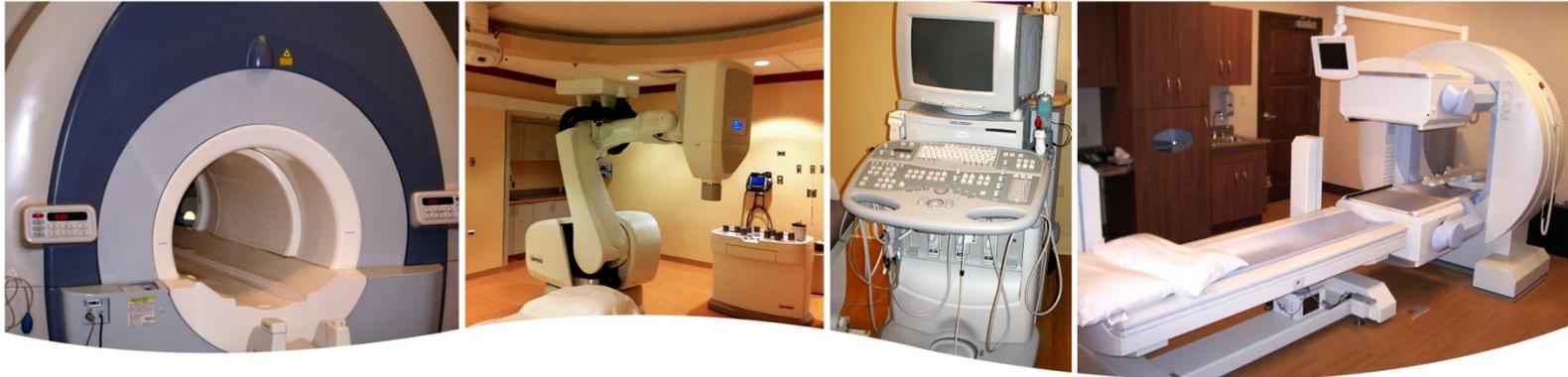


**EDWARD G DETWILER  
& ASSOCIATES LTD**

**The experts in tangible asset appraisals**



**Sample Excerpt from**

**RESEARCH REPORT**

**A STUDY OF THE ESTIMATED  
FUTURE VALUE OF  
MAMMOGRAPHY  
AND BONE DENSITOMETRY EQUIPMENT**

**August 2017**

**APPRAISALS • ARBITRATION • RESEARCH**



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**Mammography Overview**

Mammography is a low-dose x-ray procedure that allows visualization of the internal structure of the breast. Mammography screening can help detect breast cancers at an early stage, as it is highly accurate and generally detects 80-90% of the breast cancers in asymptomatic women. The American Cancer Society recommends mammograms every year for women starting at the age of 40, because studies show that mammograms can often spot tumors up to two years before they might be felt during a physical exam.

According to information provided by *Breastcancer.org*, about 1 in 8 U.S. women (about 12%) will develop invasive breast cancer over the course of her lifetime.

- In 2017, an estimated 255,180 new cases of invasive breast cancer are expected to be diagnosed in women in the U.S., along with 63,410 new cases of non-invasive (in situ) breast cancer.
- About 2,470 new cases of invasive breast cancer are expected to be diagnosed in men in 2017. A man's lifetime risk of breast cancer is about 1 in 1,000.
- Breast cancer incidence rates in the U.S. began decreasing in the year 2000, after increasing for the previous two decades. They dropped by 7% from 2002 to 2003 alone. One theory is that this decrease was partially due to the reduced use of hormone replacement therapy (HRT) by women after the results of a large study called the Women's Health Initiative were published in 2002. These results suggested a connection between HRT and increased breast cancer risk.
- About 40,610 women in the U.S. are expected to die in 2017 from breast cancer, though death rates have been decreasing since 1989. Women under 50 have experienced larger decreases. These decreases are thought to be the result of treatment advances, earlier detection through screening, and increased awareness.

There have been significant reductions in breast cancer mortality in recent years due to widespread screening and treatment advances. The U.S. Preventive Services Task Force (USPSTF) found convincing evidence of this when they reviewed randomized controlled trials for screening effectiveness. The review showed that:

- Mammographic screening reduces breast cancer mortality in women ages 39 to 69
- Data on screening mammography in older women are lacking
- Radiation exposure from mammography is low
- Adverse events are common but do not affect screening practices





- Screening leads to over-diagnosis rates of 1% to 10%
- False-positive results are more common in younger women
- Breast self-examination does not reduce mortality but does increase the rate of negative biopsies

## Mammography Vendors and Products

As of 2015, Hologic, Inc. (U.S.) led the global breast imaging market. GE Healthcare (U.K.), Siemens Healthcare (Germany), Philips Healthcare (Netherlands), Fujifilm Holdings Corporation (Japan), Gamma Medica, Inc. (U.S.), Toshiba Corporation (Japan), Sonocine, Inc. (U.S.), Aurora Imaging Technology, Inc. (U.S.), and Dilon Technologies, Inc. (U.S.) are some of the other key players in this market.

