CARLSON SCHOOL OF MANAGEMENT
UNIVERSITY OF MINNESOTA

Location, Location, Location

The best places to live for future data scientists in the tech industry

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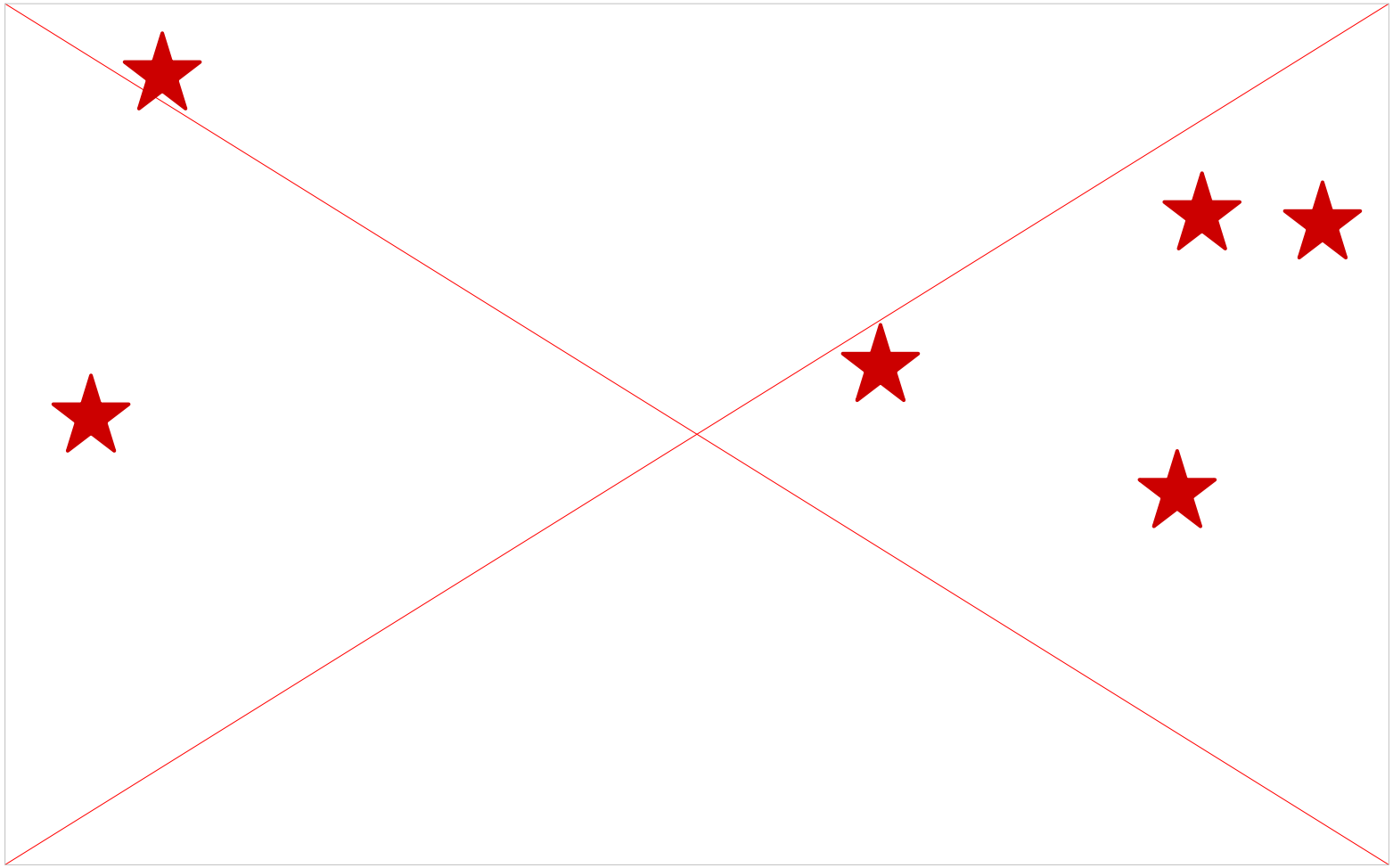
Presented by Team 1:
Shravan Shetty
Yang Shi
Hamza Farooq
Bharadwaj Mohan Kumar
Kyle Kelly

