

U.S. Market for Minimally Invasive Spinal Implants



iDATA_USMIS15_RPT
Tel: (604) 266-6933
Fax: (604) 266-6934
sales@idataresearch.net

For further information on this report series, please contact
iData's account executive at: +1 (604) 266-6933

www.idataresearch.net



iData Research
INTELLIGENCE BEHIND THE DATA



U.S. MARKET FOR MINIMALLY INVASIVE SPINAL IMPLANTS

iDATA_USMIS15_RPT

Published in December 2014

By



© iData Research Inc., 2014

iData Research Inc.
Suite 308 – 4211 Kingsway
Burnaby, British Columbia,
Canada, V5H 1Z6

Tel: (604) 266-6933
Fax: (604) 266-6934

This report and the information contained therein are believed to be accurate at the time of publishing. The information and data provided is not guaranteed in any way by iData Research, Inc. or its analysts, managers, partners, agents or authors.

iData Research, Inc. offers a corporate license agreement and options for multiple copies of this report. Please contact the sales department for more details.

This report, by default, carries a single license and is copyrighted. It should therefore not be copied or reproduced in any form, by any means, in part or in whole without a written permission from iData Research, Inc.

Reproducing, photocopying or redistributing of this report or other reports from iData Research Inc. to other sites, facilities, units, divisions, affiliates or corporate offices of the purchaser's organization is prohibited. U.S. and International law strictly forbid the redistribution or resale of illegally obtained copies.

TABLE OF CONTENTS

TABLE OF CONTENTS.....	I
LIST OF FIGURES	VII
LIST OF CHARTS.....	IX
EXECUTIVE SUMMARY.....	1
1.1 U.S. MINIMALLY INVASIVE SPINAL IMPLANT MARKET.....	1
1.2 SPINOUS PROCESS FIXATION MARKET	2
1.3 FACET FIXATION MARKET	3
1.4 MIS INTERBODY FUSION MARKET	4
1.5 MIS PEDICLE SCREW MARKET.....	5
1.6 MIS SACROILIAC JOINT FUSION MARKET	6
1.7 LEADING COMPETITORS	7
RESEARCH METHODOLOGY.....	9
2.1 RESEARCH SCOPE.....	9
2.2 iDATA’S 9-STEP METHODOLOGY	9
Step 1: Project Initiation & Team Selection.....	9
Step 2: Prepare Data Systems and Perform Secondary Research	11
Step 3: Preparation for Interviews & Questionnaire Design.....	12
Step 4: Performing Primary Research.....	13
Step 5: Research Analysis: Establishing Baseline Estimates.....	15
Step 6: Market Forecast and Analysis.....	16
Step 7: Identify Strategic Opportunities.....	18
Step 8: Final Review and Market Release	19
Step 9: Customer Feedback and Market Monitoring	20
U.S. MINIMALLY INVASIVE SPINAL IMPLANT MARKET OVERVIEW	21
3.1 INTRODUCTION.....	21

3.1.1 Spinous Process Fixation	21
3.1.2 Facet Fixation	22
3.1.3 Minimally Invasive Interbody Fusion	22
3.1.3.1 Minimally Invasive Transforaminal Lumbar Interbody Fusion	23
3.1.3.2 Minimally Invasive Posterior Lumbar Interbody Fusion	23
3.1.3.3 Lateral Lumbar Interbody Fusion.....	24
3.1.4 Minimally Invasive Surgery (MIS) Pedicle Screws.....	24
3.1.4.1 Percutaneous MIS Systems	25
3.1.4.2 Retractor-Based MIS systems	25
3.1.5 MIS Sacroiliac Joint Fusion	25
3.2 MARKET OVERVIEW.....	26
3.3 MARKET BY SEGMENT.....	28
3.4 TREND ANALYSIS BY SEGMENT.....	32
3.5 DRIVERS AND LIMITERS	34
3.5.1 Market Drivers	34
3.5.2 Market Limiters.....	35
3.6 COMPETITIVE ANALYSIS	36
3.7 MERGERS AND ACQUISITIONS	42
THE HUMAN SPINE	47
4.1 BASIC ANATOMY	47
4.2 SPINAL PATHOLOGY AND DISORDERS	50
4.2.1 Degenerative Disc Disease.....	50
4.2.1.1 Disc Herniation	50
4.2.1.2 Stenosis	50
4.2.1.3 Spondylolisthesis.....	51
4.2.1.4 Arthritis	51
4.2.2 Spinal Deformities.....	51
4.2.2.1 Scoliosis	51
4.2.2.2 Kyphosis and Lordosis	51
4.2.3 Trauma and Tumor.....	52
4.2.4 Vertebral Compression Fractures.....	52
4.2.4.1 Osteoporosis.....	52

4.2.4.2 Vertebral Compression Fractures	52
4.3 SPINAL DISORDER TREATMENTS	53
4.3.1 Decompression	53
4.3.1.1 Microdecompression	53
4.3.1.2 Laminectomy	53
4.3.2 Discectomy	53
4.3.3 Spinal Fusion	53
4.3.4 Corpectomy	54
4.3.5 Spinal Arthroplasty	54
MINIMALLY INVASIVE SPINE PROCEDURE NUMBERS.....	55
5.1 INTRODUCTION	55
5.2 SPINOUS PROCESS FIXATION PROCEDURE NUMBERS	56
5.3 FACET FIXATION PROCEDURE NUMBERS.....	58
5.4 MIS INTERBODY FUSION PROCEDURE NUMBERS	60
5.5 PEDICLE SCREW PROCEDURE NUMBERS	63
5.6 MIS SACROILIAC JOINT FUSION PROCEDURE NUMBERS	66
SPINOUS PROCESS FIXATION MARKET	69
6.1 INTRODUCTION	69
6.2 SPINOUS PROCESS FIXATION PROCEDURE NUMBERS	70
6.3 MARKET ANALYSIS AND FORECAST	72
6.4 DRIVERS AND LIMITERS	75
6.4.1 Market Drivers	75
6.4.2 Market Limiters.....	75
6.5 COMPETITIVE ANALYSIS	77
6.5.1 Leading Competitors	77
FACET FIXATION MARKET	81
7.1 INTRODUCTION	81
7.2 FACET FIXATION PROCEDURE NUMBERS.....	82
7.3 MARKET ANALYSIS AND FORECAST	84
7.4 DRIVERS AND LIMITERS	87

7.4.1 Market Drivers	87
7.4.2 Market Limiters.....	88
7.5 COMPETITIVE ANALYSIS	89
7.5.1 Leading Competitors	89
MIS INTERBODY FUSION MARKET	95
8.1 INTRODUCTION.....	95
8.1.1 Approach Types	96
8.1.1.1 Minimally Invasive Posterior Lumbar Interbody Fusion	96
8.1.1.2 Minimally Invasive Transforaminal Lumbar Interbody Fusion	96
8.1.1.3 Lateral Lumbar Interbody Fusion.....	97
8.1.1.4 Direct Lateral Interbody Fusion	97
8.1.1.5 eXtreme Lateral Interbody Fusion	97
8.1.1.6 Guided Lateral Interbody Fusion	98
8.2 PROCEDURE NUMBERS	99
8.2.1 Total MIS Interbody Procedures	99
8.2.2 MIS Interbody Procedure Numbers by Approach.....	101
8.3 MARKET OVERVIEW.....	104
8.4 MARKET ANALYSIS AND FORECAST	107
8.4.1 Total MIS Interbody Fusion Market	107
8.4.2 Minimally Invasive Posterior Lumbar Interbody Fusion Market	109
8.4.3 Minimally Invasive Transforaminal Lumbar Interbody Fusion Market	112
8.4.4 Lateral Lumbar Interbody Fusion Market	115
8.5 DRIVERS AND LIMITERS	118
8.5.1 Market Drivers	118
8.5.2 Market Limiters.....	119
8.6 COMPETITIVE ANALYSIS	121
8.6.1 Leading Competitors	121
MIS PEDICLE SCREW MARKET.....	127
9.1 INTRODUCTION.....	127
9.1.1 Percutaneous MIS Systems	127
9.1.2 Retractor-Based MIS systems	128

9.2 PROCEDURE NUMBERS	129
9.2.1 Total MIS Pedicle Screw Procedure Numbers.....	129
9.2.2 MIS Pedicle Screw Procedure Numbers by Access Type.....	131
9.3 MARKET OVERVIEW.....	135
9.4 MARKET ANALYSIS AND FORECAST	138
9.4.1 Total MIS Pedicle Screw Market	138
9.4.2 Percutaneous Cannulated Pedicle Screw Market	140
9.4.3 Retractor Cannulated Pedicle Screw Market	143
9.4.4 Retractor Non-Cannulated Pedicle Screw Market	146
9.5 DRIVERS AND LIMITERS	149
9.5.1 Market Drivers	149
9.5.2 Market Limiters.....	150
9.6 COMPETITIVE ANALYSIS	152
9.6.1 Leading Competitors	152
MIS SACROILIAC JOINT FUSION MARKET	157
10.1 INTRODUCTION	157
10.2 MIS SACROILIAC JOINT FUSION PROCEDURE NUMBERS	159
10.3 MARKET ANALYSIS AND FORECAST	161
10.4 DRIVERS AND LIMITERS	164
10.4.1 Market Drivers	164
10.4.2 Market Limiters.....	165
10.5 COMPETITIVE ANALYSIS	167
ABBREVIATIONS	171

