ALLOCATING 2020 CENSUS POPULATION AND HOUSEHOLD COUNTS TO THE COG 3722 TAZ SYSTEM

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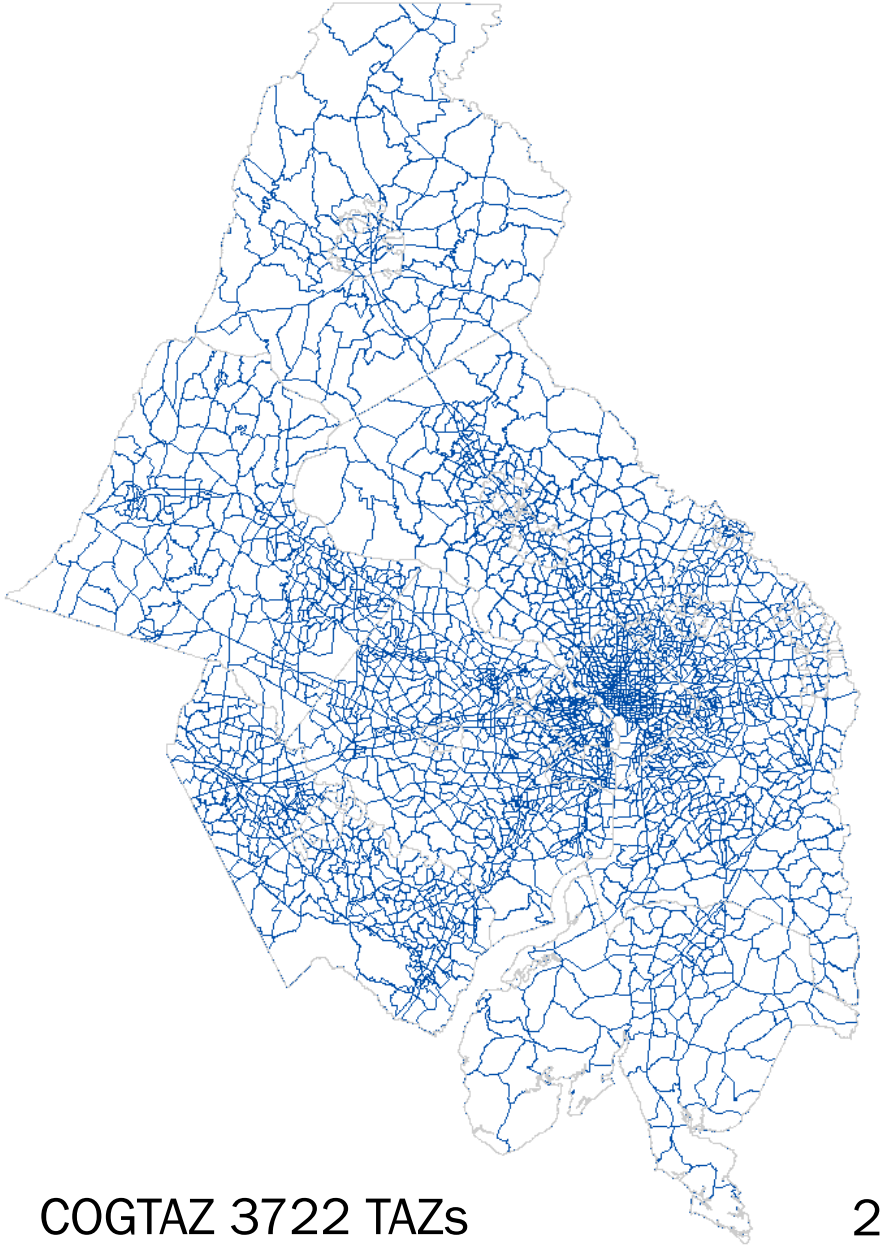
Metropolitan Washington
Council of Governments

