

# Development and Maintenance of Location-Based Data to Support Statistical Programs

**Michael Ratcliffe**  
Geography Division  
US Census Bureau

FedCASIC  
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*census.gov*

# Location-Based Data to Support Statistical Programs

- All activity measured by censuses and surveys occurs within or across space.
- Responses are associated with one or more locations.
- In the case of functional relationships, the measured activity occurs across space and is associated with multiple locations (i.e., origin and destination).
- The fundamental geospatial attribute is latitude and longitude— x,y coordinates.

## What level of precision do we need?

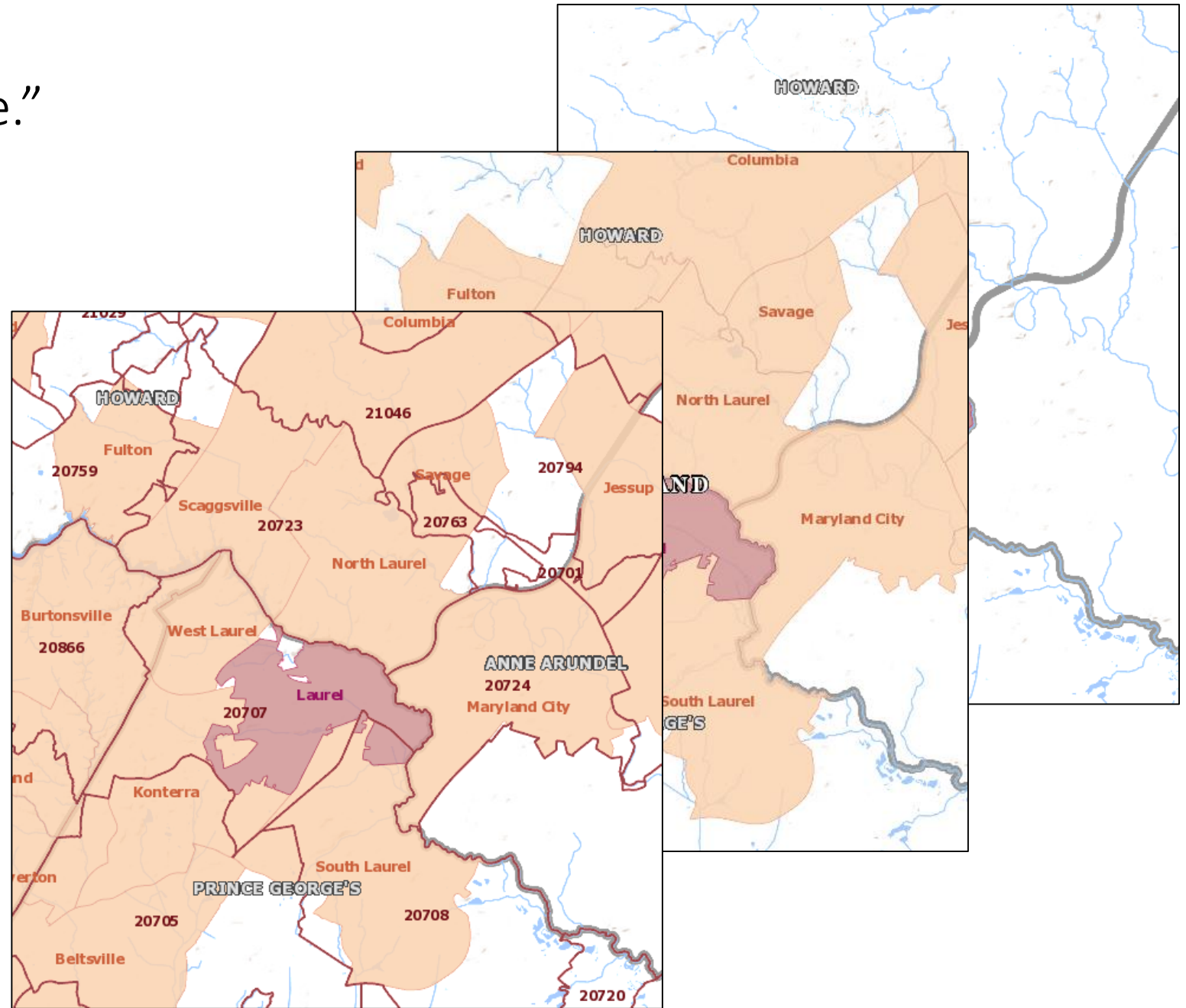
- What is the level of geography for tabulation and dissemination of reliable statistical data?
  - Do we always need positional accuracy; i.e., the precise location on the face of the earth at which the phenomenon being measured occurs?
- If a survey can only produce reliable data for large geographic areas (i.e., region, state, county), then positional accuracy is not critical.
  - A geographic area centroid may be sufficient as a location.
- If data are tabulated and disseminated for small geographic areas (i.e., census tracts, 100-meter grid cells), then positional accuracy is needed.
  - The question is then what point to use as a locational reference.