LIST OF FIGURES

Figure 3-1: Total Minimally Invasive Spinal Implant Market, U.S., 2011 – 2021 (US\$M).....	26
Figure 3-2: Minimally Invasive Spinal Implant Market by Segment, U.S., 2011 – 2021 (US\$M)	29
Figure 3-3: Minimally Invasive Spinal Implant Market Growth by Segment, U.S., 2011 – 2021.....	33
Figure 3-4: Drivers and Limiters, Minimally Invasive Spinal Implant Market, U.S., 2014	35
Figure 3-5: Leading Competitors, Minimally Invasive Spinal Implant Market, U.S., 2014.....	40
Figure 5-1: Spinous Process Fixation Procedure Numbers, U.S., 2011 – 2021	56
Figure 5-2: Facet Fixation Procedure Numbers, U.S., 2011 – 2021	58
Figure 5-3: Minimally Invasive Interbody Fusion Procedure Numbers by Approach, U.S., 2011 – 2021.	61
Figure 5-4: Pedicle Screw Procedure Numbers by Access Type, U.S., 2011 – 2021	64
Figure 5-5: MIS Sacroiliac Joint Fusion Procedure Numbers, U.S., 2011 – 2021.....	66
Figure 6-1: Spinous Process Fixation Procedure Numbers, U.S., 2011 – 2021	70
Figure 6-2: Spinous Process Fixation Market, U.S., 2011 – 2021	73
Figure 6-3: Drivers and Limiters, Spinous Process Fixation Market, U.S., 2014.....	76
Figure 6-4: Leading Competitors, Spinous Process Fixation Market, U.S., 2014	79
Figure 7-1: Facet Fixation Procedure Numbers, U.S., 2011 – 2021	82
Figure 7-2: Facet Fixation Market, U.S., 2011 – 2021.....	85
Figure 7-3: Drivers and Limiters, Facet Fixation Market, U.S., 2014	88
Figure 7-4: Leading Competitors, Facet Fixation Market, U.S., 2014.....	93
Figure 8-1: MIS Interbody Procedure Numbers, U.S., 2011 – 2021.....	99
Figure 8-2: MIS Interbody Procedure Numbers, Breakdown by Approach, U.S., 2011 – 2021.....	101
Figure 8-3: MIS Interbody Procedure Numbers, Breakdown by Approach, U.S., 2011 – 2021.....	102
Figure 8-4: MIS Interbody Fusion Market by Segment, U.S., 2011 – 2021 (US\$M).....	104
Figure 8-5: Total MIS Interbody Fusion Market, U.S., 2011 – 2021.....	107
Figure 8-6: Minimally Invasive Posterior Lumbar Interbody Fusion Market, U.S., 2011 – 2021.....	110
Figure 8-7: Minimally Invasive Transforaminal Lumbar Interbody Fusion Market, U.S., 2011 – 2021..	113
Figure 8-8: Lateral Lumbar Interbody Fusion Market, U.S., 2011 – 2021	116
Figure 8-9: Drivers and Limiters, MIS Interbody Fusion Market, U.S., 2014.....	120
Figure 8-10: Leading Competitors, MIS Interbody Fusion Market, U.S., 2014	125
Figure 9-1: Total MIS Pedicle Screw Procedure Numbers, U.S., 2011 – 2021	129
Figure 9-2: MIS Pedicle Screw Procedure Numbers, Breakdown by Access Type, U.S., 2011 – 2021...	132

Figure 9-3: MIS Pedicle Screw Procedure Numbers, Breakdown by Access Type, U.S., 2011 – 2021...	133
Figure 9-4: MIS Pedicle Screw Market by Segment, U.S., 2011 – 2021 (US\$M).....	135
Figure 9-5: Total MIS Pedicle Screw Market, U.S., 2011 – 2021	138
Figure 9-6: Percutaneous Cannulated Pedicle Screw Market, U.S., 2011 – 2021	141
Figure 9-7: Retractor Cannulated Pedicle Screw Market, U.S., 2011 – 2021	144
Figure 9-8: Retractor Non-Cannulated Pedicle Screw Market, U.S., 2011 – 2021.....	147
Figure 9-9: Drivers and Limiters, MIS Pedicle Screw Market, U.S., 2014	151
Figure 9-10: Leading Competitors, MIS Pedicle Screw Market, U.S., 2014.....	155
Figure 10-1: MIS Sacroiliac Joint Fusion Procedure Numbers, U.S., 2011 – 2021.....	159
Figure 10-2: MIS Sacroiliac Joint Fusion Market, U.S., 2011 – 2021	163
Figure 10-3: Drivers and Limiters, MIS Sacroiliac Joint Fusion Market, U.S., 2014.....	166
Figure 10-4: Leading Competitors, MIS Sacroiliac Joint Fusion Market, U.S., 2014	169

LIST OF CHARTS

Chart 1-1: Minimally Invasive Surgery Spinal Implant Market, U.S., 2011 – 2021.....	1
Chart 1-2: Spinous Process Fixation Market Value, U.S., Select Years Between 2013 and 2021	2
Chart 1-3: Procedure Number Growth Rates, Facet Fixation Market, U.S., 2012 – 2017	3
Chart 1-4: Average Selling Price, Total MIS Interbody Fusion Market, U.S., 2012 – 2018	4
Chart 1-5: Average Selling Price vs. Units Sold vs. Market Value, MIS Pedicle Screw Market, U.S., 2014	5
Chart 1-6: Market Growth Rates, MIS Sacroiliac Joint Fusion Market, U.S., 2014 – 2019	6
Chart 1-7: Leading Competitors, Minimally Invasive Surgery Spinal Implant Market, U.S., 2014.....	7
Chart 3-1: Total Minimally Invasive Spinal Implant Market, U.S., 2011 – 2021 (US\$M)	27
Chart 3-2: Minimally Invasive Spinal Implant Market by Segment, U.S., 2011 – 2021	30
Chart 3-3: Minimally Invasive Spinal Implant Market Breakdown, U.S., 2014.....	31
Chart 3-4: Minimally Invasive Spinal Implant Market Breakdown, U.S., 2021.....	31
Chart 3-5: Minimally Invasive Spinal Implant Market Growth by Segment, U.S., 2011 – 2021	33
Chart 3-6: Leading Competitors, Minimally Invasive Spinal Implant Market, U.S., 2014	41
Chart 5-1: Spinous Process Fixation Procedure Numbers, U.S., 2011 – 2021	57
Chart 5-2: Facet Fixation Procedure Numbers, U.S., 2011 – 2021	59
Chart 5-3: Minimally Invasive Interbody Fusion Procedure Numbers, Breakdown by Approach, U.S., 2014	62
Chart 5-4: Minimally Invasive Interbody Fusion Procedure Numbers, Breakdown by Approach, U.S., 2021	62
Chart 5-5: Pedicle Screw Procedure Numbers, Breakdown by Access Type, U.S., 2014	65
Chart 5-6: Pedicle Screw Procedure Numbers, Breakdown by Access Type, U.S., 2021	65
Chart 5-7: MIS Sacroiliac Joint Fusion Procedure Numbers, U.S., 2011 – 2021	67
Chart 6-1: Spinous Process Fixation Procedure Numbers, U.S., 2011 – 2021	71
Chart 6-2: Spinous Process Fixation Market, U.S., 2011 – 2021	74
Chart 6-3: Leading Competitors, Spinous Process Fixation Market, U.S., 2014.....	79
Chart 7-1: Facet Fixation Procedure Numbers, U.S., 2011 – 2021	83
Chart 7-2: Facet Fixation Market, U.S., 2011 – 2021	86
Chart 7-3: Leading Competitors, Facet Fixation Market, U.S., 2014	93
Chart 8-1: MIS Interbody Procedure Numbers, U.S., 2011 – 2021	100

