Urban Ministries of Durham
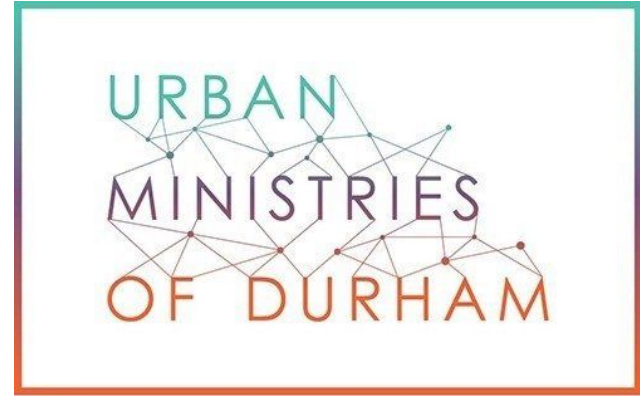
Project 1, BIOS611, Fall 2019

Ji-Eun Park

What is Urban Ministries of Durham (UMD)?

- A Durham-based non-profit organization that provides food, clothing, shelter and supportive services to our neighbors in need.

- Main service is to provide food, shelter, clothing and supportive services for over 6,000 men, women and children annually.

URBAN
MINISTRIES
OF DURHAM

FOOD, SHELTER AND A FUTURE

Goals and Research Questions

Goals

- Find meaningful insights to improve UMD's services in the future

Research Questions

- How many clients visited more than one single year (i.e. multiple times over the years)?
- Are there specific service/goods in increased demand recently?
- Are there specific trends in demand in certain seasons?
- Are there higher demand of support from the organization than before? Should the organization be prepared for more budget in order to support the future demands?

Data Source

- Data was provided from the UMD organization which contains a collection of data with 79838 observations from 1990's to current year 2019.

- Original dataset consists of:
  - 79,838 observations
  - 18 variables

- After preprocessing,
  - 79,787 observations
  - 10 variables

After Preprocessing...

- For the services/goods provided with missing values were imputed with 0 (non-received)

- Removed unused variables.

- Removed observations with abnormal dates (before founding year(1983), future)

| Variable	Details
`Date`	Date
`Client File Number`	Unique ID
`Bus Tickets (Number of)`	Number of Bus Tickets Provided
`Food Provided for`	Number of Food Provided
`Food Pounds`	Weight of Food Provided in lbs
`Clothing Items`	Number of Clothes Supported
`Diapers`	Number of Diapers Provided
`School Kits`	Number of School Kits Provided
`Hygiene Kits`	Number of Hygiene Kits Provided
`Financial Support`	Monetary support provided in dollars

Q1: Are there higher demand of support from the organization than before? Should the organization be prepared for more budget in order to support the future demands?

- The number of clients (organizations) are and increasing drastically by each year
- Service/goods support is increasing, while financial support is decreasing (since mid 2000s) over time.