The uncertainty of “place.”

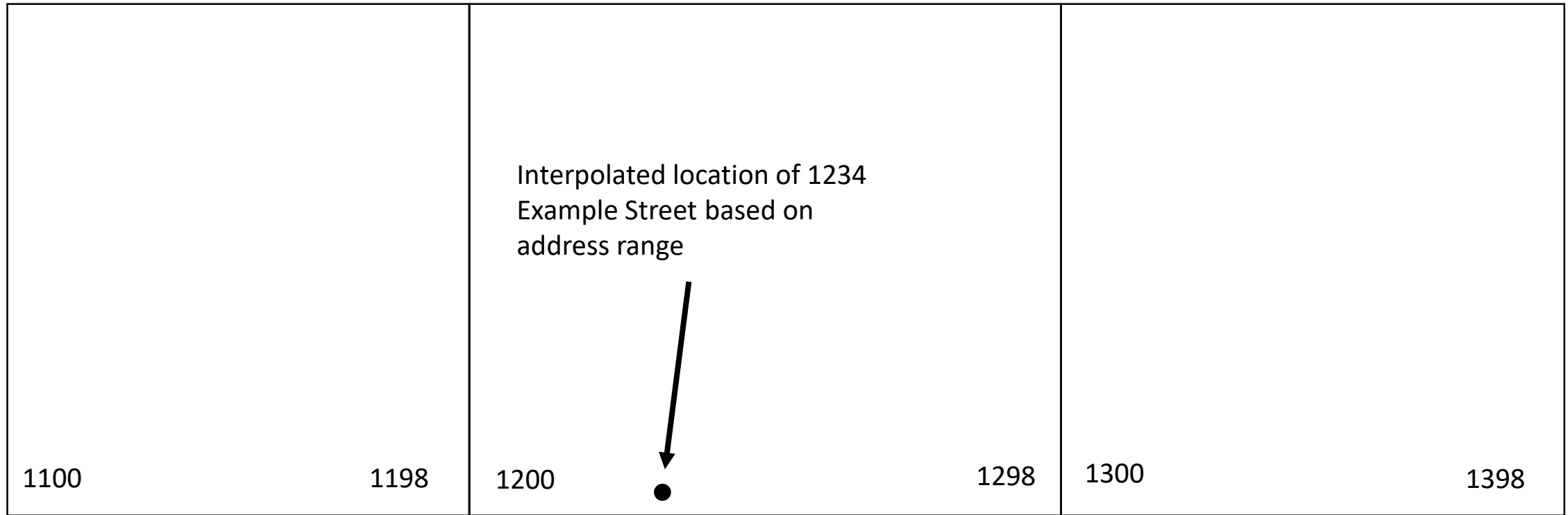
1234 Example Street  
Laurel, MD 20707

If all we know is postal  
place and/or ZIP Code,  
where is this address?

“Laurel” as a postal place  
applies to four ZIP Codes:  
20707, 20708, 20723, and  
20724.



