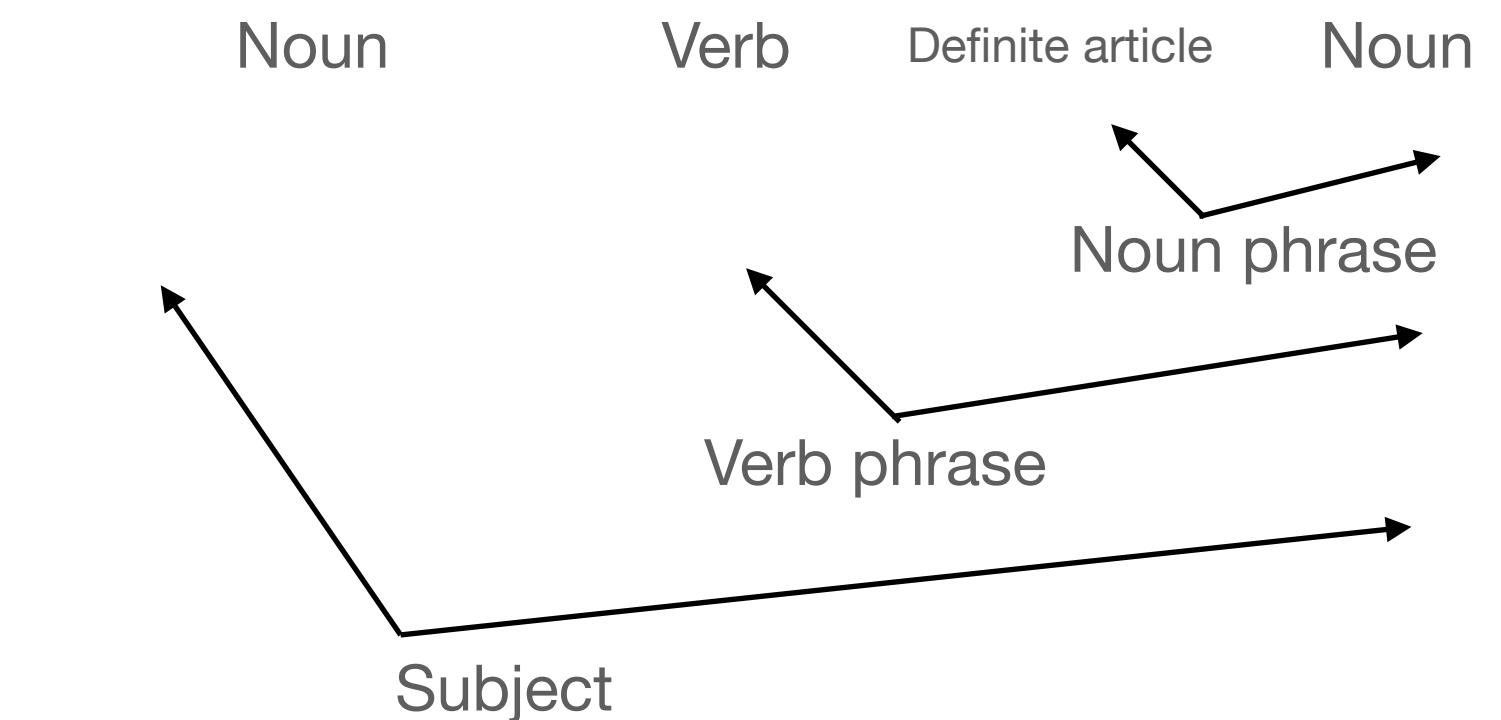


**How do you  
construct a story?**

# What is the grammar of **linguistics**?

The grammar is the set of structural rules governing the composition of clauses, phrases, and words in a natural language

John hit the ball



# How do you construct a story with a photograph?

*Camera*

*Light*

*Composition*

*Color*

*Figure vs Background*

*Contrast*



Light

Words

Data

Cameras

Verbs/Nouns

????

Color

Sentences

????

Contrast

Punctuation

????

Composition

Timing

????

