

Bar Crawl- Shortest Route Problem

Group 8

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Problem

How to complete a Bar Crawl in downtown Syracuse
on foot with minimal walking (shortest distance)

- Who cares and why?
 - Target audience- Syracuse students
 - Minimize walking & maximize bar time



List of Downtown Syracuse Bars

1. The Evergreen (Pub)
2. Ale 'n' Angus (Pub)
3. Al's Wine & Whiskey Lounge (Bar)
4. Wolff's Biergarten (Bar)
5. Blue Tusk (Bar)
6. Empire Brewing Company (Bar)
7. Kitty Hoyne's Irish Pub (Pub)
8. Clinton Street Pub (Pub)
9. Benjamin's On Franklin (Bar)
10. The Hops Spot (Bar)
11. The Penny Pub (Bar)
12. Mulrooney's (Bar)
13. Limerick Pub (Bar)
14. Funk 'n Waffles (Bar)
15. Syracuse Suds Factory (Bar)

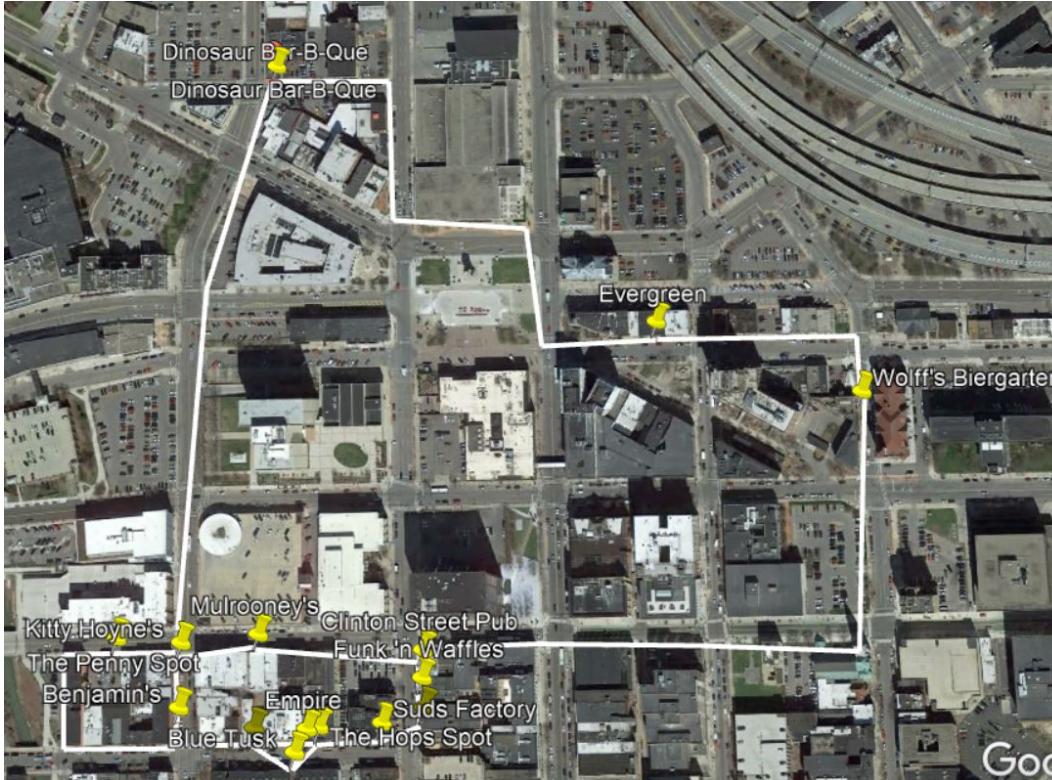


The Bar Crawl Network

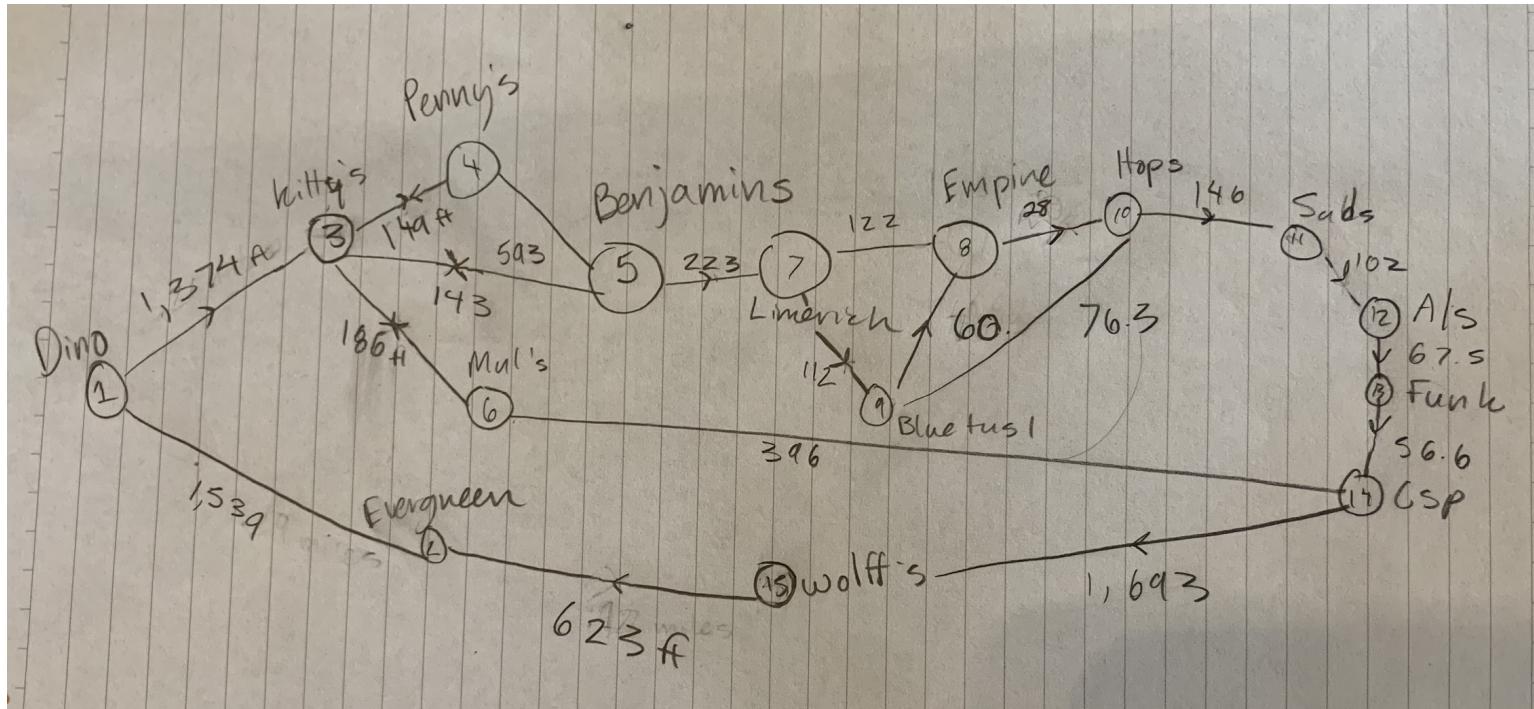


- Node 1 represents the origin (Dinosaur Barbecue) and nodes 2-15 are the destinations
- The network shows the possible routes for consideration
- Assume the branches are two-way traffic and that some nodes will be passed through twice in order to arrive at every destination at least once
- Value on each branch represents distance in feet

The Bar Crawl Network



Our Model



Solving the Network using Excel Solver

	2. Evergreen	3. Kitty's	4. Penny's	5. Benjamin'	6. Mully's	7. Limerich	8. Empire	9. Blue Tusk	10. Hops	11. Studs	12. Al's	13. Funk'n Waffles	14. CSP	15. Wolff's
1														
2	1. Dino	1539.00	1374.00											
3	2. Evergreen			149.00	143.00	186.00								
4	3. Kitty's			149.00	593.00									
5	4. Penny's			143.00	593.00	223.00								
6	5. Benjamin's			186.00										396.00
