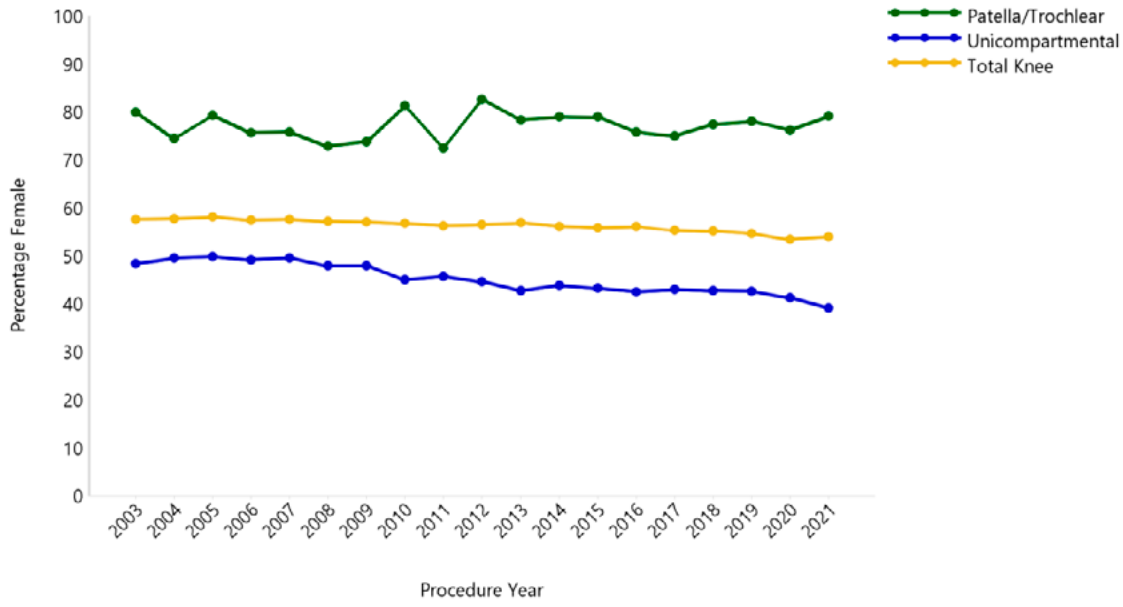


Figure SK3 **Percentage of Females by Revision Knee Replacement and Procedure Year**

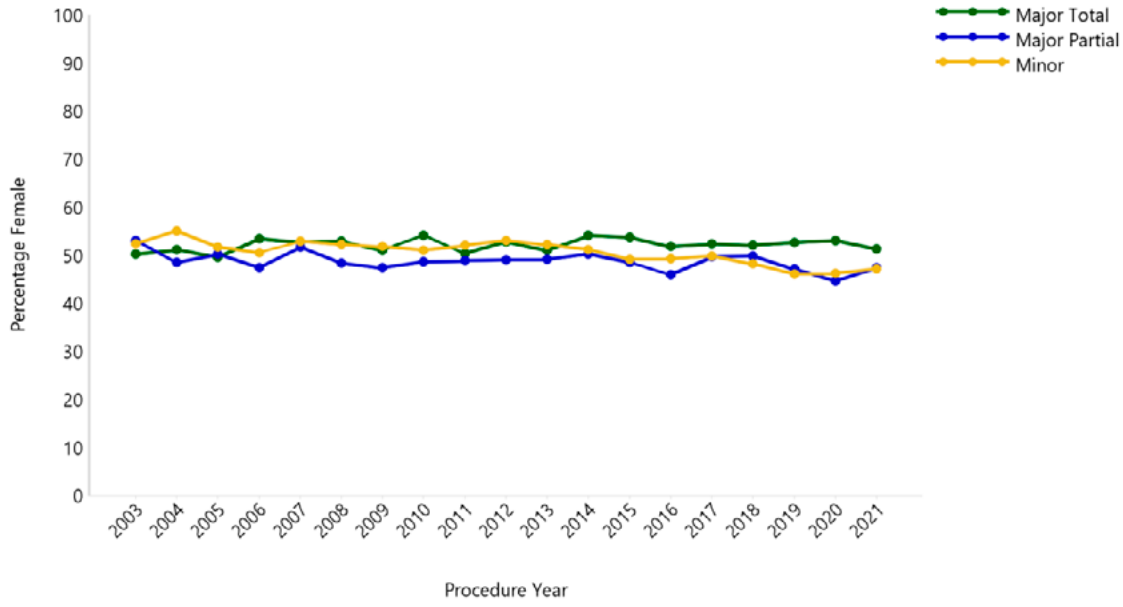


Figure SK4 **Percentage of Patients Aged <65 Years by Type of Primary Knee Replacement and Procedure Year**

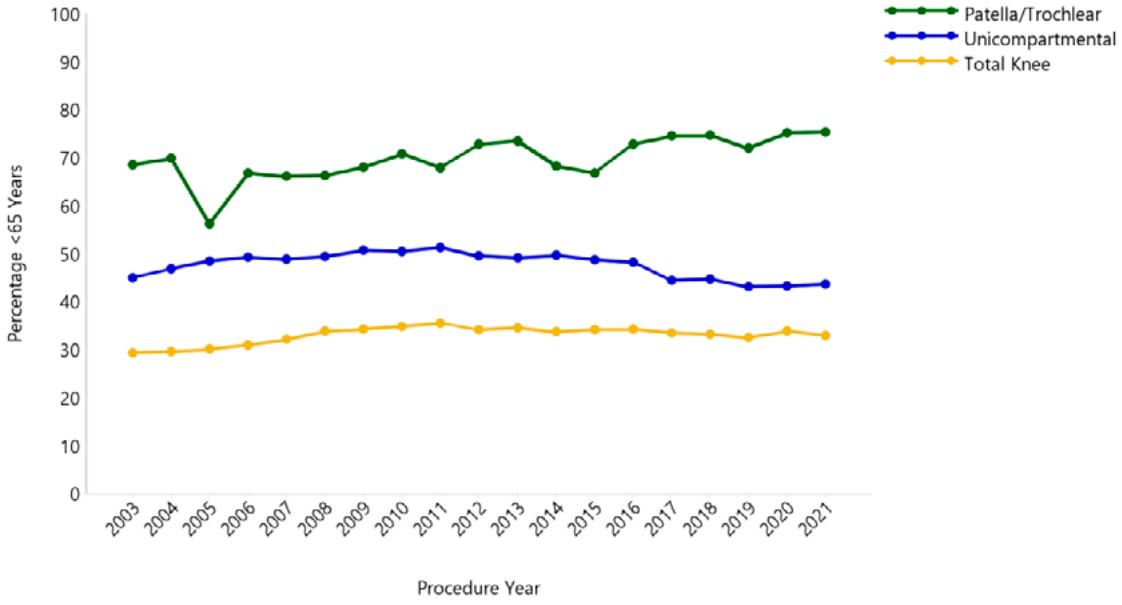


Figure SK5 **Percentage of Patients Aged <65 Years by Revision Knee Replacement and Procedure Year**

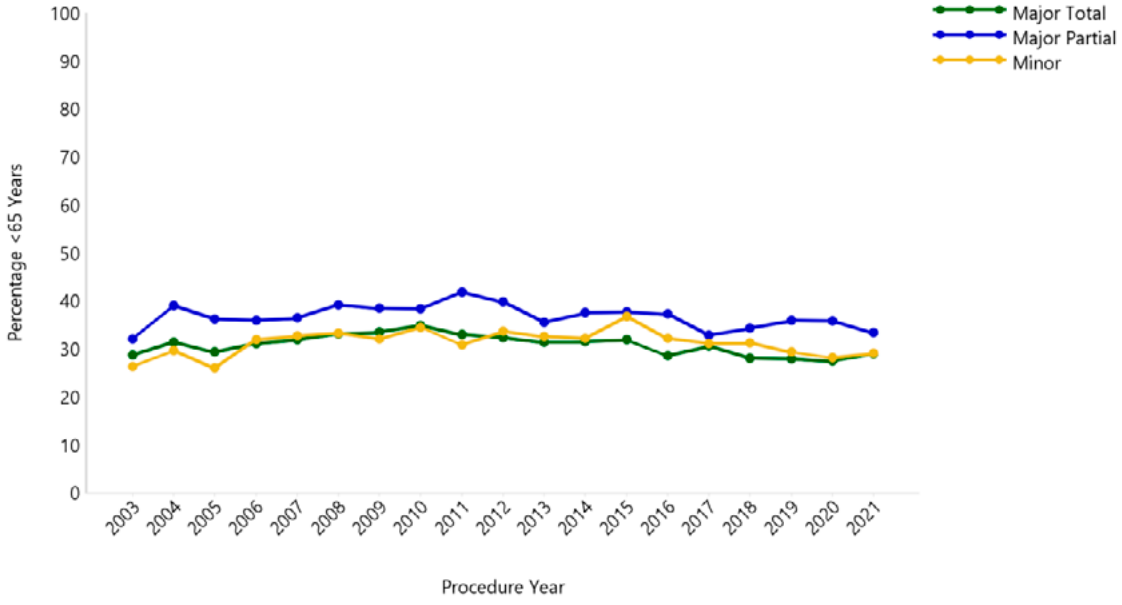


Figure SK6 Trends in Usage of Knee Replacement by Procedure Year

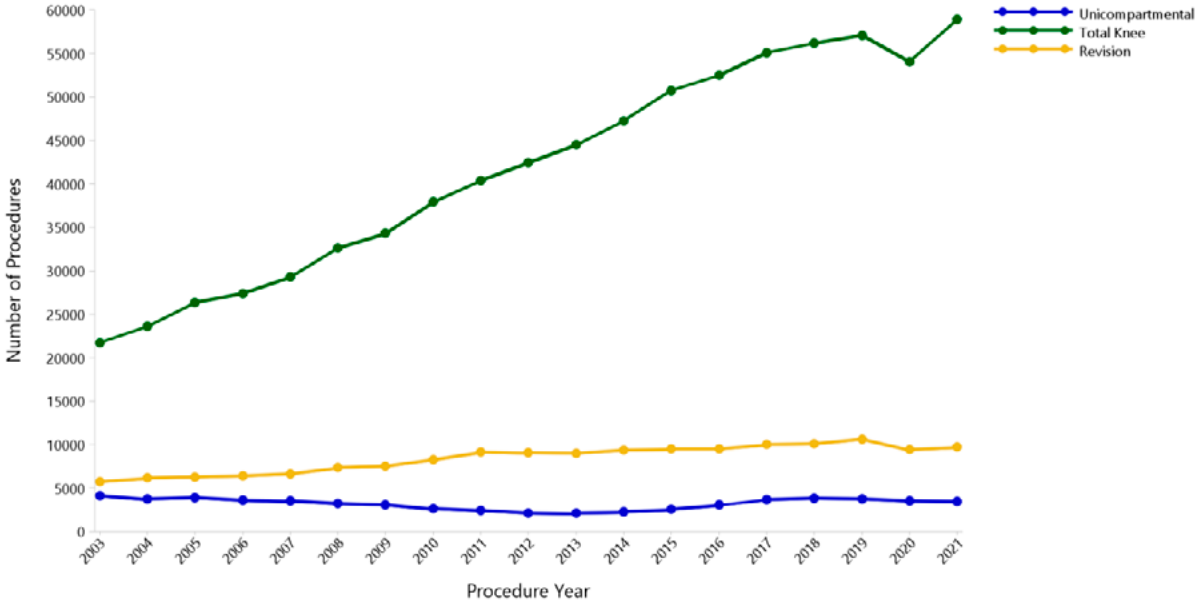


Figure SK7 Trends in Usage of Revision Knee Replacement by Procedure Year

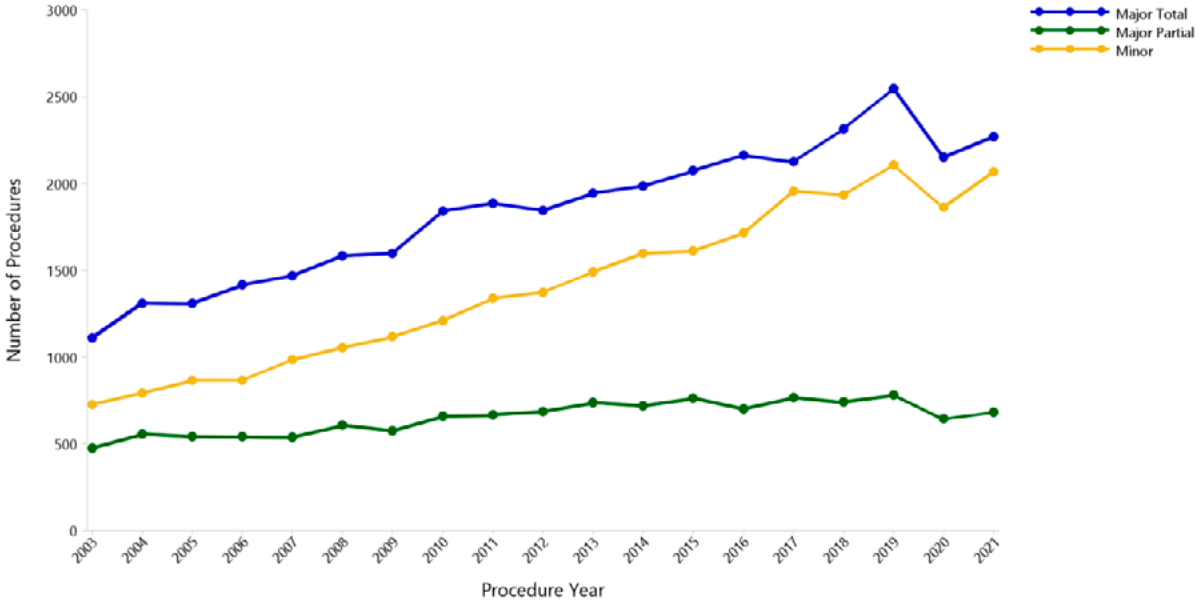


Table SK3 Incidence of Knee Replacement per 100,000 from 2003 to 2021

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	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**	**19.7**	**20.2**	**18.8**	**18.1**	**16.7**	**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	192.4
All Primary Total	**110.2**	**118.4**	**130.5**	**133.9**	**140.7**	**153.5**	**158.2**	**172.1**	**180.7**	**186.7**	**192.4**
All Revisions	**11.7**	**13.4**	**13.5**	**13.8**	**14.4**	**15.3**	**15.2**	**16.9**	**17.4**	**17.2**	**18.0**
ALL KNEES	**143.6**	**151.5**	**164.2**	**166.5**	**173.1**	**185.5**	**188.9**	**202.2**	**210.2**	**214.4**	**220.9**

Knee Replacement	2014	2015	2016	2017	2018	2019	2020	2021	TOTAL
	N	N	N	N	N	N	N	N	N
Partial Resurfacing	0.1	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	1.1	1.1
Unicompartmental	9.7	10.7	12.6	14.9	15.2	14.8	13.9	13.6	14.0
Bicompartmental	.	.	.	.	.	.	.	.	0.0
All Primary Partial	**10.8**	**11.8**	**13.9**	**16.1**	**16.6**	**16.0**	**15.1**	**14.7**	**15.2**
Total Knee	201.4	213.1	217.1	224.1	224.8	225.2	210.4	229.0	183.4
All Primary Total	**201.4**	**213.1**	**217.1**	**224.1**	**224.8**	**225.2**	**210.4**	**229.0**	**183.4**
All Revisions	**18.3**	**18.7**	**18.9**	**19.7**	**20.0**	**21.4**	**18.1**	**19.5**	**17.1**
ALL KNEES	**230.5**	**243.6**	**249.9**	**259.9**	**261.4**	**262.6**	**243.6**	**263.2**	**215.7**

Figure SK8 Incidence of Knee Replacement per 100,000 from 2003 to 2021

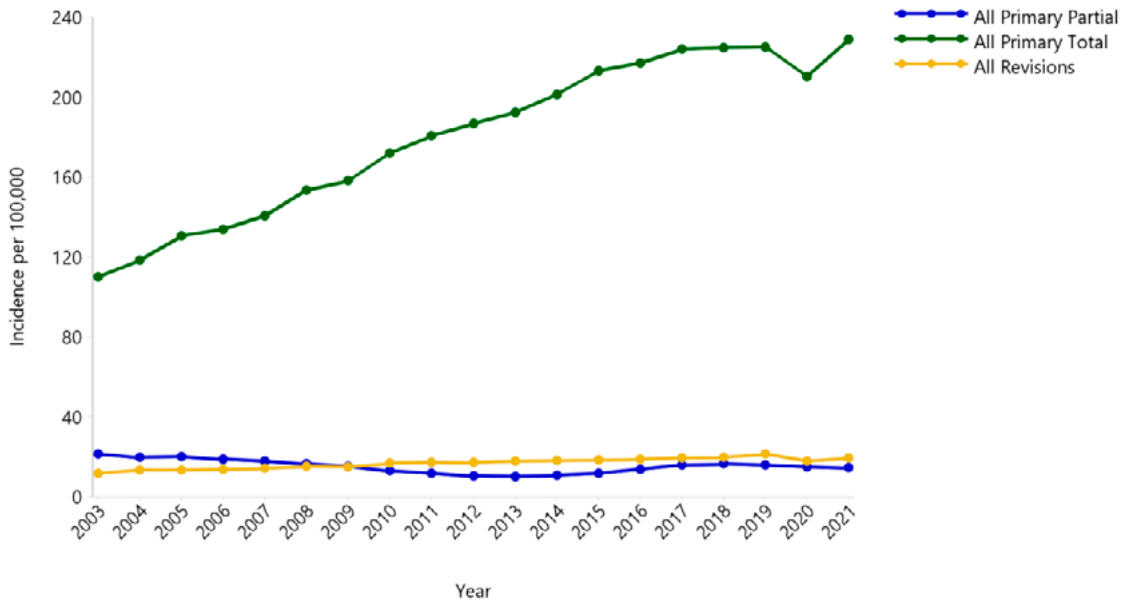


Table SK4 Incidence of Knee Replacement in Patients Aged <55 Years per 100,000 from 2003 to 2021

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	18.4
All Primary Total	**10.1**	**10.5**	**11.3**	**11.5**	**12.9**	**13.9**	**14.6**	**16.3**	**17.2**	**17.1**	**18.4**
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	TOTAL
	N	N	N	N	N	N	N	N	N
Partial Resurfacing	0.1	0.0	0.0	0.0	0.0	.	.	.	0.1
Unispacer	.	.	.	.	.	.	.	.	0.0
Patella/Trochlear	0.6	0.6	0.8	0.8	0.7	0.7	0.7	0.7	0.6
Unicompartmental	2.0	2.0	2.4	2.6	2.7	2.6	2.5	2.3	2.6
Bicompartmental	.	.	.	.	.	.	.	.	0.0
All Primary Partial	**2.6**	**2.6**	**3.2**	**3.4**	**3.4**	**3.2**	**3.2**	**3.0**	**3.3**
Total Knee	18.2	19.6	20.4	20.4	19.9	19.5	19.8	21.2	16.7
All Primary Total	**18.2**	**19.6**	**20.4**	**20.4**	**19.9**	**19.5**	**19.8**	**21.2**	**16.7**
All Revisions	**2.0**	**2.2**	**2.1**	**2.0**	**2.1**	**2.1**	**1.8**	**1.8**	**1.9**
ALL KNEES	**22.8**	**24.4**	**25.8**	**25.8**	**25.4**	**24.8**	**24.8**	**26.0**	**21.9**

