

RIDER Lung CT

Summary

The RIDER Lung CT collection was constructed as part of a study to evaluate the variability of tumor unidimensional, bidimensional, and volumetric measurements on same-day repeat computed tomographic (CT) scans in patients with non-small cell lung cancer.

Thirty-two patients with non-small cell lung cancer, each of whom underwent two CT scans of the chest within 15 minutes by using the same imaging protocol, were included in this study. Three radiologists independently measured the two greatest diameters of each lesion on both scans and, during another session, measured the same tumors on the first scan. In a separate analysis, computer software was applied to assist in the calculation of the two greatest diameters and the volume of each lesion on both scans. Concordance correlation coefficients (CCCs) and Bland-Altman plots were used to assess the agreements between the measurements of the two repeat scans (reproducibility) and between the two repeat readings of the same scan (repeatability).

The reproducibility and repeatability of the three radiologists' measurements were high (all CCCs, 0.96). The reproducibility of the computer-aided measurements was even higher (all CCCs, 1.00). The 95% limits of agreements for the computer-aided unidimensional, bidimensional, and volumetric measurements on two repeat scans were (7.3%, 6.2%), (17.6%, 19.8%), and (12.1%, 13.4%), respectively. Chest CT scans are well reproducible. Changes in unidimensional lesion size of 8% or greater exceed the measurement variability of the computer method and can be considered significant when estimating the outcome of therapy in a patient.

About the RIDER project

The Reference Image Database to Evaluate Therapy Response (RIDER) is a targeted data collection used to generate an initial consensus on how to harmonize data collection and analysis for quantitative imaging methods applied to measure the response to drug or radiation therapy. The National Cancer Institute (NCI) has exercised a series of contracts with specific academic sites for collection of repeat "coffee break," longitudinal phantom, and patient data for a range of imaging modalities (currently computed tomography [CT] positron emission tomography [PET] CT, dynamic contrast-enhanced magnetic resonance imaging [DCE MRI], diffusion-weighted [DW] MRI) and organ sites (currently lung, breast, and neuro). The methods for data collection, analysis, and results are described in the new Combined RIDER White Paper Report (Sept 2008):

- [RIDER White Paper: Combined contracts report \(Sept 2008\) PDF](#)





The long term goal is to provide a resource to permit harmonized methods for data collection and analysis across different commercial imaging platforms to support multi-site clinical trials, using imaging as a biomarker for therapy response. Thus, the database should permit an objective comparison of methods for data collection and analysis as a national and international resource as described in the first RIDER white paper report (2006):

- [RIDER White Paper: Executive Summary PDF](#)
- [RIDER White Paper: Editorial in Nature.com](#)

Data Access

Data Access

Click the **Download** button to save a ".tcia" manifest file to your computer, which you must open with the [NBIA Data Retriever](#). Click the **Search** button to open our Data Portal, where you can browse the data collection and/or download a subset of its contents.

Data Type	Download all or Query/Filter
Images (DICOM, 7.55GB)	 
DICOM Metadata Digest (CSV)	
Lesion Notes (XLS)	

Click the Versions tab for more info about data releases.

Third Party Analyses of this Dataset

TCIA encourages the community to [publish your analyses of our datasets](#). Below is a list of such third party analyses published using this Collection:

- [QIN multi-site collection of Lung CT data with Nodule Segmentations](#)
- [RIDER Lung CT Segmentation Labels from: Decoding tumour phenotype by noninvasive imaging using a quantitative radiomics approach](#)

Detailed Description

Detailed Description

Collection Statistics	
Modalities	CT
Number of Participants	32
Number of Studies	46
Number of Series	63
Number of Images	15,419
Image Size (GB)	7.55

Citations & Data Usage Policy

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Users of this data must abide by the [Creative Commons Attribution 3.0 Unported License](#) under which it has been published. Attribution should include references to the following citations:

Data Citation

Zhao, Binsheng, Schwartz, Lawrence H, & Kris, Mark G. (2015). Data From RIDER_Lung CT. The Cancer Imaging Archive. DOI: [10.7937/K9/TCIA.2015.U1X8A5NR](https://doi.org/10.7937/K9/TCIA.2015.U1X8A5NR)

Publication Citation

Zhao, B., James, L. P., Moskowitz, C. S., Guo, P., Ginsberg, M. S., Lefkowitz, R. A., Qin, Y. Riely, G.J., Kris, M.G., Schwartz, L. H. (2009, July). Evaluating Variability in Tumor Measurements from Same-day Repeat CT Scans of Patients with Non-Small Cell Lung Cancer 1 . Radiology. Radiological Society of North America (RSNA). DOI: [10.1148/radiol.2522081593](https://doi.org/10.1148/radiol.2522081593) (paper)

TCIA Citation

Clark K, Vendt B, Smith K, Freymann J, Kirby J, Koppel P, Moore S, Phillips S, Maffitt D, Pringle M, Tarbox L, Prior F. **The Cancer Imaging Archive (TCIA): Maintaining and Operating a Public Information Repository**, Journal of Digital Imaging, Volume 26, Number 6, December, 2013, pp 1045-1057. DOI: [10.1007/s10278-013-9622-7](https://doi.org/10.1007/s10278-013-9622-7)




Other Publications Using This Data

TCIA maintains [a list of publications](#) which leverage our data. If you have a publication you'd like to add please [contact the TCIA Helpdesk](#).

1. Radiomics of Lung Nodules: A Multi-Institutional Study of Robustness and Agreement of Quantitative Imaging Features. DOI:[10.18383/j.tom.2016.00235](https://doi.org/10.18383/j.tom.2016.00235)
2. Textural Analysis of Tumour Imaging: A Radiomics Approach. <https://lib.ugent.be/catalog/rug01:002367219>

Versions

Version 2 (Current): Updated 2014/11/14

Data Type	Download all or Query/Filter
Images (DICOM, 7.55GB)	 
DICOM Metadata Digest (CSV)	

It was brought to our attention that the RIDER-8509201188 patient contained 2 identical image series rather than the correct secondary/repeat series. The duplicate series has been removed (UID: 1.3.6.1.4.1.9328.50.1.64033480205396366773922006817138551096), but we are unable to obtain the correct series at this point.

Version 1: Updated 2012/10/18

Initial upload of data set.