Number of Cases Filed Over Time

Amount of Dollars in Financial Support Over Time
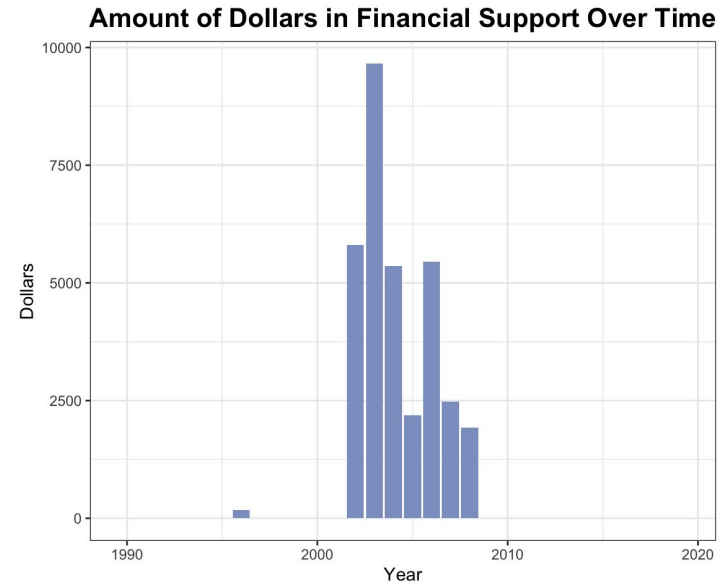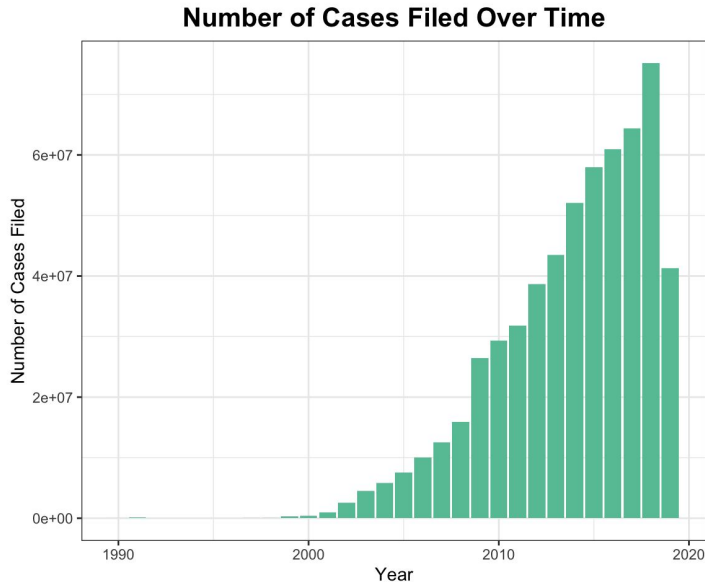
Q2: Are there specific service/goods in higher demand recently?

- Not enough BusTicket data to see a trend
- Higher trend in needs of Diapers and Schoolkits
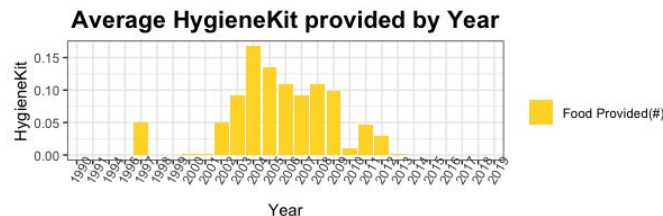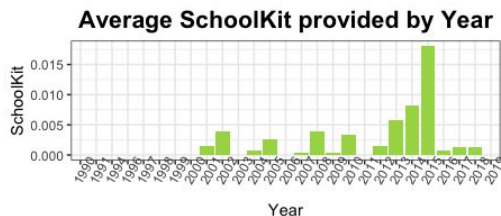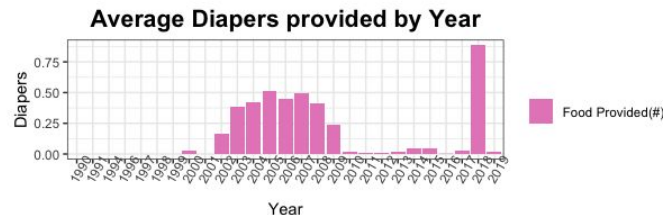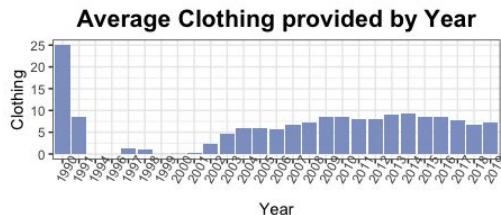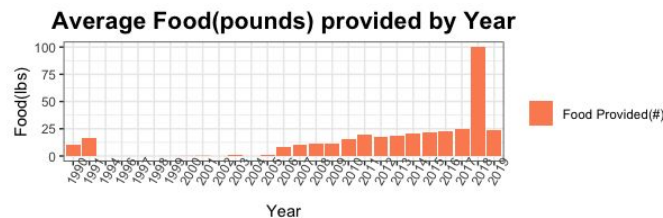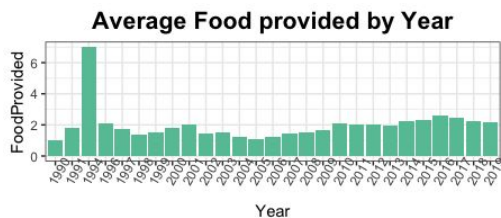
Q3: Are there specific trends in higher demand in certain seasons?