Story

Story

Story

The New York Times

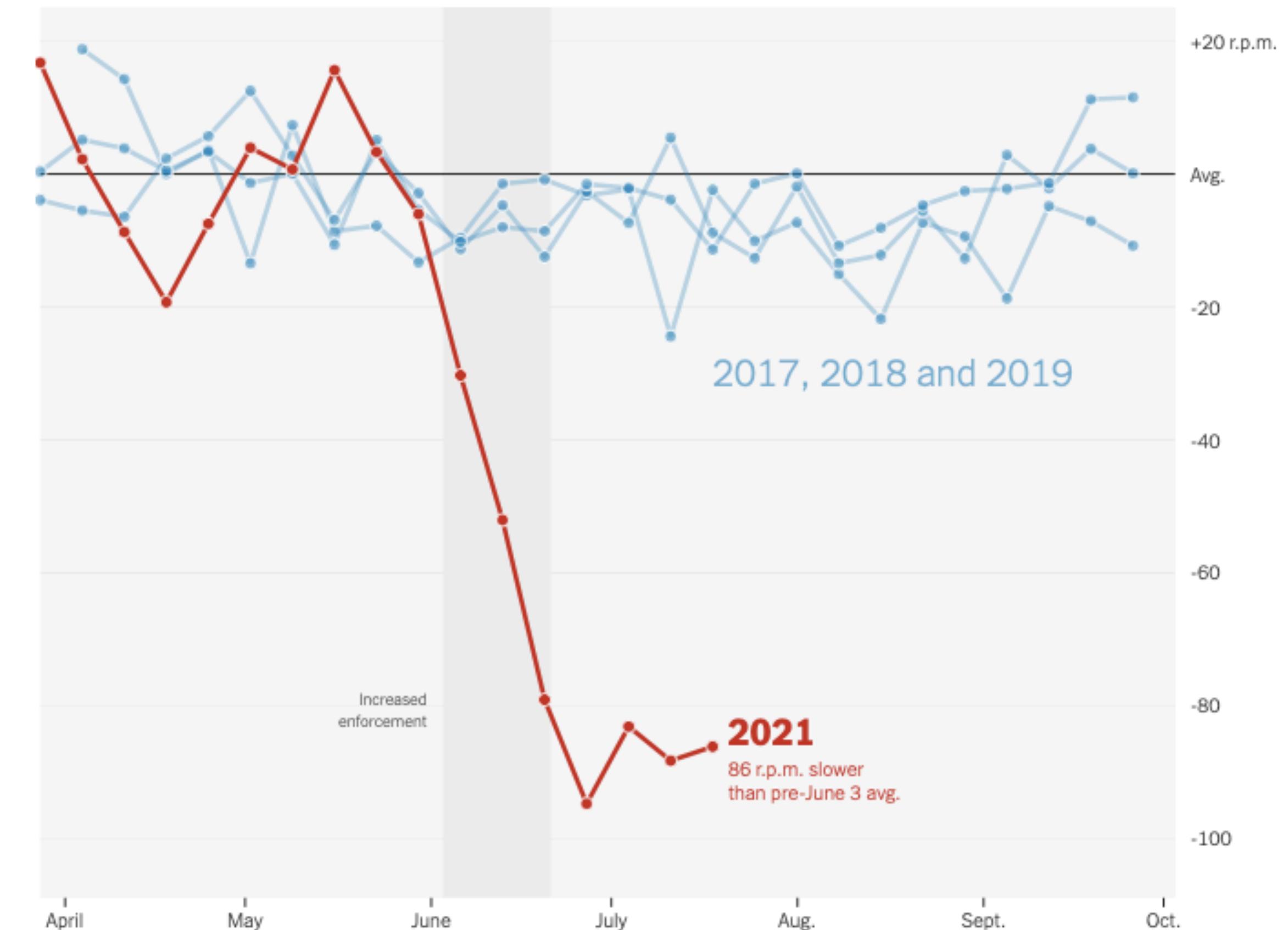
The Upshot

# The Pitchers Whose Spin Rates Fell Most After a Crackdown on Sticky Substances

By [Josh Katz](#), [Kevin Quealy](#) and [Tyler Kepner](#) July 19, 2021



Change in spin in major league fastballs, compared with the average before June 3



Source: Upshot analysis of pitch data from [Baseball Savant](#)

Includes pitches thrown in games through July 17, 2021

**WHAT IS THE GRAMMAR OF  
GRAPHICS?**

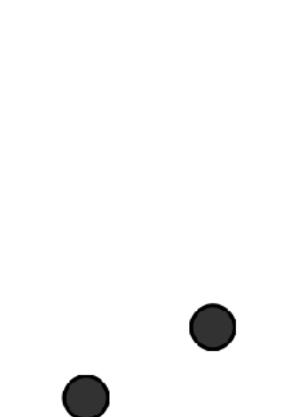
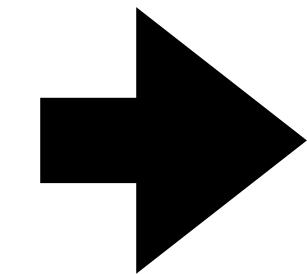
**HOW CAN YOU USE IT TO CRITIQUE  
AND CREATE GRAPHICS?**