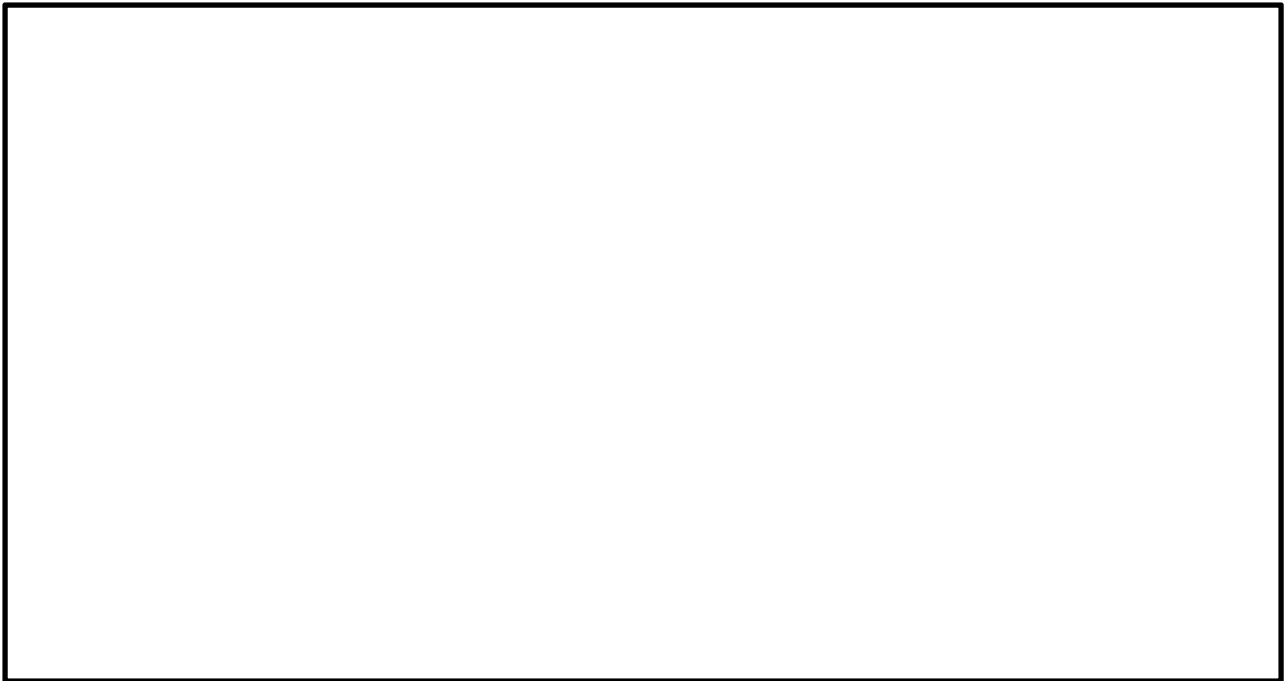
Chart 8-2: MIS Interbody Procedure Numbers, Breakdown by Approach, U.S., 2014	103
Chart 8-3: MIS Interbody Procedure Numbers, Breakdown by Approach, U.S., 2021	103
Chart 8-4: MIS Interbody Fusion Market by Segment, U.S., 2011 – 2021.....	105
Chart 8-5: MIS Interbody Fusion Market Breakdown, U.S., 2014	106
Chart 8-6: MIS Interbody Fusion Market Breakdown, U.S., 2021	106
Chart 8-7: Total MIS Interbody Fusion Market, U.S., 2011 – 2021	108
Chart 8-8: Minimally Invasive Posterior Lumbar Interbody Fusion Market, U.S., 2011 – 2021	111
Chart 8-9: Minimally Invasive Transforaminal Lumbar Interbody Fusion Market, U.S., 2011 – 2021 ..	114
Chart 8-10: Lateral Lumbar Interbody Fusion Market, U.S., 2011 – 2021	117
Chart 8-11: Leading Competitors, MIS Interbody Fusion Market, U.S., 2014.....	126
Chart 9-1: Total MIS Pedicle Screw Procedure Numbers, U.S., 2011 – 2021.....	130
Chart 9-2: MIS Pedicle Screw Procedure Numbers, Breakdown by Access Type, U.S., 2014	134
Chart 9-3: MIS Pedicle Screw Procedure Numbers, Breakdown by Access Type, U.S., 2021	134
Chart 9-4: MIS Pedicle Screw Market by Segment, U.S., 2011 – 2021	136
Chart 9-5: MIS Pedicle Screw Market Breakdown, U.S., 2014.....	137
Chart 9-6: MIS Pedicle Screw Market Breakdown, U.S., 2021.....	137
Chart 9-7: Total MIS Pedicle Screw Market, U.S., 2011 – 2021.....	139
Chart 9-8: Percutaneous Cannulated Pedicle Screw Market, U.S., 2011 – 2021	142
Chart 9-9: Retractor Cannulated Pedicle Screw Market, U.S., 2011 – 2021	145
Chart 9-10: Retractor Non-Cannulated Pedicle Screw Market, U.S., 2011 – 2021	148
Chart 9-11: Leading Competitors, MIS Pedicle Screw Market, U.S., 2014	156
Chart 10-1: MIS Sacroiliac Joint Fusion Procedure Numbers, U.S., 2011 – 2021	160
Chart 10-2: MIS Sacroiliac Joint Fusion Market, U.S., 2011 – 2021	163
Chart 10-3: Leading Competitors, MIS Sacroiliac Joint Fusion Market, U.S., 2014.....	170

3

U.S. MINIMALLY INVASIVE SPINAL IMPLANT MARKET OVERVIEW

3.1 Introduction

The spinal implant market is considered by many to be the most exciting and controversial segment of the orthopedics industry. This market has traditionally been a segment of the orthopedics market, but due to rapid growth and a large market size, many manufacturers view spine as a key business division separate from traditional orthopedics.



3.1.1 Spinous Process Fixation

Both plating systems as well as rod and screw systems used in traditional fusion procedures add bulk along the lateral aspect of the spine, which limits access to the pars and transverse processes of the spinal column. This complicates the removal of membranes and the placement of bone graft. As a result of the

limitations of plate and rod systems, there was a need for spinal stabilization devices that did not add bulk to the lateral aspect of the spine and did not limit access to the pars and transverse processes.

3.1.2 Facet Fixation

Percutaneous minimally invasive surgery (MIS) is the least invasive of all MIS procedures. These procedures are performed using small, needle-like, tubular instruments. The tubes act as a pathway for the insertion of screws or rods. All percutaneous systems use cannulated screws, which have a central cavity by which they are fed along a guidewire in the tube, allowing accurate implantation without directly viewing the surgical site.

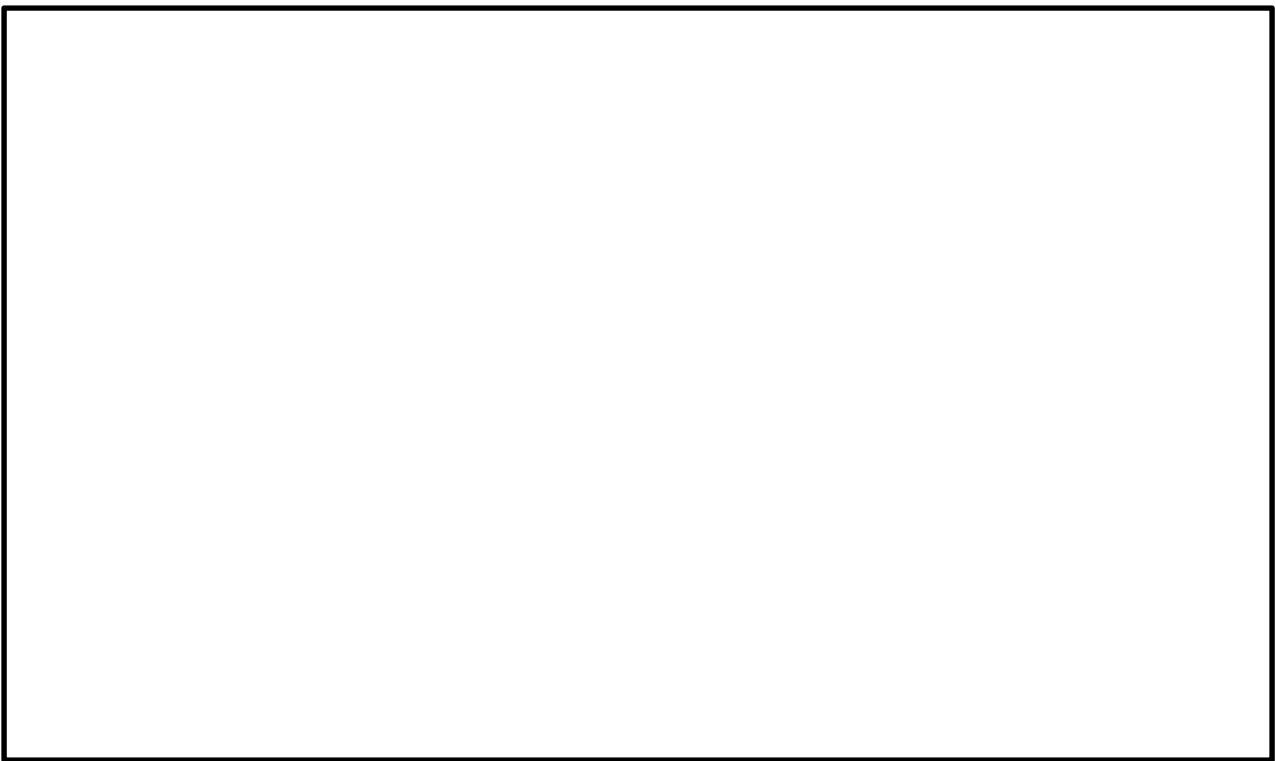
3.1.3 Minimally Invasive Interbody Fusion

Interbody (IB) devices are designed to replace the intervertebral discs of the spine, which enhances stability in the region and promotes fusion between the two adjacent vertebral bodies. These devices are threaded, allowing them to be used in conjunction with bone graft material. Over time, the packed graft is gradually replaced by natural bone, forming a solid piece. IB fusion procedures typically add a posterior fixation device to the associated level. These procedures are often referred to as 360° fusions, as surgeons will implant interbody devices from an anterior approach and flip the patient over to implant a posterior pedicle screw device. This combination increases the fusion success rate over an interbody fusion device implantation alone.