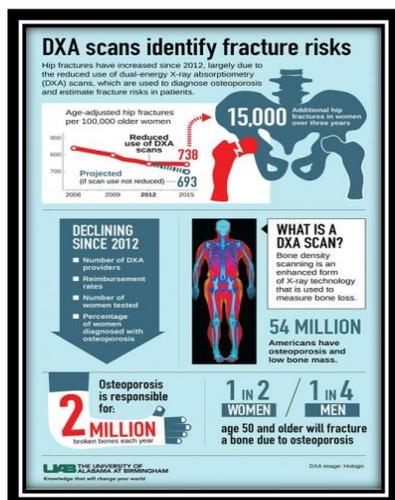
### GE Healthcare

The Senographe Essential is a full field digital mammography system (FFDM) with single exposure imaging capability. It features an enlarged detector that accommodates all sizes of breast images without degradation. It has digital capabilities designed to enhance workflow and provides 3D images for interventional mammography procedures. Senographe Essential has access to upgrades with SenoBright, SenoClaire, and Stereotaxy. Senographe Essential Stereotaxy provides accurate access to the breast lesion, allows optimal patient positioning, and enables an easy switch from full-field digital.

GE offers SenoBright CESM (Contrast-Enhanced Spectral Mammography) technology, which is designed as a follow-up diagnostic option for suspicious mammography screening results. It combines digital mammography, low- and high-energy x-rays, and a contrast agent, to automatically acquire two images per view: a standard mammographic image showing tissue density and a contrast-enhanced image with the background signal subtracted out.

\*\*\*\*\*Abbreviated\*\*\*\*\*

## Bone Densitometry Market Overview



Osteoporosis is a condition of the bones that leads to an increased risk of fracture. Osteoporosis causes the bone mineral density (BMD) to be reduced, causes the deterioration of bone micro-architecture, and creates a change in the amount and variety of proteins in bone. Osteoporosis and osteopenia (bone density that is lower than normal peak density but not low enough to be classified as osteoporosis) are threats to approximately 44 million Americans, or 55% of people 50 years and older. Research suggests that the disease largely affects women, and current estimates indicate that 10 million individuals have the disease, while another 34 million have low bone mass.

Osteoporosis is defined by the World Health Organization as a bone mineral density of 2.5 standard deviations or more below the mean peak bone mass average of young, healthy adults. This density is measured by dual-energy x-ray absorptiometry (DEXA) or bone density scanning, a

form of x-ray technology, with measurements taken from various body parts, including the spine, hip, femur, forearm, fingers, and heel.





The aging global population, increase in the number of osteoporosis patients, significant rise of bone-related metabolic conditions, and the need for early detection are all contributing to the growth of this market. In the United States, osteoporosis is the direct cause of more than 500,000 hospital admissions, 2.6 million physician visits and nearly 180,000 nursing home admissions. The International Society for Clinical Densitometry reports that the numbers will continue to increase with at least 3 million new fractures expected to occur annually by 2025. Over the past decade, prostate cancer treatment is utilizing bone densitometry technology for the diagnosis of vertebral bone mineral loss, and treatment has improved with increased diagnosis and drug therapies.

## **Bone Densitometry Vendors and Products**

### ***GE Healthcare***

GE's bone densitometry line all feature DEXA (Dual-energy X-ray Absorptiometry). Their DEXA Dual-energy X-ray Absorptiometry (DXA) is considered the most highly developed and most thoroughly validated technique for assessing bone mineral density, according to the World Health Organization's report on the *"Prevention and Management of Osteoporosis."* It can also determine fat distribution beyond the traditional body mass index, and is useful in scanning patients with conditions such as obesity, anorexia nervosa, cystic fibrosis, wasting syndrome and chronic renal failure.

The Lunar iDXA uses the latest DXA technology to help assess bone density, fracture risk, body composition, or pediatric development. Lunar iDXA's key features include:

- Narrow-angle fan beam technology with Multi-View Image Reconstruction (MVIR) that eliminates magnification errors
- Direct-to-digital detector improved accuracy
- Large scan window and high arm height to accommodate patients up to 450 pounds
- Bone health applications including BMD, vertebral fracture assessment, pediatrics, orthopedics, and others
- Body composition analysis

iDXA with Advance Package and iDXA with Pro Package are offered in the United States. The Advance Package offers the full complement of skeletal and metabolic health applications while the Pro Package allows for the future addition of optional applications.