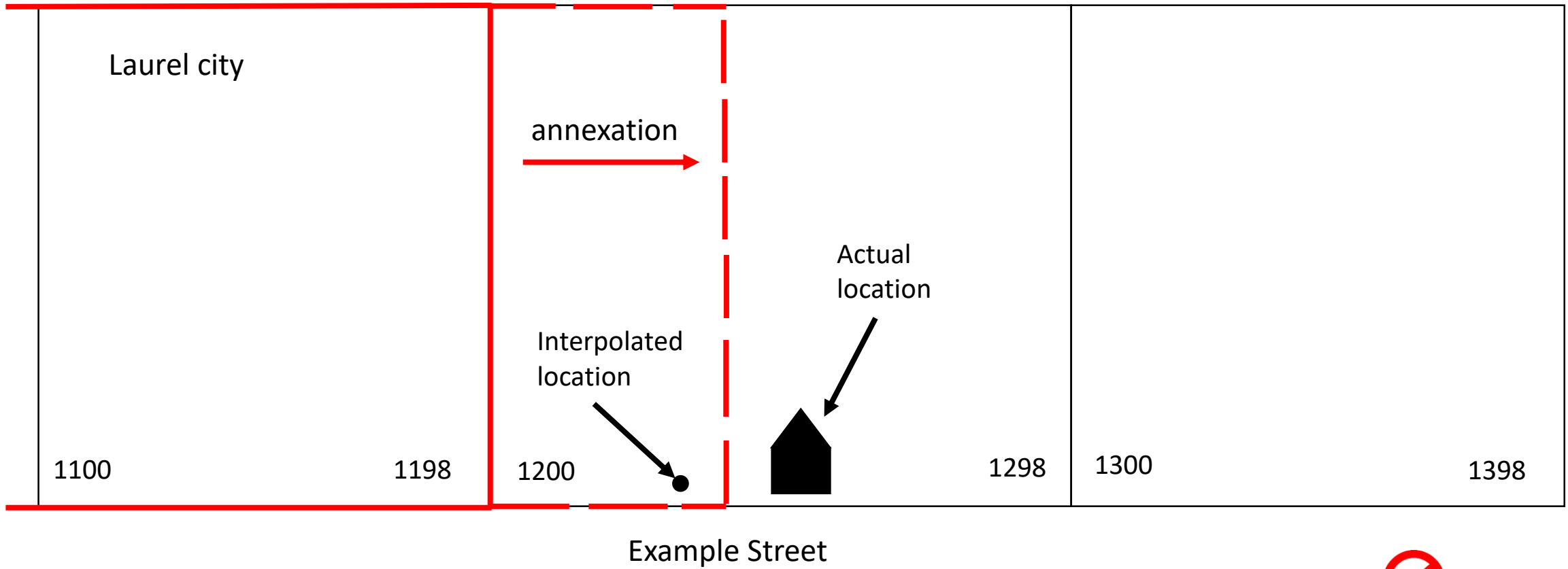
# Where is 1234 Example Street?