3.1.3.1 Minimally Invasive Transforaminal Lumbar Interbody Fusion

Transforaminal lumbar interbody fusion (TLIF) devices are implanted posterolaterally, or from the side. This approach avoids the exposure of nerve roots and posterior ligaments and is gaining popularity because it is less invasive, with fewer complications than PLIF procedures.



3.1.3.2 Minimally Invasive Posterior Lumbar Interbody Fusion

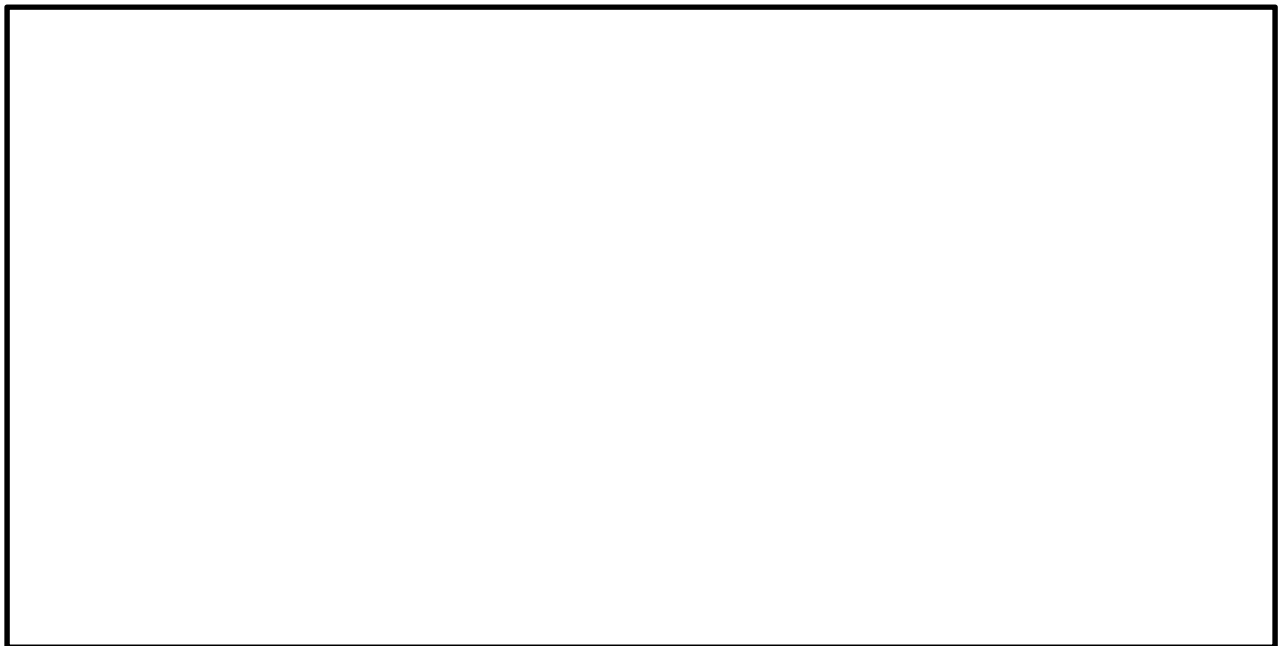
Minimally invasive posterior lumbar interbody fusion (MIPLIF) is a minimally invasive surgical technique that is performed in patients with lower back and radicular pain caused by degenerative disc disease (DDD), spondylolisthesis or disc herniation. This procedure typically takes about three hours and is performed from the back (posterior) with the patient on his or her stomach.





3.1.3.3 Lateral Lumbar Interbody Fusion

A number of newer techniques utilize a lateral approach in order to reach the spine. In 2014, more than ten lateral lumbar interbody fusion (LLIF) systems were available on the U.S. market, including NuVasive's popular *XLIF*[®], Medtronic's *DLIF*[®] and Alphatec Spine's *GLIF*[®].



3.1.4 Minimally Invasive Surgery (MIS) Pedicle Screws

Pedicle screws provide a means of stabilizing a spinal level during a fusion procedure. The screws do not fixate the levels, but act as firm anchor points that can then be connected with a rod. Pedicle screws can be placed at two or more consecutive spine levels; a short rod is subsequently implanted in order to connect the screws. The screw and rod construct prevents motion at the levels that are being fused.



3.1.4.1 Percutaneous MIS Systems



3.1.4.2 Retractor-Based MIS systems



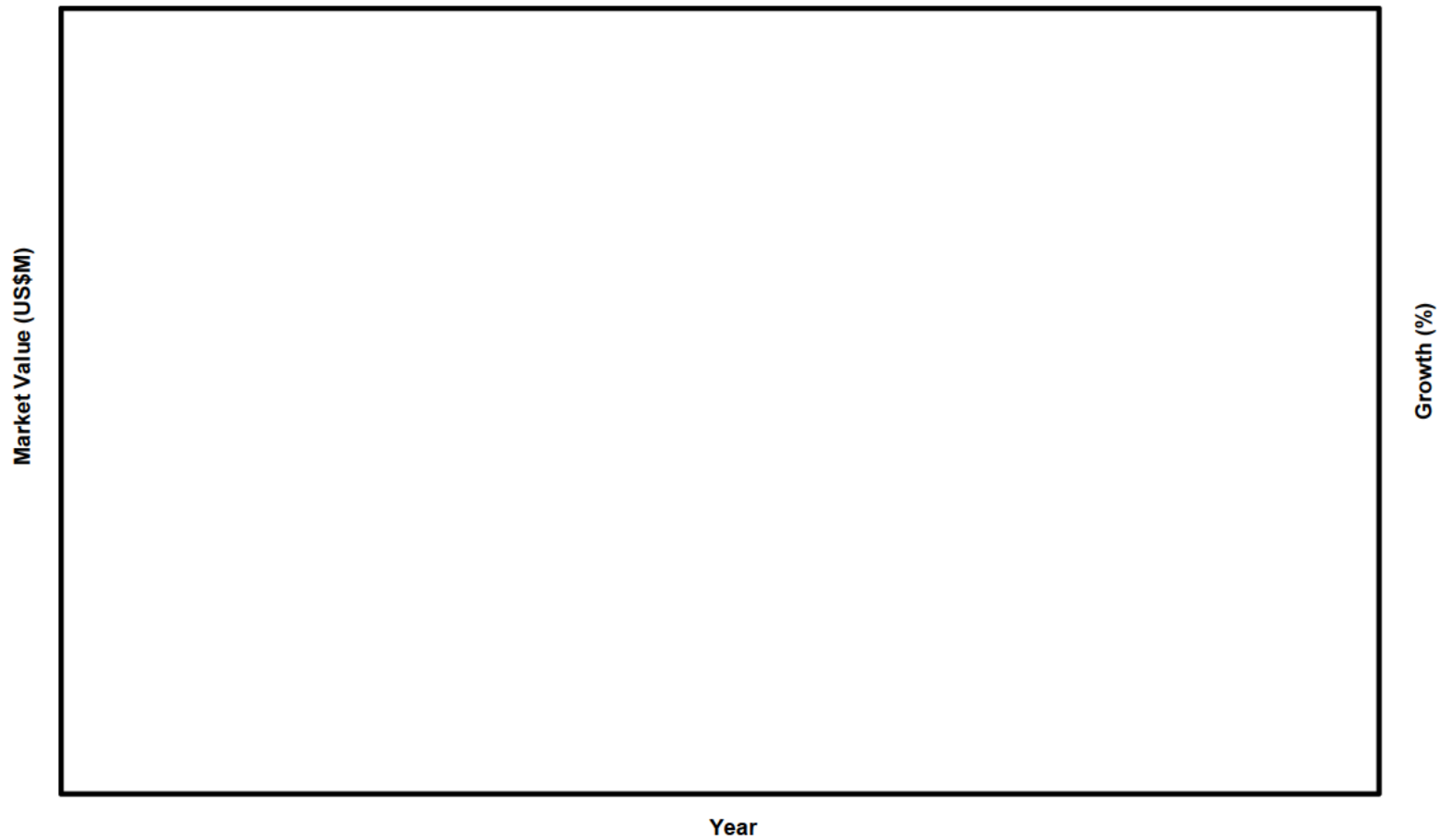
3.1.5 MIS Sacroiliac Joint Fusion

Sacroiliac (SI) joint fusion is the fusion of the SI joint, which is found between the sacrum and iliac bones in the pelvic area. Fusion of this joint is required when a patient is suffering from SI joint dysfunction (SIJD), which studies have shown to be responsible for up to **X%** of lower back pain cases. However, growth of this market has been limited due to controversial diagnosis methods and a lack of effective treatments with positive long-term clinical data.