Lunar Prodigy is a fan beam system with third generation DXA technology. This includes the use of narrow-angle fan-beam to eliminate magnification errors, direct to digital detector that improves image quality, and lower doses than some competitors. Prodigy comes with either a full-sized bed or a compact bed, to accommodate all patients. Currently GE offers three models of the Prodigy family:

- Prodigy Advance – offers a full spectrum of skeletal and metabolic health applications
- Prodigy Pro – offers an expanded skeletal feature set (with additional applications available as options)
- Prodigy Primo – offers core skeletal application (with workflow and efficiency features)

\*\*\*\*\*Abbreviated\*\*\*\*\*



Mammography Equipment and Bone Densitometry Product Lists



<b>Table 2</b>									
<b><u>Vendor and Product</u></b>	<b><u>Description</u></b>	<b><u>FMV</u></b> <b><u>1</u></b>	<b><u>FMV</u></b> <b><u>3</u></b>	<b><u>FMV</u></b> <b><u>5</u></b>	<b><u>FMV</u></b> <b><u>7</u></b>	<b><u>OLV</u></b> <b><u>1</u></b>	<b><u>OLV</u></b> <b><u>3</u></b>	<b><u>OLV</u></b> <b><u>5</u></b>	<b><u>OLV</u></b> <b><u>7</u></b>
<b><i>GE Healthcare</i></b>									
Lunar iDXA	High resolution system with latest DXA technology	50%	35%	20%	10%	35%	20%	10%	5%
Lunar Prodigy	Digital fan beam system	45%	30%	20%	10%	30%	15%	5%	5%
<b><u>Portable Densitometry Ultrasonometers</u></b>									
Lunar Achilles EXP II	Compact, cost effective ultrasonometer	45%	25%	15%	5%	35%	15%	5%	0%
Lunar Achilles InSight	Compact ultrasonometer with real-time imaging	45%	25%	15%	5%	35%	15%	5%	0%
<b><i>Hologic</i></b>									
Horizon	System for assessment of osteoporosis, obesity, and cardiovascular disease	55%	40%	30%	20%	40%	30%	20%	10%
Discovery	The most advanced system in the QDR Series	50%	35%	20%	10%	35%	20%	10%	5%



## Concepts of Value

*Fair Market Value* - The amount of money paid by a willing buyer to a willing seller, both aware of all relevant facts and neither under compulsion to buy or sell.

*Fair Market Value In Exchange* - The definition of this value is the amount, expressed in money, as of the appraisal date, that may be expected to exchange between a willing buyer and a willing seller with equity to both, neither under any compulsion to buy or sell, and both fully aware of all relevant facts. This is the estimated dollar amount that could be received if the equipment were to be sold to another end user for reinstallation in another location.

*Fair Market Value In Place and In Use* - Again this value builds on the above value by adding to it such costs as installation, transportation, rigging, selling expenses, commissions, taxes, etc. Because this value reflects the fact that the product is in use, it can be derived from all three approaches to value.

- *The cost approach* to determination of value begins with looking for the replacement cost of a new asset of the same or similar utility, then deducting all forms of depreciation to the subject asset, including physical (age, condition), technological obsolescence and economic factors external to the asset.
- *The income approach* capitalizes current net income or projected net cash flows and discounts those at a calculated rate to estimate current value. This approach works when the asset(s) can be identified as a separate business entity and income statements can be obtained or constructed. This is the least frequently applied approach to value in single-asset appraisals.
- *The market approach* uses market comparables as one would find in a real estate appraisal. In valuing high-technology equipment, this can be a real challenge, as values change rapidly and very little market data exists for equipment sales prices. Additionally, most sales of equipment are private and there are no available reliable market guides. Also, there may be other factors involved with the values seen in comparable sales, such as group discounts, unrealistic trade-ins and other factors not related to the actual value of the equipment.

*Forced Liquidation Value* - This value is not only reduced by the seller's compulsion to sell, but by the time frame in which the equipment must be sold. The sense of urgency causes the forced liquidation value to be the lowest above scrap value and is often forced by bankruptcy, foreclosure, default and other very negative conditions.

*Orderly Liquidation Value* - The price paid by a buyer to a seller with the seller under compulsion to sell. The key word here is compulsion. The seller may need to move to a new location, make space for new equipment, or the equipment is no longer needed due to a change in market focus or volume. This usually means the equipment will be sold to a used equipment broker or dealer to be removed from service, transported to a new location and reinstalled.

Needless to say, the costs involved in the moving process will greatly affect values. Once again, market values are sought as in the fair market value market approach.





*Residual Value* - This value is the projected value the lessor expects to receive from a lessee at the termination of a "fair market value" or operating lease. This value should fall somewhere between fair market value and orderly liquidation value and reflects the lessor's calculated expectation of the lessee's willingness to buy the equipment at its fair market value at the end of the lease. If the lessee elects not to buy, the lessor is likely to receive only the orderly liquidation value for the equipment.