Figure SK9 Incidence of Knee Replacement in Patients Aged <55 Years per 100,000 from 2003 to 2021

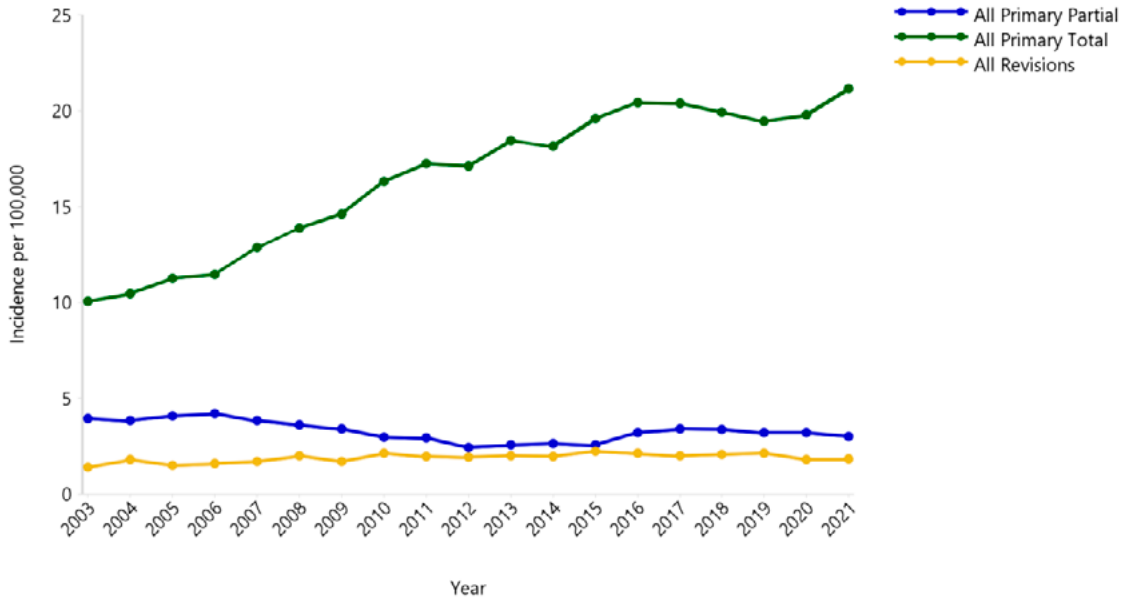


Table SK5 Incidence of Knee Replacement in Patients Aged 55-64 Years per 100,000 from 2003 to 2021

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	0.2	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	66.3	59.4	61.5	55.4	52.5	47.3	45.8	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**	**51.2**	**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	421.9	449.5	449.2	466.1
All Primary Total	**242.7**	**260.1**	**287.5**	**300.7**	**320.5**	**370.5**	**383.7**	**421.9**	**449.5**	**449.2**	**466.1**
All Revisions	**22.5**	**28.4**	**26.6**	**29.7**	**31.1**	**33.3**	**34.3**	**38.5**	**38.6**	**39.0**	**38.6**
ALL KNEES	**333.6**	**351.6**	**377.5**	**388.4**	**407.3**	**455.0**	**467.5**	**502.1**	**524.6**	**520.1**	**535.4**

Knee Replacement	2014	2015	2016	2017	2018	2019	2020	2021	TOTAL
	N	N	N	N	N	N	N	N	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	3.1	2.9
Unicompartmental	29.5	33.1	37.7	40.8	42.3	39.3	36.4	36.7	41.7
Bicompartmental	.	.	.	.	.	.	.	.	0.1
All Primary Partial	**31.8**	**35.6**	**40.9**	**43.9**	**46.6**	**42.6**	**39.3**	**39.9**	**44.8**
Total Knee	479.3	511.8	518.7	523.5	523.5	513.0	490.3	520.6	433.6
All Primary Total	**479.3**	**511.8**	**518.7**	**523.5**	**523.5**	**513.0**	**490.3**	**520.6**	**433.6**
All Revisions	**39.9**	**42.1**	**38.0**	**40.7**	**39.2**	**41.5**	**33.8**	**38.4**	**36.0**
ALL KNEES	**551.0**	**589.6**	**597.6**	**608.0**	**609.4**	**597.1**	**563.5**	**598.8**	**514.4**

Figure SK10 Incidence of Knee Replacement in Patients Aged 55-64 Years per 100,000 from 2003 to 2021

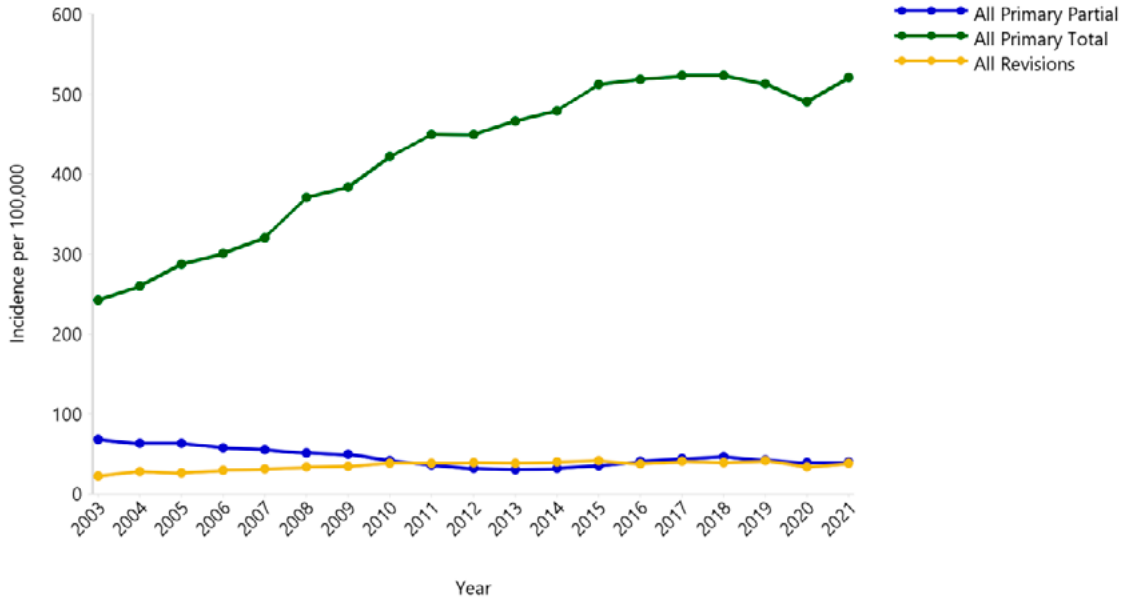


Table SK6 Incidence of Knee Replacement in Patients Aged 65-74 Years per 100,000 from 2003 to 2021

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	101.8	84.0	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	**104.1**	**86.0**	**90.5**	**84.3**	**77.7**	**69.2**	**65.8**	**55.7**	**47.4**	**41.7**	**40.2**
Total Knee	616.4	659.8	705.4	726.2	750.5	810.5	835.2	886.4	910.1	944.9	944.8
All Primary Total	**616.4**	**659.8**	**705.4**	**726.2**	**750.5**	**810.5**	**835.2**	**886.4**	**910.1**	**944.9**	**944.8**
All Revisions	**56.3**	**65.8**	**67.2**	**66.3**	**66.4**	**70.8**	**73.4**	**80.5**	**82.4**	**80.7**	**85.3**
ALL KNEES	**776.8**	**811.6**	**863.0**	**876.8**	**894.6**	**950.5**	**974.4**	**1022.6**	**1040.0**	**1067.3**	**1070.3**

Knee Replacement	2014 N	2015 N	2016 N	2017 N	2018 N	2019 N	2020 N	2021 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	1.9	2.5
Unicompartmental	38.9	44.1	53.6	64.7	62.2	61.6	57.8	51.9	59.4
Bicompartmental	.	.	.	.	.	.	.	.	0.1
All Primary Partial	**41.8**	**47.0**	**56.3**	**67.1**	**64.9**	**63.9**	**59.8**	**53.8**	**62.1**
Total Knee	994.7	1024.0	1030.9	1065.6	1053.9	1046.3	949.0	1010.7	918.0
All Primary Total	**994.7**	**1024.0**	**1030.9**	**1065.6**	**1053.9**	**1046.3**	**949.0**	**1010.7**	**918.0**
All Revisions	**86.3**	**83.8**	**84.6**	**88.5**	**90.9**	**93.4**	**80.3**	**78.5**	**79.6**
ALL KNEES	**1122.7**	**1154.8**	**1171.8**	**1221.2**	**1209.8**	**1203.7**	**1089.1**	**1143.1**	**1059.6**

Figure SK11 Incidence of Knee Replacement in Patients Aged 65-74 Years per 100,000 from 2003 to 2021

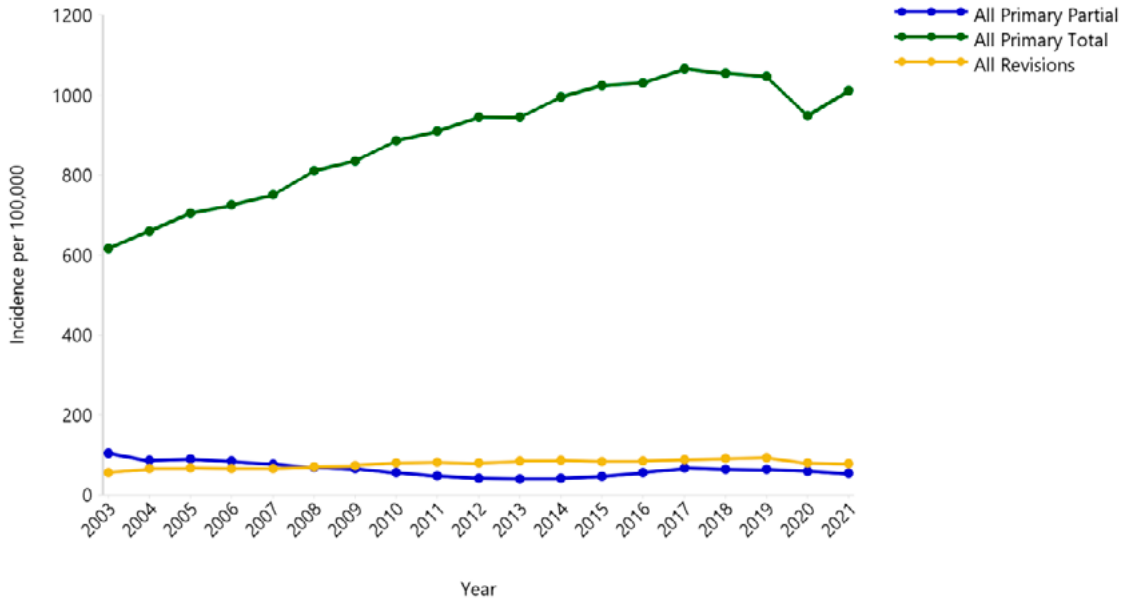


Table SK7 Incidence of Knee Replacement in Patients Aged ≥75 Years per 100,000 from 2003 to 2021

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	604.3	635.3	702.6	688.3	698.5	720.9	715.5	754.6	759.3	774.4	781.6
All Primary Total	**604.3**	**635.3**	**702.6**	**688.3**	**698.5**	**720.9**	**715.5**	**754.6**	**759.3**	**774.4**	**781.6**
All Revisions	**76.4**	**75.2**	**79.9**	**77.8**	**80.9**	**81.9**	**77.4**	**80.0**	**84.7**	**79.3**	**83.3**
ALL KNEES	**758.1**	**782.9**	**849.5**	**823.3**	**837.9**	**856.5**	**837.0**	**869.7**	**876.3**	**881.9**	**893.0**

Knee Replacement	2014 N	2015 N	2016 N	2017 N	2018 N	2019 N	2020 N	2021 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	1.9
Unicompartmental	25.8	27.3	29.1	38.8	42.4	41.5	35.9	37.3	41.1
Bicompartmental	.	.	.	.	.	.	.	.	0.1
All Primary Partial	**27.1**	**29.1**	**30.8**	**40.3**	**43.7**	**43.2**	**37.4**	**38.6**	**43.1**
Total Knee	799.3	828.2	817.3	834.0	827.5	830.1	725.9	784.2	758.4
All Primary Total	**799.3**	**828.2**	**817.3**	**834.0**	**827.5**	**830.1**	**725.9**	**784.2**	**758.4**
All Revisions	**81.3**	**79.2**	**87.1**	**87.5**	**86.3**	**96.4**	**77.1**	**85.6**	**82.4**
ALL KNEES	**907.6**	**936.4**	**935.3**	**961.8**	**957.5**	**969.7**	**840.5**	**908.4**	**884.0**

Figure SK12 Incidence of Knee Replacement in Patients Aged ≥75 Years per 100,000 from 2003 to 2021

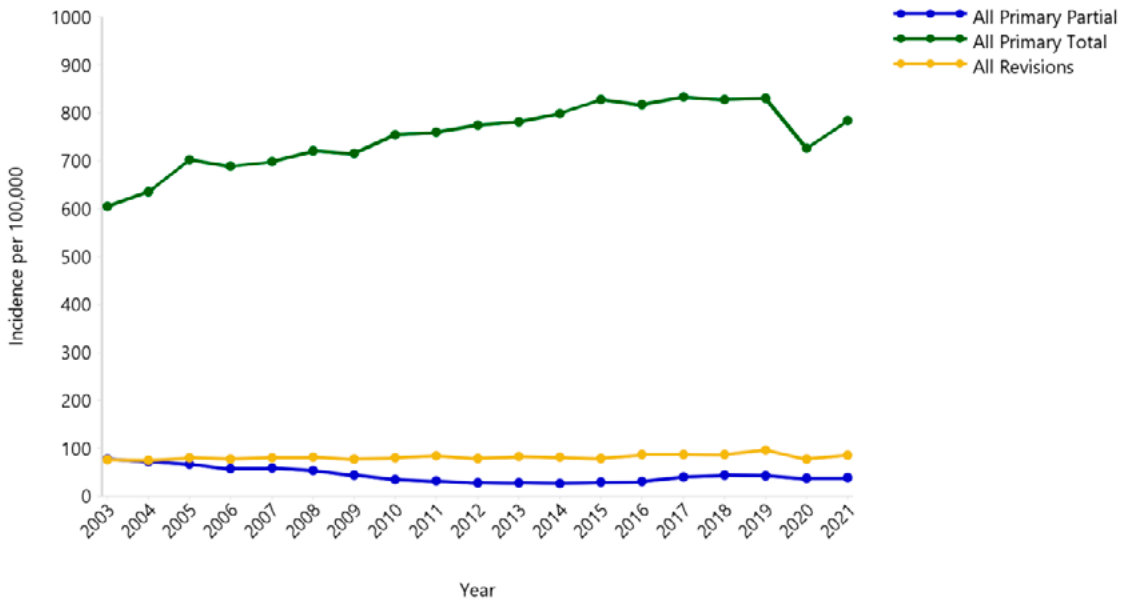


Figure SK13 Trends in Usage of Knee Replacement by State/Territory and Year

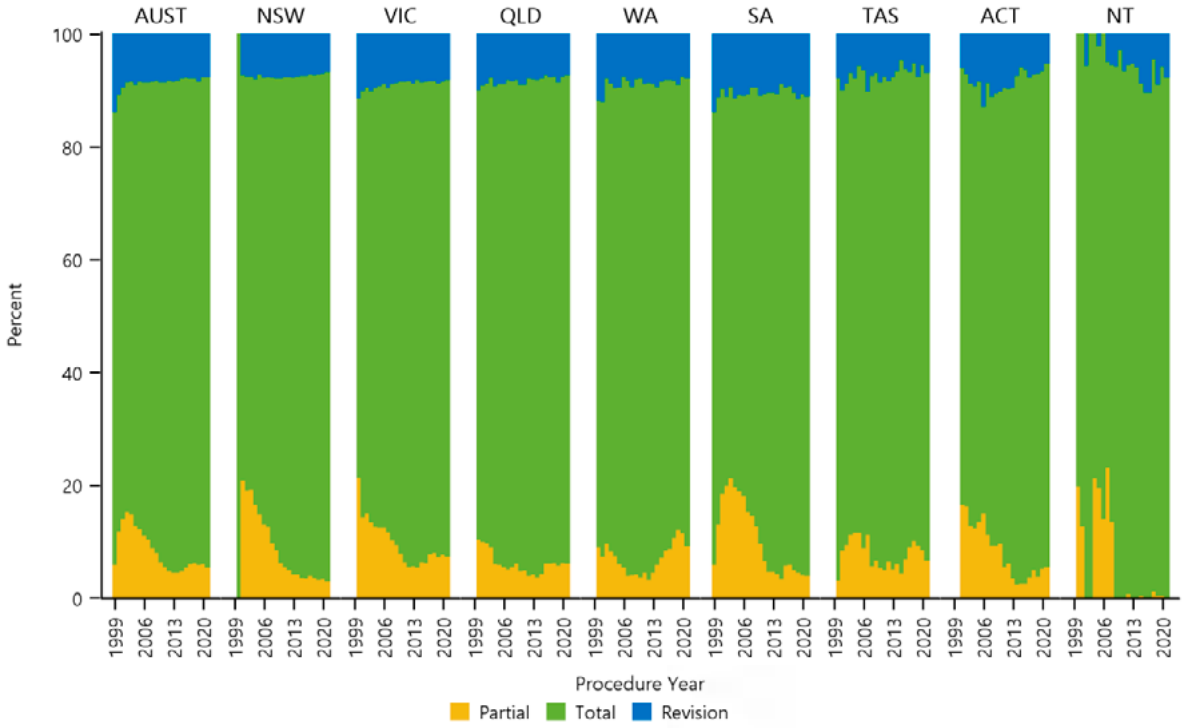


Table SK8 Time between Procedures for Bilateral Primary Knee Replacement

Bilateral Procedures	Same Day			1 day - 3 months			3 - 6 months			≥6 months			TOTAL		
	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%
Both Partial	5010	39.2	9.8	691	5.4	8.6	929	7.3	5.4	6146	48.1	3.8	12776	100.0	5.4
Both Total	45400	21.4	89.2	7221	3.4	90.2	16108	7.6	93.3	143576	67.6	89.7	212305	100.0	89.9
Total/Partial	461	4.2	0.9	91	0.8	1.1	220	2.0	1.3	10267	93.0	6.4	11039	100.0	4.7
TOTAL	**50871**	**21.5**	**100.0**	**8003**	**3.4**	**100.0**	**17257**	**7.3**	**100.0**	**159989**	**67.8**	**100.0**	**236120**	**100.0**	**100.0**

Table SK9 Number of Knee Procedures by Patient

Knee 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	.	.	8113	75.5	1949	18.1	690	6.4	10752	100.0
Single Primary Procedure	404616	94.1	19574	4.6	3832	0.9	1784	0.4	429806	100.0
2 Primary Procedures	215419	91.2	14788	6.3	4055	1.7	1858	0.8	236120	100.0
TOTAL	**620035**	**91.6**	**42475**	**6.3**	**9836**	**1.5**	**4332**	**0.6**	**676678**	**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 2018.