--

Year	Total Market Value	Growth (%)
Source: iData Research Inc.		

Chart 3-1: Total Minimally Invasive Spinal Implant Market, U.S., 2011 – 2021 (US\$M)

Source: iData Research Inc.

3.3 Market by Segment

In 2014, the U.S. minimally invasive spinal implant market approached \$X, an increase of X% over the previous year. The market consists of five segments: spinous process fixation, facet fixation, MIS interbody fusion, MIS pedicle screws and MIS sacroiliac (SI) joint fusion. The MIS interbody fusion market represented the largest segment in 2014, with a value in excess of \$X. The second largest segment in 2014 was the MIS pedicle screw market, which was valued at \$X, followed by facet fixation over \$X, spinous process fixation at \$X and finally MIS SI joint fusion just below \$X.

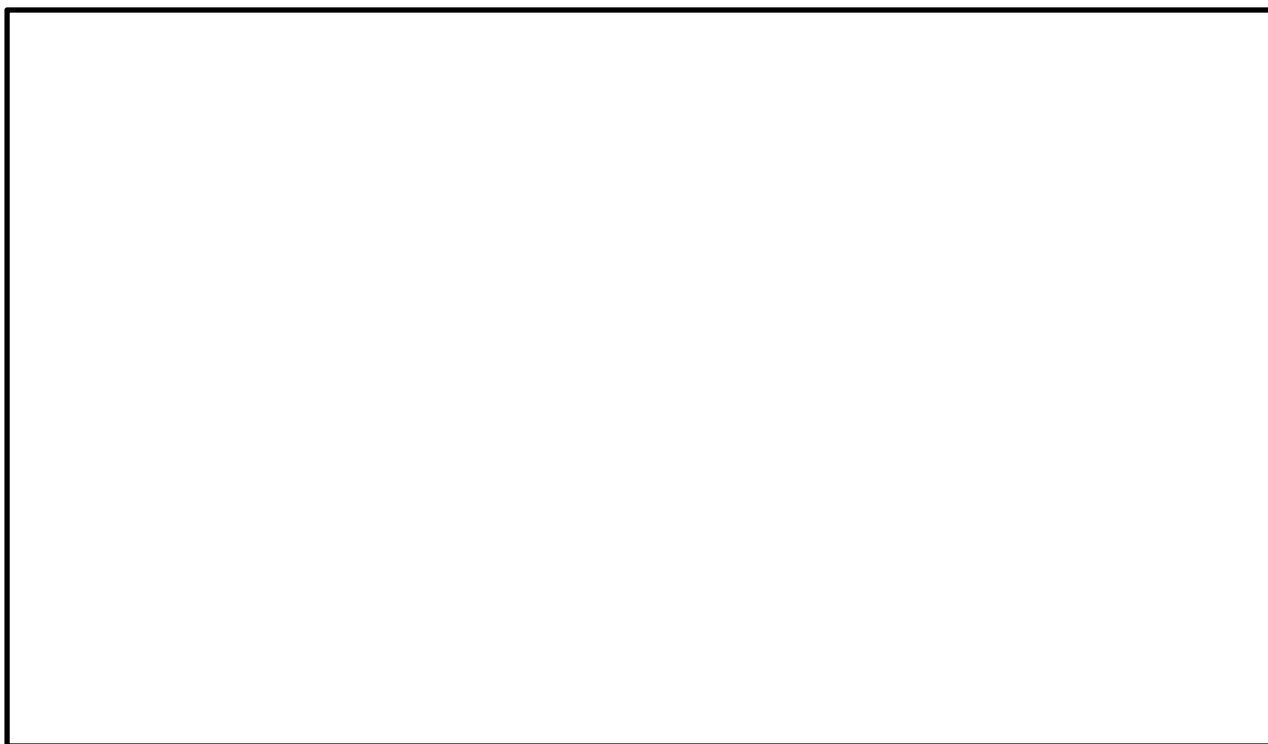
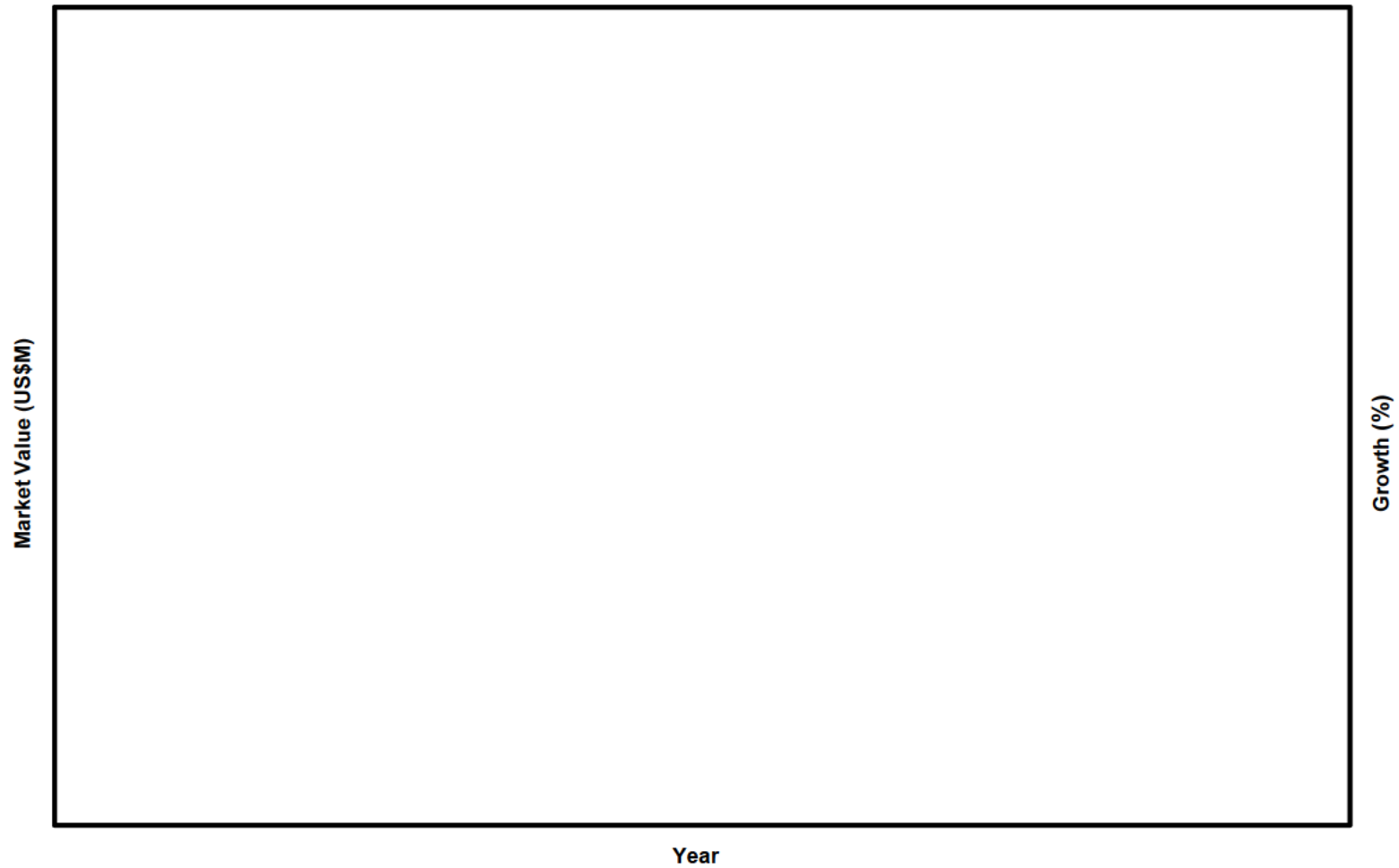


Figure 3-2: Minimally Invasive Spinal Implant Market by Segment, U.S., 2011 – 2021 (US\$M)

Year	Spinous Process Fixation Market	Facet Fixation Market	MIS Interbody Fusion Market	MIS Pedicle Screw Market	MIS Sacroiliac Joint Fusion Market	Total Market Value	Growth (%)
Source: iData Research Inc.							

Chart 3-2: Minimally Invasive Spinal Implant Market by Segment, U.S., 2011 – 2021

Source: iData Research Inc.

Chart 3-3: Minimally Invasive Spinal Implant Market Breakdown, U.S., 2014

Source: iData Research Inc.

Chart 3-4: Minimally Invasive Spinal Implant Market Breakdown, U.S., 2021

Source: iData Research Inc.