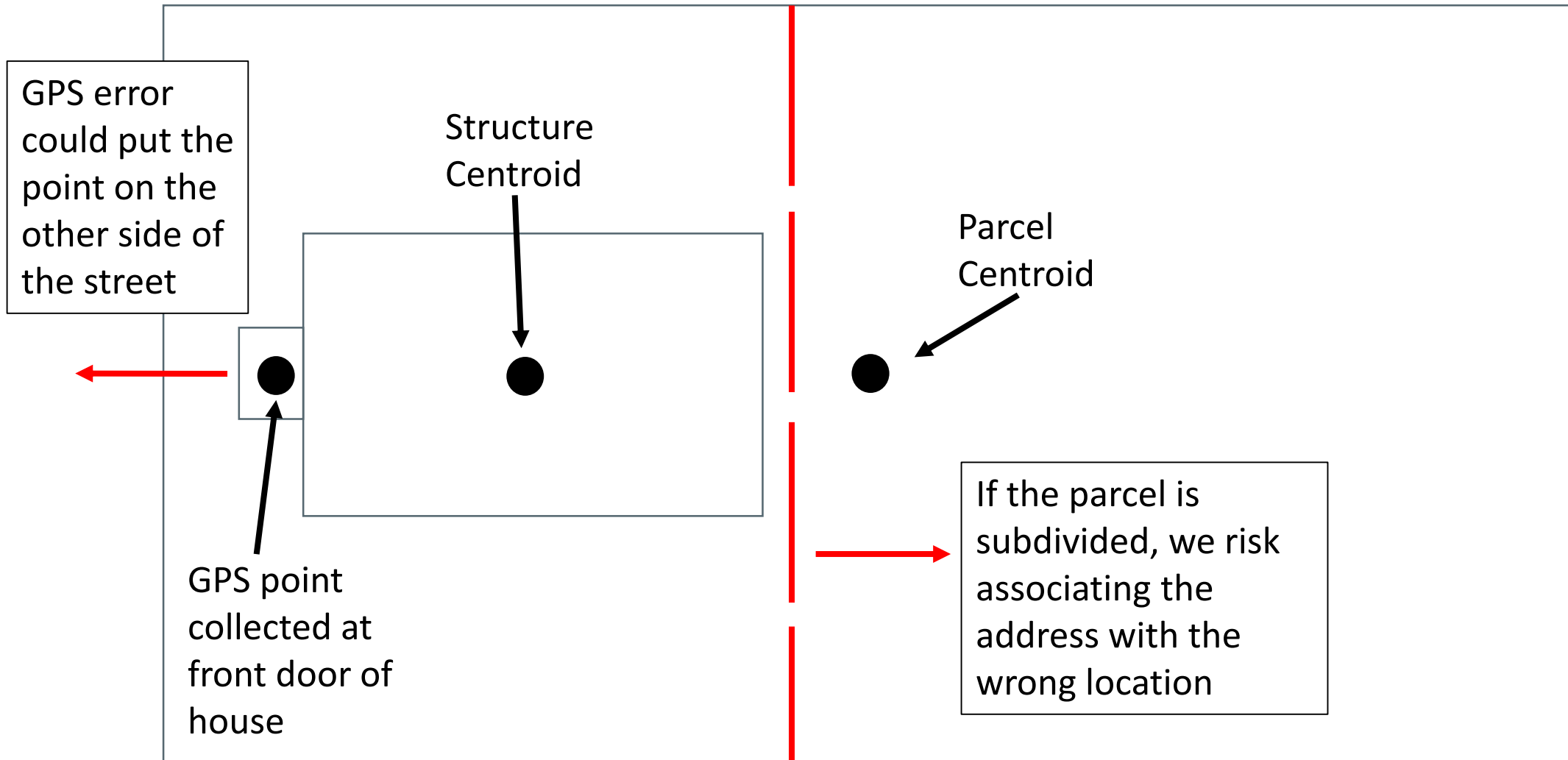
Example Street



# Where is 1234 Example Street?



# Which coordinate is best?



# Which coordinate is best?

Corporate Address:  
1234 Example Street

Example Street

Company  
Offices



Block 1001

Assembly Plant and  
Manufacturing  
Division



Block 1002

Warehouse and  
Distribution Services



Block 1003

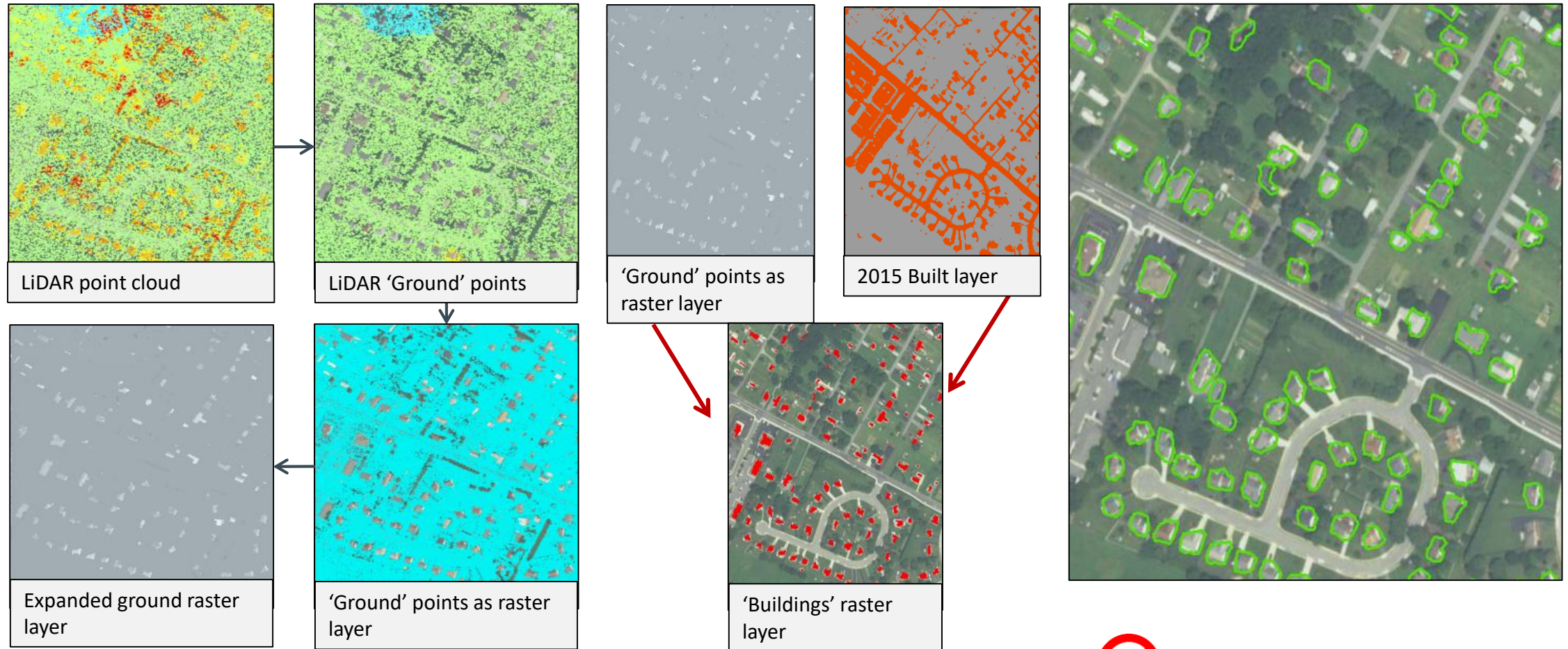
Corporate Drive

Interpolated  
point based  
on address  
range





# Use of LiDAR to identify structure locations and outlines

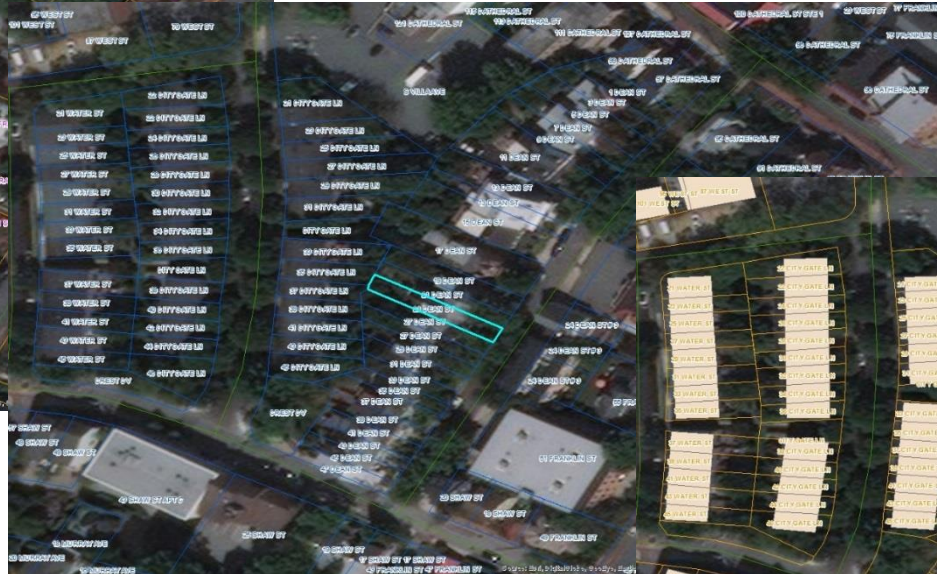


# Identifying locations using imagery, LiDAR, and parcel data

Address with  
Coordinates



Parcel linked to Address  
via Coordinates



Address from Parcel is  
transferred to Structure



# Identifying Address Locations

US Postal Service Delivery Sequence File (DSF)-Enhanced  
Line of Travel (eLOT<sup>®</sup>)

SEQUENCE	DSF_LOW_HN	DSF_STREET	DSF_SUBTYPE
55532C05100220416	3900	KIERAN	ST
55532C05100220417	3912	KIERAN	ST
55532C05100220418	3916	KIERAN	ST
55532C05100220419	3920	KIERAN	ST
55532C05100220420	3930	KIERAN	ST
55532C05100220421	3934	KIERAN	ST
55532C05100220422	4000	KIERAN	ST
55532C05100220423	4008	KIERAN	ST
55532C05100220424	4010	KIERAN	ST
55532C05100220425	4022	KIERAN	ST
55532C05100220426	4026	KIERAN	ST
55532C05100220427	4034	KIERAN	ST
55532C05100220428	4036	KIERAN	ST