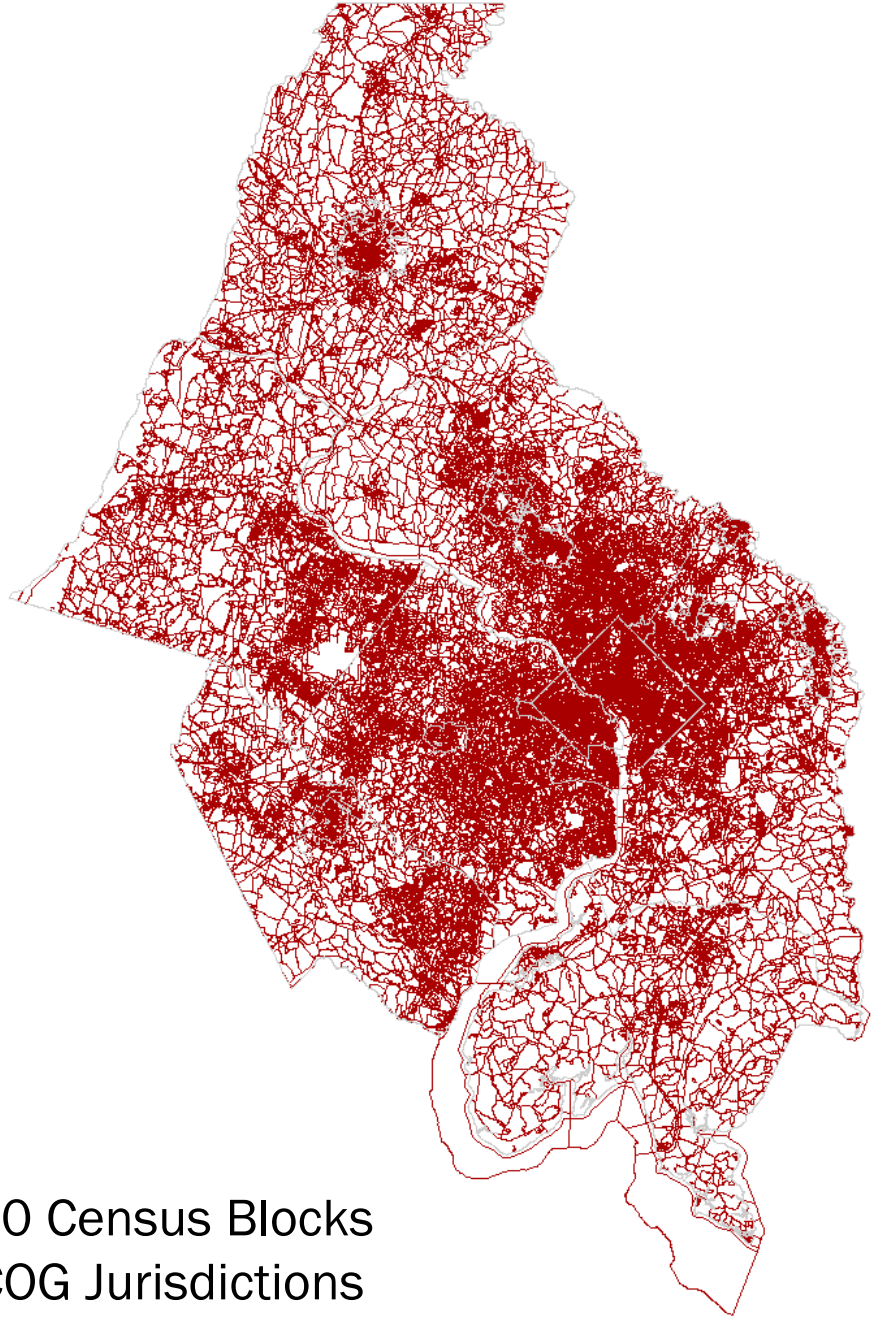
2020 Census and Cooperative Forecasting

- Opportunity
  - Block level counts from the Decennial Census provide highest quality data available for population and household counts in small area geography.

- Challenge
  - Geographic mismatch
    - 3,063 TAZs in COG Jurisdictions
    - 54,293 2020 Blocks in COG Jurisdictions