7	6. Mully's					233.00		122.00	112.00					
8	7. Limerich						122.00	60.00	28.00					
9	8. Empire						112.00	60.00	76.00					
10	9. Blue Tusk							28.00	76.00	146.00				
11	10. Hops								146.00	102.00				
12	11. Studs									68.00				
13	12. Al's										68.00			
14	13. Funk'n Waffles											57.00		
15	14. CSP													1693.00
16	15. Wolff's													1693.00
17														

Subject to the Constraints:

```
$B$44 = 1
$B$45:$B$57 >= 1
$C$43 = 1
$C$45:$C$57 = $B$45:$B$57
$T$1:$T$33 = integer
```

Solving the Network using Excel Solver

Results:

- Minimum path =
 - 1 - 3 - 6 - 3 - 4 - 3 - 5 - 7 - 9 - 8 - 10 - 11 - 12 - 13 - 14 - 15 - 2
- Minimum distance
 - 5,299 ft = 1.004 miles

Objective Function		
Min Distance (ft)	5299.00	
Constraints		
	Arrivals	Departures
1. Dinos	0	1
2. Evergreen	1.00	0
3. Kitty's	3.00	2.999999
4. Penny's	1.00	1
5. Benjamin's	1.00	1
6. Mully's	1.00	1
7. Limerich	1.00	1
8. Empire	1.00	1
9. Blue Tusk	1.00	1
10. Hops	1.00	1
11. Suds	1.00	1
12. Als	1.00	1
13. Funk 'n Waffles	1.00	1
14. CSP	1.00	1
15. Wolff's	1.00	1

Real World Application

- This network can be used to solve various problems such as:
 - Minimal path to clear snow in downtown Syracuse
 - Package Delivery Route
 - Sightseeing



Questions?



Picture sources

https://www.kare11.com/img/resize/content.kare11.com/photo/2017/04/19/Bar%20Crawl%20North%20High%20School_1492613518951_9256037_ver1.0.jpg?mode=pad&bgcolor=000000&scale=both&width=750&height=422

<https://stepoutbuffalo.com/wp-content/uploads/2016/07/BIG-FAT-SUNDAY-FUNDAY-BAR-CRAWL-Photo-plain.jpg>

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