# GRAMMAR OF GRAPHICS

Leland Wilkinson, *The Grammar of Graphics* 2005

A framework that enables us to concisely describe the components of any graphic

x	y	Shape
25	11	circle
0	0	circle
75	53	square
200	300	square

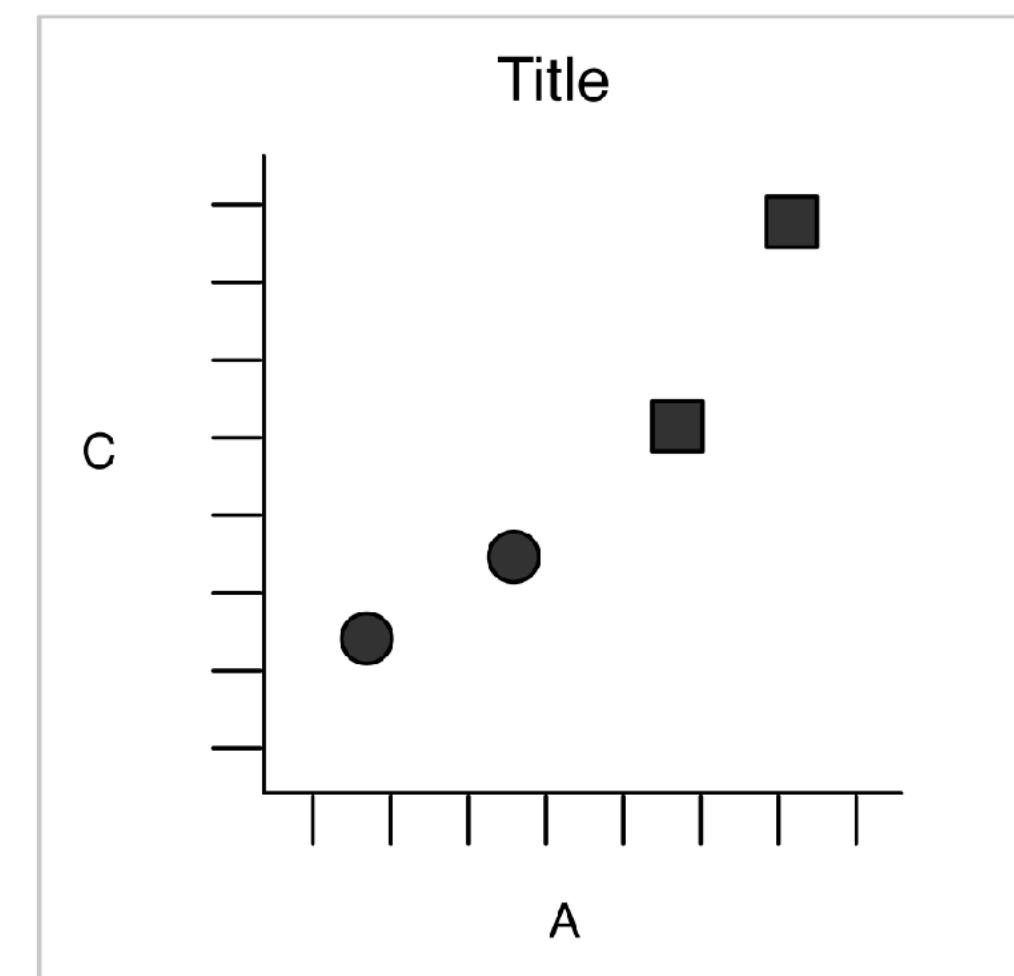
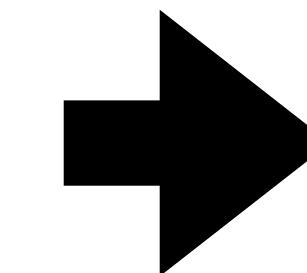
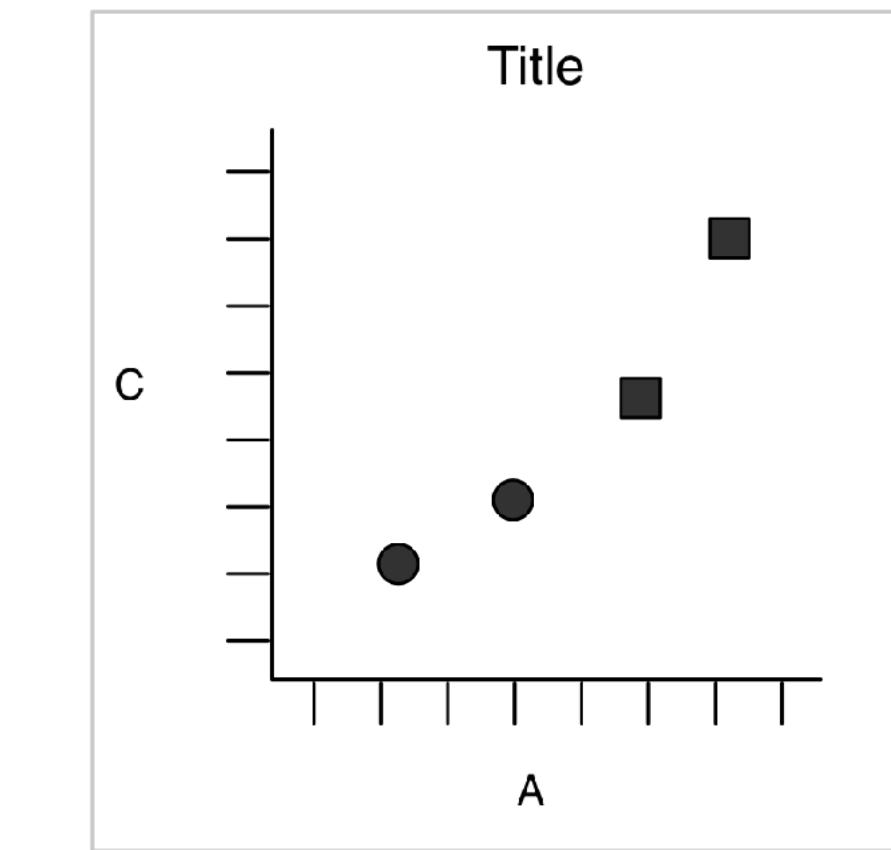
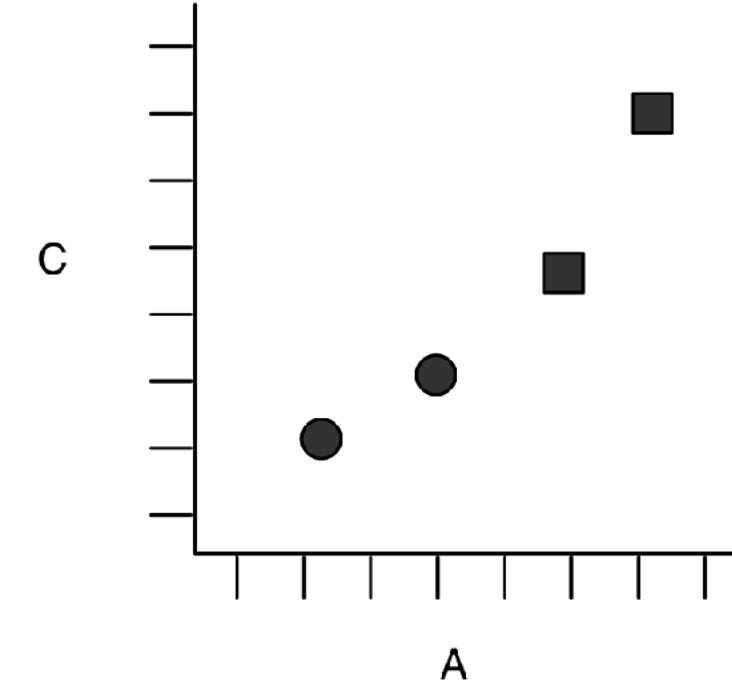


