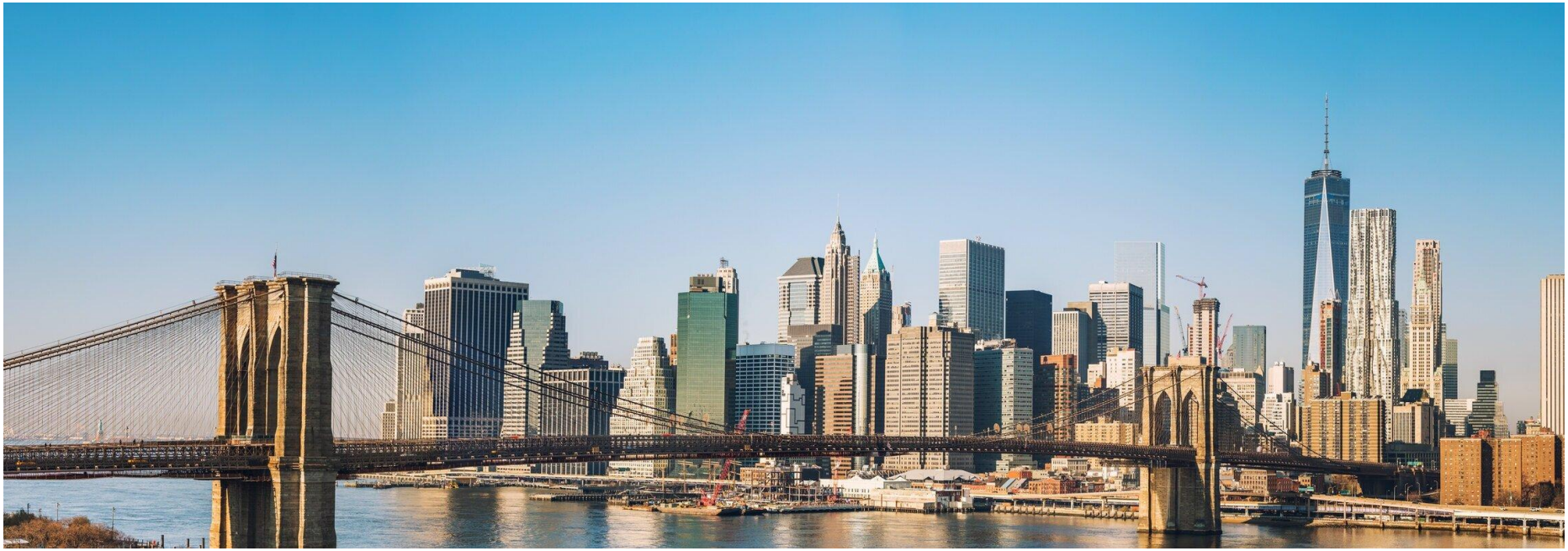

Brooklyn Property Sales

Team 4

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Agenda

- Scenario
- Data Overview
- Normalization Plan
  ER Diagram
- Analytical Procedures
- ETL Process
- Dashboard Demos

Case Study of the Real Estate Industry

Client:
Property Management Company in NYC

Project Goals:

- Utilize historical sales data to inform upcoming property investments and acquisitions, as well as business development and marketing strategies.
- Build a scalable system that allows for expansion.

Brooklyn Property Sales

Original Data

23,955
ROWS

26
COLUMNS

2017
Time range

address	total_units	land_sqft	residential_units	commercial_units	block	lot	sale_price	sale_date	year_of_sale	apartment_number	gross_sqft	zip_code
21 CLARK STREET	1	20267	0	1	230	1	202500000	10/31/2017	2017		356000	11201
16 COURT STREET	102	12500	0	102	250	44	171000000	10/10/2017	2017		290440	11241
20 NORTH 12 STREET	0	60400	0	0	2287	16	160000000	4/19/2017	2017		0	11249
55 PROSPECT STREET	2	20704	0	2	63	1	138106368	3/31/2017	2017		253096	11201
90 SANDS STREET	1	21175	0	1	87	9	135000000	8/29/2017	2017		363100	11201

building_class_category	building_class	OwnerType	OwnerName	tax_class	XCoord	YCoord	neighborhood	FireComp	PolicePrct	CD	Council	SchoolDist
26 OTHER HOTELS	H8	X	WATCHTOWER C/O REAL P	4	985622	193713	BROOKLYN HEIGHTS	E205	84	302	33	13
21 OFFICE BUILDINGS	O4	P	16 COURT STREET OWNER	4	986784	191977	BROOKLYN HEIGHTS	E205	84	302	33	13
41 TAX CLASS 4 - OTHER	Z9	P	10TH STREET LLC	4	995151	202986	WILLIAMSBURG-NORTH	L106	94	301	33	14
21 OFFICE BUILDINGS	O6		55 PROSPECT OWNER LLC	4	987524	194630	DOWNTOWN-METROTECH	L118	84	302	33	13
26 OTHER HOTELS	H8	P	WATCHTOWER C/O REAL P	4	987811	194154	DOWNTOWN-METROTECH	L118	84	302	33	13