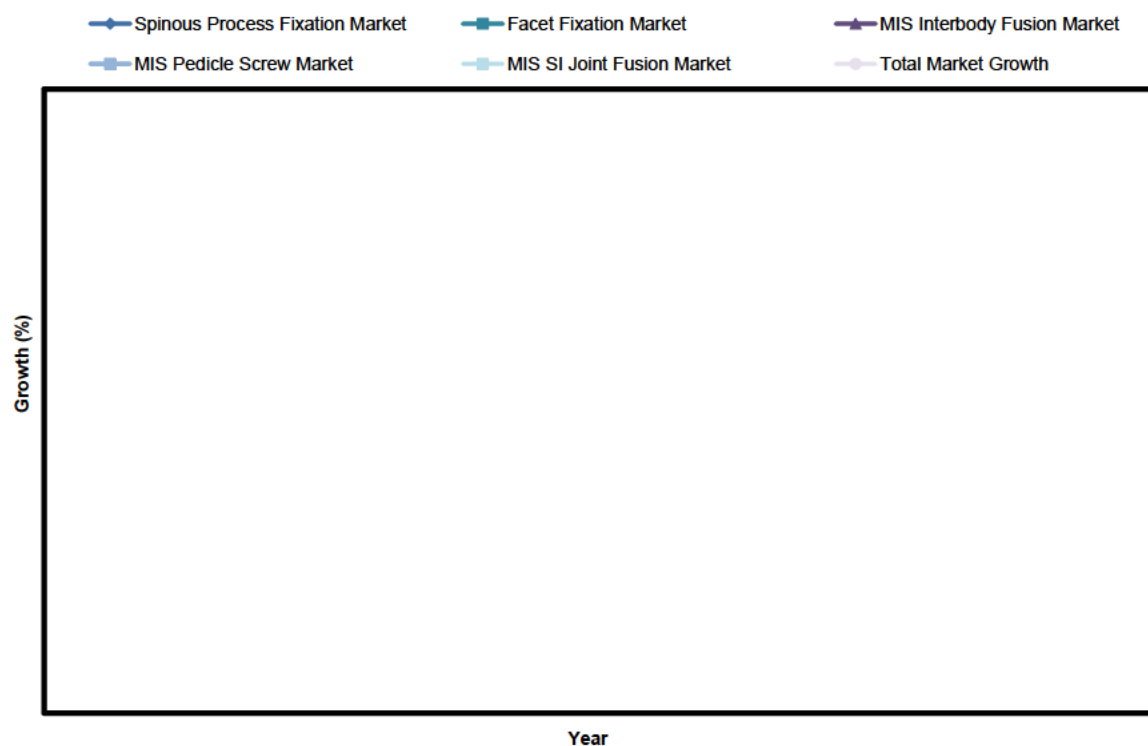
3.4 Trend Analysis by Segment

The fastest growing segment of the minimally invasive spinal implant market in 2014 was represented by spinous process fixation, which increased by **X%** over 2013. After emerging in 2005, this segment's growth has slowed down significantly in 2014 due to recent reimbursement changes that have affected almost half of the U.S. population. The segment will continue to be driven by the entrance of new competitors in the market, along with the growing acceptance of minimally invasive procedures among surgeons.



Figure 3-3: Minimally Invasive Spinal Implant Market Growth by Segment, U.S., 2011 – 2021

Year	Spinous Process Fixation Market	Facet Fixation Market	MIS Interbody Fusion Market	MIS Pedicle Screw Market	MIS Sacroiliac Joint Fusion Market	Total Market Growth
Source: iData Research Inc.						

Chart 3-5: Minimally Invasive Spinal Implant Market Growth by Segment, U.S., 2011 – 2021

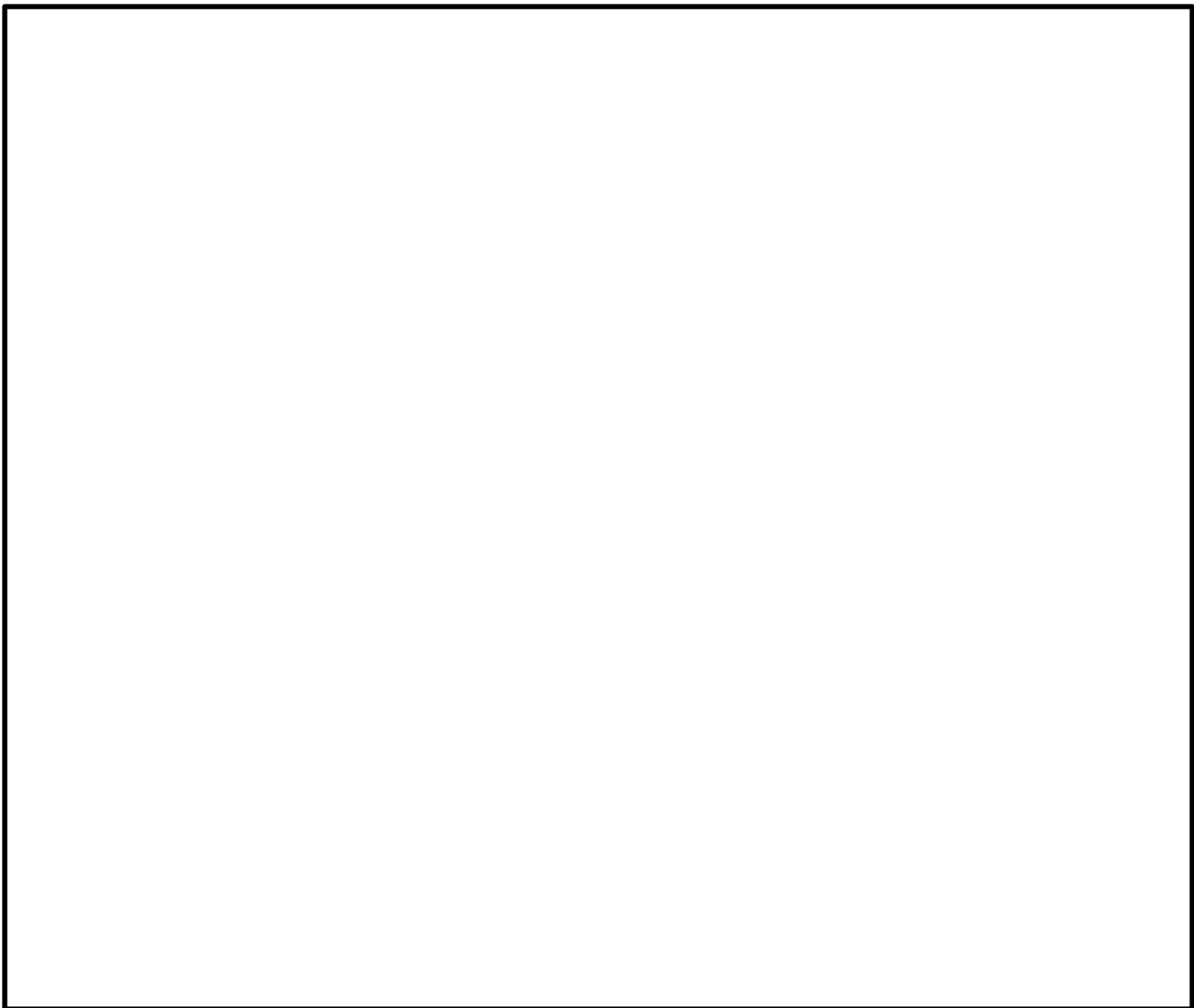
Source: iData Research Inc.

3.5 Drivers and Limiters

3.5.1 Market Drivers

Increase in Key Demographics

In 2014, the fastest growing population segment in the U.S. comprised those over the age of 65. This group represents the aging baby boomer generation. The majority of spinal fusions are performed to treat degenerative diseases that are often associated with age. The growing elderly population will increase the number of annual fusion procedures performed.



3.5.2 Market Limiters

Motion Preservation

Because MIS fusion is a segment within the total fusion market, factors that limit the growth of the total spinal fusion market will limit the MIS fusion market, including motion preservation devices. These devices offer an alternative to fusion that allows the preservation of motion in the indicated spinal segment. As more motion preservation devices, such as facet arthroplasty and nucleus replacement, emerge onto the U.S. market, the growth of the spinal fusion market will be increasingly limited by these devices. Although the MIS market may continue to grow within the total fusion market, it will eventually be limited by the general stagnation of spinal fusion that is expected over the forecast period as the market is cannibalized by motion preservation devices.

