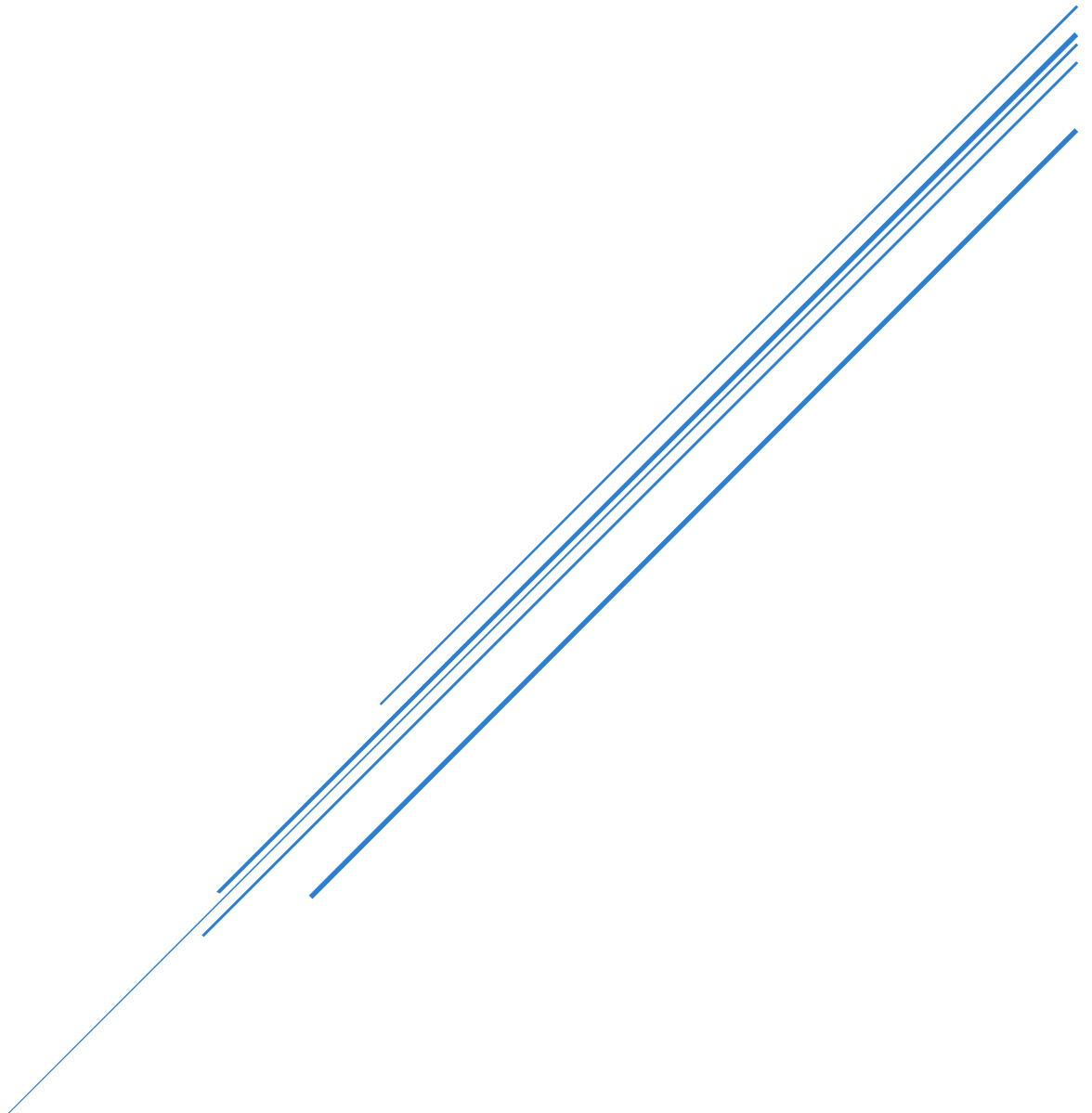


# MOMA ART EXPLORER TOOL

Project Report



Manthan Pandey

# INTRODUCTION

The MoMA Art Explorer Tool is an interactive, Excel-based dashboard designed to provide a dynamic and engaging way to explore the extensive artwork collection of the Museum of Modern Art (MoMA) in New York City. Developed as part of a guided data analysis project, this tool demonstrates the application of advanced Excel functionalities — including data cleaning, transformation, dependent dropdown lists, dynamic filtering, and image embedding — to solve a real-world problem faced by museum curators and researchers.