Data:  
Variables & Observations

Geometric Objects (point) &  
Aesthetics (circle / square)

Scales &  
Coordinate System

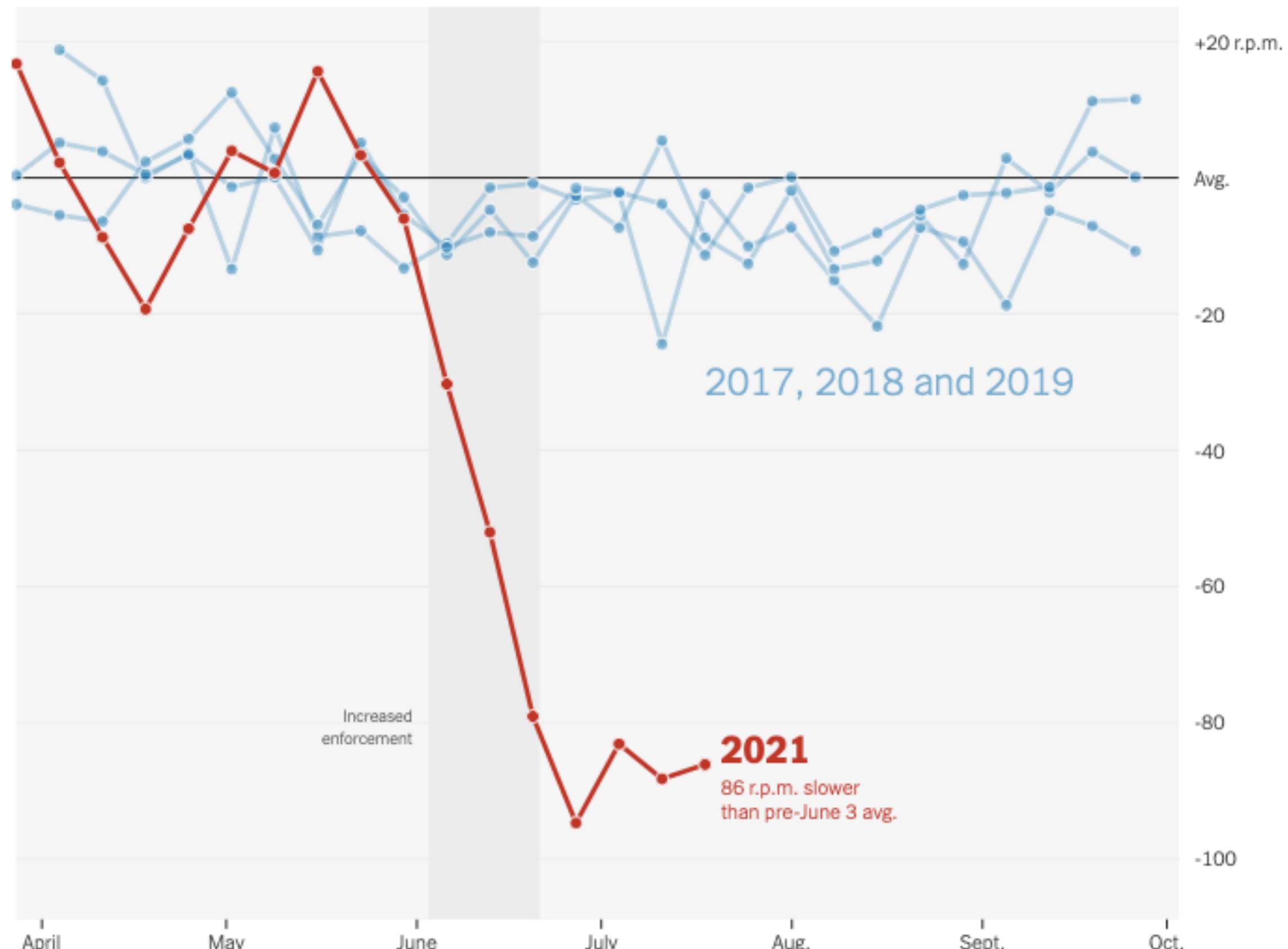
Plot Annotations



