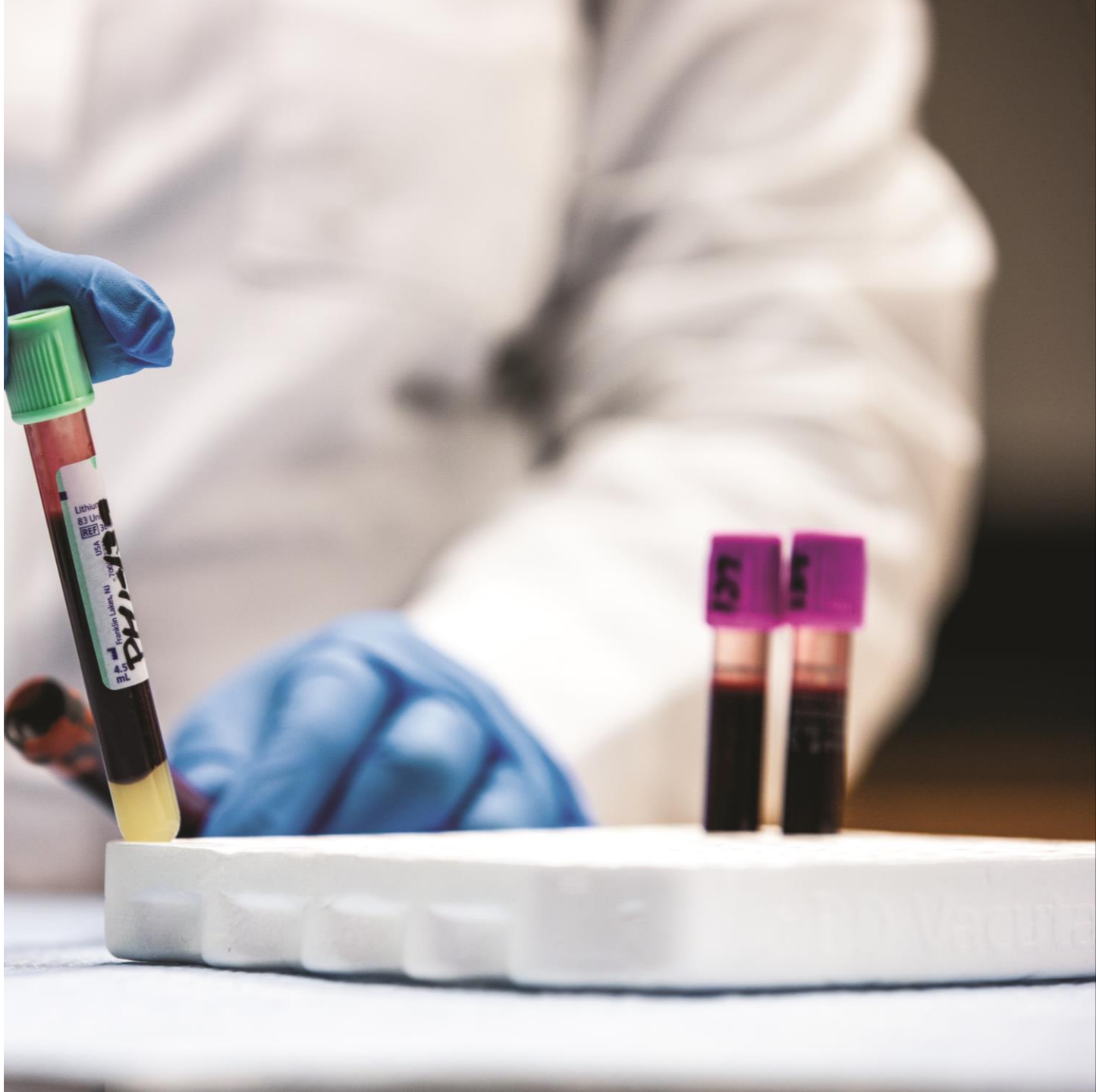
Microsoft

Lung Cancer audience and performance insights

Microsoft Advertising. Intelligent connections.



Agenda

1 Treatment trends

2 Audience insights

3 Personas

4 Correlated cancers

5 Keyword correlations

6 Brand awareness

7 Marketplace performance

8 Recommendations

Microsoft

Key findings

Screenings may increase

The U.S. government tries to increase lung cancer screening in 2020, but it's unlikely to pass this year with COVID-19 pandemic

If passed, screenings should increase 2.5x, and it will be available to 10% of the U.S. population

Barriers to testing remain:

- Lack of CT scanning
- Intrusive biopsies
- Low insurance coverage

Women

Women comprise two of three searchers for lung cancer

There are concerns over metastatic breast cancer as the cause of their lung cancer symptoms

They spend just over 2 months searching for treatment information

Overall, they live in the Southeast USA and they visit four sites to get consumer-quality lung cancer information

Metastatic cancers

In the study, we found indications that over 1/3 of searchers may have another cancer that has invaded their lungs