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-2022

Table SKP1 Primary Partial Knee Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	34781	47.8%	13	98	64	64.1	10.6
Male	37993	52.2%	17	98	66	65.6	9.8
TOTAL	**72774**	**100.0%**	**13**	**98**	**65**	**64.9**	**10.2**

Figure SKP1 Primary Partial Knee Replacement by Age and Gender

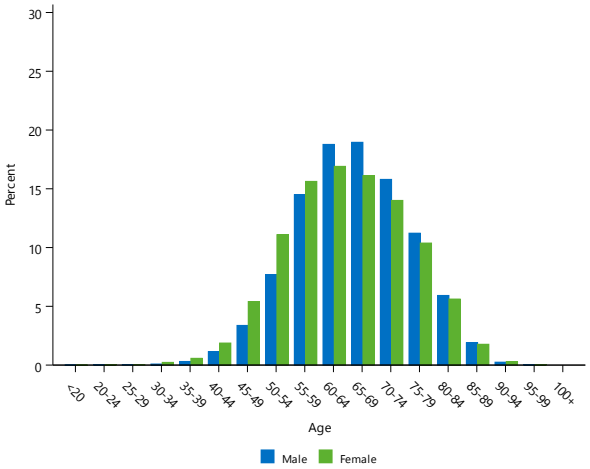
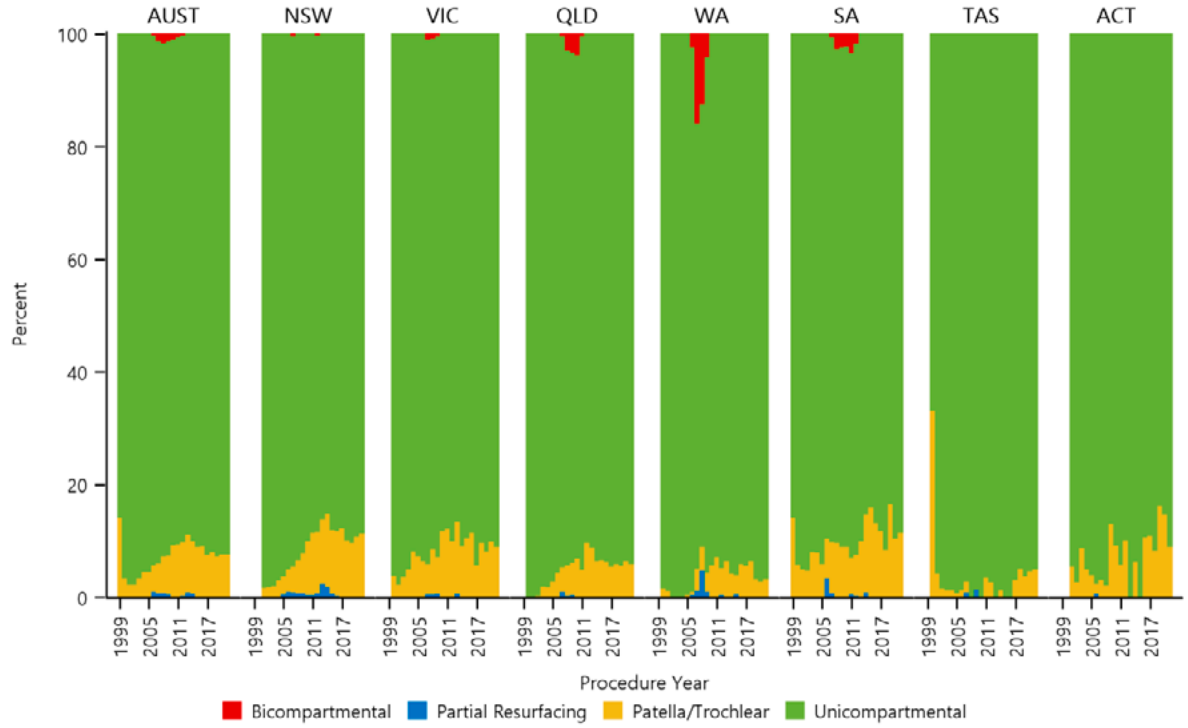


Table SKP2 Primary Partial Knee Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Osteoarthritis	72067	99.0
Osteonecrosis	427	0.6
Rheumatoid Arthritis	159	0.2
Other Inflammatory Arthritis	76	0.1
Osteochondritis Dissecans	13	0.0
Fracture	8	0.0
Tumour	1	0.0
Chondrocalcinosis	1	0.0
Other	22	0.0
TOTAL	**72774**	**100.0**

Figure SKP2 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 SKP3 Primary Partial Resurfacing Knee Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	120	49.0%	30	88	51	51.3	11.7
Male	125	51.0%	17	85	49	48.9	14.4
TOTAL	**245**	**100.0%**	**17**	**88**	**50**	**50.1**	**13.2**

Figure SKP3 Primary Partial Resurfacing Knee Replacement by Age and Gender

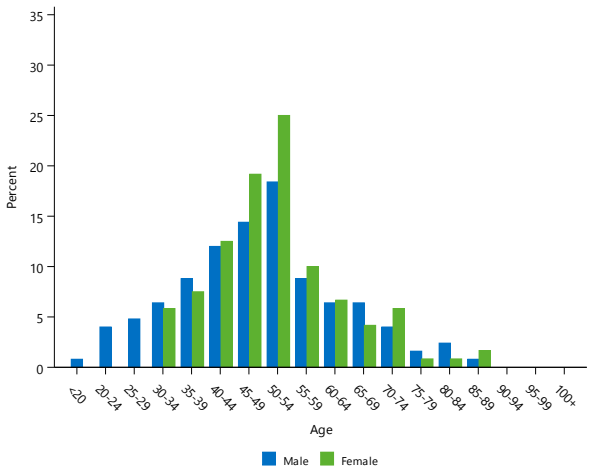


Table SKP4 Primary Partial Resurfacing Knee Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Osteoarthritis	220	89.8
Osteonecrosis	11	4.5
Osteochondritis Dissecans	7	2.9
Other Inflammatory Arthritis	2	0.8
Chondrocalcinosis	1	0.4
Other	4	1.6
TOTAL	**245**	**100.0**

PRIMARY UNISPACER KNEE REPLACEMENT

Table SKP5 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 SKP4 Primary Unispacer Knee Replacement by Age and Gender

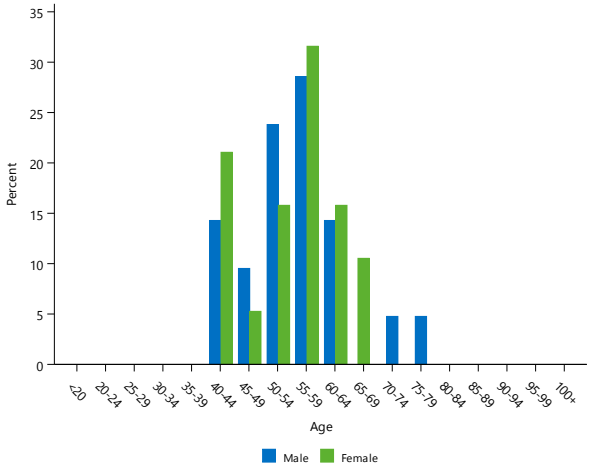


Table SKP6 Primary Unispacer Knee Replacement by Primary Diagnosis

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

PRIMARY BICOMPARTMENTAL KNEE REPLACEMENT

Table SKP7 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 SKP5 Primary Bicompartmental Knee Replacement by Age and Gender

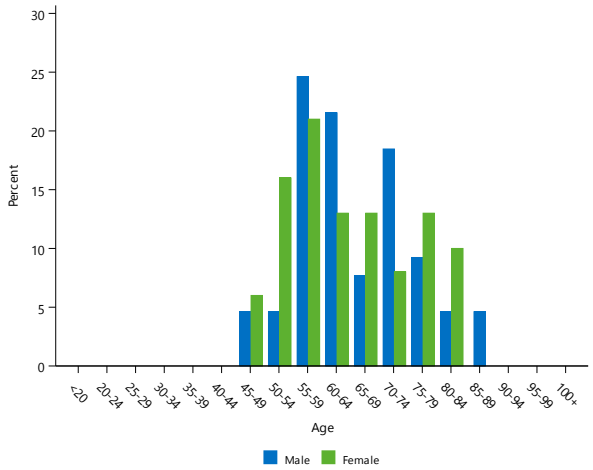


Table SKP8 Primary Bicompartmental Knee Replacement by Primary Diagnosis

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 SKP9 Primary Patella/Trochlea Knee Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	3719	77.0%	22	95	57	57.7	11.8
Male	1108	23.0%	24	95	60	60.8	13.0
TOTAL	**4827**	**100.0%**	**22**	**95**	**57**	**58.4**	**12.1**

Figure SKP6 Primary Patella/Trochlea Knee Replacement by Age and Gender

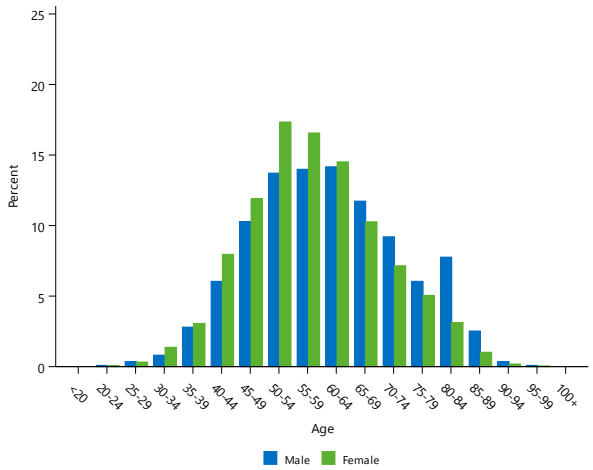


Table SKP10 Primary Patella/Trochlea Knee Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Osteoarthritis	4772	98.9
Other Inflammatory Arthritis	22	0.5
Rheumatoid Arthritis	9	0.2
Fracture	4	0.1
Osteonecrosis	4	0.1
Other	16	0.3
TOTAL	**4827**	**100.0**

PRIMARY UNICOMPARTMENTAL KNEE REPLACEMENT

Table SKP11 Primary Unicompartmental Knee Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	30823	45.7%	13	98	65	64.9	10.2
Male	36674	54.3%	24	98	66	65.8	9.6
TOTAL	**67497**	**100.0%**	**13**	**98**	**65**	**65.4**	**9.9**

Figure SKP7 Primary Unicompartmental Knee Replacement by Age and Gender

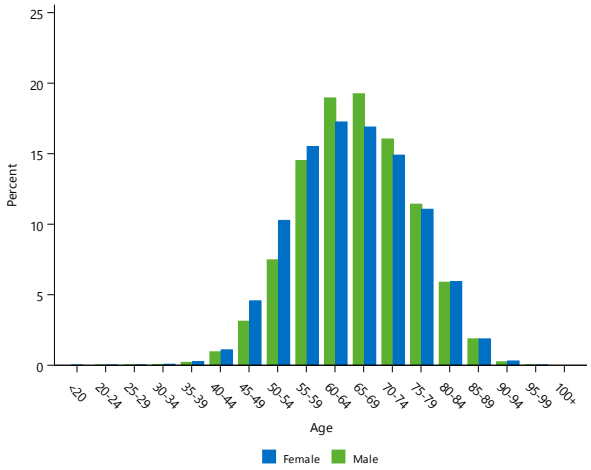
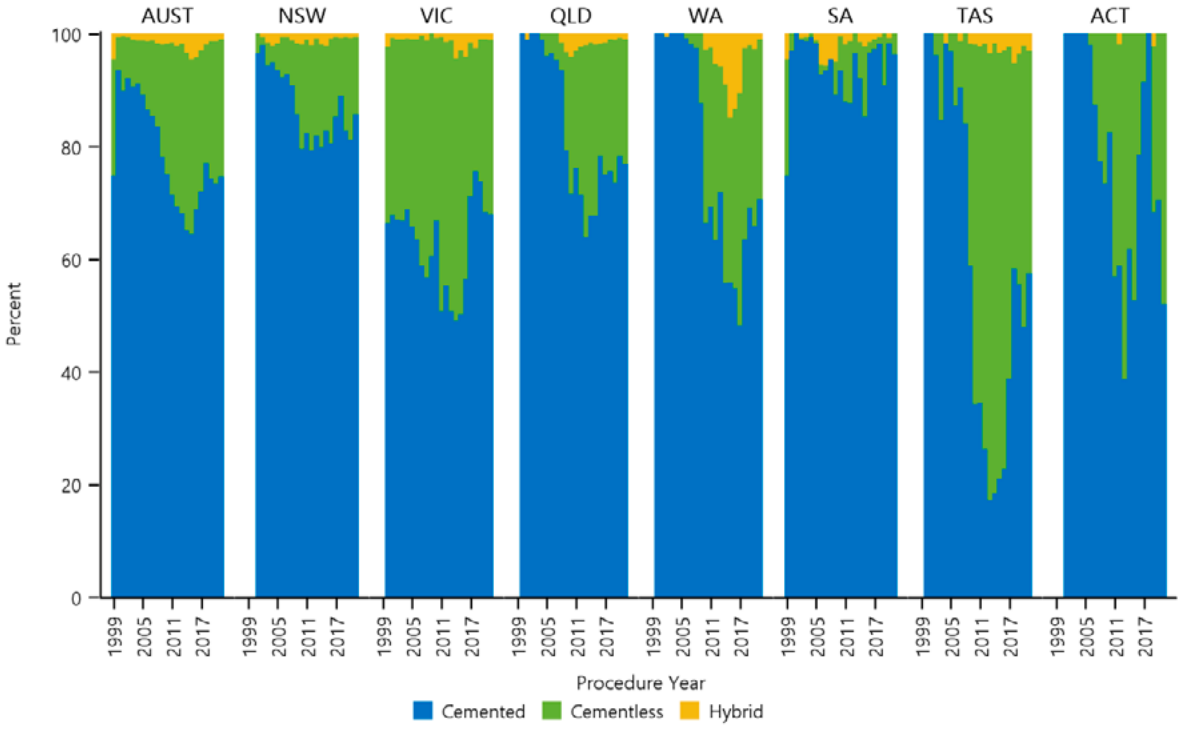


Table SKP12 Primary Unicompartmental Knee Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Osteoarthritis	66875	99.1
Osteonecrosis	409	0.6
Rheumatoid Arthritis	149	0.2
Other Inflammatory Arthritis	51	0.1
Osteochondritis Dissecans	6	0.0
Fracture	4	0.0
Tumour	1	0.0
Other	2	0.0
TOTAL	**67497**	**100.0**

Figure SKP8 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 SKT1 Primary Total Knee Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	464841	56.1%	8	103	69	68.7	9.3
Male	364431	43.9%	8	101	68	68.1	9.1
TOTAL	**829272**	**100.0%**	**8**	**103**	**69**	**68.5**	**9.2**

Figure SKT1 Primary Total Knee Replacement by Age and Gender

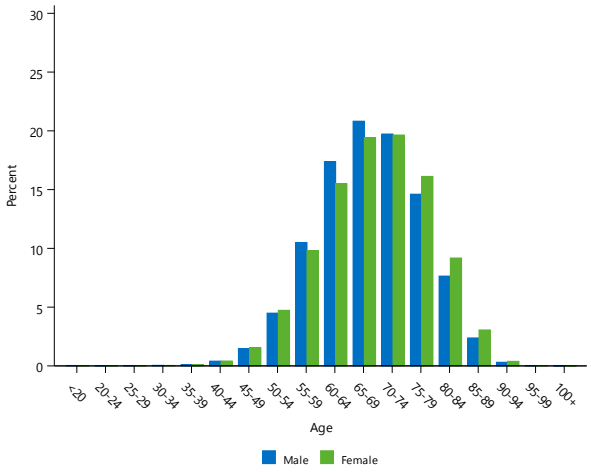
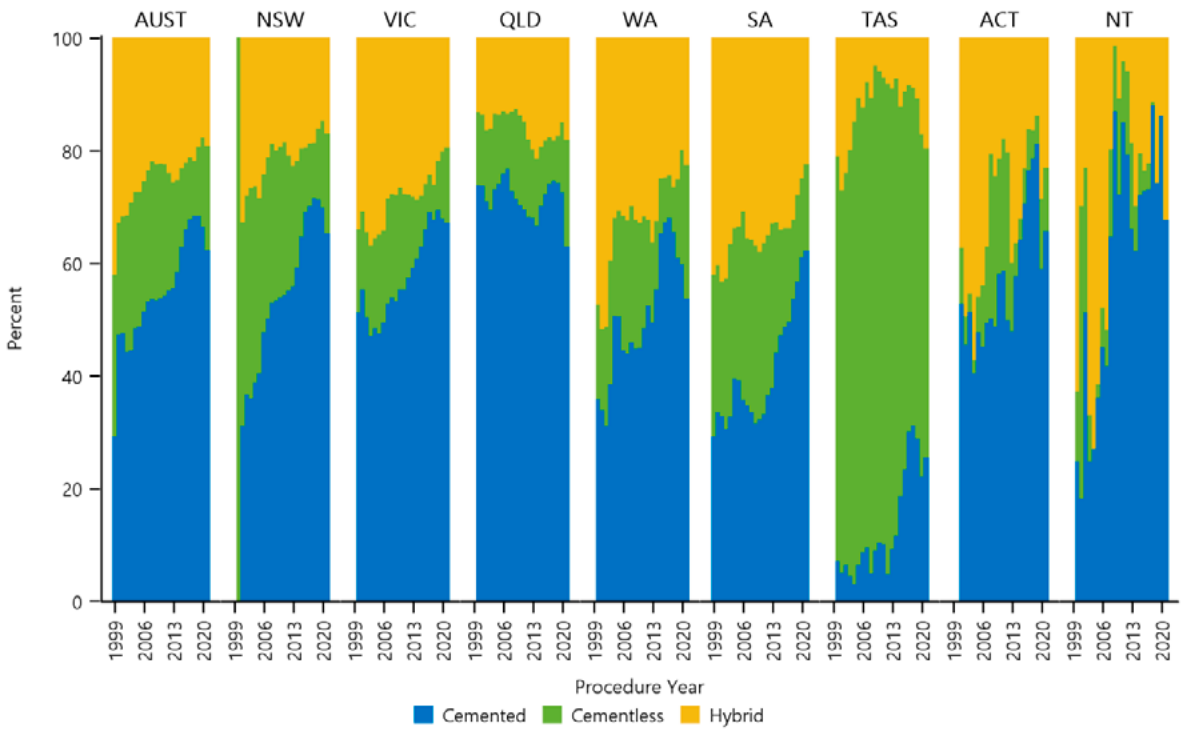


Table SKT2 Primary Total Knee Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Osteoarthritis	810780	97.8
Rheumatoid Arthritis	9839	1.2
Other Inflammatory Arthritis	4181	0.5
Osteonecrosis	2517	0.3
Tumour	1000	0.1
Fracture	685	0.1
Chondrocalcinosis	18	0.0
Osteochondritis Dissecans	1	0.0
Other	251	0.0
TOTAL	**829272**	**100.0**