# THE GRAMMAR OF GRAPHICS COMPONENTS

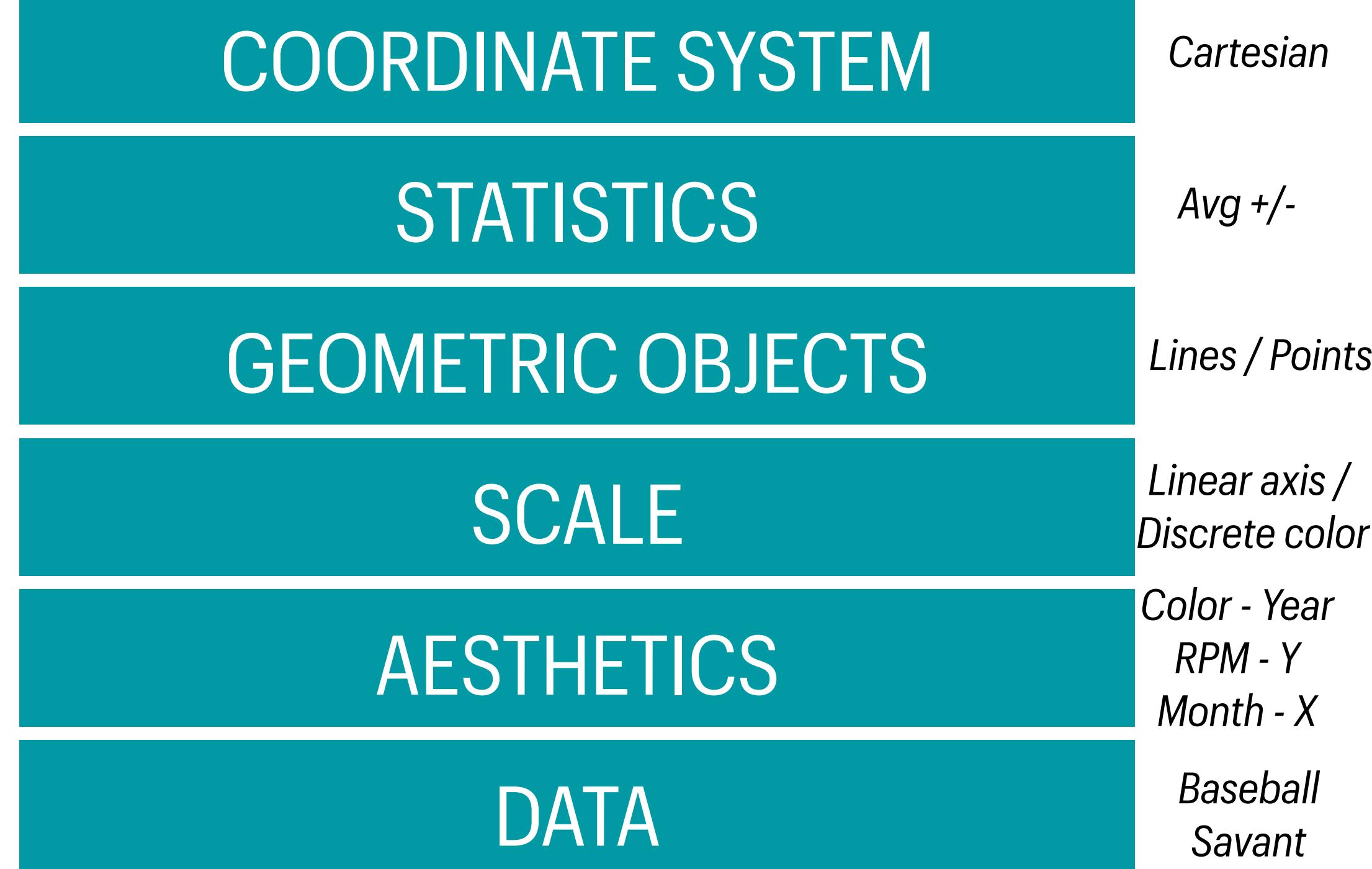
COORDINATE SYSTEM	<i>Cartesian</i>
STATISTICS	<i>Mean</i>
GEOMETRIC OBJECTS	<i>Lines / Bars</i>
SCALE	<i>Gradient</i>
AESTHETICS	<i>Color</i>
DATA	