Those cancers include:

- Breast
- Colo-rectal
- Prostate
- Bone
- Blood
- Skin
- Pancreatic

These cancers are the most likely to spread throughout the body

This makes drugs that treat multiple cancers the most sought after

Healthcare provider (HCP) search

Please see the query sequencing dashboard for specific HCP keyword patterns

HCPs have very long, detailed search patterns

They focus on the drug brand names and their generic forms

HCPs seem most interested in side effects, using in combination with other cancer drugs or medical conditions like diabetes

Conservatively, over 50% of brand name mentions indicate an HCP

Upper funnel

Our study indicates that upper funnel terms (condition & symptoms) remains the largest driver of clicks and conversions over the 3-month analysis period

For the very last click by a searcher, 53% were on a generic, upper funnel term like "lung cancer'

The remaining 47% of clicks were a mix of drug brand terms or a lower funnel keyword like "lung cancer treatment'

Syndication

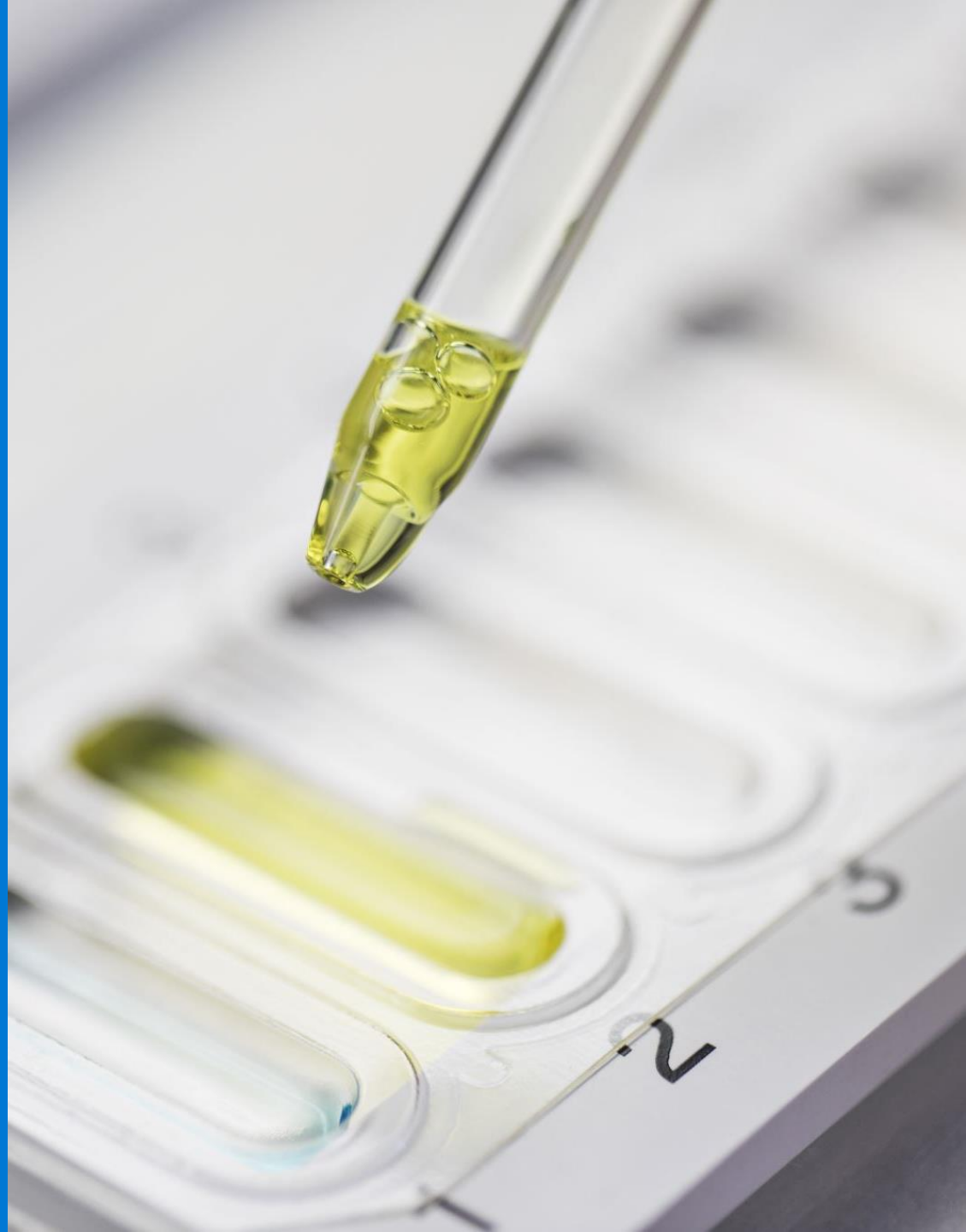
Overall, cancer searchers on owned & operated (O&O) properties (Bing, Yahoo & AOL) have shown a mixed bag of up-and-down volume