Figure SKT2 **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 SKR1 All Revision Knee Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Male	38382	49.0%	13	101	69	68.9	10.2
Female	39991	51.0%	10	99	70	69.1	10.4
TOTAL	**78373**	**100.0%**	**10**	**101**	**70**	**69.0**	**10.3**

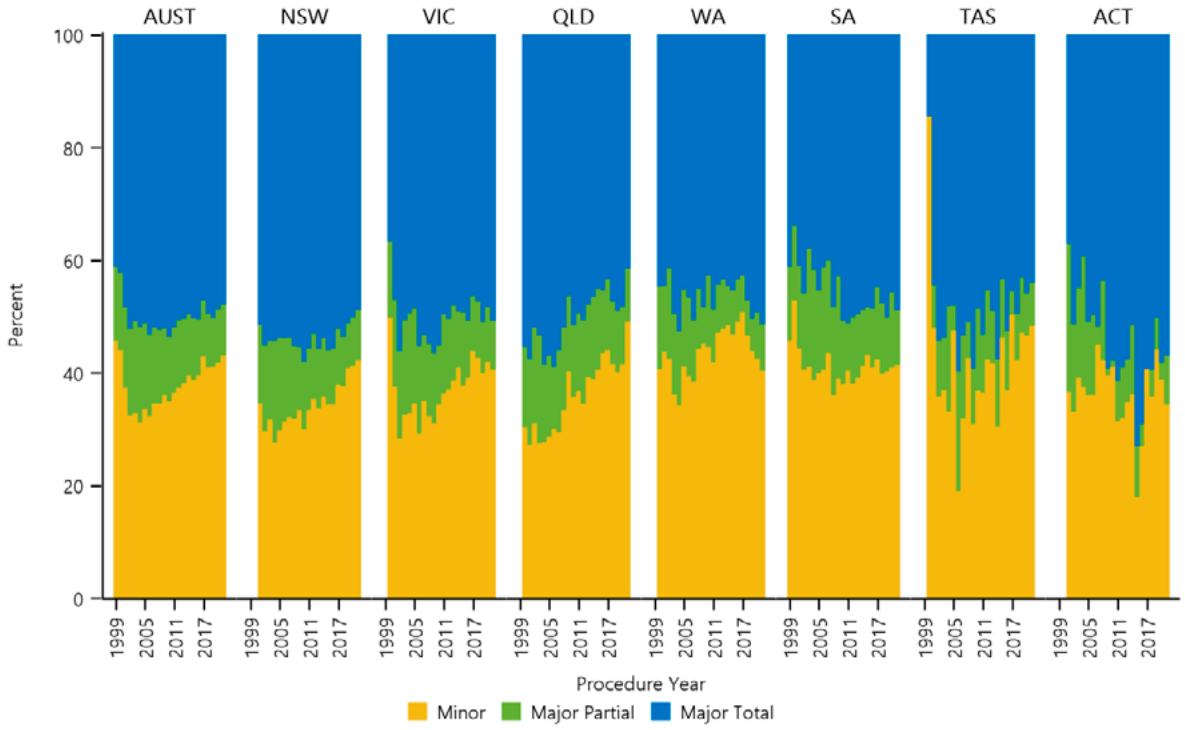
Table SKR2 Reason for Revision of All Knee Replacement

Reason for Revision	Number	Percent
Loosening	22459	28.7
Infection	19637	25.1
Progression Of Disease	5038	6.4
Pain	4832	6.2
Instability	4574	5.8
Patellofemoral Pain	3612	4.6
Wear Tibial Insert	2560	3.3
Lysis	2440	3.1
Patella Erosion	2405	3.1
Fracture	2083	2.7
Arthrofibrosis	1637	2.1
Malalignment	1182	1.5
Implant Breakage Tibial Insert	676	0.9
Metal Related Pathology	636	0.8
Bearing Dislocation	584	0.7
Wear Tibial	494	0.6
Incorrect Sizing	482	0.6
Implant Breakage Tibial	450	0.6
Implant Breakage Patella	427	0.5
Patella Maltracking	389	0.5
Prosthesis Dislocation	268	0.3
Wear Patella	263	0.3
Implant Breakage Femoral	229	0.3
Synovitis	195	0.2
Osteonecrosis	133	0.2
Tumour	68	0.1
Heterotopic Bone	41	0.1
Wear Femoral	20	0.0
Patella Dislocation	6	0.0
Incorrect Side	3	0.0
Other	550	0.7
TOTAL	**78373**	**100.0**

Table SKR3 Type of Revision of All Knee Replacement

Type of Revision	Number	Percent
TKR (Tibial/Femoral)	37004	47.2
Insert Only	13306	17.0
Patella Only	8155	10.4
Insert/Patella	5615	7.2
Tibial Component	4645	5.9
Cement Spacer	4144	5.3
Femoral Component	3236	4.1
Uni Insert Only	716	0.9
Removal of Prostheses	425	0.5
Minor Components	347	0.4
Uni Tibial Component	281	0.4
UKR (Uni Tibial/Uni Femoral)	198	0.3
Uni Femoral Component	111	0.1
Patella/Trochlear Resurfacing	92	0.1
Cement Only	42	0.1
Reinsertion of Components	36	0.0
Removal of Patella	8	0.0
Partial Resurfacing	7	0.0
Unispacer	4	0.0
Uni Insert/Patella	1	0.0
TOTAL	**78373**	**100.0**

Figure SKR1 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.

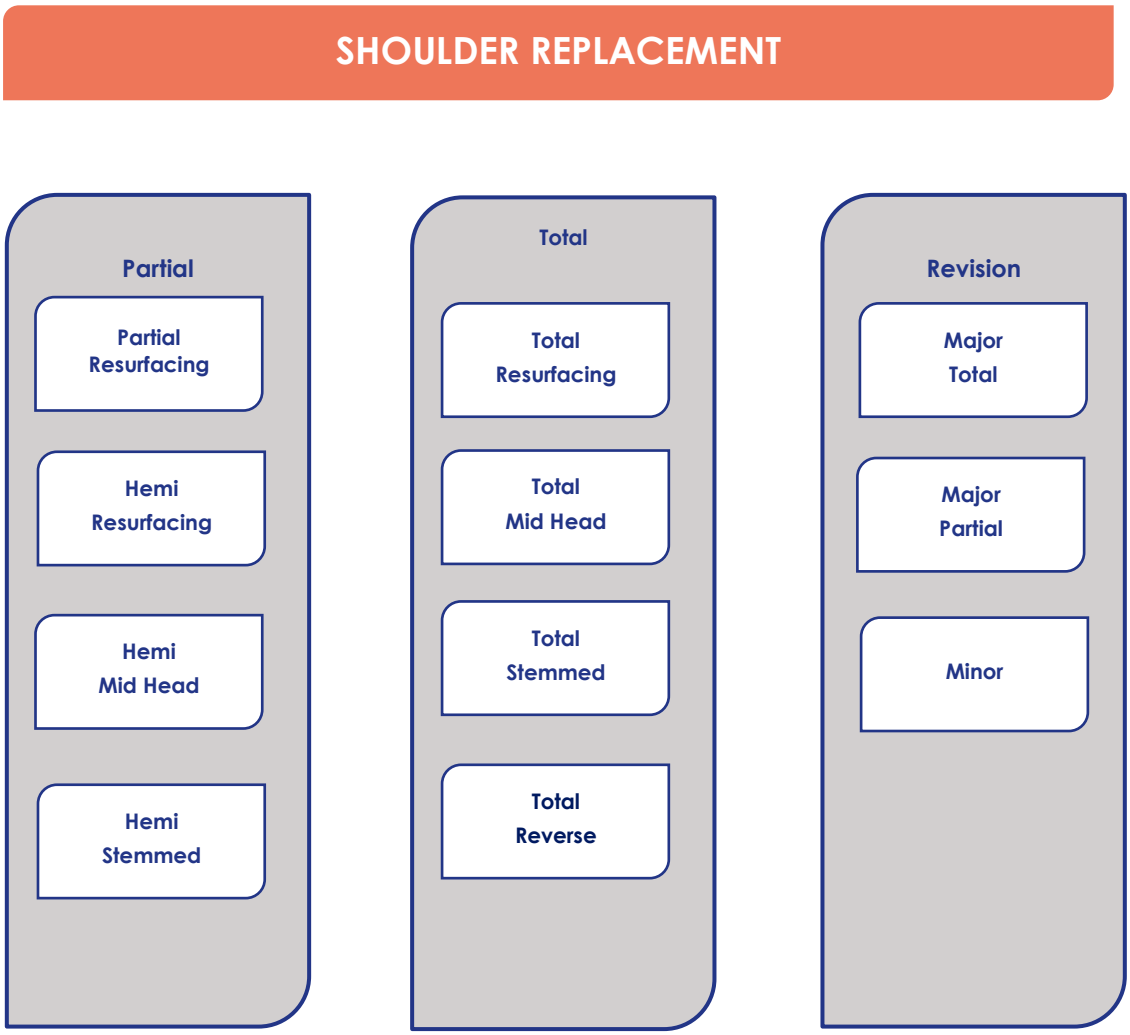
A primary replacement is the initial joint replacement procedure and involves replacing either part (partial) or all (total) of the articular surface.

Primary partial and primary total shoulder replacements are further subcategorised into classes depending on the type of prosthesis used. Partial shoulder classes include partial resurfacing, hemi resurfacing, hemi mid head and hemi stemmed replacement.

Total shoulder classes include total resurfacing, total mid head, total stemmed and total reverse shoulder replacement. Definitions for each of these 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.

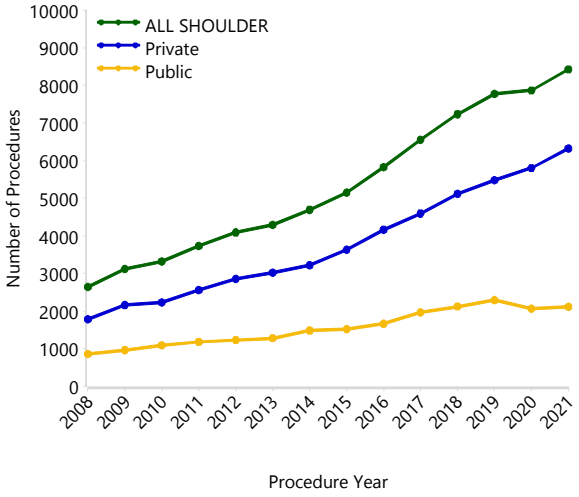


PUBLIC AND PRIVATE SECTOR

In 2021, 75.0% 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 both the private and public sectors. There were 6,320 private sector procedures (an increase of 8.9% compared to number of private sector procedures in 2020) and 2,110 public sector procedures (an increase of 2.2% in the number of public sector procedures since 2020)(Figure SS1).

Figure SS1 Shoulder Replacement by Hospital Sector



Since 2008, shoulder replacement has increased by 255.7% in the private sector compared to 145.6% in the public sector.

There were 166 primary partial shoulder replacements reported for the private sector in 2021; a decrease of 9.3% compared to 2020 and a decrease of 62.0% since 2008. In the public sector, there were 96 partial shoulder replacements; a decrease of 6.8% compared to 2020 and a decrease of 77.3% since 2008.

In 2021, 5,753 primary total shoulder replacements were reported in the private sector, an increase of 10.7% compared to 2020. In the public sector in 2021, there were 1,801 primary total shoulder replacements, an increase of 2.3% compared to 2020. Since 2008, primary total shoulder replacement has increased by 369.8% in the private sector compared to 400.3% in the public sector.

There were 401 private sector revision shoulder replacements reported in 2021. This is a decrease of 5.9% compared to 2020. In the public sector, there were 213 revision shoulder replacements, an increase of 6.5% compared to 2020. Since 2008, revision shoulder replacement has increased by 120.3% in the private sector compared to 176.6% in the public sector.

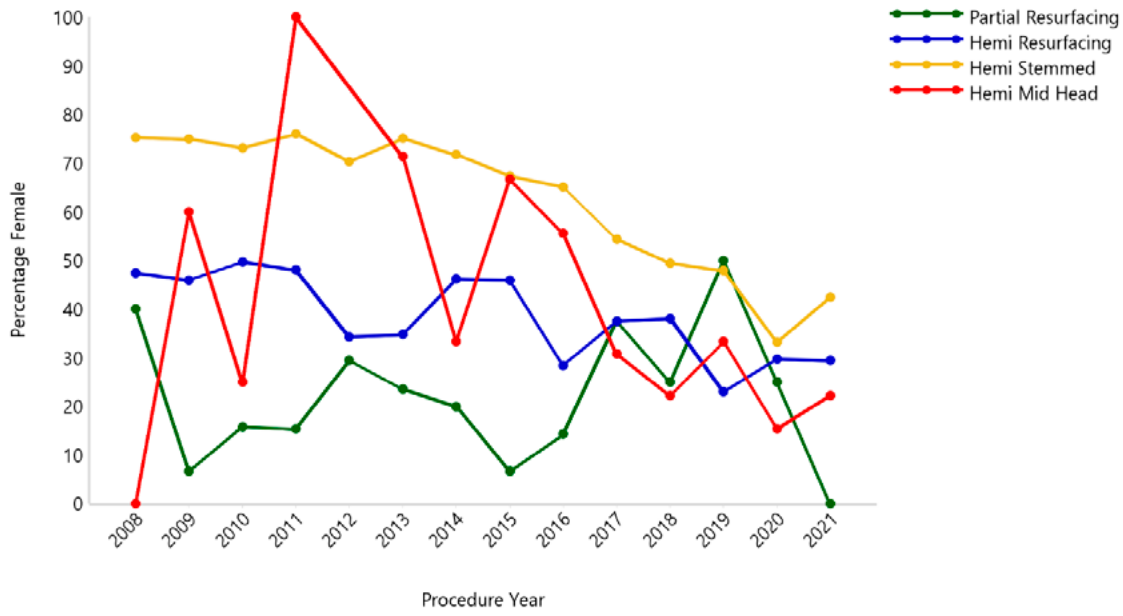
Table SS1 All Shoulder Replacements by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Male	30605	40.1%	14	96	70	69.0	10.2
Female	45742	59.9%	13	102	74	73.0	9.0
TOTAL	**76347**	**100.0%**	**13**	**102**	**72**	**71.4**	**9.7**

Table SS2 Number of Shoulder Replacements by Gender

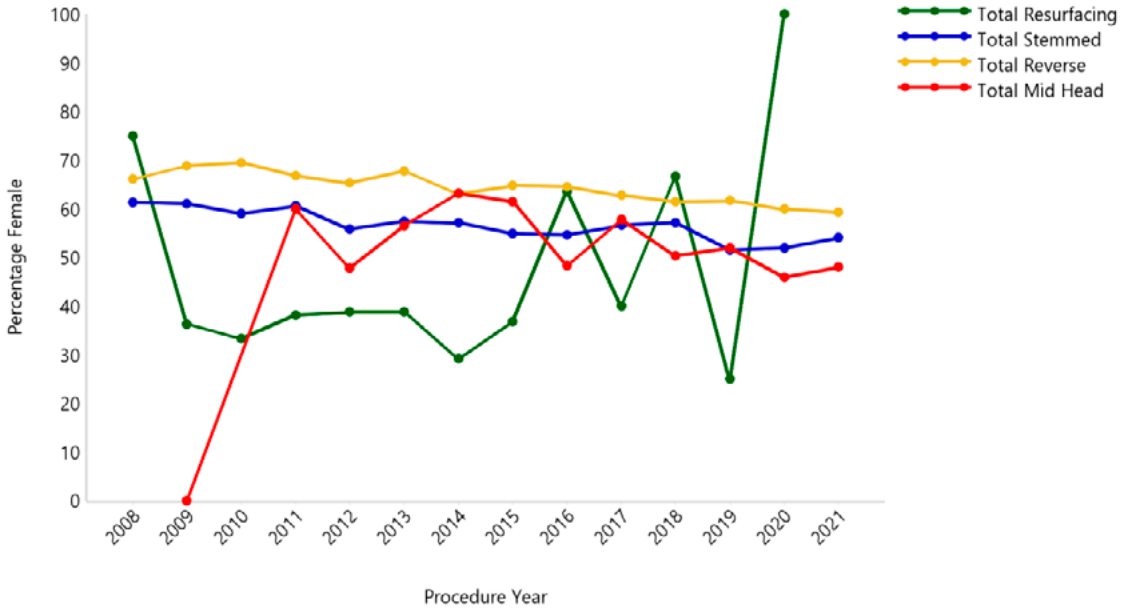
Shoulder Replacement	Female		Male		TOTAL	
	N	%	N	%	N	%
Partial Resurfacing	47	23.3	155	76.7	202	2.6
Hemi Resurfacing	732	40.9	1058	59.1	1790	23.5
Hemi Stemmed	3798	68.5	1744	31.5	5542	72.7
Hemi Mid Head	32	36.0	57	64.0	89	1.2
All Primary Partial	**4609**	**60.5**	**3014**	**39.5**	**7623**	**100.0**
Total Resurfacing	95	40.4	140	59.6	235	0.4
Total Stemmed	8841	57.2	6622	42.8	15463	25.1
Total Reverse	26641	62.7	15872	37.3	42513	69.0
Total Mid Head	1746	51.2	1663	48.8	3409	5.5
All Primary Total	**37323**	**60.6**	**24297**	**39.4**	**61620**	**100.0**
Major Total	1455	56.9	1104	43.1	2559	36.0
Major Partial	1577	52.9	1404	47.1	2981	42.0
Minor	778	49.7	786	50.3	1564	22.0
All Revision	**3810**	**53.6**	**3294**	**46.4**	**7104**	**100.0**
ALL SHOULDERS	**45742**	**59.9**	**30605**	**40.1**	**76347**	**100.0**

Figure SS2 Percentage of Females by Type of Partial Shoulder Replacement and Procedure Year



Note: There were no hemi mid head procedures recorded in 2012

Figure SS3 Percentage of Females by Type of Total Shoulder Replacement and Procedure Year



Note: There were no total mid head procedures recorded in 2008 and 2010
There were no total resurfacing procedures recorded in 2021

Figure SS4 **Percentage of Females by Revision Shoulder Replacement and Procedure Year**