Agenda

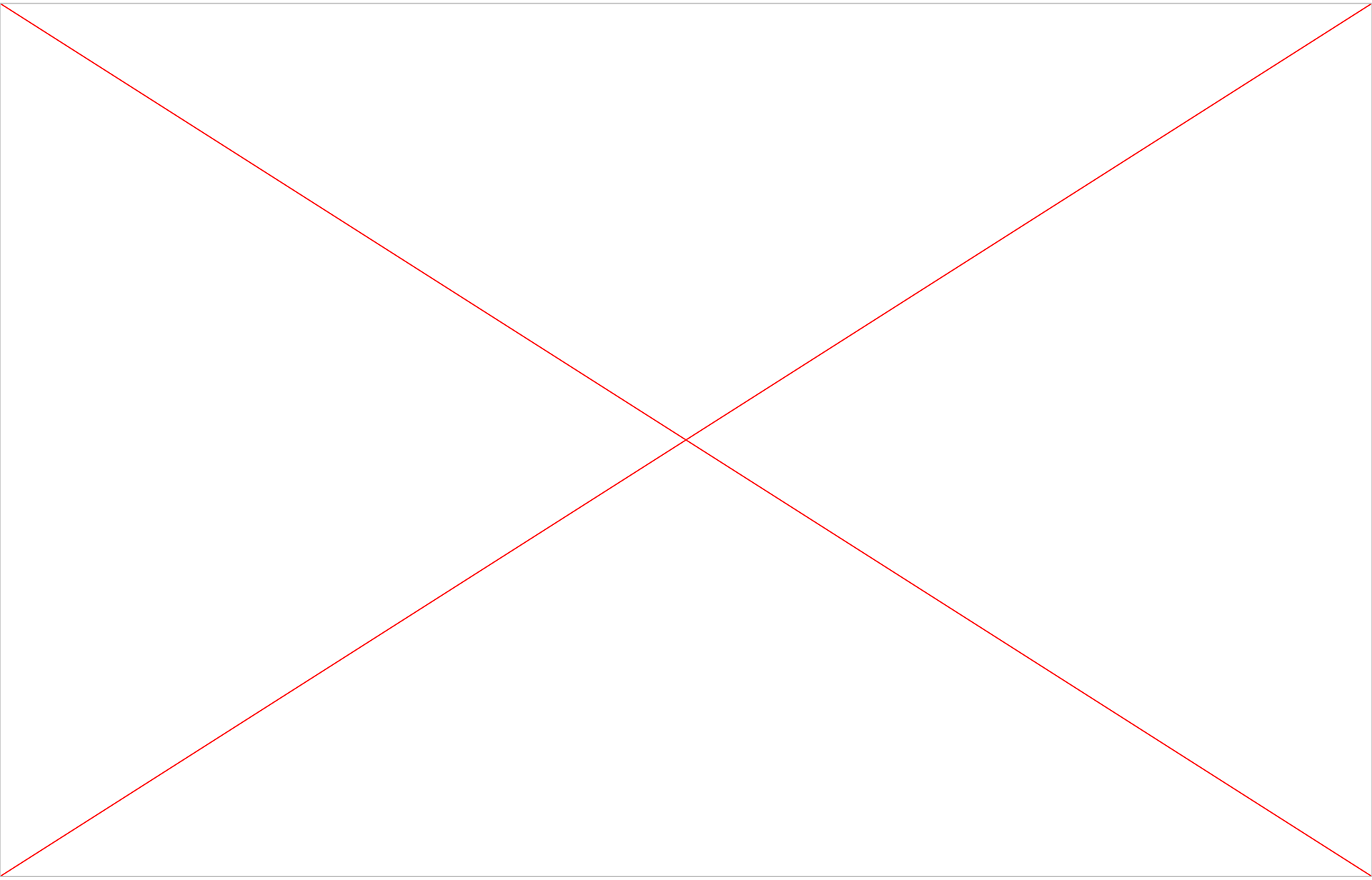
1. ***Introduction/Executive Summary***
   - 1.1. Project goals
   - 1.2. Capturing and cleaning the dataset
2. ***Datawarehouse Design***
   - 2.1. Dimensional model
   - 2.2. Grain, facts and choice of grains
   - 2.3. SCD Type-1 and Type-2
3. ***Implementation***
   - 3.1. Building the databases
   - 3.2. Extracting, Transforming, and Loading the data
4. ***Methods of Analysis and Findings***
   - 4.1. Questions to consider