The Museum of Modern Art maintains a vast collection of over 157,000 artworks, encompassing a wide variety of artists, mediums, classifications, and historical periods. Managing, searching, and analyzing this large dataset can be challenging, especially when a curator needs to quickly locate an artist's earliest work after a certain date, filter results by nationality, or compare artistic timelines.

The MoMA Art Explorer Tool was created to address these challenges. By integrating multiple Excel features into a single user-friendly interface, the tool enables curators, art historians, and researchers to:

- Filter the dataset by Nationality, Artist, and Minimum Year of Creation.
- Instantly retrieve the earliest qualifying artwork based on user criteria.
- View detailed metadata such as title, year, medium, classification, dimensions, department, acquisition date, and display location.
- See the artwork image embedded directly in the dashboard for immediate visual reference.

Beyond its functional use, this project serves as a showcase of professional data analysis practices in Excel. It emphasizes:

- The importance of thorough data preparation before analysis.
- Automation of lookup processes for handling large datasets.
- Creation of interactive and accessible tools that make complex datasets easy to navigate for non-technical users.

Through this project, the MoMA dataset was transformed from a static, text-heavy collection of records into an interactive exploration platform, bridging the gap between raw data and practical curatorial decision-making.

## PROJECT OBJECTIVES

The project was designed to achieve the following core objectives:

- **Clean & Prepare the Data** – Consolidate artist information, extract accurate creation dates, and standardize fields for analysis.
- **Extract Artist Information** – Create dynamic, dependent dropdown menus for Nationality and Artist, and calculate key metrics such as artwork counts and earliest/latest display dates.
- **Display Detailed Artwork Information** – Filter and present comprehensive details for the earliest qualifying artwork, including an embedded image.

## DATASET OVERVIEW

**Dataset Name:** MoMA Collection

**File Type:** CSV (compiled into Excel workbook)

**Structure:** Multiple related tables

**Number of Records:** 157,630

**Number of Fields:** 30

**Key Fields:** Title, Artist, Date, Medium, Dimensions, Classification, Department, DateAcquired, ImageURL, OnView, ConstituentID.

**Notable Issues:** Missing or inconsistent dates, artworks without curator approval, multiple artist IDs for a single artwork.

# METHODOLOGY

## 1. Data Cleaning & Preparation

- **Artist Name Extraction:**
  - Used XLOOKUP to map ConstituentID from Artworks to artist names from Artists sheet.
  - For artworks with multiple IDs, applied TEXTSPLIT to separate IDs, converted text to numbers, and combined results with TEXTJOIN to create a single cell containing all artist names.
- **Creation Date Standardization:**
  - Created a CleanDate column using REGEXEXTRACT to capture the first four numeric characters from the Date field.
  - Converted results to numeric format and manually corrected invalid years.
- **OnView Column Cleaning:**
  - Removed “MoMA” prefix, quotation marks, and extra characters using Find & Replace.

## 2. Artist Information Extraction

- **Nationality Dropdown:**
  - Generated unique, alphabetically sorted nationality list from Artists sheet using:  
`=DROP(SORT(UNIQUE(Artists!D2:D662)), -1)`
  - Applied data validation to create the primary dropdown.
- **Artist Dropdown (Dependent List):**
  - Used FILTER to return artists based on the selected nationality, sorted alphabetically.
- **Artwork Count:**
  - Applied COUNTIFS with wildcards to count artworks for the selected artist, accounting for multiple artist names in a cell.
- **Earliest & Latest Dates:**
  - Used MINIFS and MAXIFS with wildcards to identify the first and last creation years for the selected artist.

### 3. Displaying Artwork Details

- **Filtering Artworks:**
  - Used FILTER + SEARCH to extract artworks for the selected artist.
  - Incorporated user-input Min Year into filter logic for dynamic control.
- **Earliest Artwork Selection:**
  - Applied SORT on CleanDate and used TAKE to retrieve only the earliest artwork.
  - Transposed data for better readability.
- **Image Embedding:**
  - Used IMAGE function with ImageURL to display the artwork thumbnail within the dashboard.
  - Enlarged images by merging cells.