COGTAZ 3722 TAZs
In COG Jurisdictions



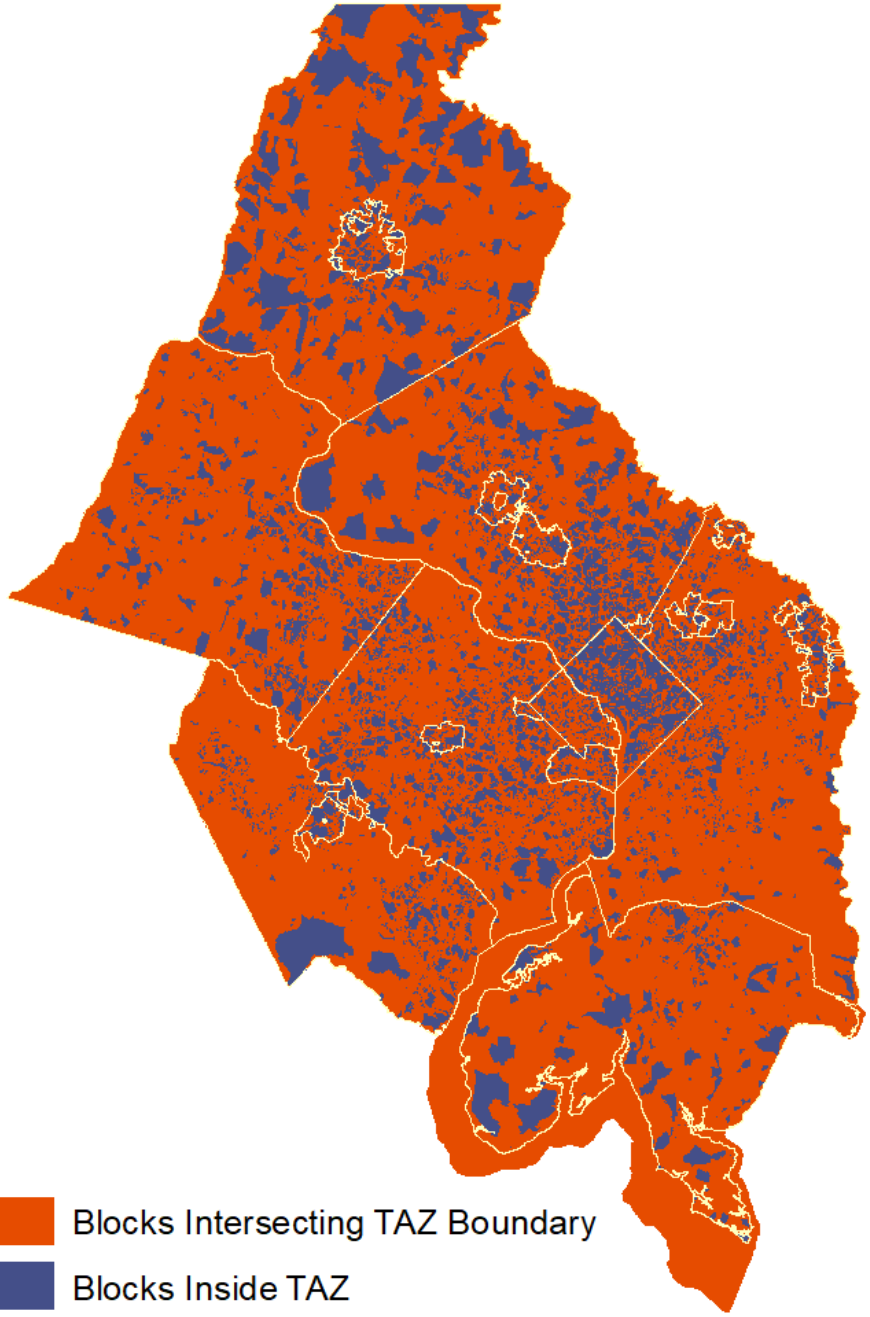
2020 Census Blocks
In COG Jurisdictions

Blocks to TAZ Allocation

- COG and/or TPB Staff analyze and allocate Block- or Block Group-level Decennial Census data to the COG/TPB TAZ system every 10 years.
- Allocation is inexact due to differing geographic levels and noncommon boundaries between the two systems
- Elimination of Census TAZs and addition of differential privacy “fuzziness” are new complications for the 2020 Census.
- COG and TPB staff are analyzing the 2020 Census data to determine the most appropriate way to allocate the Decennial Census data to our zone system.

Overlapping Boundaries

- 30,429 (56%) out of the 54,293 blocks in COG jurisdictions are fully within a TAZ
- Count data from 23,864 blocks overlaps at least one TAZ.
- Count data does not overlap jurisdictions