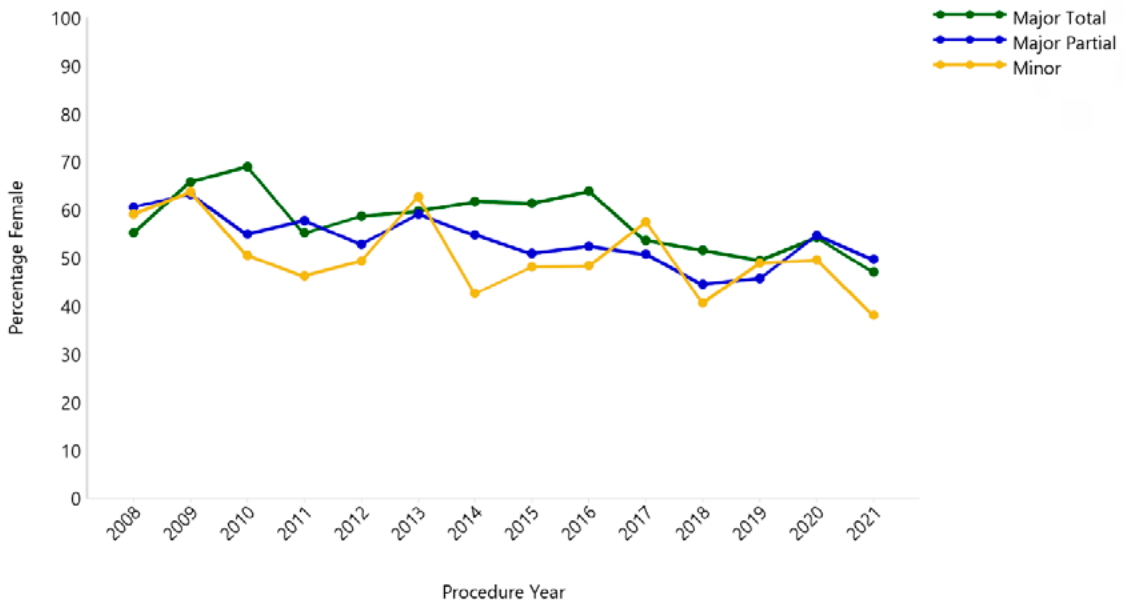


Figure SS5 **Percentage of Patients Aged <65 Years by Type of Partial Shoulder Replacement and Procedure Year**

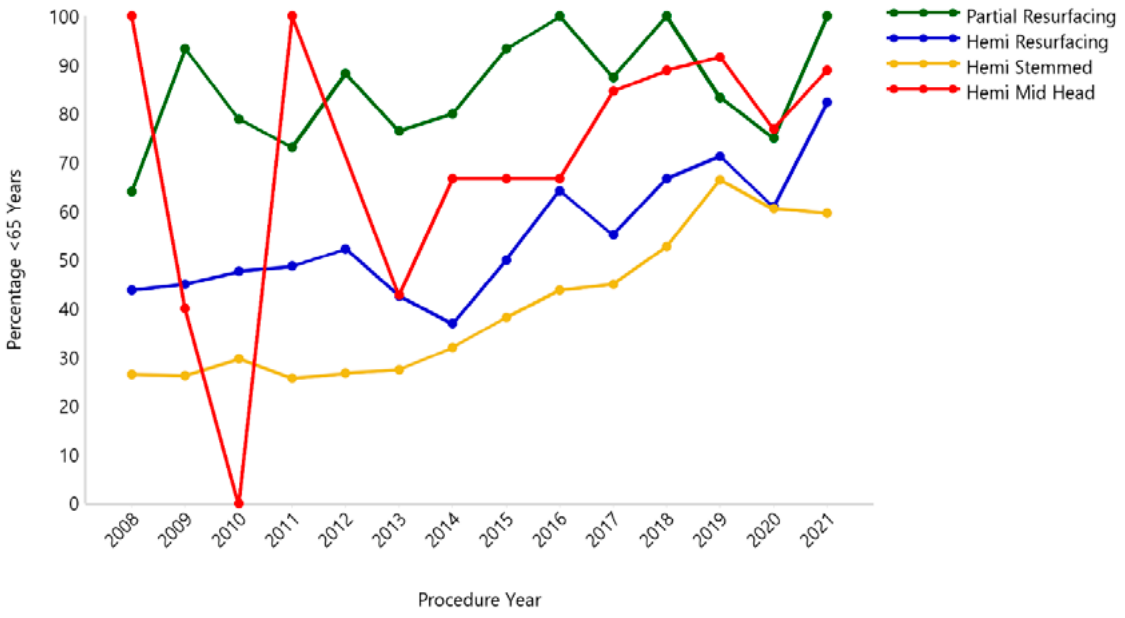
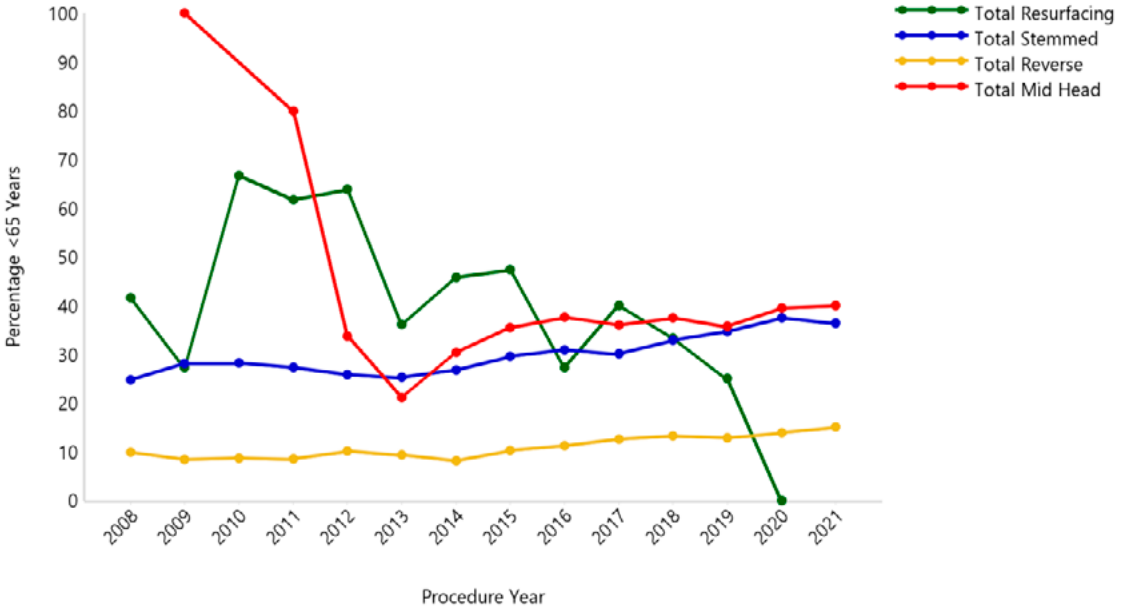


Figure SS6 Percentage of Patients Aged <65 Years by Type of Total Shoulder Replacement and Procedure Year



Note: There were no total mid head procedures recorded in 2008
There were no total resurfacing procedures recorded in 2021

Figure SS7 Percentage of Patients Aged <65 Years by Revision Shoulder Replacement and Procedure Year

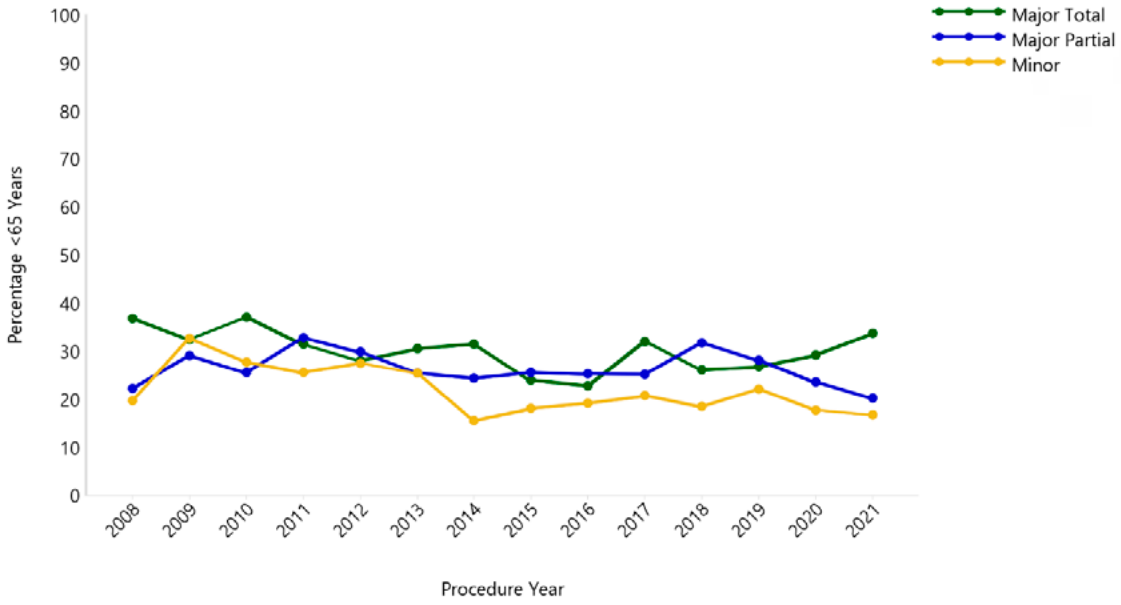


Figure SS8 Trends in Usage of Partial Shoulder Replacement by Procedure Year

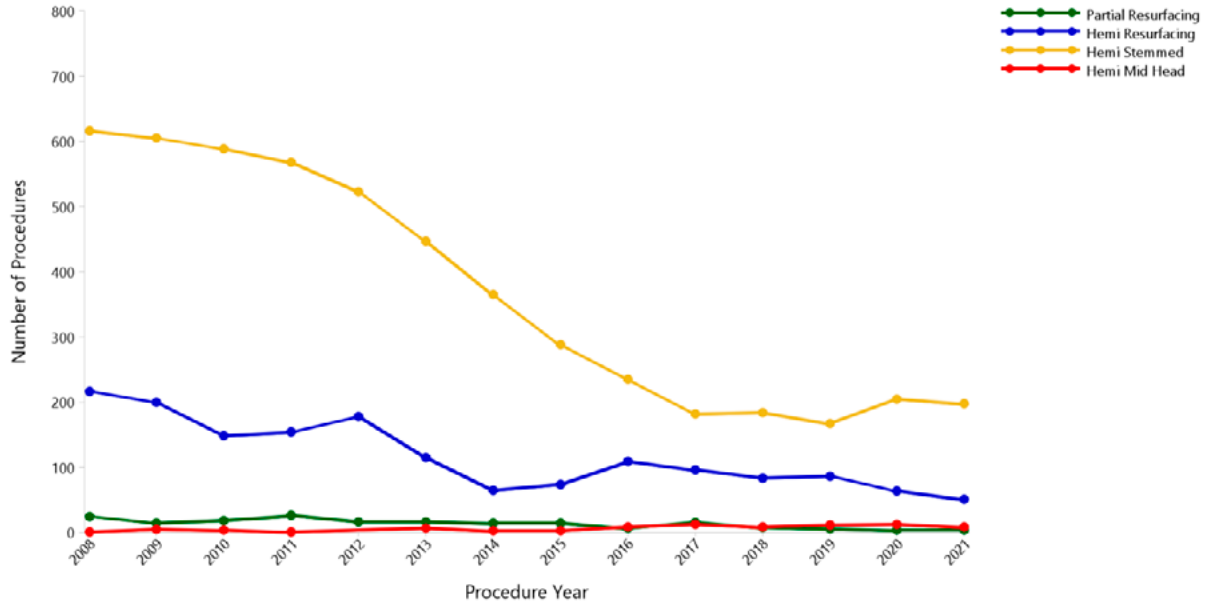


Figure SS9 Trends in Usage of Total Shoulder Replacement by Procedure Year

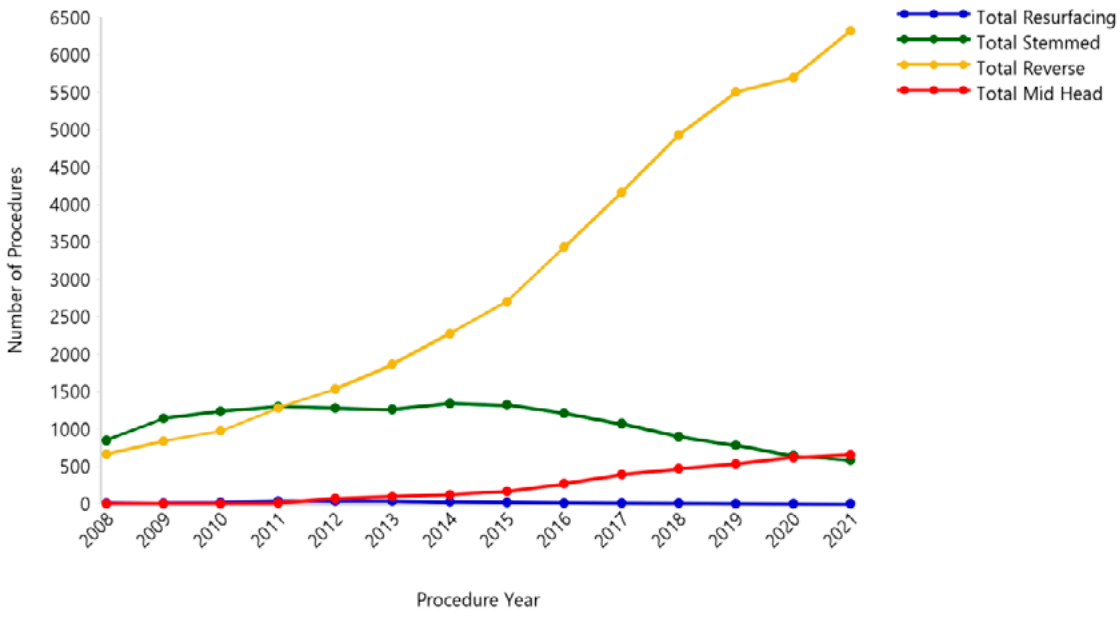


Figure SS10 Trends in Usage of Revision Shoulder Replacement by Procedure Year

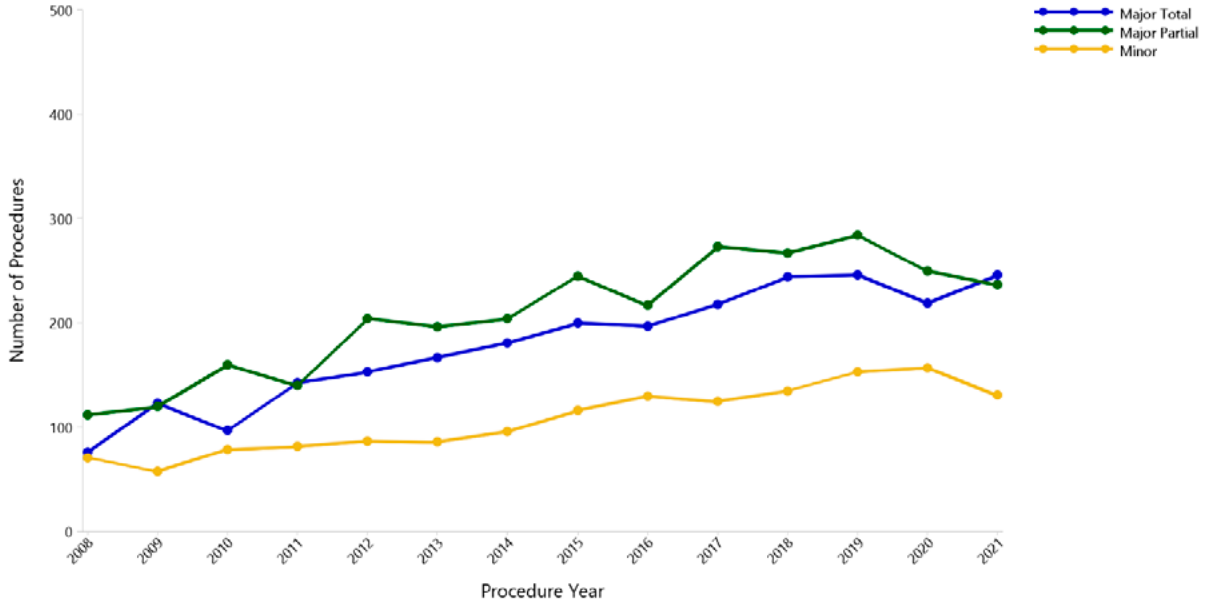


Table SS3 Incidence of Shoulder Replacement per 100,000 from 2008 to 2021

Shoulder Replacement	2008 N	2009 N	2010 N	2011 N	2012 N	2013 N	2014 N	2015 N
Partial Resurfacing	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Hemi Resurfacing	1.0	0.9	0.7	0.7	0.8	0.5	0.3	0.3
Hemi Stemmed	2.9	2.8	2.7	2.5	2.3	1.9	1.6	1.2
Hemi Mid Head	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**
Total Resurfacing	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1
Total Stemmed	4.0	5.2	5.6	5.8	5.6	5.5	5.7	5.6
Total Reverse	3.1	3.9	4.4	5.7	6.8	8.1	9.7	11.3
Total Mid Head	.	0.0	.	0.0	0.3	0.4	0.5	0.7
All Primary Total	**7.1**	**9.2**	**10.1**	**11.7**	**12.9**	**14.1**	**16.0**	**17.7**
All Revisions	**1.2**	**1.4**	**1.5**	**1.6**	**2.0**	**1.9**	**2.0**	**2.4**
ALL SHOULDERS	**12.4**	**14.4**	**15.1**	**16.7**	**18.0**	**18.6**	**20.0**	**21.6**

Shoulder Replacement	2016 N	2017 N	2018 N	2019 N	2020 N	2021 N	TOTAL N
Partial Resurfacing	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Hemi Resurfacing	0.5	0.4	0.3	0.3	0.2	0.2	0.4
Hemi Stemmed	1.0	0.7	0.7	0.7	0.8	0.8	1.2
Hemi Mid Head	0.0	0.1	0.0	0.0	0.1	0.0	0.0
All Primary Partial	**1.5**	**1.2**	**1.1**	**1.1**	**1.1**	**1.0**	**1.6**
Total Resurfacing	0.0	0.0	0.0	0.0	0.0	.	0.1
Total Stemmed	5.0	4.3	3.6	3.1	2.5	2.3	3.4
Total Reverse	14.2	16.9	19.7	21.7	22.2	24.5	9.8
Total Mid Head	1.1	1.6	1.9	2.1	2.4	2.6	0.8
All Primary Total	**20.3**	**22.9**	**25.2**	**26.9**	**27.1**	**29.3**	**14.0**
All Revisions	**2.2**	**2.5**	**2.6**	**2.7**	**2.4**	**2.4**	**1.6**
ALL SHOULDERS	**24.1**	**26.6**	**29.0**	**30.6**	**30.6**	**32.8**	**17.3**

