

CLAIMS

1. A method for partitioning a geographic area comprising:
 - partitioning the geographic area into geographic units;
 - determining, for each respective geographic unit, a central location of the respective geographic unit;
 - determining, for each respective geographic unit, an aggregate demand location of the respective geographic unit based on pick-up locations in the respective geographic unit in a time period;
 - determining, for each respective geographic unit, an aggregate supply location of the respective geographic unit based on provider locations when responding to requests having pick-up locations in the respective geographic unit in said time period;
 - determining, for each respective pair of geographic units among a plurality of the geographic units, a connection strength between the respective pair of geographic units based on distance metrics between the respective pair of geographic units, wherein the distance metrics are determined based on the central locations, the aggregate supply locations, and the aggregate demand locations of the respective pair of geographic units in said time period; and
 - assigning each respective geographic unit to a respective one of one or more aggregate geographic units based on the determined connection strengths.
2. The method of claim 1, further comprising:
 - determining, for each respective pair of geographic units, a central distance, wherein the central distance is based on a distance between the central locations of the geographic units of the respective pair of geographic units in said time period.
3. The method of claim 2, wherein the central distance is the Euclidean distance between the geometric centers of the respective pair of geographic units.
4. The method of claim 2, further comprising:
 - determining, for each respective pair of geographic units having pick-up locations in said time period, a demand distance, wherein the demand distance is based on a distance between the aggregate demand locations of the geographic units of the respective pair of geographic units in said time period.

5. The method of claim 4, wherein the demand distance is the Euclidean distance between the aggregate demand locations of the respective pair of geographic units.
6. The method of claim 4, further comprising:
determining, for each respective pair of geographic units, a supply distance, wherein the supply distance is based on a distance between the aggregate supply locations of the geographic units of the respective pair of geographic units in said time period.
7. The method of claim 6, wherein the supply distance is the Euclidean distance between the aggregate supply locations of the respective pair of geographic units.
8. The method of claim 6, wherein the connection strength between two geographic units of the respective pair of geographic units is determined based on the central distance, the demand distance, and the supply distance between the two geographic units of the respective pair of geographic units.
9. The method of claim 8, wherein the aggregate demand location of the respective geographic unit is based on an average of the distribution of pick-up locations in the respective geographic unit in said time period.
10. The method of claim 8, wherein the aggregate supply location of the respective geographic unit based on an average of the distribution of provider locations when responding to requests having pick-up locations in the respective geographic unit in said time period.
11. The method of claim 8, wherein the connection strength between two geographic units of the respective pair of geographic units is directional and wherein the connection strength is determined in both directions.
12. The method of claim 8, wherein the connection metric is further determined based on a supply distance modifying factor.
13. The method of claim 12, wherein the supply distance modifying factor for the supply distance into a demand geographic unit from a supply geographic unit is based on a ratio of a

total number of suppliers of the demand geographic unit and the number of suppliers of the demand geographic unit from the supply geographic unit.

14. The method of claim 8, wherein assigning each respective geographic unit to a respective one of one or more aggregate geographic units based on the determined connection strengths, comprises:

- assigning a first geographic unit to a first aggregate geographic unit; and
- assigning a second geographic unit to said first geographic unit when the connection strength between the first geographic unit and the second geographic unit exceeds a predetermined threshold.

15. The method of claim 8, wherein assigning each respective geographic unit to a respective one of one or more aggregate geographic units based on the determined connection strengths, comprises:

- determining a first modularity metric of a geographic unit based on said geographic unit being assigned to a first aggregate geographic unit;
- determining a second modularity metric of said geographic unit based on said geographic unit being assigned to a second aggregate geographic unit;
- assigning said geographic unit to the first aggregate geographic unit when the first modularity metric of said geographic unit is larger than the second modularity metric of said geographic unit.

16. The method of claim 8, further comprising:

- determining, for each respective aggregate geographic unit, a cluster demand location, wherein the cluster demand location is determined based on an average of the aggregate demand locations of all geographic units assigned to the respective aggregate geographic unit; and

- determining, for each respective aggregate geographic unit, a cluster supply location, wherein the cluster supply location is determined based on an average of the aggregate demand locations of all geographic units assigned to the respective aggregate geographic unit.

17. The method of claim 16, further comprising:

assigning, to each respective geographic unit of the respective aggregate geographic unit, the cluster demand location and the cluster supply location of the respective aggregate geographic unit; and

determining a pricing associated with the respective geographic unit in said time period based on the respective cluster demand location and cluster supply location.

18. A method for partitioning a geographic area comprising:

partitioning the geographic area into a grid of uniform geographic units;

determining a central location of at least one of the geographic units;

receiving information related to pick-up locations and provider locations in the geographic area associated with a time period;

determining an aggregate demand location of said at least one of the geographic units based on the distribution of pick-up locations in said at least one of the respective geographic units in said time period;

determining an aggregate supply location of said at least one of the geographic units based on the distribution of provider locations when responding to requests having pick-up locations in said at least one of the geographic units in said time period;

determining a connection metric between two geographic units of said at least one of the geographic units, wherein the connection metric is based on a central distance, a demand distance, and a supply distance, wherein the central distance is a distance between the central locations, the demand distance is a distance between the aggregate supply locations, and the supply distance is a distance between the aggregate demand locations of the two geographic units in said time period; and

assigning said at least one of the geographic units to an aggregate geographic unit based on the connection metric.

19. A method for partitioning a geographic area comprising:

receiving information related to pick-up locations and provider locations in the geographic area associated with a time period;

partitioning the geographic area into a uniform set of geocoded cells;

determining, for each respective geocoded cell of the set, a central location of the respective geocoded cell;

determining, for each respective geocoded cell of the set, an aggregate demand location of the respective geocoded cell based on pick-up locations in the respective geocoded cell in said time period;

determining, for each respective geocoded cell of the set, an aggregate supply location of the respective geocoded cell based on provider locations when responding to requests having pick-up locations in the respective geocoded cell in said time period;

determining, for each respective pair of geocoded cells among a subset of the geocoded cells, a connection strength between the respective pair of geocoded cells based on distance metrics between the respective pair of geocoded cells, wherein the distance metrics are determined based on a distance between the central locations of the respective pair of geocoded cells, a distance between the aggregate supply locations of the respective pair of geocoded cells in said time period, and a distance between the aggregate demand locations of the respective pair of geocoded cells in said time period; and

assigning each respective geocoded cell to a respective one of one or more clusters based on the determined connection strengths.

20. The method of claim 19, wherein the subset of the geocoded cells comprises a plurality of geocoded cells, wherein the distance between the central locations of each of the plurality of geocoded cells is less than a predetermined maximum distance or wherein the number of hops between each of the plurality of geocoded cells is fewer than a predetermined maximum number of hops.