Additional Data

Addresses

aggregated across properties, communities, and lat/lon information

Community Districts

information on population, parks etc

Police Districts

location and contact information

School District

location information, nr. schools etc

Fire Companies

location information

Normalization Plan

owns ← owner +

Property

property_id int (PK)	address varchar(100) NOT NULL	zipcode int	lon numeric(10,6),	lat numeric(10,6),
school_district int NOT NULL	students_enrolled int	nr_schools int	school_dist_address_id int	fire_company char(4) NOT NULL
community_district int NOT NULL	population int	area_sq_mi numeric(3,1)	male_perc numeric(3,1)	female_perc numeric(3,1)
varchar(100) NOT NULL	city_council_district int NOT NULL	ry varchar(100) NOT NULL	building_class char(2) NOT NULL	building_class_categ ry_id int
fire_comp_address_id int	police_precinct int NOT NULL	police_prct_address_id int	phone_number varchar(12)	education_bachelor_level numeric(3,1)
foreign_born_pop numeric(3,1)	majority_race_pop varchar(10)	access_to_parks int	commute_to_work_in_min numeric(3,1)	lot int NOT NULL
Borough varchar(70)				

addresses

school_districts

fire_companies

community_districts

building_classes

building_class_categories

building_class_categories_combinations

police_precincts

neighborhoods

Sale

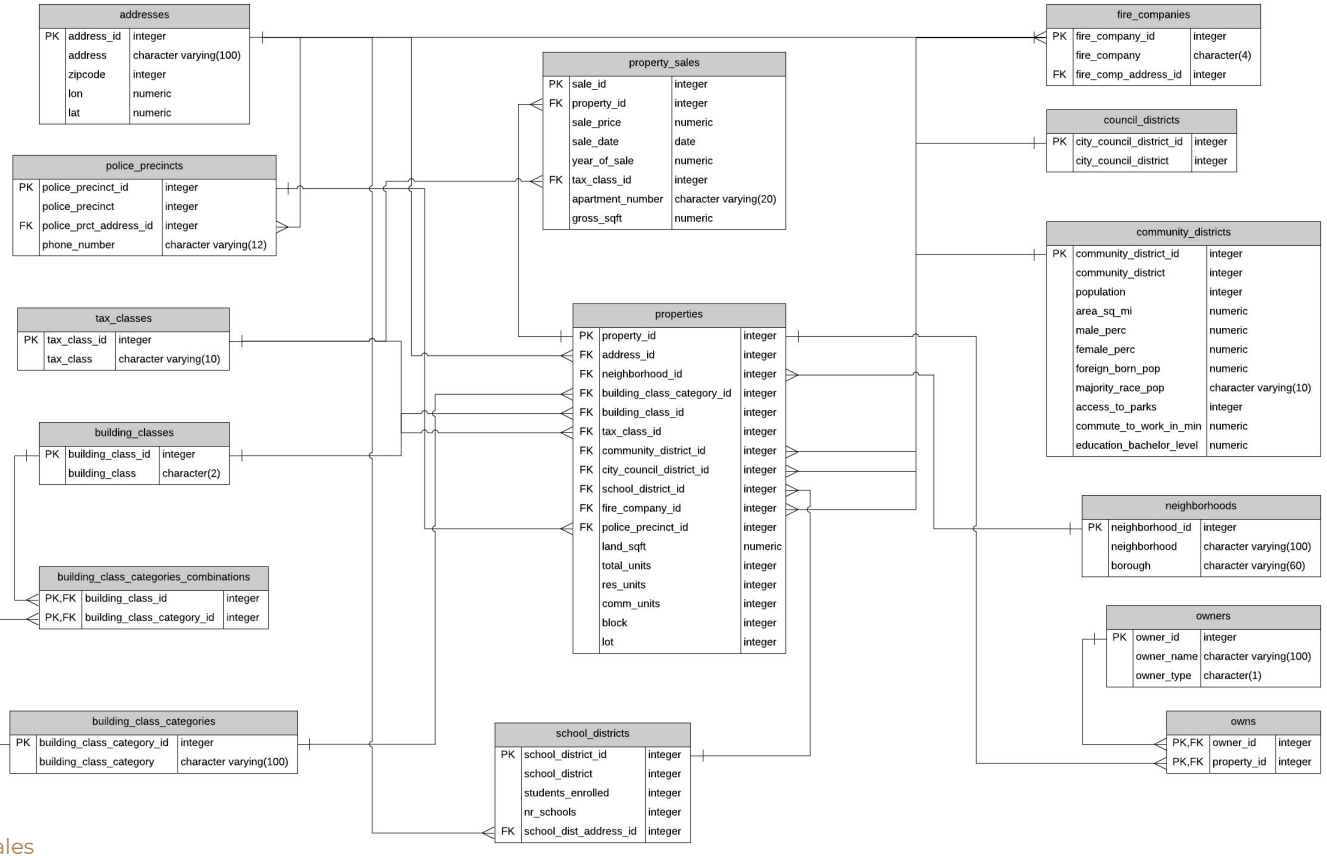
sale_id int (PK)	property_id int NOT NULL	sale_price numeric (20,1) NOT NULL	sale_date date NOT NULL	year_of_sale numeric(4,0) NOT NULL
tax_class_id int	apartment_number varchar(20)	numeric(20,1) NOT NULL	varchar(100) NOT NULL	owner_type char(1)