# Identifying and Determining Address Locations

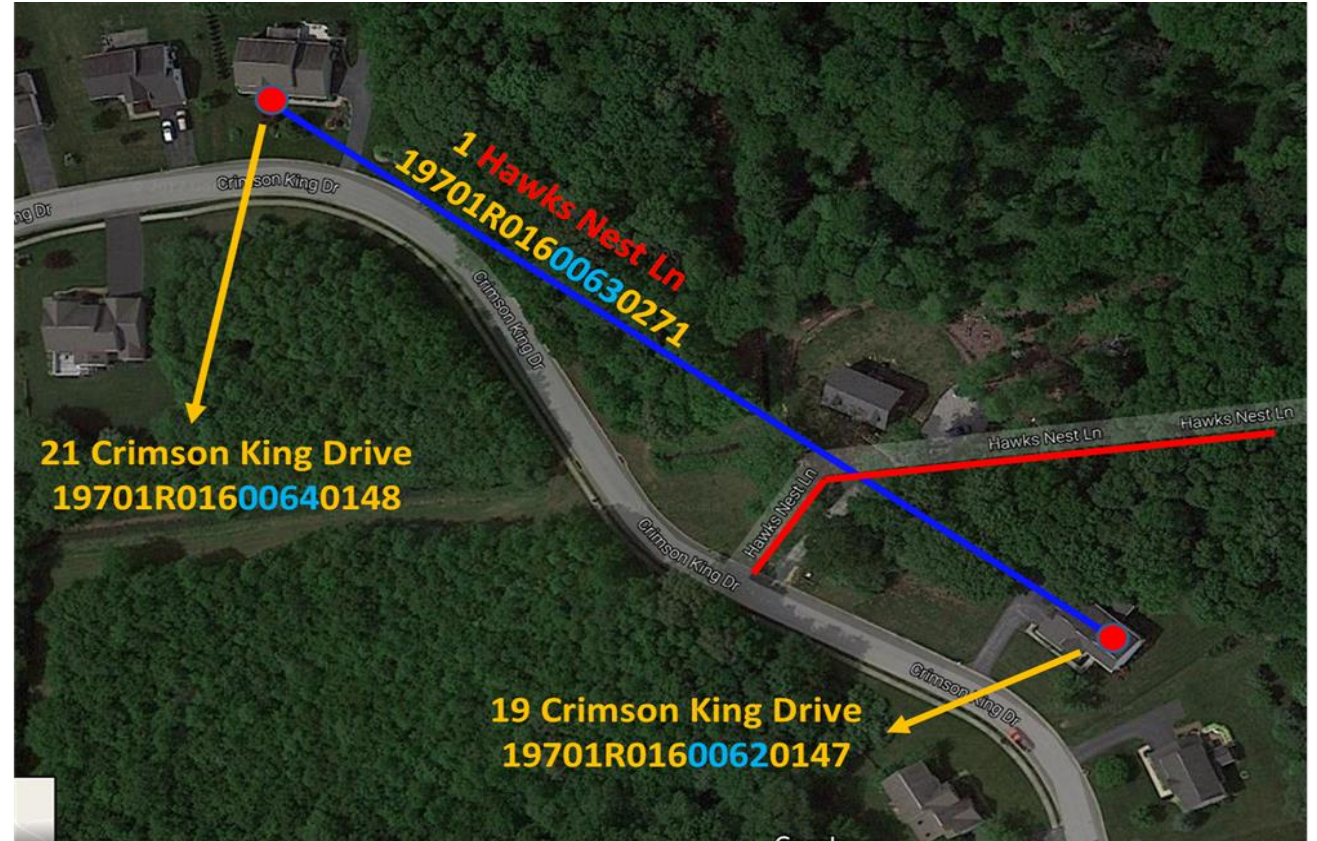
US Postal Service DSF-eLOT®

Question:

Where is **1 Hawks Nest Lane**?

Answer:

Somewhere between **19 Crimson King Drive** and **21 Crimson King Drive**



# The Importance of Metadata

For any given coordinate location, we need to know:

- What does the point represent?
  - Front door or other entrance.
  - Roof top or structure centroid.
  - Centroid of a geographic area (i.e., parcel, ZIP Code, census tract, county).
- How was it collected or determined?
  - Interpolated based on address range.
  - Hand-held GPS.
  - Land survey.
  - Digitized or calculated from imagery.
- What is the level of accuracy?
  - Surveyor/engineering quality.
  - GPS error/offset.

# Thank You

Michael Ratcliffe

Assistant Division Chief, Geographic Standards, Criteria, Research, and Quality

Geography Division

US Census Bureau

[michael.r.ratcliffe@census.gov](mailto:michael.r.ratcliffe@census.gov)