

Turn Table in Network Analysis

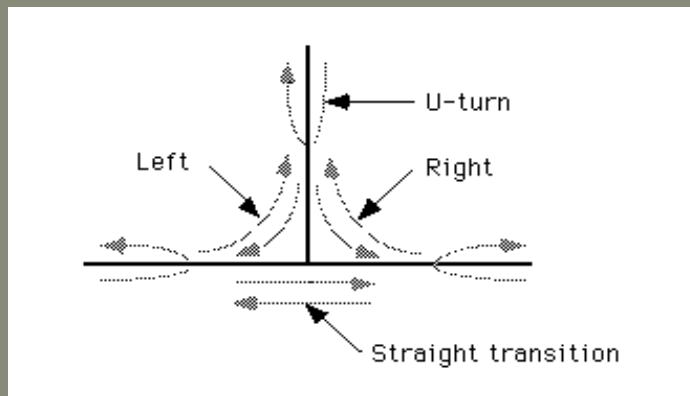
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Turn Table Purpose

- In Network analysis the distance traveled along each segment is only part of the travel time. Each Junction also requires time to traverse. Turn Tables are used to store these values for more complete route analysis.

What is a turn in network Analysis?

- “A turn is a transition from one street segment to another at a junction”



Possible Turns


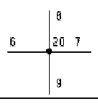

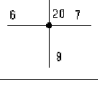

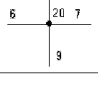
- Left Turn
- Right
- Straight
- U-Turn
- There are n^2 possible turns at an intersection with n being the number of edges at an intersection

Turn impedance

- The amount of time required to make a turn
- DIRECTIONAL- Different turns take longer to complete

Turn Table

Turns in the network dataset

| Situation | Representation | Turntable | | | | 0 = No Impedance -1 = No Turn | |
|--|---|---------------|------------|------------|-------|----------------------------------|--|
| | | FROM NODE# | TO ARC# | TO ARC# | ANGLE | TIME IMPEDANCE (seconds) | |
| U-Turn  |  | 20 | 6 | 6 | 180 | 20 | |
| Stop sign  |  | 20 | 6 | 7 | 0 | 15 | |
| | | 20 | 6 | 8 | 90 | 20 | |
| | | 20 | 6 | 9 | -90 | 10 | |
| No Right Turn  |  | 20 | 6 | 9 | -90 | -1 | |
| | | 20 | 6 | 7 | 0 | 5 | |
| | | 20 | 6 | 8 | 90 | 10 | |

| OID | HODE_ | ARC1_ | ARC2_ | AZIMUTH | ANGLE | ARC1_ID | ARC2_ID | MINUTES |
|-----|-------|-------|-------|------------|------------|---------|---------|---------|
| 0 | 138 | 166 | 251 | 272.552002 | 91.157303 | 166 | 251 | 0.5 |
| 1 | 138 | 166 | 154 | 272.552002 | -0.319168 | 166 | 154 | 0.25 |
| 2 | 138 | 166 | 153 | 272.552002 | -89.601799 | 166 | 153 | 0.25 |
| 3 | 138 | 154 | 251 | 92.871002 | -88.523499 | 154 | 251 | 0.25 |
| 4 | 138 | 154 | 166 | 92.871002 | 0.319168 | 154 | 166 | 0.25 |
| 5 | 138 | 154 | 153 | 92.871002 | 90.7174 | 154 | 153 | 0.5 |
| 6 | 190 | 265 | 228 | 2.24202 | 94.778 | 265 | 228 | 0.5 |
| 7 | 190 | 265 | 225 | 2.24202 | 0.021412 | 265 | 225 | 0.25 |
| 8 | 190 | 265 | 224 | 2.24202 | -81.2052 | 265 | 224 | 0.25 |
| 9 | 190 | 228 | 265 | 87.463997 | -94.778 | 228 | 265 | 0.25 |
| 10 | 190 | 228 | 225 | 87.463997 | 85.243401 | 228 | 225 | 0.5 |
| 11 | 190 | 228 | 224 | 87.463997 | 4.01679 | 228 | 224 | 0.25 |
| 12 | 190 | 225 | 265 | 182.220993 | -0.021412 | 225 | 265 | 0.25 |
| 13 | 190 | 225 | 228 | 182.220993 | -85.243401 | 225 | 228 | 0.25 |
| 14 | 190 | 225 | 224 | 182.220993 | 98.773399 | 225 | 224 | 0.5 |
| 15 | 190 | 224 | 265 | 263.446991 | 81.2052 | 224 | 265 | 0.5 |
| 16 | 190 | 224 | 228 | 263.446991 | -4.01679 | 224 | 228 | 0.25 |
| 17 | 190 | 224 | 225 | 263.446991 | -98.773399 | 224 | 225 | 0.25 |
| 18 | 200 | 280 | 244 | 2.13658 | -89.981201 | 280 | 244 | 0.25 |
| 19 | 200 | 280 | 242 | 2.13658 | 88.644897 | 280 | 242 | 0.5 |
| 20 | 200 | 280 | 241 | 2.13658 | 1.97814 | 280 | 241 | 0.25 |

Sleect Turns.dbf
Database file created from a turn table in Arcinfo workstation

Conclusion

- The turn database file can be imported into a network dataset along with the network segments to perform Network Analysis

References

Introduction to Geographic Information Systems Kang-tsung Chang, 5th Ed., ch 17pgs
373-374
ArcGis Desktop Help Turns in the Network Dataset