Introduction: Project Goals

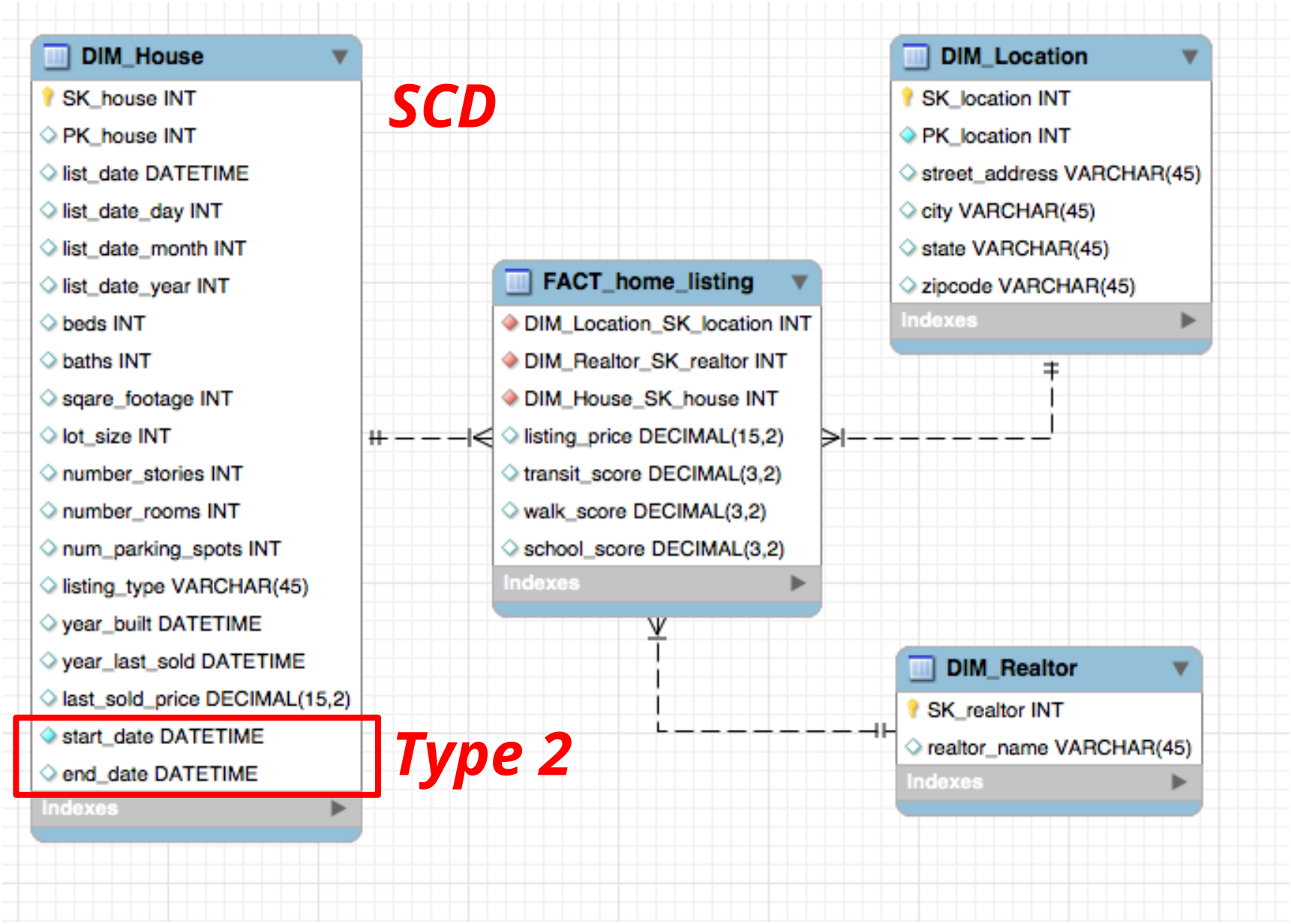
Which areas in the United States present the best property values for data scientists in the tech industry?