tax_classes

property_sales

owner

ER Diagram


addresses
PK address_id integer
address character varying(100)
zipcode integer
lon numeric
lat numeric
police_precincts
PK police_precinct_id integer
police_precinct integer
FK police_prct_address_id integer
phone_number character varying(12)
tax_classes
PK tax_class_id integer
tax_class character varying(10)
building_classes
PK building_class_id integer
building_class character(2)
building_class_categories_combinations
PK,FK building_class_id integer
PK,FK building_class_category_id integer
building_class_categories
PK building_class_category_id integer
building_class_category character varying(100)
property_sales
PK sale_id integer
FK property_id integer
sale_price numeric
sale_date date
year_of_sale numeric
FK tax_class_id integer
apartment_number character varying(20)
gross_sqft numeric
properties
PK property_id integer
FK address_id integer
FK neighborhood_id integer
FK building_class_category_id integer
FK building_class_id integer
FK tax_class_id integer
FK community_district_id integer
FK city_council_district_id integer
FK school_district_id integer
FK fire_company_id integer
FK police_precinct_id integer
land_sqft numeric
total_units integer
res_units integer
comm_units integer
block integer
lot integer
school_districts
PK school_district_id integer
school_district integer
students_enrolled integer
nr_schools integer
FK school_dist_address_id integer
fire_companies
PK fire_company_id integer
fire_company character(4)
FK fire_comp_address_id integer
council_districts
PK city_council_district_id integer
city_council_district integer
community_districts
PK community_district_id integer
community_district integer
population integer
area_sq_mi numeric
male_perc numeric
female_perc numeric
foreign_born_pop numeric
majority_race_pop character varying(10)
access_to_parks integer
commute_to_work_in_min numeric
education_bachelor_level numeric
neighborhoods
PK neighborhood_id integer
neighborhood character varying(100)
borough character varying(60)
owners
PK owner_id integer
owner_name character varying(100)
owner_type character(1)
owns
PK,FK owner_id integer
PK,FK property_id integer

ETL Process

01 Connect to the PostgreSQL server and database

02 Load and inspect the data

03 Transform the data into necessary tables

04 Ingest the transformed data into the PostgreSQL database and the respective tables

https://github.com/ergetamuca/sql_project_team4/blob/master/ETL%20Process%20-%20Brooklyn%20Home%20Sales.ipynb

Analytical Procedures

Analyst Level

- Analysts bring in new clients and analyze current business to refine business strategies
- Interact directly through PostgreSQL, PgAdmin and self-serve reporting capabilities on Metabase
- **Questions: What are some of the purchasing trends of owners who have purchased more than one property?**

  What is the trend of changes in sales from month-to-month?

C-Suite Level

- Quarterly and annual reports via a dashboard in Metabase
- Interested in high level, aggregated metrics presented in a clear way. Looking to get insight on potential investments.
- **Questions: What is the typology of neighborhoods with the highest nr of sales? What are the up and coming neighborhoods and why should we invest there?**

https://github.com/ergetamuca/sql_project_team4/blob/master/Analytical_Procedures.ipynb

Dashboard Demo

Analyst dashboard:

http://f19server.apan5310.com:3204/public/dashboard/b3851a7c-337f-4d25-86f2-9851467c6cc5

C-level dashboard:
http://f19server.apan5310.com:3204/public/dashboard/d655cd67-6747-472d-906c-d18f3ad6e56d