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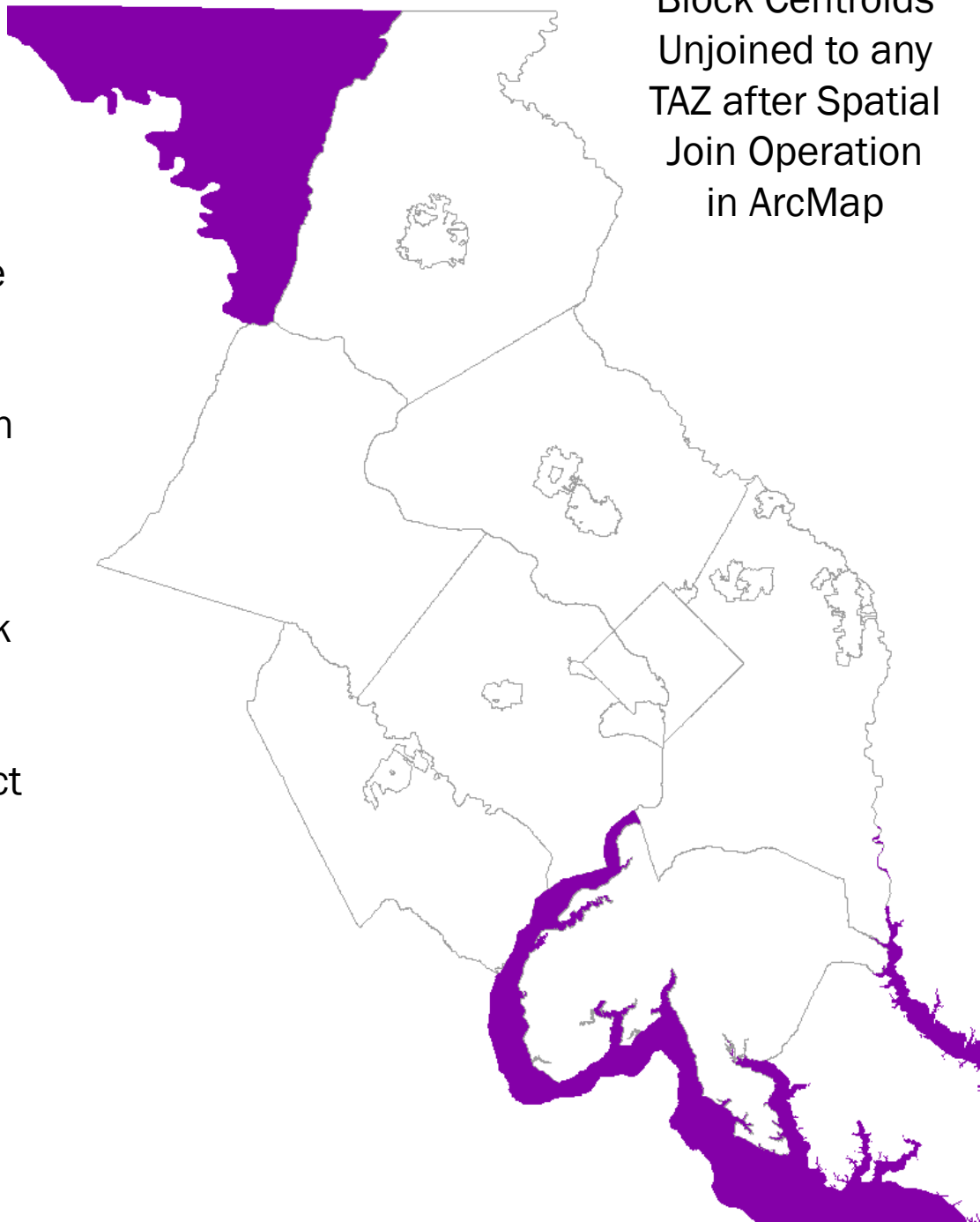
Challenges

- Inconsistent or incompatible geography
- Geographic borders between the two polygon feature classes are not identical.
- A test looking at where block centroids fall using a simple spatial join overlay did not place all blocks in the correct jurisdiction.



