



MEDICAL IMAGING EQUIPMENT

CURRENT TRENDS

- Analysts expect the global magnetic resonance imaging (MRI) market to increase at a compound annual growth rate of 6% between 2021 and 2028.
- The MRI market is entering an upgrade cycle and will have higher resolution machines by 2024.
- As facilities update their technology, older machinery may become obsolete and lose value in the secondary domestic market, since the average lifespan of medical devices is only five to eight years.
- In the coming years, existing models will become obsolete because of improvements in superconducting magnets and more inter-operative and user-friendly machines that are faster and compatible with pacemakers.

PROJECTED VALUES (12-MONTH OUTLOOK)

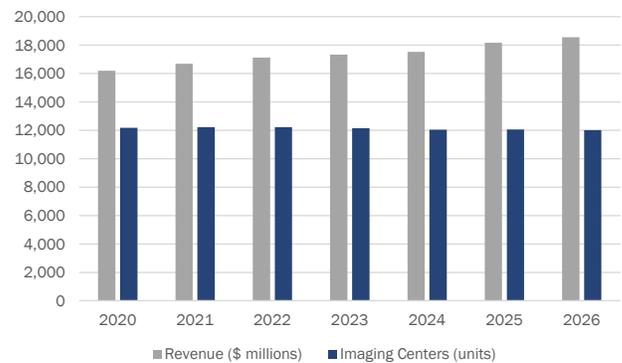


GORDON BROTHERS BY THE NUMBERS

\$20B+
healthcare assets
appraised & disposed

869+
healthcare engagements

DIAGNOSTIC IMAGING CENTERS IN THE U.S.



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INDUSTRY OUTLOOK: During the early days of the pandemic, facilities delayed most elective procedures, which decreased revenue for diagnostic imaging centers. However, volumes have largely returned to normal as patients and caregivers were vaccinated and infection rates decreased.

Gordon Brothers' research currently shows a strong market for MRI; however, there has been a downturn in the number of new imaging facilities opening in 2021. According to market participants, most recent buyer inquiries have come from facilities looking to expand or replace their existing machines.

As the number of adults aged 50 and older continues to rise, increasing 1.4% from 2015 through 2020, demand for computerized topography (CT) scanners is currently at an all-time high for dealers. Demand for MRI equipment is not as robust as for CT scanners, but it has shown significant improvement since the 2020 slowdown.

Major medical centers and hospitals in the U.S., Mexico and South America are increasingly accepting refurbished machines to reduce costs. Some global markets have seen decent demand, which offsets U.S. consolidation among rural and smaller providers.

Gordon Brothers expects an upgrade to higher resolution machines in one to three years because the market has stabilized, and patients are returning for routine and elective procedures. The average MRI machine age in the U.S. is more than 10 years, and every five to seven years there are advancements, or mid-cycle refreshes.

Every 10 years there are major model and machine improvements, and the latest generation of machines were introduced in 2019 and 2020. While the pandemic delayed many planned upgrades, forecasters expect a mid-cycle upgrade by 2024. The average MRI machine age has been trending higher over time so there is some latent demand for newer machines.

After an 11% downturn in 2020, forecasters expect diagnostic imaging center revenue in the U.S. to increase at an annualized rate of 2.3% through 2025, according to data from research firm IBISWorld. The global MRI market was valued at \$5.3 billion in 2020 and will increase at a compound annual growth rate of 6% between 2021 and 2028, according to data from research firm Grand View Research. The aging population and increase in the number of tests available for cancer and infectious diseases continue to drive industry growth.

MACHINE AGE IMPORTANT TO VALUE: The manufacture year is a good indicator of how much imaging equipment is worth on the secondary market. After five years, machines are typically worth no more than 25 to 40 cents on the cost dollar because every five to seven years, manufacturers release a new generation of machines. It is important to note throughout the approximate five- to seven-year window of a generational lifetime, the industry generally considers a machine to be "current" technology. However, as machines approach years five and six, users may contemplate purchasing new machinery since the service life will be longer and, from a

business and marketing standpoint, they may benefit from obtaining the most recently updated machinery.

Machines older than eight or nine years will likely end up in emerging markets such as Mexico or South America. While these second- or third-generation machines may be fully functional, they are no longer the state-of-the-art technology most medical facilities in the U.S. desire.

MAGNET STRENGTH, GRADIENT AND SLEW RATE DETERMINE BEST

USE: Magnets are the fundamental, most important components of MRI machines, and magnetic strength correlates with images' level of detail. Magnetic strength is commonly measured in Tesla, or T. Today's machines use magnets ranging from 0.35T to 3T in power; however, moderate strength magnets with 1.5T power most machines sold in the world today.

Within this category, machines are additionally refined by their gradient specifications, which define the machine's spatial resolution and imaging speed. Electrical currents create gradients when they pulse on and off during imaging. They reach different heights over different durations. A machine's slew rate is calculated by dividing the gradient strength by the rise time, or the time to reach that strength, and is measured in Tesla per meter per second, or T/m/s. High-field superconducting machines achieve slew rates of approximately 150 to 200 T/m/s; superconducting open scanners typically range from 100 to 120 T/m/s; and lower-field permanent scanners feature 50 T/m/s. The combination of strong gradients and high slew rates means thinner slices, which are important for cardiac and brain imaging. However, other specialties, such as orthopedics, do not have such strict performance requirements. Appraisers must consider these technical specifications when determining whether a machine is marketable.

COILS ADD VALUE: Coils act as antennae for MRI systems and broadcast the radiofrequency (RF) signal to the patient and receive the return signal. There are two classes of RF coils: volume coils and surface coils. Volume coils transmit and receive signals over large volumes while surface coils are designed to scan smaller regions. Examples include specialized extremity coils, which produce high-resolution images for wrists, shoulders, feet and fingers and head coils, which enable faster brain scans with parallel imaging. An array of coils can increase an MRI system's value. Lenders should be aware of coil types included in their collateral. Coils are more valuable when sold with a full MRI system.

LATEST SOFTWARE DESIRED: While an MRI machine's physical characteristics are important, they mean little without sophisticated software to operate the equipment. Some companies refuse to service machines unless the software is up to date. Upgrades can be very expensive, so MRIs operating current technology will fetch the highest prices. Even an older machine running the latest software can be quite valuable. Lenders should inquire with borrowers about their maintenance practices for upgrades.

LOGISTICS CAN ADD UP: Prospective buyers on the secondary market must consider significant rigging and transportation costs when purchasing used machines. De-installation is complicated and must be performed by a trained professional, who may charge \$15,000 to \$20,000 per machine, plus additional costs for building removal. Installation involves a variety of highly technical tasks that require specialized expertise and sensitive and costly tools. Removal, rigging, transportation and installation costs can total \$75,000 to \$100,000, or more, per machine.

The Expert: Will Monto



Will Monto has been an expert in the appraisal industry for over 15 years, specializing in machinery and equipment valuations. His appraisals have been used for asset-based financing, mergers and acquisitions and tax and litigation support. Read his full bio [here](#).



Gordon Brothers

GORDONBROTHERS.COM
+1.617.426.3233