Change in spin in major league fastballs, compared with the average before June 3



Source: Upshot analysis of pitch data from [Baseball Savant](#)

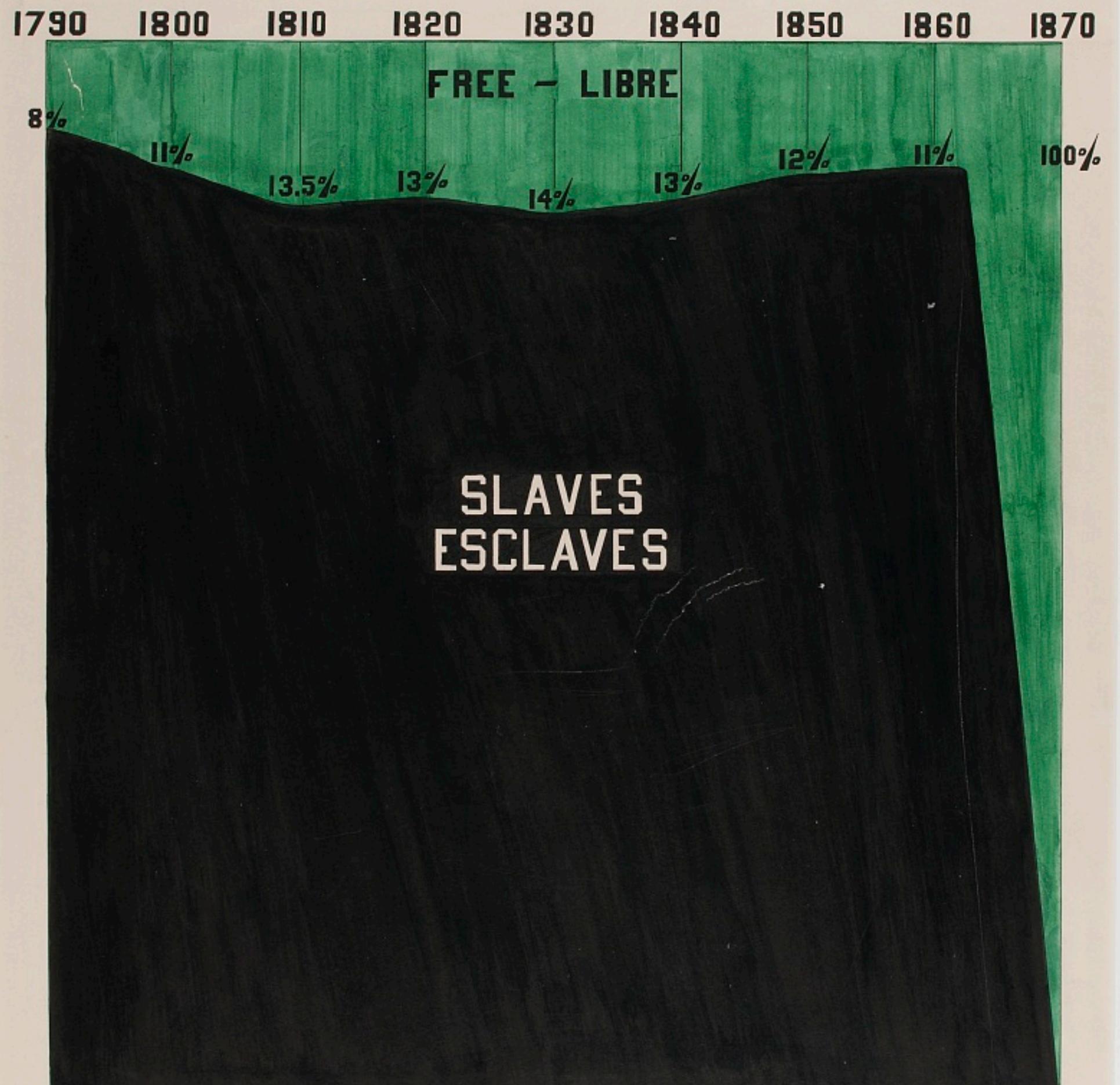
Includes pitches thrown in games through July 17, 2021