Figure SS11 Incidence of Shoulder Replacement per 100,000 from 2008 to 2021

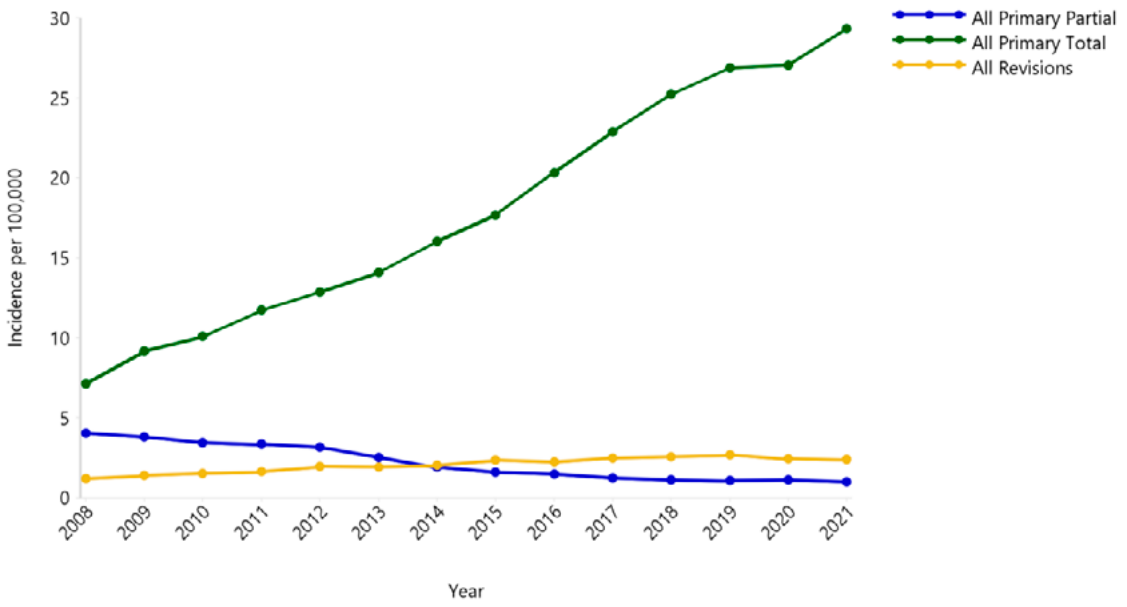


Table SS4 Incidence of Shoulder Replacement in Patients Aged <55 Years per 100,000 from 2008 to 2021

Shoulder Replacement	2008	2009	2010	2011	2012	2013	2014	2015
	N	N	N	N	N	N	N	N
Partial Resurfacing	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Hemi Resurfacing	0.2	0.2	0.2	0.2	0.2	0.1	0.0	0.1
Hemi Stemmed	0.2	0.3	0.3	0.3	0.3	0.2	0.2	0.2
Hemi Mid Head	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**
Total Resurfacing	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Total Stemmed	0.3	0.4	0.4	0.4	0.4	0.3	0.3	0.4
Total Reverse	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.3
Total Mid Head	.	0.0	.	.	0.0	0.0	0.0	0.1
All Primary Total	**0.3**	**0.4**	**0.5**	**0.6**	**0.6**	**0.5**	**0.5**	**0.8**
All Revisions	**0.1**	**0.1**	**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**

Shoulder Replacement	2016	2017	2018	2019	2020	2021	TOTAL
	N	N	N	N	N	N	N
Partial Resurfacing	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Hemi Resurfacing	0.2	0.2	0.2	0.2	0.1	0.1	0.1
Hemi Stemmed	0.3	0.3	0.3	0.3	0.4	0.3	0.2
Hemi Mid Head	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All Primary Partial	**0.5**	**0.5**	**0.5**	**0.6**	**0.6**	**0.5**	**0.4**
Total Resurfacing	0.0	.	0.0	.	.	.	0.0
Total Stemmed	0.5	0.3	0.4	0.3	0.3	0.3	0.3
Total Reverse	0.2	0.4	0.4	0.5	0.6	0.6	0.2
Total Mid Head	0.1	0.2	0.2	0.2	0.4	0.4	0.1
All Primary Total	**0.8**	**0.9**	**1.0**	**1.1**	**1.3**	**1.3**	**0.6**
All Revisions	**0.2**	**0.3**	**0.2**	**0.3**	**0.2**	**0.2**	**0.2**
ALL SHOULDERS	**1.5**	**1.7**	**1.8**	**1.9**	**2.0**	**1.9**	**1.1**

Figure SS12 Incidence of Shoulder Replacement in Patients Aged <55 Years per 100,000 from 2008 to 2021

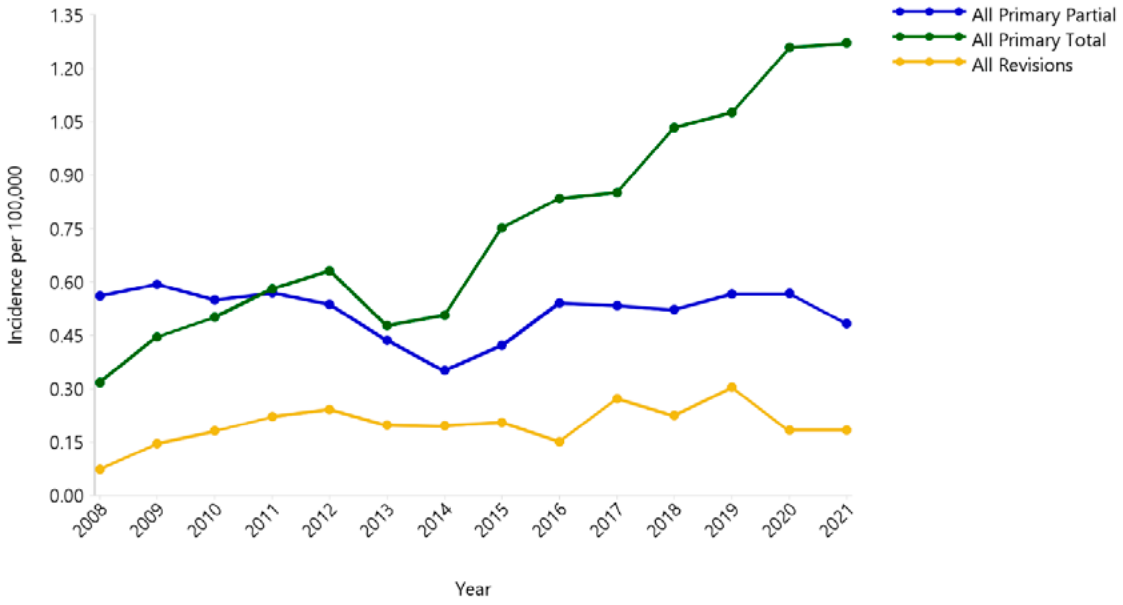


Table SS5 Incidence of Shoulder Replacement in Patients Aged 55-64 Years per 100,000 from 2008 to 2021

Shoulder Replacement	2008 N	2009 N	2010 N	2011 N	2012 N	2013 N	2014 N
Partial Resurfacing	0.1	0.0	0.1	0.1	0.1	0.0	0.1
Hemi Resurfacing	2.4	2.3	1.7	1.6	2.3	1.1	0.6
Hemi Stemmed	5.2	4.4	5.0	4.0	3.7	3.2	2.8
Hemi Mid Head	.	0.1	.	0.0	.	.	0.0
All Primary Partial	**7.8**	**6.9**	**6.8**	**5.7**	**6.1**	**4.3**	**3.5**
Total Resurfacing	0.2	.	0.2	0.5	0.7	0.4	0.3
Total Stemmed	7.1	10.6	11.2	11.1	10.2	10.3	11.2
Total Reverse	2.3	2.5	3.0	3.6	5.0	5.6	6.1
Total Mid Head	.	.	.	0.2	0.7	0.6	1.3
All Primary Total	**9.6**	**13.2**	**14.4**	**15.3**	**16.5**	**16.9**	**18.9**
All Revisions	**2.3**	**2.9**	**2.8**	**2.9**	**3.4**	**3.4**	**3.3**
ALL SHOULDERS	**19.7**	**22.9**	**23.9**	**23.9**	**26.0**	**24.6**	**25.7**

Shoulder Replacement	2015 N	2016 N	2017 N	2018 N	2019 N	2020 N	2021 N	TOTAL N
Partial Resurfacing	0.0	.	.	.	.	.	0.0	0.0
Hemi Resurfacing	0.7	1.1	0.8	0.7	0.8	0.5	0.7	0.9
Hemi Stemmed	2.5	2.0	1.3	1.8	2.0	1.8	1.9	2.2
Hemi Mid Head	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.0
All Primary Partial	**3.3**	**3.2**	**2.3**	**2.6**	**2.9**	**2.4**	**2.8**	**3.3**
Total Resurfacing	0.3	0.1	0.1	0.0	0.0	.	.	0.2
Total Stemmed	11.9	10.5	9.4	7.9	7.2	6.1	5.4	7.2
Total Reverse	8.5	12.3	16.2	19.9	21.0	22.8	27.9	9.2
Total Mid Head	1.5	2.8	3.7	4.7	5.0	5.9	6.4	1.9
All Primary Total	**22.2**	**25.7**	**29.5**	**32.6**	**33.2**	**34.9**	**39.8**	**18.4**
All Revisions	**3.5**	**3.5**	**4.1**	**4.6**	**4.2**	**3.9**	**4.0**	**2.7**
ALL SHOULDERS	**29.0**	**32.5**	**35.9**	**39.7**	**40.3**	**41.2**	**46.5**	**24.4**

Figure SS13 Incidence of Shoulder Replacement in Patients Aged 55-64 Years per 100,000 from 2008 to 2021

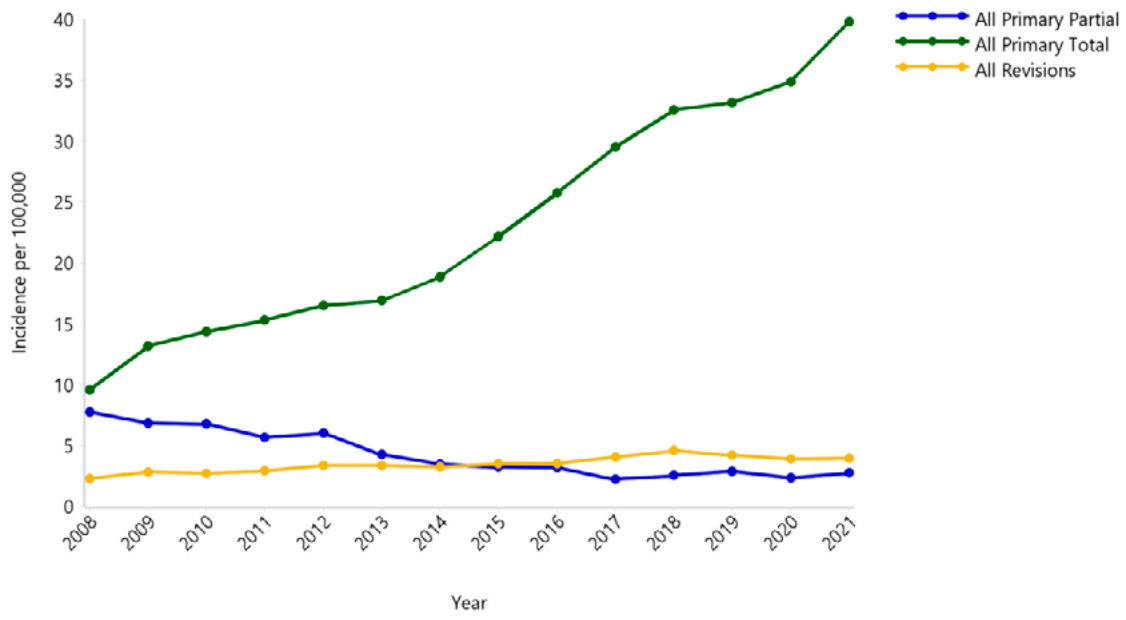


Table SS6 Incidence of Shoulder Replacement in Patients Aged 65-74 Years per 100,000 from 2008 to 2021

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

Shoulder Replacement	2016	2017	2018	2019	2020	2021	TOTAL
	N	N	N	N	N	N	N
Partial Resurfacing	.	0.1	.	0.0	0.0	.	0.1
Hemi Resurfacing	1.4	1.3	0.9	0.9	0.9	0.4	1.4
Hemi Stemmed	3.0	2.2	1.7	0.9	2.2	1.9	4.3
Hemi Mid Head	0.1	0.1	0.0	0.0	0.1	.	0.1
All Primary Partial	**4.6**	**3.8**	**2.6**	**1.8**	**3.3**	**2.3**	**5.8**
Total Resurfacing	0.4	0.3	0.2	0.1	0.0	.	0.3
Total Stemmed	26.7	23.9	18.8	16.0	11.8	10.6	19.4
Total Reverse	68.7	78.4	87.1	96.1	100.6	106.4	47.9
Total Mid Head	5.5	8.0	9.2	10.6	12.0	11.1	4.4
All Primary Total	**101.3**	**110.6**	**115.4**	**122.7**	**124.5**	**128.1**	**71.9**
All Revisions	**11.4**	**11.4**	**12.2**	**12.2**	**10.3**	**9.6**	**7.8**
ALL SHOULDERS	**117.4**	**125.8**	**130.2**	**136.7**	**138.1**	**140.1**	**85.6**

Figure SS14 Incidence of Shoulder Replacement in Patients Aged 65-74 Years per 100,000 from 2008 to 2021

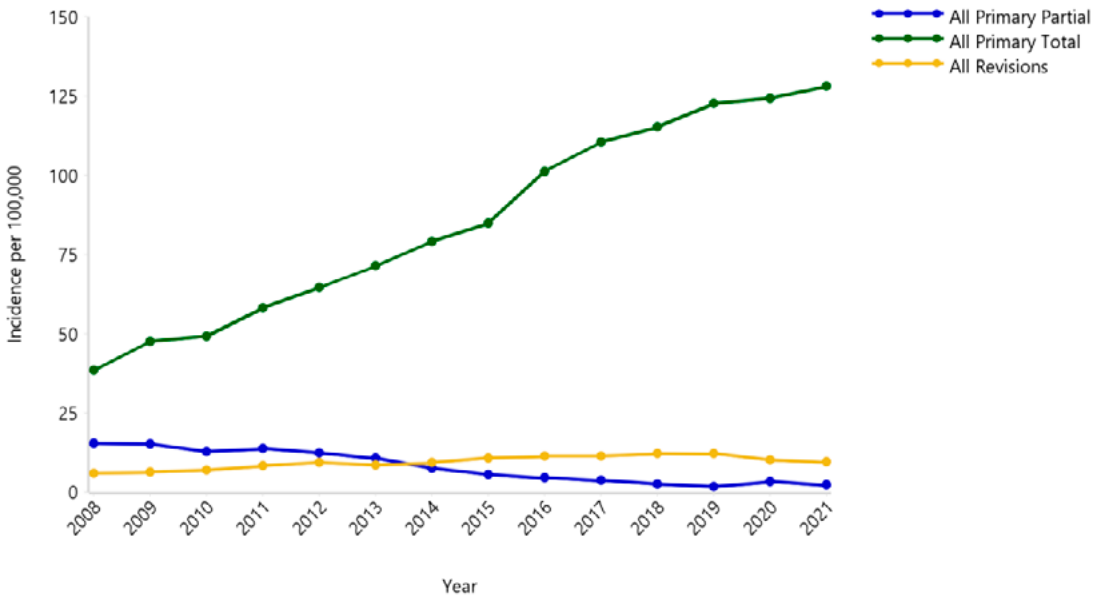


Table SS7 Incidence of Shoulder Replacement in Patients Aged ≥75 Years per 100,000 from 2008 to 2021

Shoulder Replacement	2008 N	2009 N	2010 N	2011 N	2012 N	2013 N	2014 N
Partial Resurfacing	0.4	0.1	0.1	0.3	0.1	0.1	.
Hemi Resurfacing	5.2	3.6	2.3	1.8	2.2	1.4	1.2
Hemi Stemmed	21.2	20.2	18.6	17.5	15.0	11.8	8.4
Hemi Mid Head	.	0.1	0.1	.	.	0.1	.
All Primary Partial	**26.8**	**24.0**	**21.2**	**19.6**	**17.2**	**13.3**	**9.6**
Total Resurfacing	0.1	0.1	.	0.2	0.1	0.3	0.1
Total Stemmed	20.8	26.5	28.2	28.6	27.5	22.2	23.7
Total Reverse	29.5	37.3	43.4	53.1	58.0	70.7	82.7
Total Mid Head	.	.	.	.	0.8	2.2	2.2
All Primary Total	**50.4**	**63.9**	**71.6**	**81.9**	**86.4**	**95.4**	**108.7**
All Revisions	**7.7**	**8.1**	**9.0**	**8.0**	**10.4**	**11.2**	**11.7**
ALL SHOULDERS	**84.9**	**96.0**	**101.8**	**109.4**	**114.0**	**120.0**	**130.0**

Shoulder Replacement	2015 N	2016 N	2017 N	2018 N	2019 N	2020 N	2021 N	TOTAL N
Partial Resurfacing	.	.	.	.	.	.	.	0.0
Hemi Resurfacing	1.0	0.6	0.9	0.5	0.3	0.2	.	1.1
Hemi Stemmed	5.6	4.3	3.2	2.9	2.1	1.5	1.7	6.9
Hemi Mid Head	0.1	.	.	.	.	.	0.1	0.0
All Primary Partial	**6.7**	**4.9**	**4.0**	**3.4**	**2.3**	**1.7**	**1.8**	**8.0**
Total Resurfacing	.	.	.	0.1	0.1	.	.	0.1
Total Stemmed	21.8	17.6	14.3	10.9	8.3	6.6	6.0	14.0
Total Reverse	90.8	101.4	119.0	138.2	148.0	137.8	146.0	73.4
Total Mid Head	1.9	3.4	4.7	5.2	5.7	5.0	6.5	2.3
All Primary Total	**114.5**	**122.4**	**138.0**	**154.5**	**162.0**	**149.5**	**158.5**	**89.8**
All Revisions	**13.6**	**11.4**	**12.5**	**11.8**	**12.8**	**12.6**	**11.9**	**8.6**
ALL SHOULDERS	**134.7**	**138.7**	**154.5**	**169.8**	**177.2**	**163.8**	**172.2**	**106.4**

Figure SS15 Incidence of Shoulder Replacement in Patients Aged ≥75 Years per 100,000 from 2008 to 2021