Introduction: Zillow.com



Datawarehouse Design



Implementation: Building the Databases

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Base Database

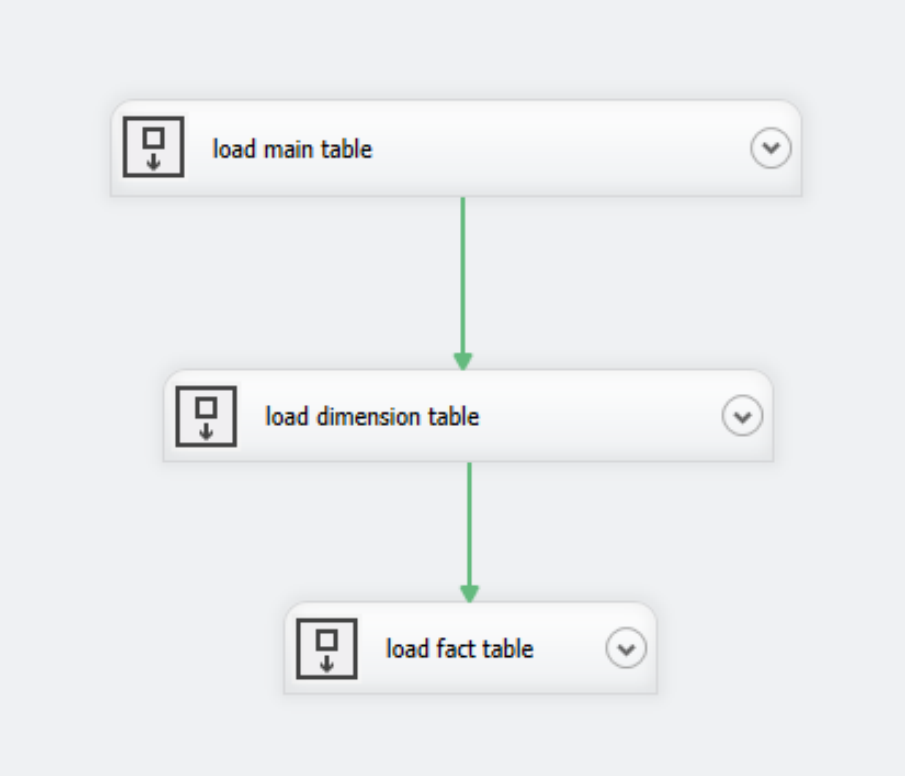
- Used as a data holding area
- 1 Base table which contain:
  - House
    - Contains all descriptive information on home
  - Realtor
    - Contains contact information etc.
  - Location
    - Contains location information for all homes

Dimensional Model

- 1 fact table, 3 dimensions
- Grain: Represents a house listing on Zillow.com
- House Dimension
  - Type 1 SCD: cooling, dishwasher
  - Type 2 SCD: ListingType , sq_ft
  - Listing Date : Entirely derived from when the data is scraped
- Realtor Dimension
- Location Dimension