- Slightly higher demands of clothings in winter can be seen.
- Also, slightly higher demands in diapers in winter.
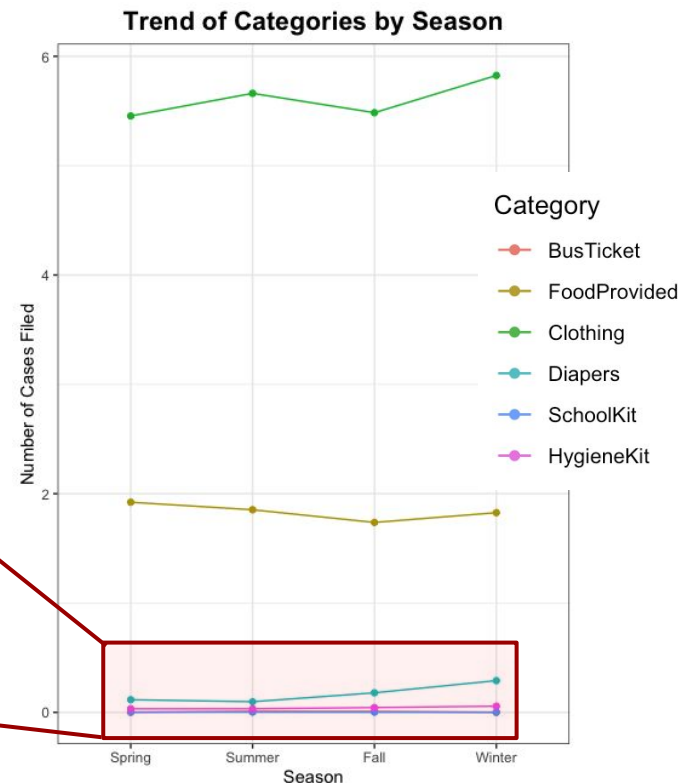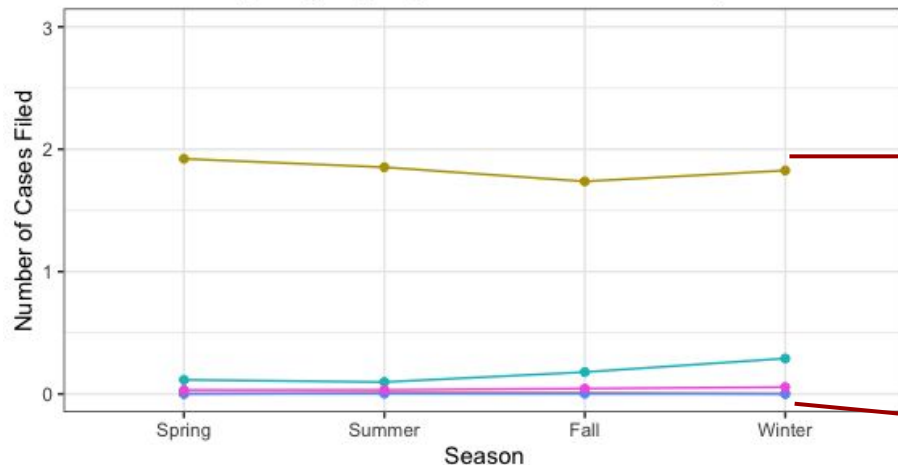- Abnormal value in diapers in Jan 2018 which might caused bias.

Q3: Are there specific trends in higher demand in certain seasons?