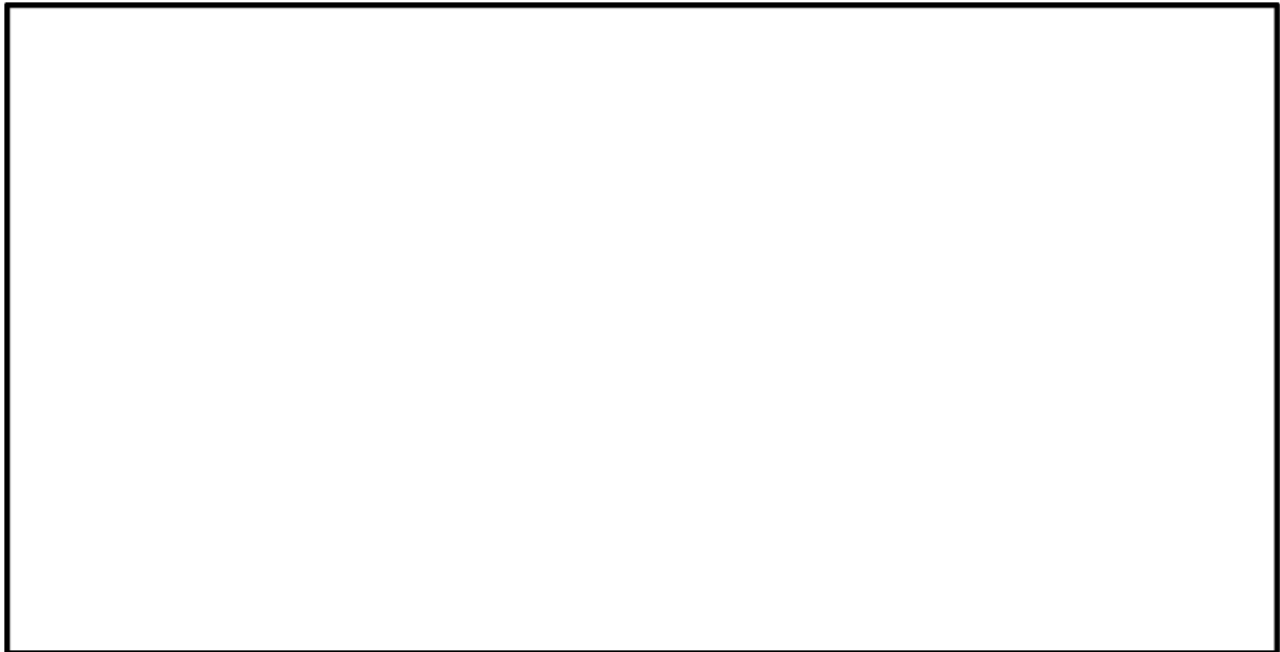


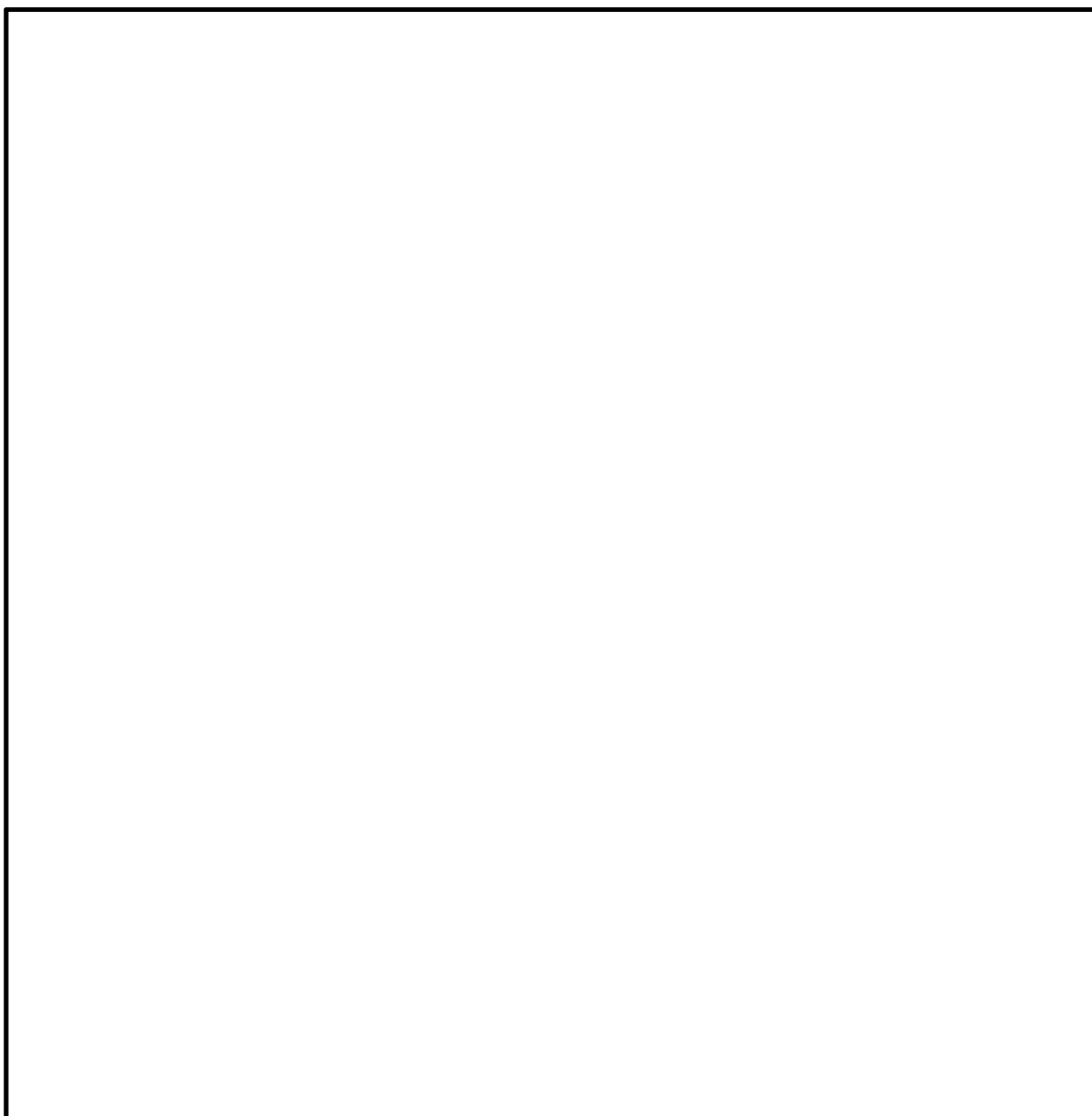
Figure 3-4: Drivers and Limiters, Minimally Invasive Spinal Implant Market, U.S., 2014

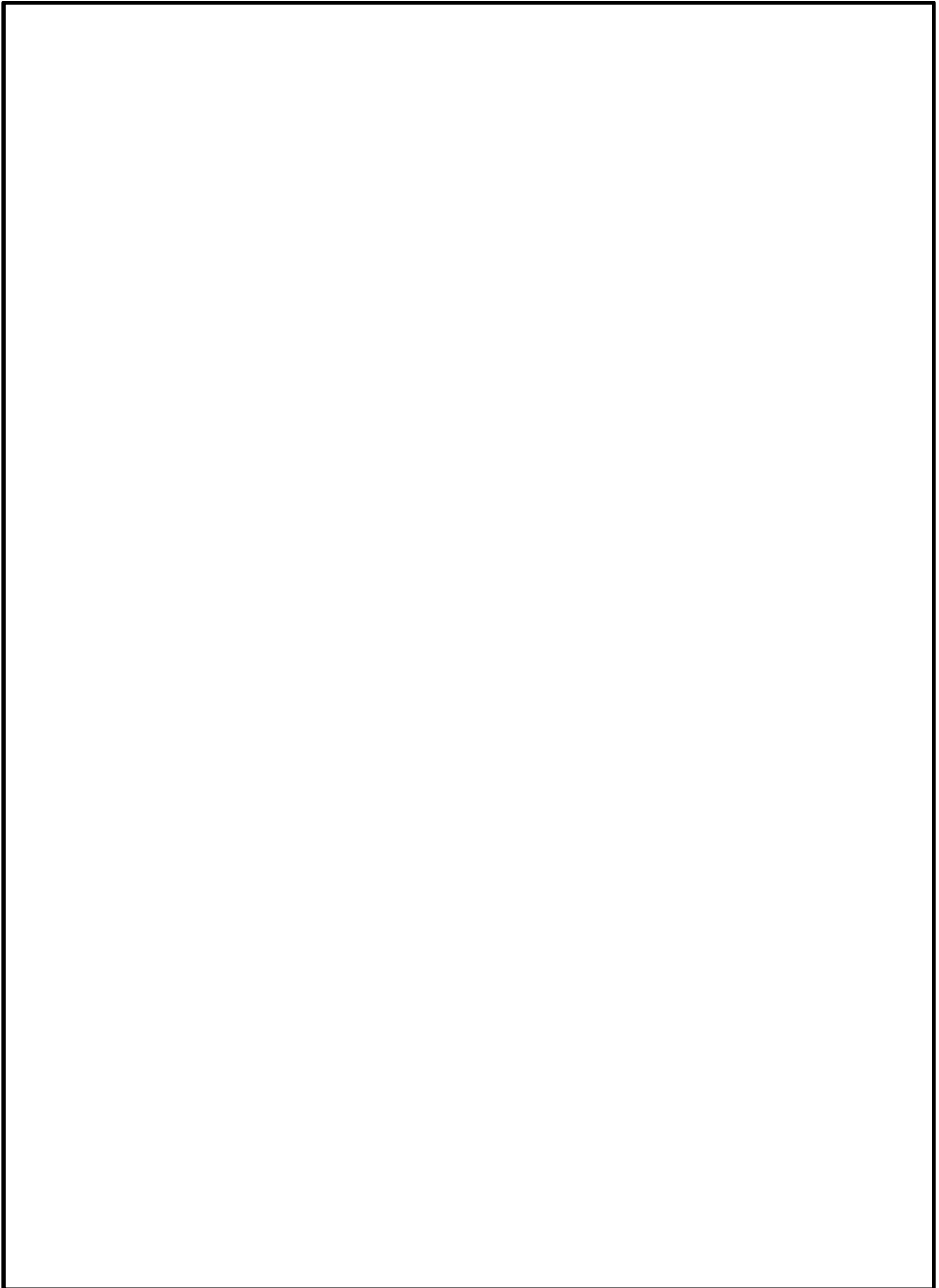
Market Drivers	Market Limiters
Source: iData Research Inc.	