PROPORTION OF FREEMEN AND SLAVES AMONG AMERICAN NEGROES .

PROPORTION DES NÈGRES LIBRES ET DES ESCLAVES EN AMÉRIQUE .

DONE BY ATLANTA UNIVERSITY .



COORDINATE SYSTEM

CARTESIAN

STATISTICS

Percentage of individuals

GEOMETRIC OBJECTS

AREA PLOT

SCALE

LINEAR - X LIMITS 1790-1870

AESTHETICS

COLOR - FREE (GREEN), SLAVES (BLACK)  
X-AXIS - YEAR  
Y-AXIS - % OF FREEMAN AND SLAVES AMONG  
AFRICAN AMERICAN

DATA

CENSUS DATA

# RIVER DISCHARGE ANOMALY

June-August 2022

Reference period: 1980-2021



Dominic Royé (@dr\_xeo) | Data: GLOFAS Copernicus

COORDINATE SYSTEM

STATISTICS

GEOMETRIC OBJECTS

SCALE

AESTHETICS

DATA

## COORDINATE SYSTEM

## STATISTICS

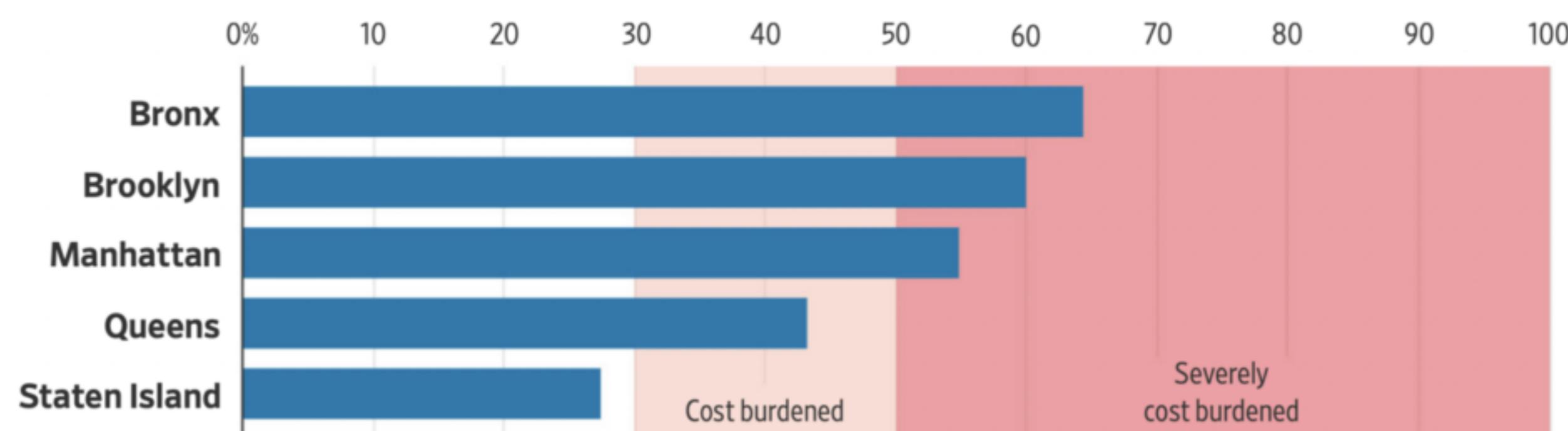
## GEOMETRIC OBJECTS

## SCALE

## AESTHETICS

## DATA

Median asking rent in June 2022, annualized, as percentage of median household income in 2020



Sources: U.S. Department of Housing and Urban Development ('cost burdened' and 'severely cost burdened' values); StreetEasy (median asking rent); U.S. Census Bureau (median household income)