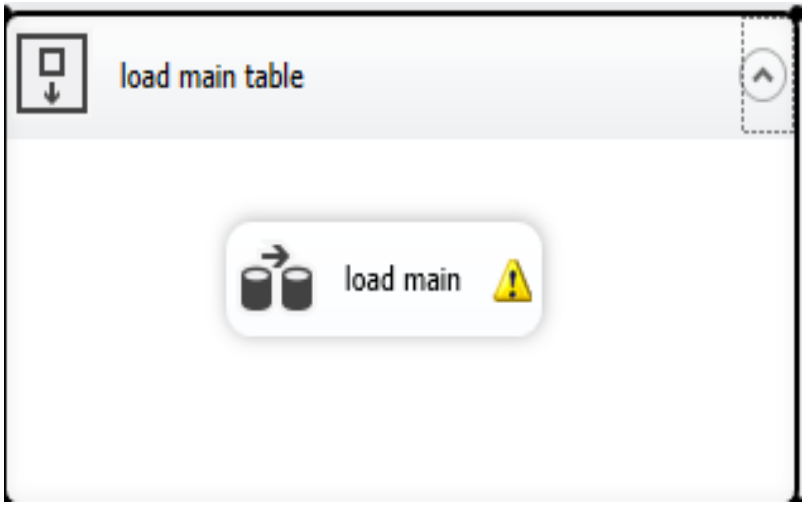
Implementation: ETL Process

3 sequence containers for the 3 steps

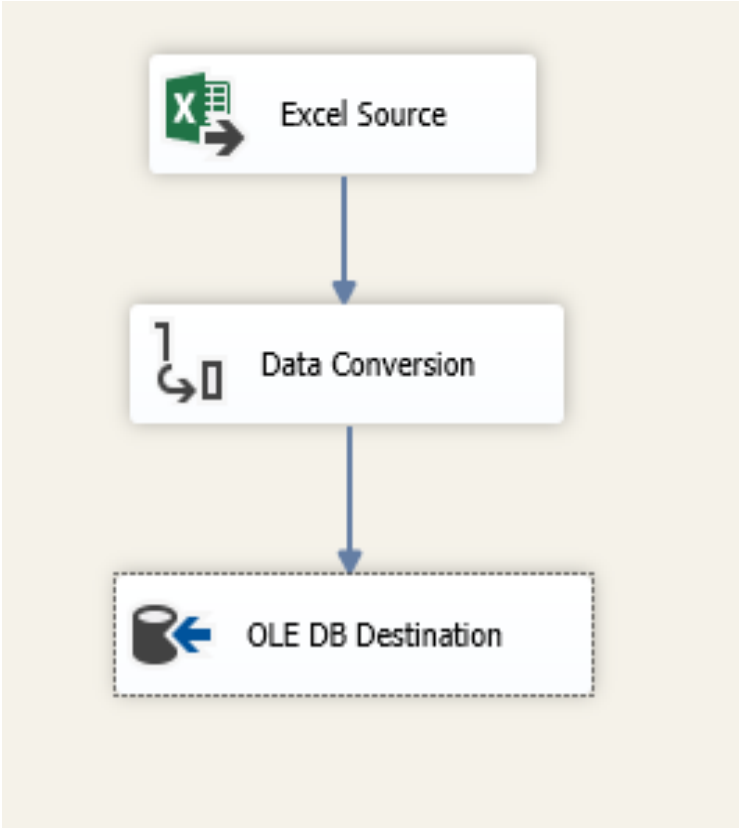


Implementation: Loading Base Tables

Control Flow of Load Base Table



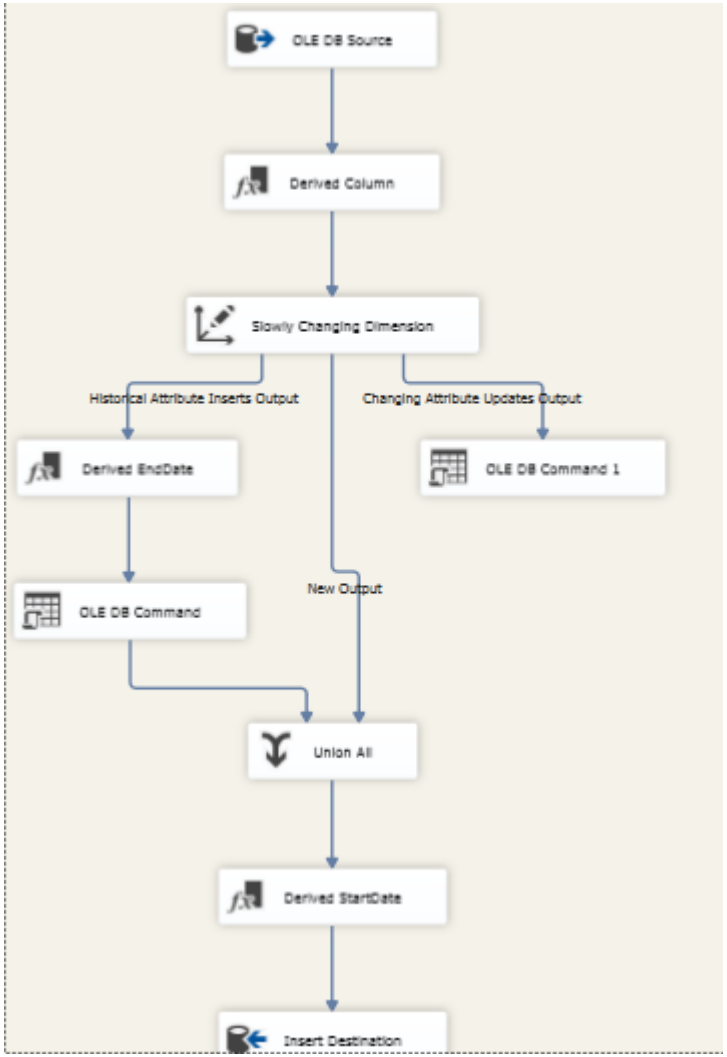
Data Flow Process



Implementation: Loading Dimensions

load house dimension

Dimension Columns	Change Type
beds	Changing attribute
cooling	Changing attribute
deck	Changing attribute
dishwash	Changing attribute
heating	Changing attribute
last_sold	Historical attribute
laundry	Changing attribute
listing_type	Changing attribute
lot_size	Changing attribute
num_rooms	Historical attribute
num_stories	Historical attribute
parking_spots	Historical attribute
porch	Changing attribute
security	Changing attribute
sq_ft	Changing attribute
year	Fixed attribute