## KEY EXCEL FUNCTIONS USED

**Lookup & Join:** *XLOOKUP, TEXTSPLIT, TEXTJOIN*

**Data Cleaning:** *REGEXEXTRACT, Find & Replace*

**Data Validation:** *UNIQUE, SORT, DROP, FILTER*

**Metrics Calculation:** *COUNTIFS, MINIFS, MAXIFS*

**Data Presentation:** *HSTACK, TAKE, TRANSPOSE*

**Image Display:** *IMAGE*

## HOW THE TOOL WORKS

The MoMA Art Explorer Tool is designed with an intuitive, step-by-step workflow that allows the curator or user to quickly explore artworks based on nationality, artist, and creation year.

- **Step 1 – Select Nationality**
  - Use the Nationality Dropdown to choose a country or nationality from the alphabetically sorted list.
  - This selection dynamically filters the available artists in the next dropdown.
- **Step 2 – Select Artist**
  - Once a nationality is chosen, the Artist Dropdown automatically updates to show only artists from that nationality.
  - Select an artist to view:
    - Total number of artworks currently on display.
    - The earliest and latest creation years for their displayed works.
- **Step 3 – Set Minimum Year**
- Enter a Minimum Year in the input field.
- This acts as a filter, ensuring only artworks created after or in that year are considered.
- **Step 4 – View Earliest Artwork Details**
  - The tool automatically identifies the earliest artwork that meets the criteria (nationality, artist, minimum year).
  - Displays the following details for that artwork:
    - Title
    - Year Created (CleanDate)
    - Medium
    - Dimensions
    - Classification
    - Department
    - Date Acquired
    - OnView Location
- **Step 5 – View Artwork Image**
  - The tool embeds the actual image of the artwork directly in the dashboard.
  - The image is scaled to fit the display area, offering a quick visual reference.
- **Example Usage:**
  - Nationality: Mexican

- Artist: Diego Rivera
- Minimum Year: 1900
- Result: Displays Cubist Landscape (earliest qualifying artwork) along with its details and image.

## FINAL OUTPUT & FEATURES

The completed tool allows the curator to:

- Select a Nationality and dynamically filter artists.
- Select an Artist to see:
  - Total artworks on display.
  - Earliest and latest creation years.
- Enter a Minimum Year to further filter results.
- View detailed information on the earliest qualifying artwork:
  - Title
  - Year (CleanDate)
  - Medium
  - Dimensions
  - Classification
  - Department
  - Acquisition Date
  - OnView Location
  - Embedded Image

**Validation Example:** For Mexican artist Diego Rivera, the earliest artwork on display is Cubist Landscape.

## INSIGHTS & LEARNINGS

- Advanced Excel functions like TEXTSPLIT, TEXTJOIN, and REGEXEXTRACT are powerful for handling messy multi-ID data.
- Dependent dropdowns improve dashboard interactivity for non-technical users.
- Incorporating images directly in Excel creates a richer user experience.
- Data cleaning, especially for dates, is critical before applying filters and lookups.

## CONCLUSION

The MoMA Art Explorer Tool successfully transforms a large, complex museum dataset into an intuitive and interactive platform that can be used by curators, researchers, and art enthusiasts to explore the Museum of Modern Art's vast collection with ease. Through the strategic use of advanced Excel features — including data cleaning functions, dynamic dropdowns, conditional filtering, and embedded images — the tool bridges the gap between static records and actionable insights.

From a functional standpoint, the tool streamlines the process of identifying and analyzing an artist's earliest work on display after a specified date, filtered by nationality. This eliminates the need for time-consuming manual searches and ensures that relevant information is delivered quickly, accurately, and in a visually engaging format. By embedding images of the artworks directly into the dashboard, it enhances the curator's ability to connect the data with the actual piece, fostering a deeper appreciation and contextual understanding of the collection.

From a technical perspective, the project highlights the power of Excel as more than just a spreadsheet tool — demonstrating its capabilities as a robust data analysis and visualization platform. Key lessons learned during development include the importance of meticulous data preparation, the use of advanced lookup and filtering techniques to handle multi-criteria searches, and the value of building tools that prioritize user experience.

In conclusion, this project not only fulfills its intended purpose of assisting MoMA's curatorial team in artwork exploration but also stands as a strong portfolio example of applying data analysis skills to solve real-world challenges. It demonstrates how thoughtful design, combined with technical proficiency, can transform raw datasets into powerful decision-making tools that add lasting value to an organization.