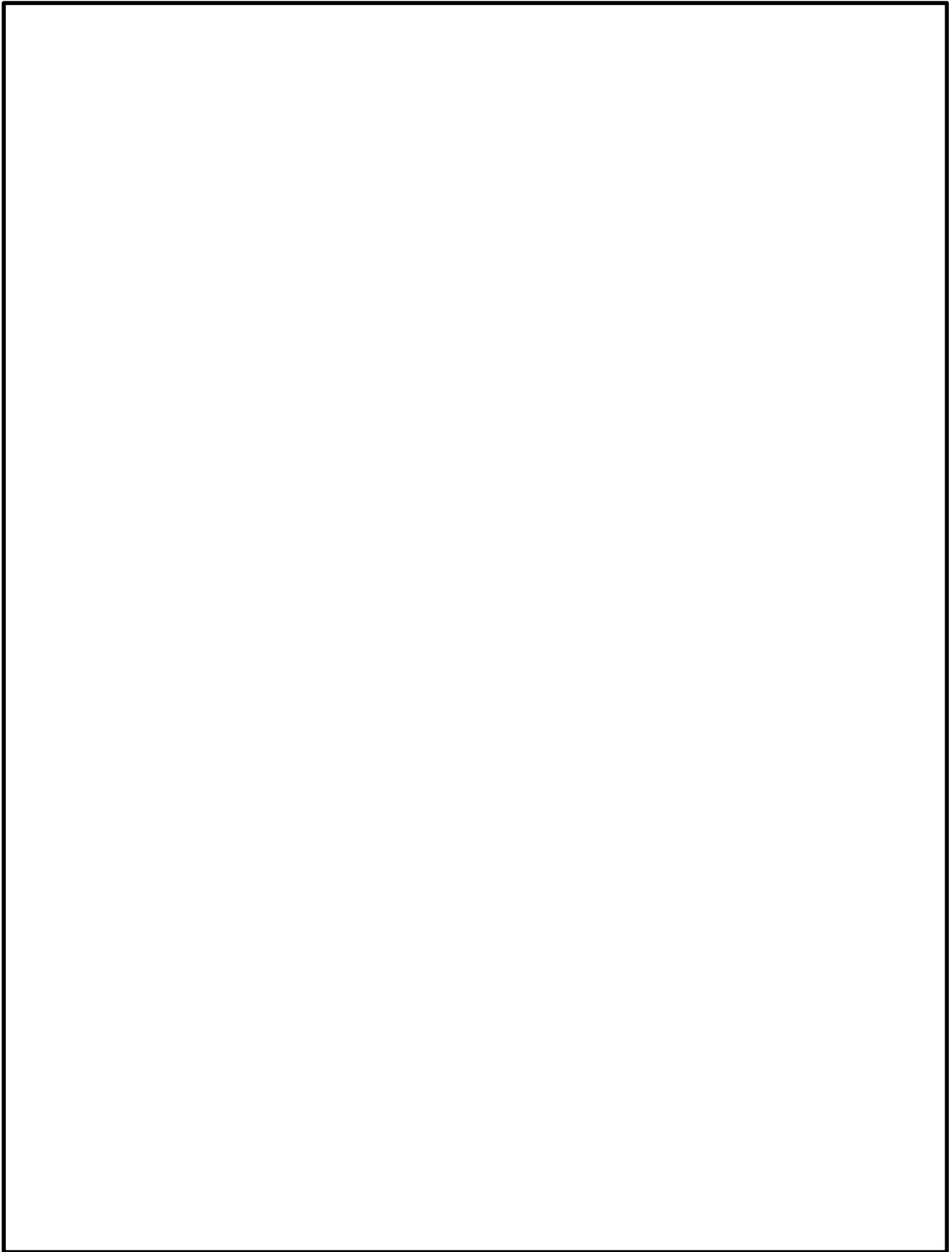
3.6 Competitive Analysis

Medtronic

In 2014, Medtronic led the U.S. MIS spinal implant market with a market share of **X%**. Medtronic was the leading competitor in the MIS interbody fusion and MIS pedicle screw markets with shares of **X%** and **X%** respectively. Medtronic held **X%** of the facet fixation market with their *ANCHOR FS™ Facet Fixation System*. The company also held a third leading market share of **X%** in the spinous process fixation market with its *CD HORIZON SPIRE™* device.







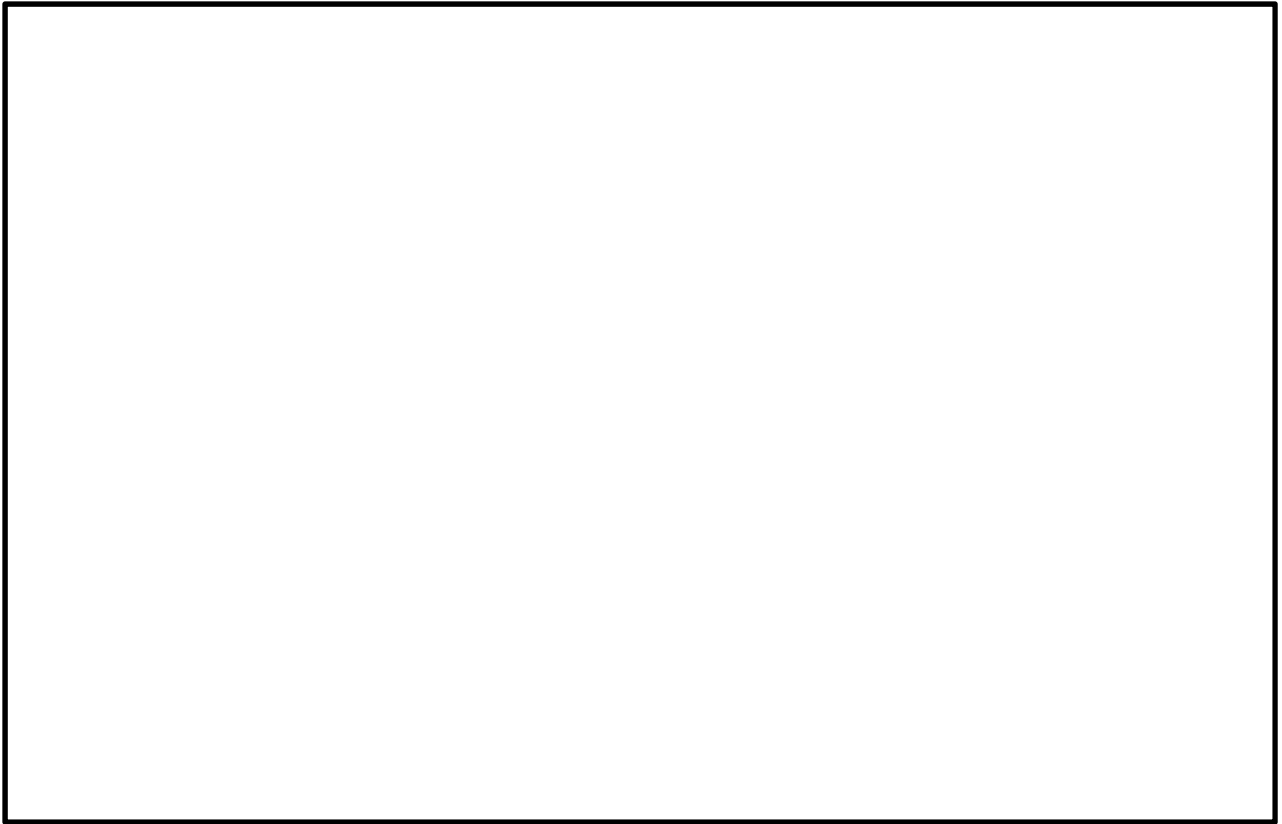


Figure 3-5: Leading Competitors, Minimally Invasive Spinal Implant Market, U.S., 2014

Company	Spinous Process Fixation Market	Facet Fixation Market	MIS Interbody Fusion Market	MIS Pedicule Screw Market	MIS Sacroiliac Joint Fusion Market	Total Market Share
Medtronic						
Source: iData Research Inc.						

Chart 3-6: Leading Competitors, Minimally Invasive Spinal Implant Market, U.S., 2014

Source: iData Research Inc.

3.7 Mergers and Acquisitions

Zimmer to Acquire Biomet

Zimmer announced the **\$X** acquisition of Biomet which is expected to close Q1 of 2015. Zimmer's absorption of Biomet will bring them access to multiple areas of the spine market. It will be interesting to see how the merger of two such large companies will play out in regards to the shift in market composition across the spine industry.