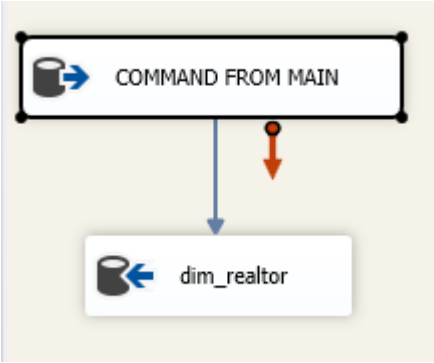
Implementation: Loading Dimensions

load House dimension:
Derived Columns

Derived Column Name	Derived Column	Expression	Data Type	L
day	<add as new column>	DAY(DATEADD("day",-Days_On_Zillow,GETDATE()))	four-byte signed integ...	
month	<add as new column>	MONTH(DATEADD("day",-Days_On_Zillow,GETDAT...	four-byte signed integ...	
year	<add as new column>	YEAR(DATEADD("day",-Days_On_Zillow,GETDATE()))	four-byte signed integ...	
list_date	<add as new column>	DATEADD("day",-Days_On_Zillow,GETDATE())	database timestamp [D...	

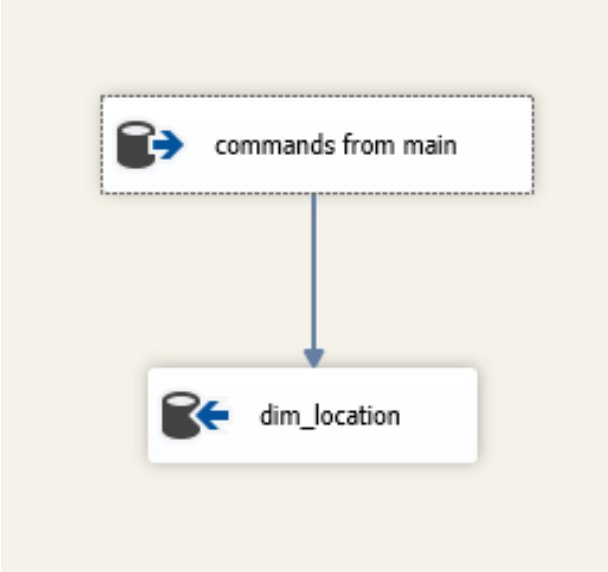
Implementation: Loading Dimensions

load realtor dimension




```
select distinct [realtor_name]
  FROM [db_team1_f2014].[dbo].[base_main]
  where [realtor_name] is not NULL
```

load location dimension




```
select  distinct [propert_address],[Street], [City]  ,[State],[ZipCode]
 FROM [db_team1_f2014].[dbo].[base_main]
 where [propert_address] is not NULL
```