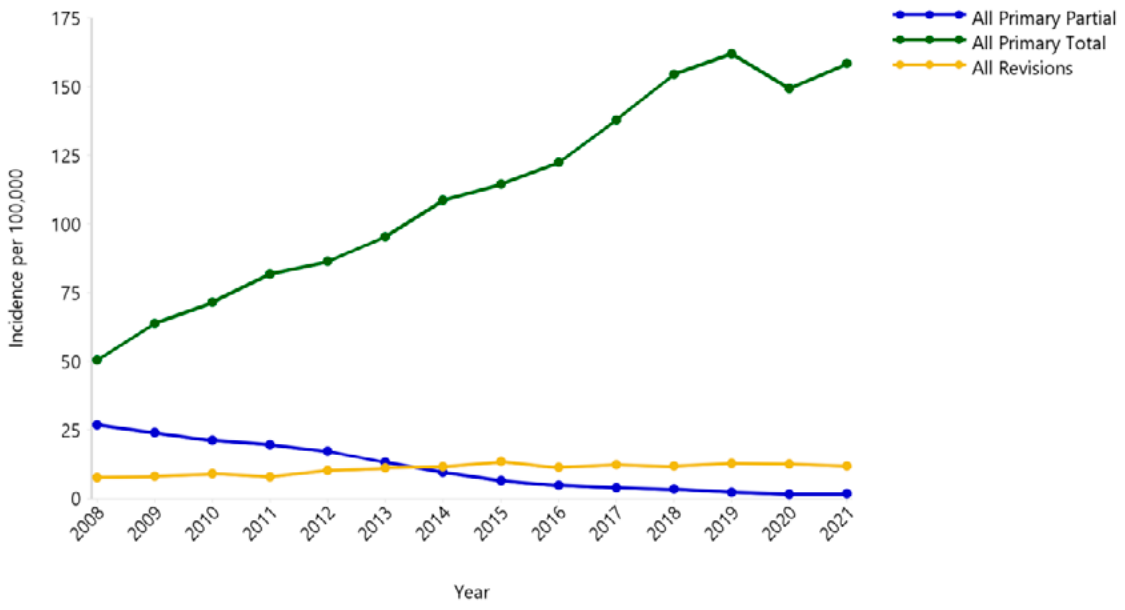
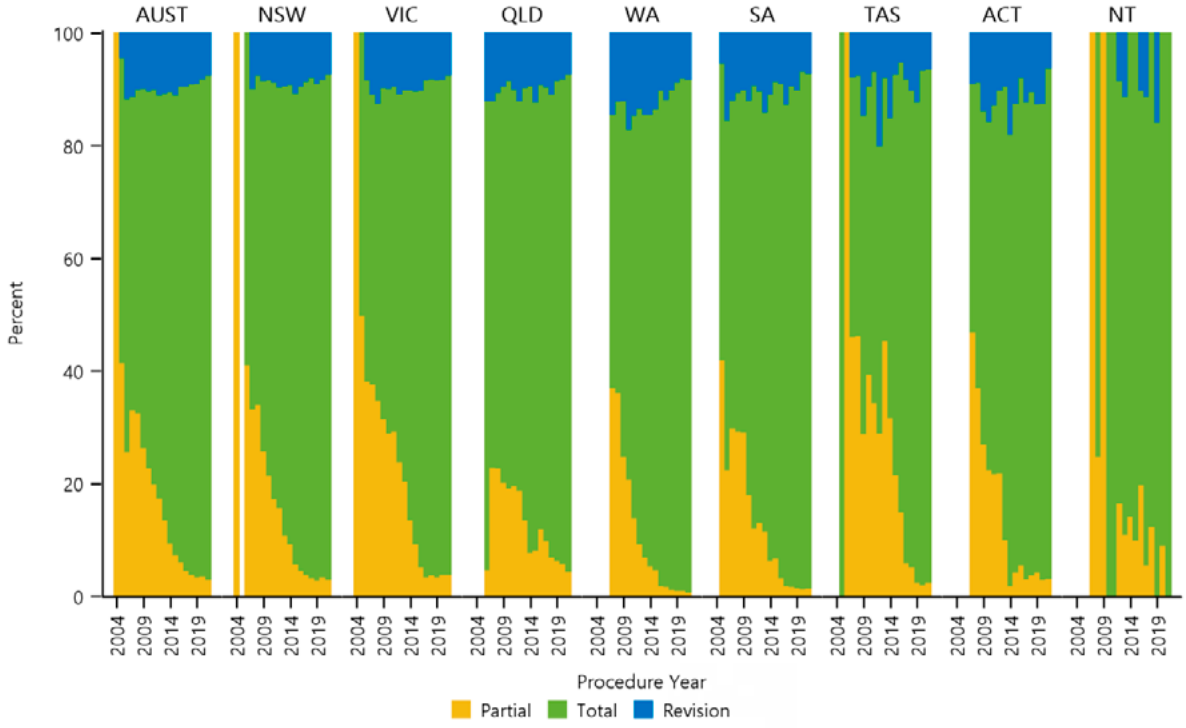


Figure SS16 Trends in Usage of Shoulder Replacement by State/Territory and Year



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

Table SS8 Time between Procedures for Bilateral Primary Shoulder Replacement

Bilateral Procedures	Same Day			1 day - 3 months			3 - 6 months			≥6 months			TOTAL		
	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%	N	Row%	Col%
Both Partial	17	5.7	56.7	20	6.7	10.7	37	12.4	5.3	225	75.3	3.1	299	100.0	3.6
Both Total	13	0.2	43.3	162	2.2	86.6	644	8.7	92.1	6620	89.0	90.8	7439	100.0	90.7
Total/Partial	.	.	.	5	1.1	2.7	18	3.9	2.6	444	95.1	6.1	467	100.0	5.7
TOTAL	**30**	**0.4**	**100.0**	**187**	**2.3**	**100.0**	**699**	**8.5**	**100.0**	**7289**	**88.8**	**100.0**	**8205**	**100.0**	**100.0**

Table SS9 Number of Shoulder Procedures by Patient

Shoulder 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	.	.	902	77.3	179	15.3	86	7.4	1167	100.0
Single Primary Procedure	49666	94.0	2445	4.6	520	1.0	204	0.4	52835	100.0
2 Primary Procedures	7259	88.5	689	8.4	189	2.3	68	0.8	8205	100.0
TOTAL	**56925**	**91.5**	**4036**	**6.5**	**888**	**1.4**	**358**	**0.6**	**62207**	**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 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 involves the use of a humeral prosthesis that replaces the humeral articular surface only, without resecting the head.

Hemi mid head involves resection of part of the humeral head and replacement with a humeral head and an epiphyseal fixation prosthesis.
Hemi stemmed involves the resection of the humeral head and replacement with a humeral head and a humeral stem prosthesis. A humeral stem prosthesis may have metaphyseal or diaphyseal fixation.

Table SSP1 Primary Partial Shoulder Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	4609	60.5%	13	101	72	71.0	11.8
Male	3014	39.5%	14	94	62	60.4	14.4
TOTAL	**7623**	**100.0%**	**13**	**101**	**68**	**66.8**	**13.9**

Figure SSP1 Primary Partial Shoulder Replacement by Age and Gender

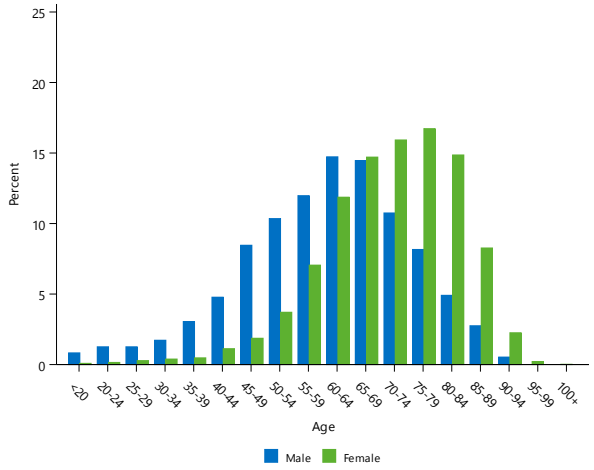
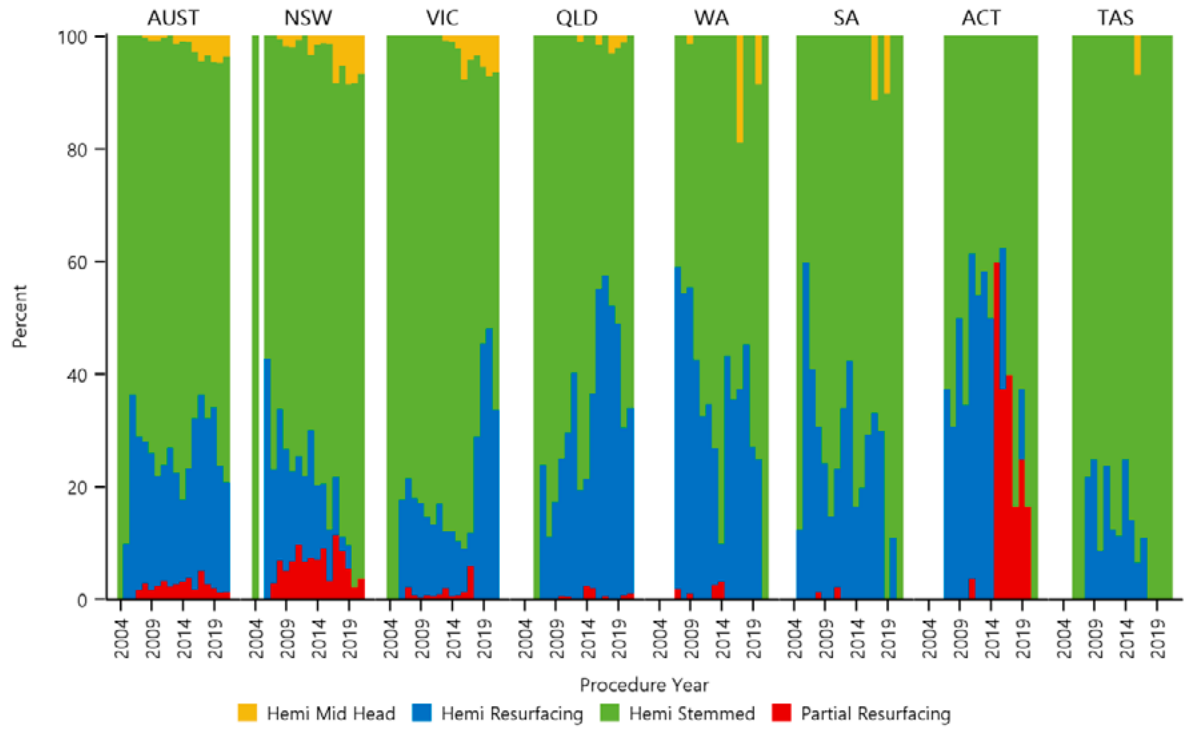


Table SSP2 Primary Partial Shoulder Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Osteoarthritis	3314	43.5
Fracture	3132	41.1
Rotator Cuff Arthropathy	340	4.5
Osteonecrosis	271	3.6
Instability	215	2.8
Tumour	181	2.4
Rheumatoid Arthritis	128	1.7
Other Inflammatory Arthritis	37	0.5
Osteochondritis Dissecans	2	0.0
Other	3	0.0
TOTAL	**7623**	**100.0**

Figure SSP2 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 SHOULDER REPLACEMENT

Table SSP3 Primary Partial Resurfacing Shoulder Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	47	23.3%	16	88	55	55.3	19.5
Male	155	76.7%	14	87	35	38.6	17.5
TOTAL	**202**	**100.0%**	**14**	**88**	**40**	**42.5**	**19.3**

Figure SSP3 Primary Partial Resurfacing Shoulder Replacement by Age and Gender

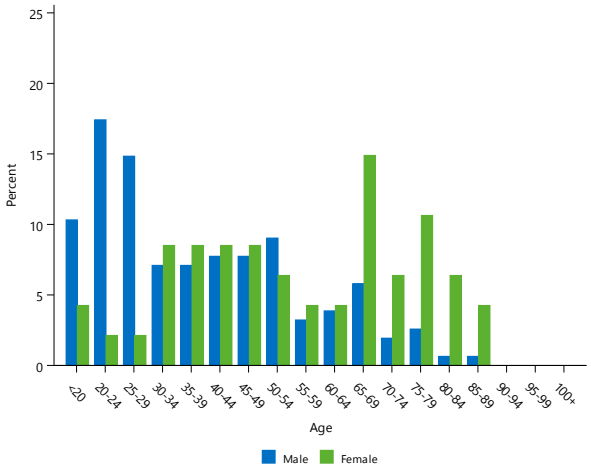


Table SSP4 Primary Partial Resurfacing Shoulder Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Instability	106	52.5
Osteoarthritis	71	35.1
Fracture	15	7.4
Osteonecrosis	5	2.5
Osteochondritis Dissecans	2	1.0
Rotator Cuff Arthropathy	2	1.0
Rheumatoid Arthritis	1	0.5
TOTAL	**202**	**100.0**

PRIMARY HEMI RESURFACING SHOULDER REPLACEMENT

Table SSP5 Primary Hemi Resurfacing Shoulder Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	732	40.9%	27	93	68	67.7	11.3
Male	1058	59.1%	19	90	61	59.9	12.1
TOTAL	**1790**	**100.0%**	**19**	**93**	**64**	**63.1**	**12.4**

Figure SSP4 Primary Hemi Resurfacing Shoulder Replacement by Age and Gender

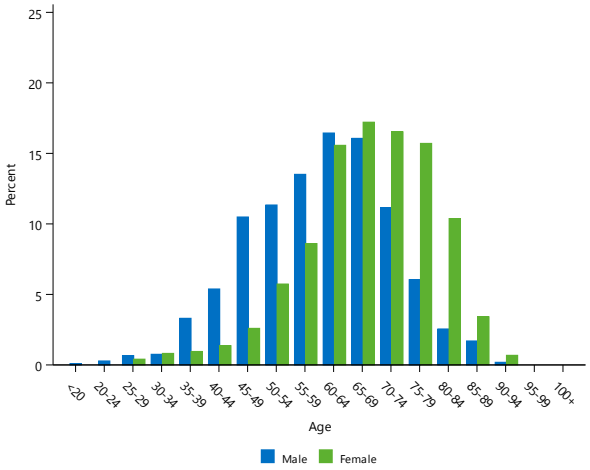


Table SSP6 Primary Hemi Resurfacing Shoulder Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Osteoarthritis	1583	88.4
Rotator Cuff Arthropathy	85	4.7
Osteonecrosis	37	2.1
Instability	31	1.7
Rheumatoid Arthritis	28	1.6
Fracture	14	0.8
Other Inflammatory Arthritis	12	0.7
TOTAL	**1790**	**100.0**

PRIMARY HEMI STEMMED SHOULDER REPLACEMENT

Table SSP7 Primary Hemi Stemmed Shoulder Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	3798	68.5%	13	101	73	71.8	11.5
Male	1744	31.5%	14	94	64	63.0	13.7
TOTAL	**5542**	**100.0%**	**13**	**101**	**70**	**69.0**	**12.9**

Figure SSP5 Primary Hemi Stemmed Shoulder Replacement by Age and Gender

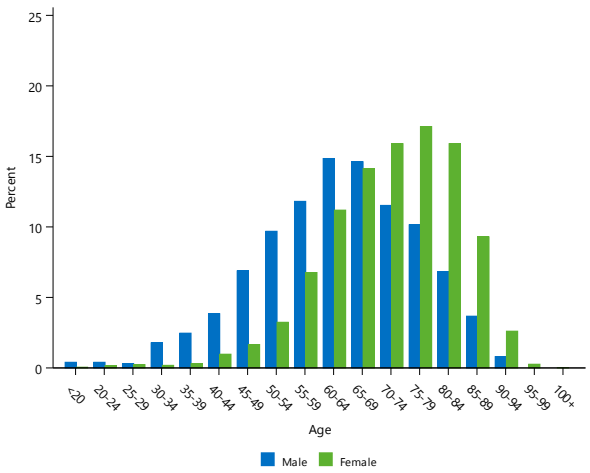


Table SSP8 Primary Hemi Stemmed Shoulder Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Fracture	3097	55.9
Osteoarthritis	1607	29.0
Rotator Cuff Arthropathy	251	4.5
Osteonecrosis	206	3.7
Tumour	181	3.3
Rheumatoid Arthritis	98	1.8
Instability	76	1.4
Other Inflammatory Arthritis	24	0.4
Other	2	0.0
TOTAL	**5542**	**100.0**

PRIMARY HEMI MID HEAD SHOULDER REPLACEMENT

Table SSP9 Primary Hemi Mid Head Shoulder Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	32	36.0%	30	85	66	64.6	11.4
Male	57	64.0%	18	83	48	49.4	12.8
TOTAL	**89**	**100.0%**	**18**	**85**	**55**	**54.8**	**14.3**

Figure SSP6 Primary Hemi Mid Head Shoulder Replacement by Age and Gender

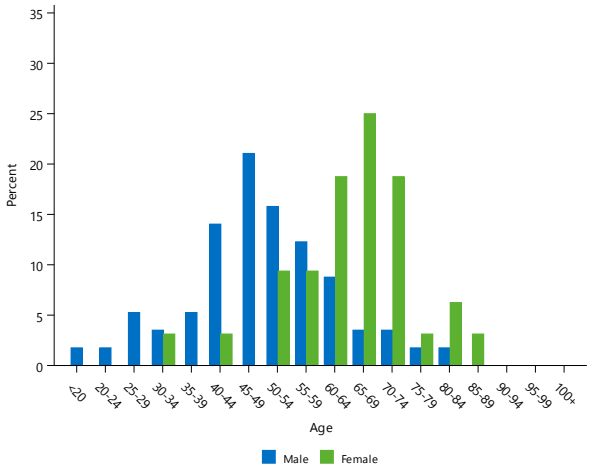


Table SSP10 Primary Hemi Mid Head Shoulder Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Osteoarthritis	53	59.6
Osteonecrosis	23	25.8
Fracture	6	6.7
Rotator Cuff Arthropathy	2	2.2
Instability	2	2.2
Rheumatoid Arthritis	1	1.1
Other Inflammatory Arthritis	1	1.1
Other	1	1.1
TOTAL	**89**	**100.0**

PRIMARY TOTAL SHOULDER REPLACEMENT

CLASSES OF TOTAL SHOULDER REPLACEMENT

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

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

Table SST1 Primary Total Shoulder Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	37323	60.6%	13	102	74	73.4	8.4
Male	24297	39.4%	14	96	71	70.1	9.0
TOTAL	**61620**	**100.0%**	**13**	**102**	**73**	**72.1**	**8.8**

Figure SST1 Primary Total Shoulder Replacement by Age and Gender

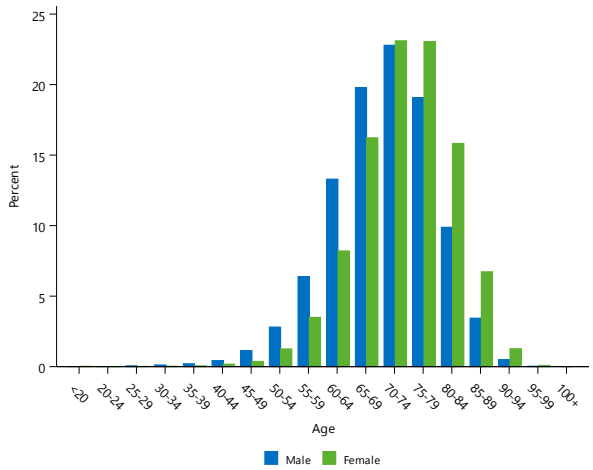
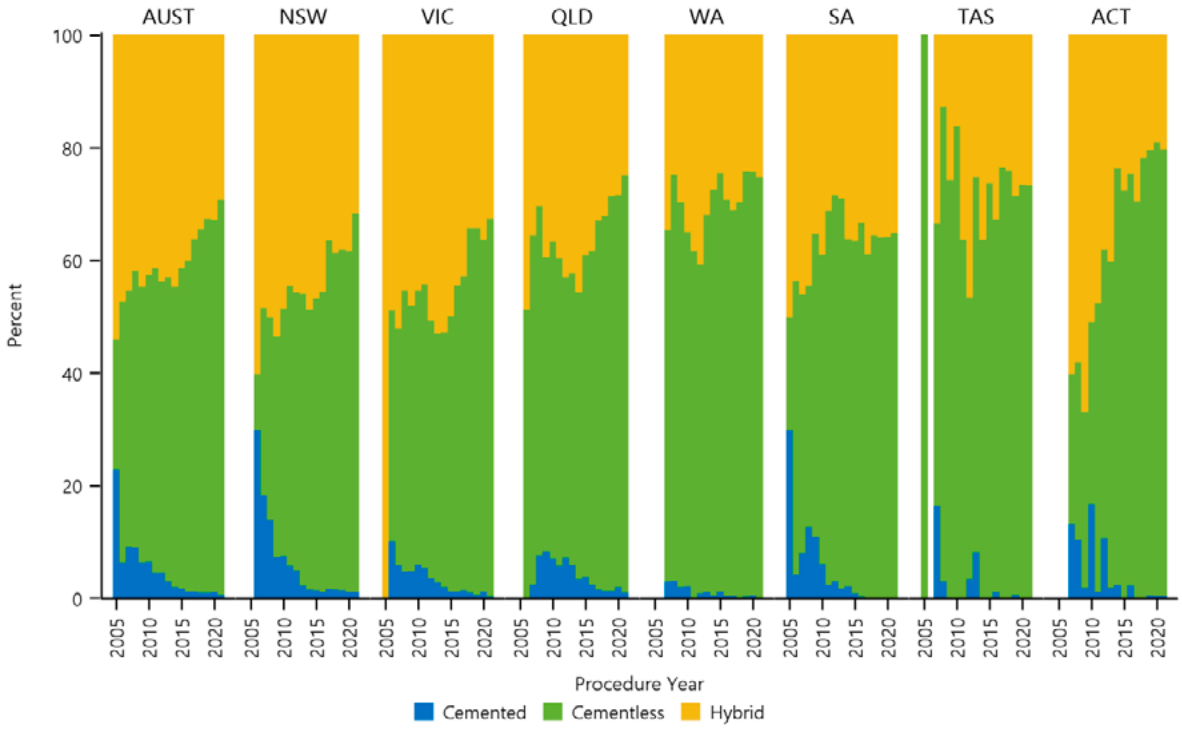