Block Centroids Unjoined to any TAZ after Spatial Join Operation in ArcMap

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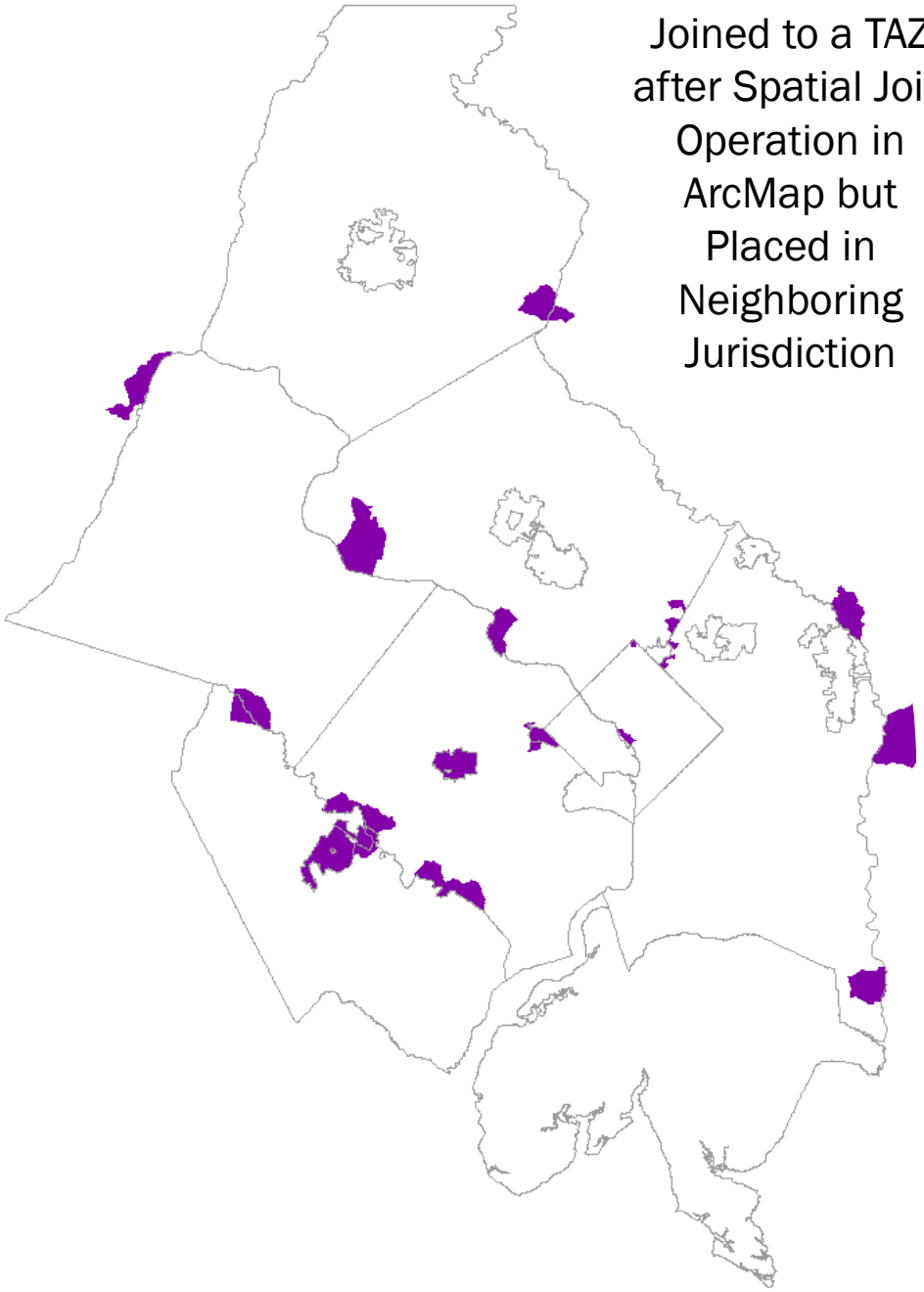

Block Centroids Joined to a TAZ after Spatial Join Operation in ArcMap but Placed in Neighboring Jurisdiction

Using Block-Level Data for TAZ Allocation

- For the 2020 enumeration, the Census Bureau has introduced small adjustments to small area datasets to ensure anonymity of responses.
- As data is aggregated into larger geographies, the larger datasets provide more safeguard against unmasking and the errors are eliminated.
- COG staff checked the 2020 Census geographic hierarchy for consistency for all blocks, block groups, Census tracts, jurisdictions and states in the District of Columbia, Maryland, Virginia and West Virginia.
- From blocks on up to states, all data aggregates consistently and completely.
- The total of all blocks within a block group always added up to the total for their containing block group for population, households, group quarters, etc.

Using Block-Level Data for TAZ Allocation

- All count data for Blocks always added up to the count total for their Block Group.
- All count data for Block Groups always added up to the count total for their Census Tract.
- All count data for Census Tracts always added up to the count total for their County/Independent City.
- All count data at the County level always added up to the count total for the State/State-Equivalent.

Using Block-Level Data for TAZ Allocation

- Any errors introduced by differential privacy for a given level are balanced by the errors introduced in nearby geographies.
- Errors introduced at higher geographic levels are “faithfully” distributed to its constituent sub-geographies.
- Even though lower geographies will contain intentional errors due to differential privacy, COG/TPB staff believe the lower-level geographies remain the best available representation of the true count.
- Because they aggregate faithfully, the Census to TAZ allocation for count data can be performed at the block level.
- If desired, data can later be aggregated to block group of Census tract level geographies with highest achievable accuracy.

Next Steps

- COG and TPB staff will continue to analyze Census data with respect to the COG 3722 Zone System
- Staff will allocate Census data TAZs in the most appropriate way.
    - Due to geographic mismatch, some misallocations are inevitable at the TAZ level.
    - County-equivalent jurisdictions will have the same totals as the county-equivalent totals from the 2020 Census.
    - Due to overlapping TAZ boundaries at the borders of Maryland cities and towns, the aggregated TAZ totals for Maryland municipalities may not be an exact match to the totals from the 2020 Census
- No allocation method can correct for the intentional errors introduced by Census Bureau due to differential privacy.