Implementation: Loading Dimensions

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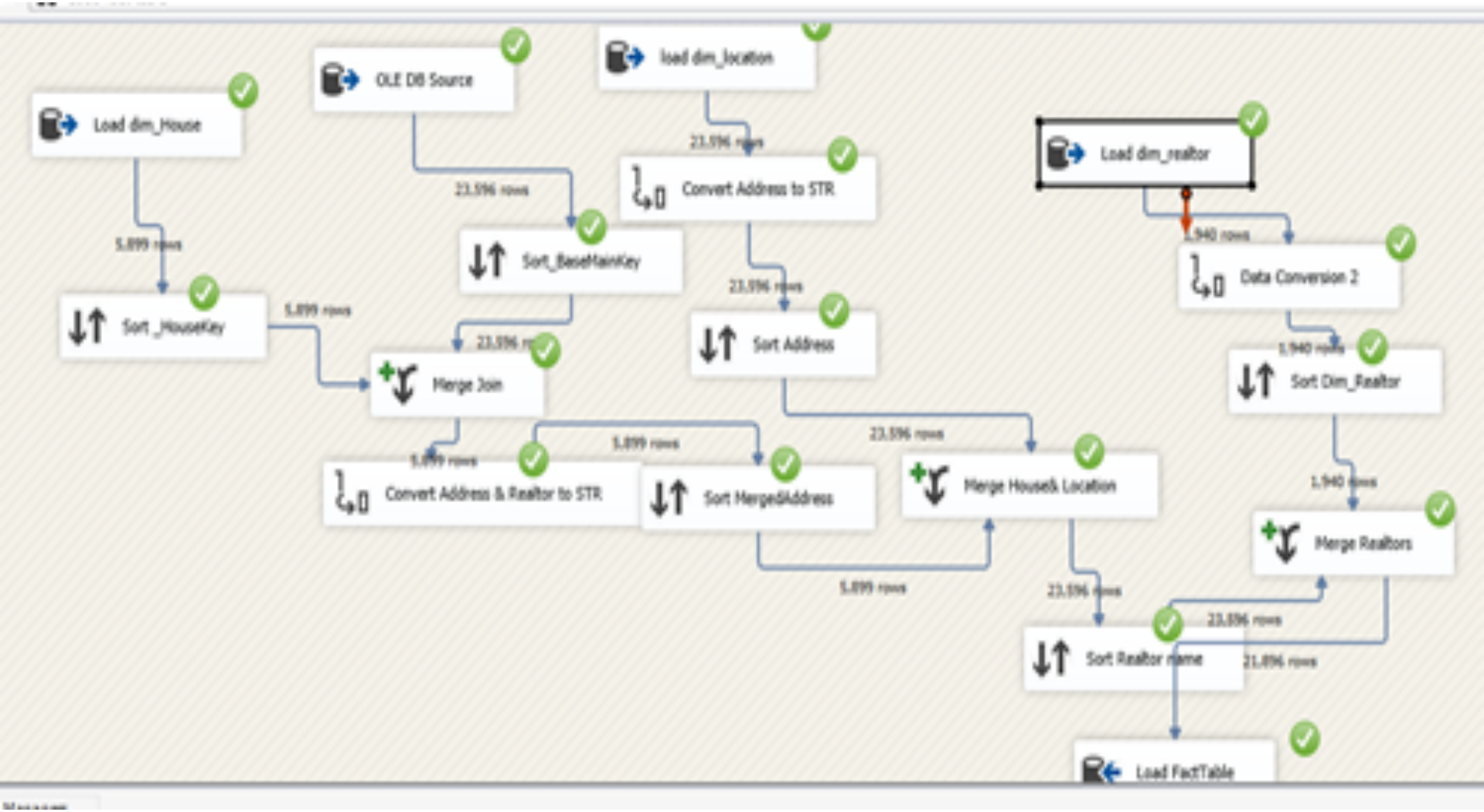
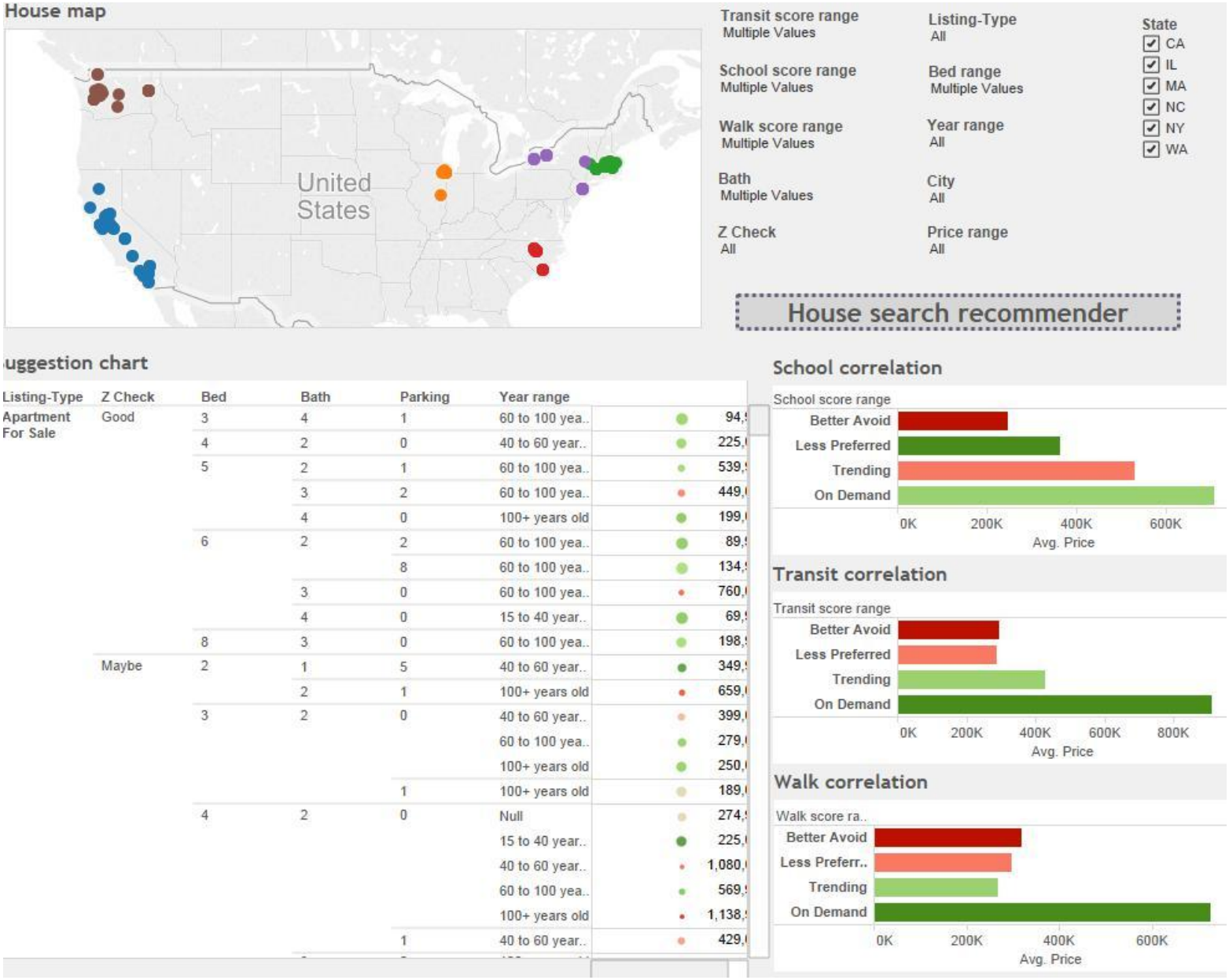
load listing fact table