Table SST2 Primary Total Shoulder Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Osteoarthritis	36635	59.5
Rotator Cuff Arthropathy	15540	25.2
Fracture	6573	10.7
Rheumatoid Arthritis	1022	1.7
Osteonecrosis	794	1.3
Instability	495	0.8
Other Inflammatory Arthritis	309	0.5
Tumour	234	0.4
Other	18	0.0
TOTAL	**61620**	**100.0**

Figure SST2 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 SHOULDER REPLACEMENT

Table SST3 Primary Total Resurfacing 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 SST3 Primary Total Resurfacing Shoulder Replacement by Age and Gender

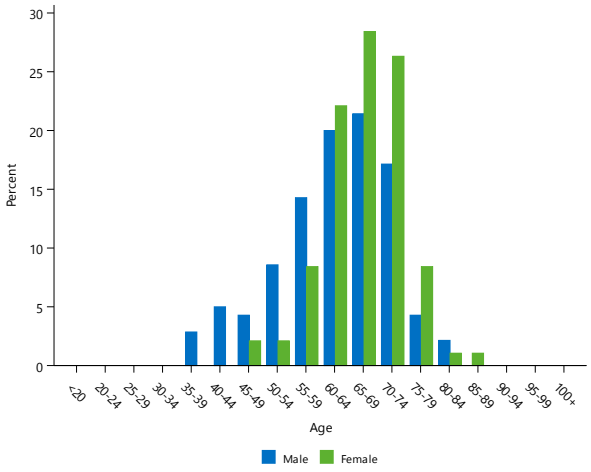


Table SST4 Primary Total Resurfacing Shoulder Replacement by Primary Diagnosis

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 SHOULDER REPLACEMENT

Table SST5 Primary Total Stemmed Shoulder Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	8841	57.2%	19	96	71	70.3	8.5
Male	6622	42.8%	21	93	67	66.8	9.0
TOTAL	**15463**	**100.0%**	**19**	**96**	**69**	**68.8**	**8.9**

Figure SST4 Primary Total Stemmed Shoulder Replacement by Age and Gender

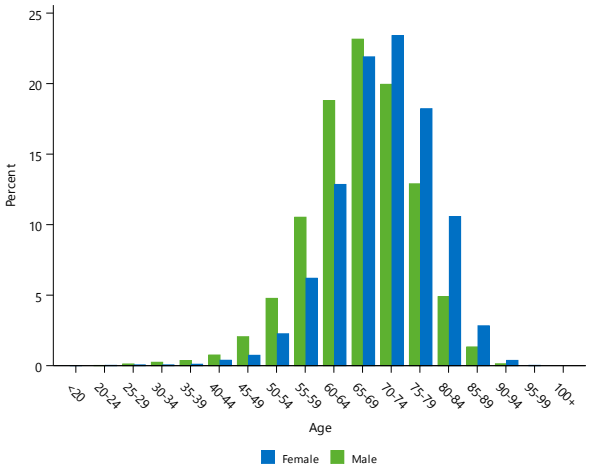
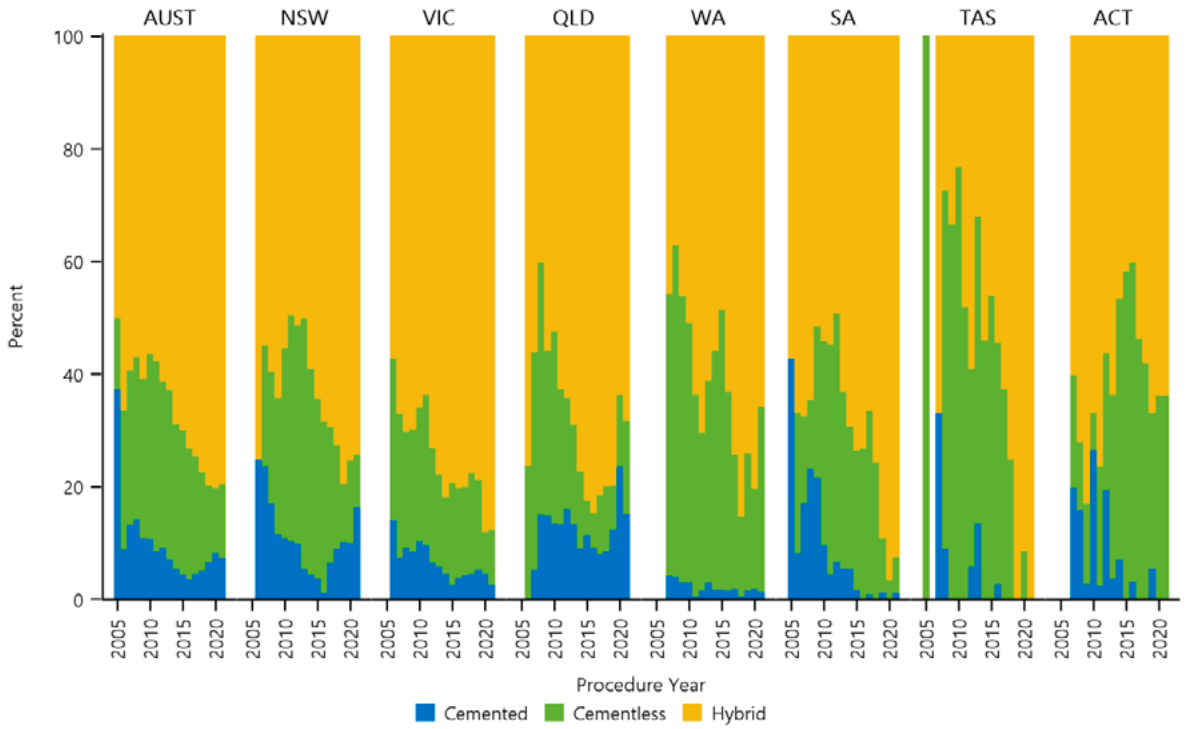


Table SST6 Primary Total Stemmed Shoulder Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Osteoarthritis	14586	94.3
Rheumatoid Arthritis	259	1.7
Osteonecrosis	255	1.6
Fracture	128	0.8
Other Inflammatory Arthritis	90	0.6
Rotator Cuff Arthropathy	82	0.5
Instability	46	0.3
Tumour	11	0.1
Other	6	0.0
TOTAL	**15463**	**100.0**

Figure SST5 Trends in Fixation of Primary Total Stemmed Shoulder Replacement by State/Territory and Year



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

PRIMARY TOTAL REVERSE SHOULDER REPLACEMENT

Table SST7 Primary Total Reverse Shoulder Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	26641	62.7%	13	102	75	74.8	8.0
Male	15872	37.3%	14	96	73	72.2	8.2
TOTAL	**42513**	**100.0%**	**13**	**102**	**74**	**73.8**	**8.2**

Figure SST6 Primary Total Reverse Shoulder Replacement by Age and Gender

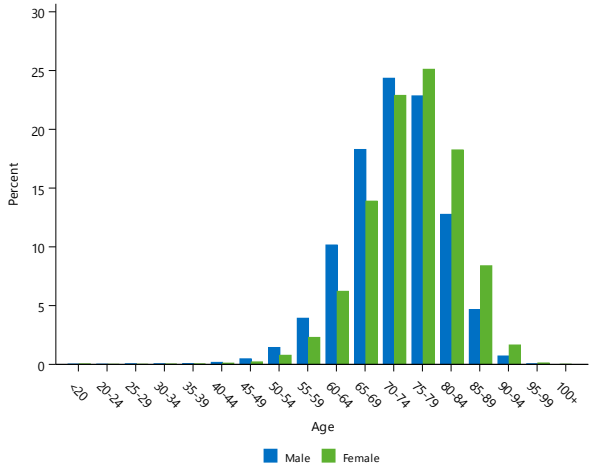
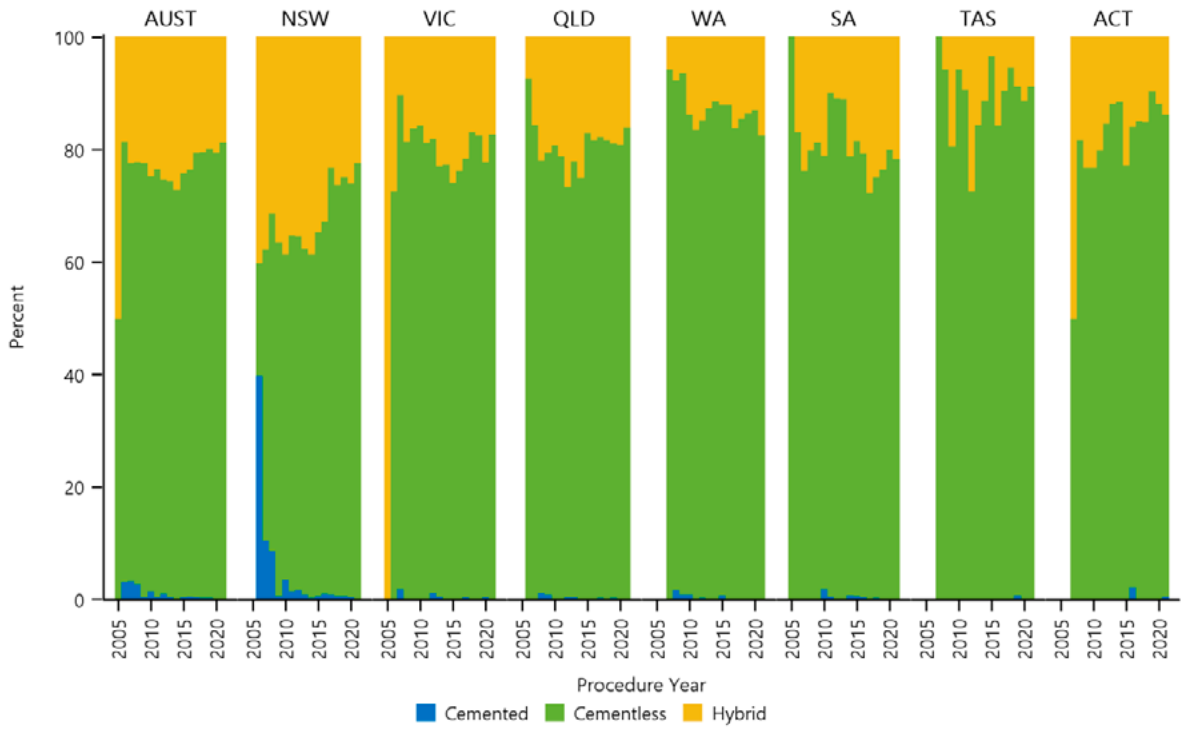


Table SST8 Primary Total Reverse Shoulder Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Osteoarthritis	18582	43.7
Rotator Cuff Arthropathy	15416	36.3
Fracture	6437	15.1
Rheumatoid Arthritis	735	1.7
Osteonecrosis	482	1.1
Instability	428	1.0
Tumour	223	0.5
Other Inflammatory Arthritis	198	0.5
Other	12	0.0
TOTAL	**42513**	**100.0**

Figure SST7 Trends in Fixation of Primary Total Reverse Shoulder Replacement by State/Territory and Year



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

PRIMARY TOTAL MID HEAD SHOULDER REPLACEMENT

Table SST9 Primary Total Mid Head Shoulder Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	1746	51.2%	32	94	69	68.9	8.3
Male	1663	48.8%	31	95	65	64.5	9.3
TOTAL	**3409**	**100.0%**	**31**	**95**	**67**	**66.8**	**9.0**

Figure SST8 Primary Total Mid Head Shoulder Replacement by Age and Gender

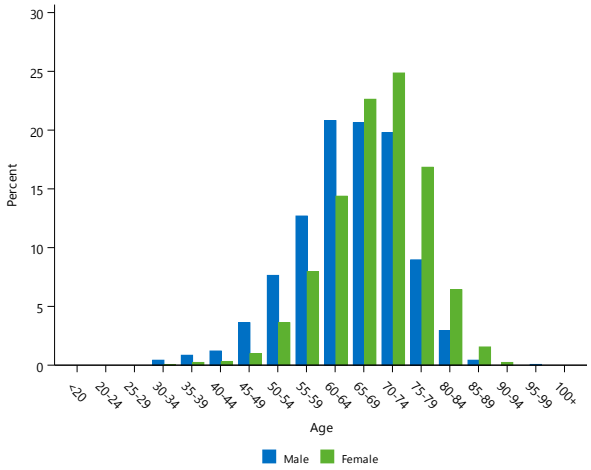


Table SST10 Primary Total Mid Head Shoulder Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Osteoarthritis	3241	95.1
Osteonecrosis	56	1.6
Rotator Cuff Arthropathy	41	1.2
Rheumatoid Arthritis	25	0.7
Other Inflammatory Arthritis	20	0.6
Instability	20	0.6
Fracture	6	0.2
TOTAL	**3409**	**100.0**

ALL REVISION SHOULDER REPLACEMENT

Table SSR1 Age and Gender of All Revision Shoulder Replacement

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Male	3268	46.4%	19	96	70	68.4	10.2
Female	3782	53.6%	15	98	72	71.4	10.0
TOTAL	**7050**	**100.0%**	**15**	**98**	**71**	**70.0**	**10.2**

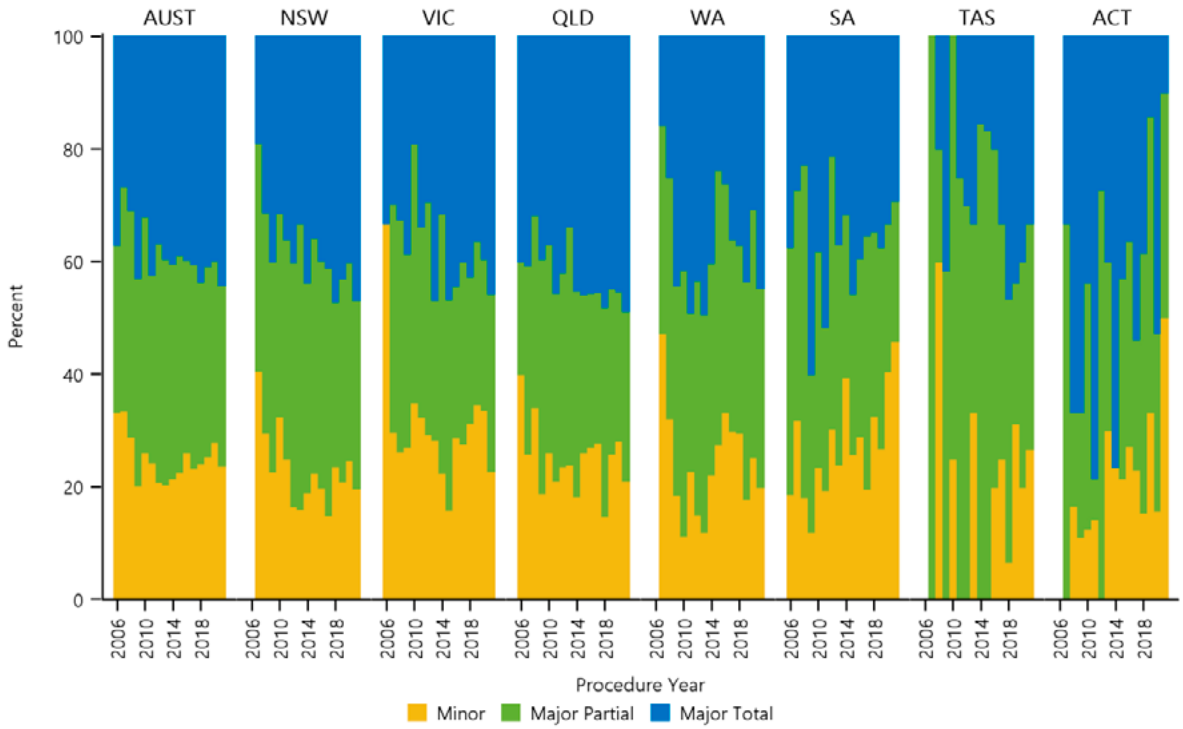
Table SSR2 Reason for Revision of All Shoulder Replacement

Reason for Revision	Number	Percent
Instability/Dislocation	1645	23.3
Infection	1382	19.6
Loosening	1288	18.3
Rotator Cuff Insufficiency	761	10.8
Fracture	484	6.9
Pain	300	4.3
Glenoid Erosion	258	3.7
Dissociation	172	2.4
Implant Breakage Glenoid Insert	119	1.7
Lysis	116	1.6
Implant Breakage Glenoid	66	0.9
Arthrofibrosis	57	0.8
Malposition	57	0.8
Metal Related Pathology	55	0.8
Incorrect Sizing	47	0.7
Wear Glenoid Insert	41	0.6
Wear Glenoid	28	0.4
Progression Of Disease	21	0.3
Implant Breakage Head	19	0.3
Wear Humeral Cup	17	0.2
Implant Breakage Humeral	16	0.2
Tumour	12	0.2
Osteonecrosis	12	0.2
Heterotopic Bone	6	0.1
Synovitis	2	0.0
Other	69	1.0
TOTAL	**7050**	**100.0**

Table SSR3 Type of Revision of All Shoulder Replacement

Type of Revision	Number	Percent
Humeral/Glenoid	2555	36.2
Humeral Component	1825	25.9
Head Only	538	7.6
Glenoid Component	502	7.1
Cup/Head	465	6.6
Cement Spacer	464	6.6
Cup Only	420	6.0
Removal of Prostheses	131	1.9
Head/Insert	62	0.9
Minor Components	40	0.6
Cement Only	27	0.4
Reinsertion of Components	13	0.2
Insert Only	5	0.1
Partial Resurfacing	3	0.0
TOTAL	**7050**	**100.0**

Figure SSR1 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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