- Multiple Comparisons for **Clothings**

Season	n	n.complete	mean.sd	pval.anova	median.IQR	pval.KW
Spring	24.000	24	5.45 +/- 3.62		6.8 (1.64,8.26)	
Summer	24.000	24	5.5 +/- 3.34		6.33 (2.25,8.3)	
Fall	24.000	24	5.4 +/- 3.46		6.38 (2.82,8.2)	
Winter	24.000	24	5.46 +/- 3.42	1	6.57 (2.23,8.14)	0.997

Season	pm.p.Tukey	pm.p	wilcoxon.p.holm	wilcoxon.p
Summer - Spring	1.000	0.959	1.000	0.984
Fall - Spring	1.000	0.960	1.000	0.820
Winter - Spring	1.000	0.991	1.000	0.975
Fall - Summer	1.000	0.916	1.000	0.918
Winter - Summer	1.000	0.966	1.000	0.975
Winter - Fall	1.000	0.950	1.000	0.893

- Multiple Comparisons for **Diapers**

Season	n	n.complete	mean.sd	pval.anova	median.IQR	pval.KW
Spring	24.000	24	0.12 +/- 0.17		0.01 (0,0.19)	
Summer	24.000	24	0.1 +/- 0.16		0.01 (0,0.1)	
Fall	24.000	24	0.17 +/- 0.29		0.01 (0,0.38)	
Winter	24.000	24	0.29 +/- 0.68	0.32	0.01 (0,0.39)	0.896

Season	pm.p.Tukey	pm.p	wilcoxon.p.holm	wilcoxon.p
Summer - Spring	0.998	0.665	1.000	0.872
Fall - Spring	0.960	0.420	1.000	0.604
Winter - Spring	0.425	0.243	1.000	0.602
Fall - Summer	0.902	0.261	1.000	0.649
Winter - Summer	0.321	0.190	1.000	0.530
Winter - Fall	0.731	0.449	1.000	0.874

Q4: How many clients did they visit more than one single year?

- Only around 13% of the clients have visited and got aided more than three times.

- Indicates that our clients discontinue their visits in couple of years.
  - Reason is unknown, but can be helpful in analyzing or improving the service of UMD.

Proportion of Number of Visits Years per Client

13.1%   86.9%

Number of Visiting Years
- more than 3 visits
- <=3 visits
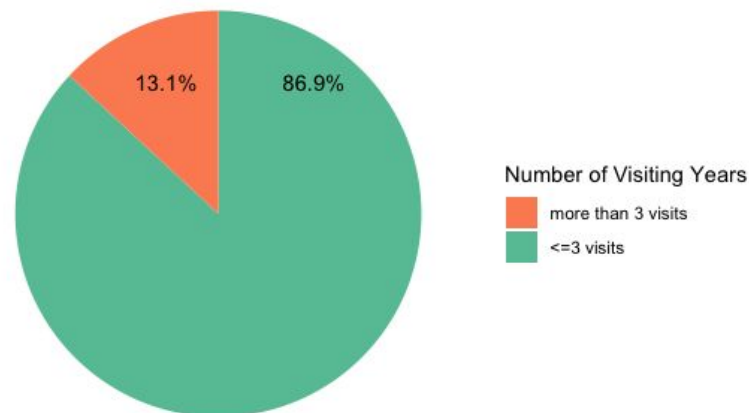
Conclusion

- UMD is growing fast!

  ⇒ Find more financial supports, better priced products (but with same quality), etc.

- Increase of demands in diapers and school kits

  ⇒ More clients with children, hence consider adding more service/goods for babies and youngs

- Higher demand in clothings and diapers in winter

  ⇒ Be prepared for the coming season!

- Majority of clients do not have continued visitings.

  ⇒ Identifying the reason to this discontinuity is important (No need? Not satisfied? Hard to reach?)

  ⇒ Satisfaction surveys can be helpful

Q&A

Conclusion

- Around 87% of our clients have revisited and need more than one time aids.

- The one who got the most aids 249 times between 2001 and 2019 and this is 50 times the average 5.2 cases.

- The average number of cases filed per year per client is 2.55 cases.

- There was no specific items or services in higher demand in recent 3 years.

- There was no item that have higher demand in certain seasons.

- The number of clients (organizations) are getting more and increasing as time goes by.

- Service/good support is increasing, while financial support is decreasing (since mid 2000s) over time.

Q1: How many clients visited more than one single year?

- One who got the most aids is 249 times between 2001 and 2019 (50 times the average, 5.2 cases)
- One who got the most aids per year is 36 times in 2012.

Top 10 Most Aided Clients and Average

Top 10 Most Aided Clients Per Year and Average