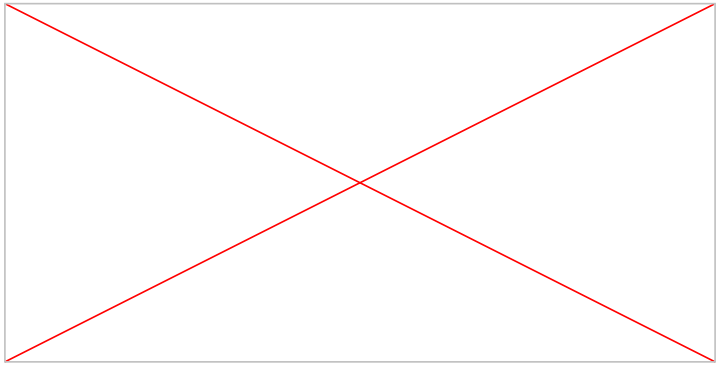


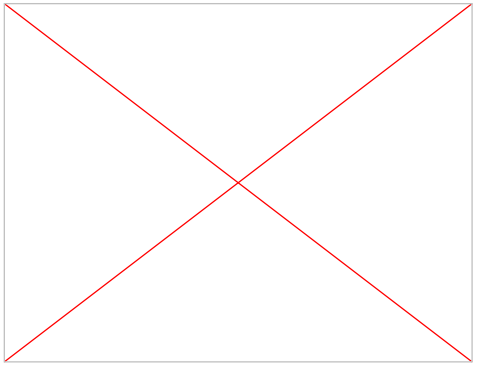
Methods of Analysis



Listing-Type	Z Check	Bed	Bath	Parking	Year range	
Apartment For Sale	Good	3	4	1	60 to 100 yea..	94,(
		4	2	0	40 to 60 year..	225,(
		5	2	1	60 to 100 yea..	539,(
			3	2	60 to 100 yea..	449,(
			4	0	100+ years old	199,(
		6	2	2	60 to 100 yea..	89,(
				8	60 to 100 yea..	134,(
			3	0	60 to 100 yea..	760,(
			4	0	15 to 40 year..	69,(
		8	3	0	60 to 100 yea..	198,(
	Maybe	2	1	5	40 to 60 year..	349,(
			2	1	100+ years old	659,(
		3	2	0	40 to 60 year..	399,(
					60 to 100 yea..	279,(
					100+ years old	250,(
				1	100+ years old	189,(
		4	2	0	Null	274,(
					15 to 40 year..	225,(
					40 to 60 year..	1,080,(
					60 to 100 yea..	569,(
					100+ years old	1,138,(
				1	40 to 60 year..	429,(

Insights About the States: CA is expensive!





- The median price for 2 bed room prices is higher in New York than 3 bedroom (about $30,000 more)
- Walk Score is so important in New York that median price jumps from 0.5 million to 3.2 million from a walk score of 90 to 99
- A huge price driver for Massachusetts is transit score, at 70, the average cost is 1.2 million whereas at 90 it's 2.9 million

Questions?