COORDINATE SYSTEM

STATISTICS

GEOMETRIC OBJECTS

SCALE

AESTHETICS

DATA

Finn



Jack



Josie



2016 2017 2018 2019 2020 2021 2022

*Is this the most effective way of comparing the kids at the same age?*

*THE BELL FAMILY*

Finn



Jack



Josie



1

2

3

4

5

6

7

Age

COORDINATE SYSTEM

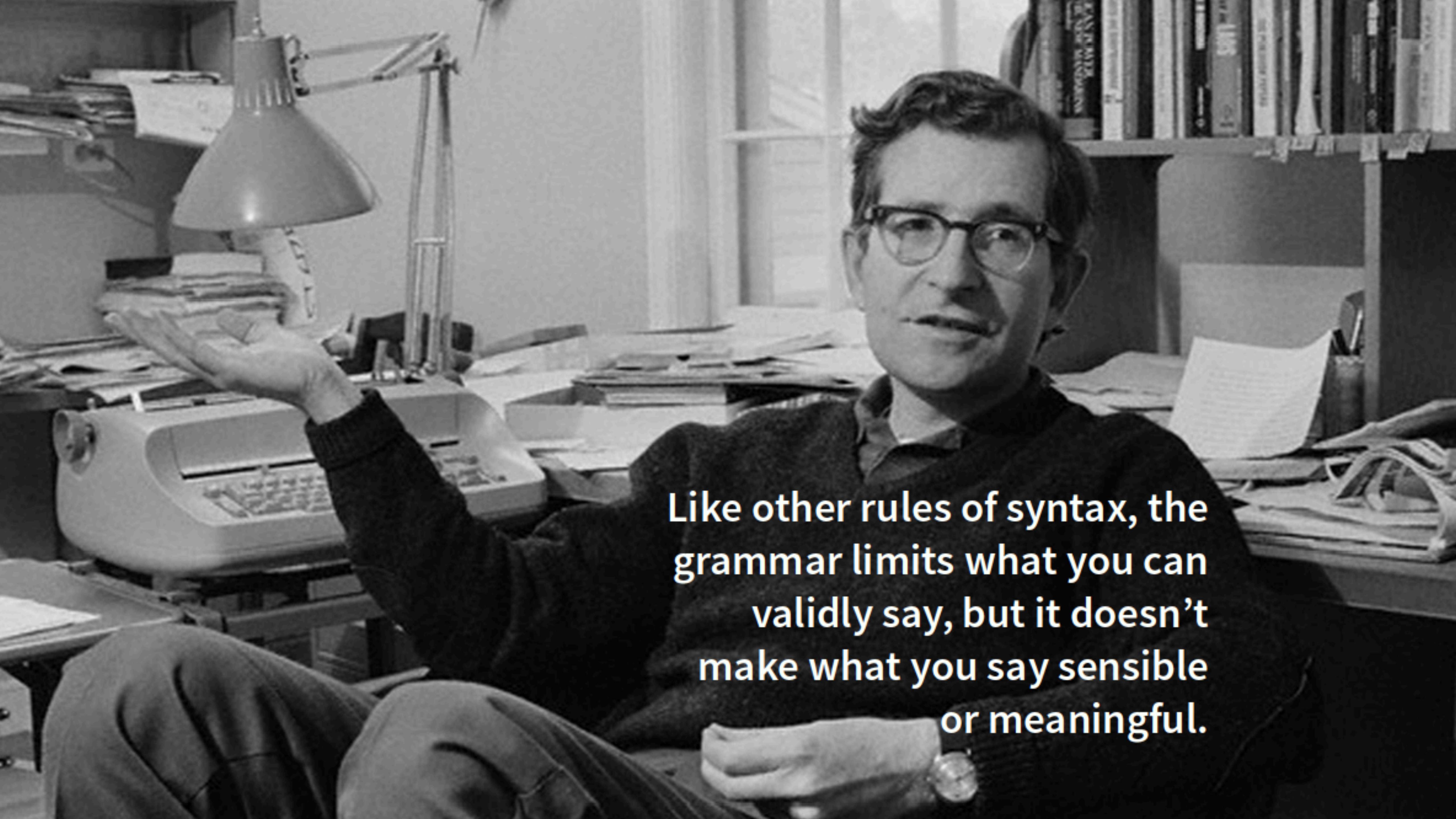
STATISTICS

GEOMETRIC OBJECTS

SCALE

AESTHETICS

DATA



Like other rules of syntax, the grammar limits what you can validly say, but it doesn't make what you say sensible or meaningful.

# **Light**

Cameras

Color

Contrast

Composition

Story

# **Words**

Verbs/Nouns

Sentences

Punctuation

Timing

Story

# **Data**

Aesthetics

Coordinates

Scale

Geometric Objects

Story

# **Light**

Cameras

Color

Contrast

Composition

Story

# **Words**

Verbs/Nouns

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# **Data**

Aesthetics

Coordinates

Scale

Geometric Objects

# **Story**

Software