Syndication sites (like WebMD) have become more important in driving search volume and much lower cost-per clicks (CPCs)

Many searchers begin their lung cancer journeys on our partner sites, but ultimately convert from an O&O site

Please see Forecasts for more info

Lung Cancer treatment trends



Footnotes

Four things to know about lung cancer diagnoses

200,000

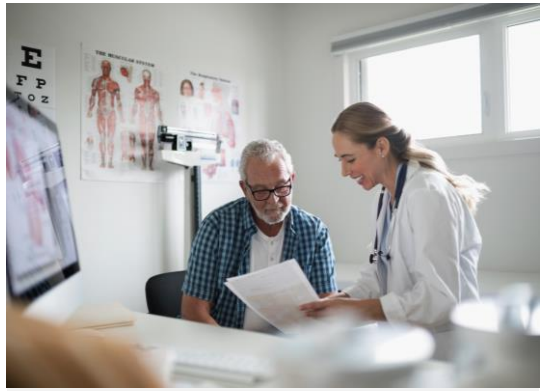
diagnoses in 2020

+26%

increase in 5-year survival rates

4%

of eligible Americans screened in 2018



-19%

decrease in lung cancer diagnoses

Source: https://www.webmd.com/lung-cancer/news/20191113/lung-cancer-report-delivers-good-bad-news#1 (retrieved on 7 July 2020)

Microsoft

Barriers to testing

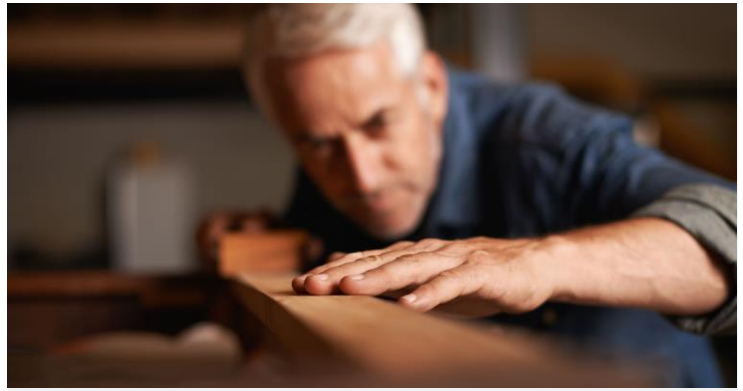
- Requires at least two tests and a biopsy (cost prohibitive)
- Biopsies can be dangerous
- Equipment is not available in all hospitals (CT scans)
- Medicaid does not cover screenings
- ‘Death Sentence’ stigma

Source: https://www.lungcancerresearchfoundation.org/news/ (retrieved on 7 July 2020)

The most at-risk populations

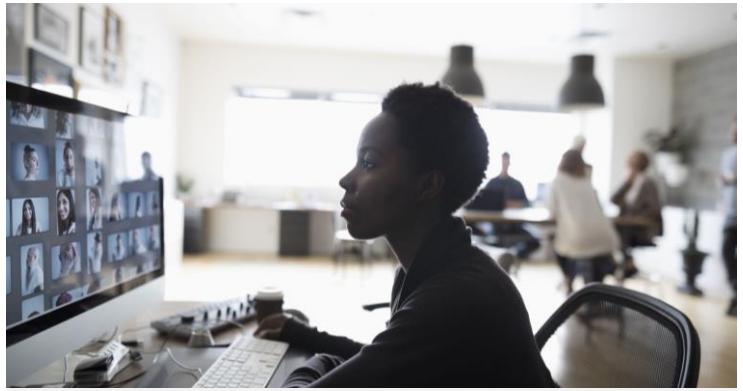
COVID-19 infected

- Immune system response to inflammation
- Pulmonary system compromised
- Older patients with weaker immune systems



Men

- Visit healthcare providers less frequently
- Let health checkups slip
- More likely to develop certain cancers



African-Americans

- Less access to healthcare
- Lower insurance coverage
- More likely to develop certain cancers

Source: https://www.lungcancerresearchfoundation.org/news/ (retrieved on 7 July 2020)

Microsoft

United States Preventative Strike Force (USPSFT) recommendations for screenings:

- Lower screening age from 55 to 50
  - Increases availability to 10% of U.S. population
- Add Medicaid coverage
  - Cover people with lower incomes
- Reduce 30-pack year guideline to 20-pack year ("light smoker")
- Current smokers and those who quit in the last 15 years

This is predicted to reduce deaths by 13% in the first year

Source: https://www.aafp.org/news/health-of-the-public/20200715uspstfdraftlung.html, retrieved July 17, 2020

Audience insights

AUDIENCE INSIGHTS

Women are the most common lung cancer searchers

35+
years old

63
Research days

66%
Female searchers

Southeast
Location

4-5
Paid search interactions

10
Days to SEM* conversion

*SEM=search engine marketing

Sites visited:

NIH | American Lung Association. | WebMD | healthline

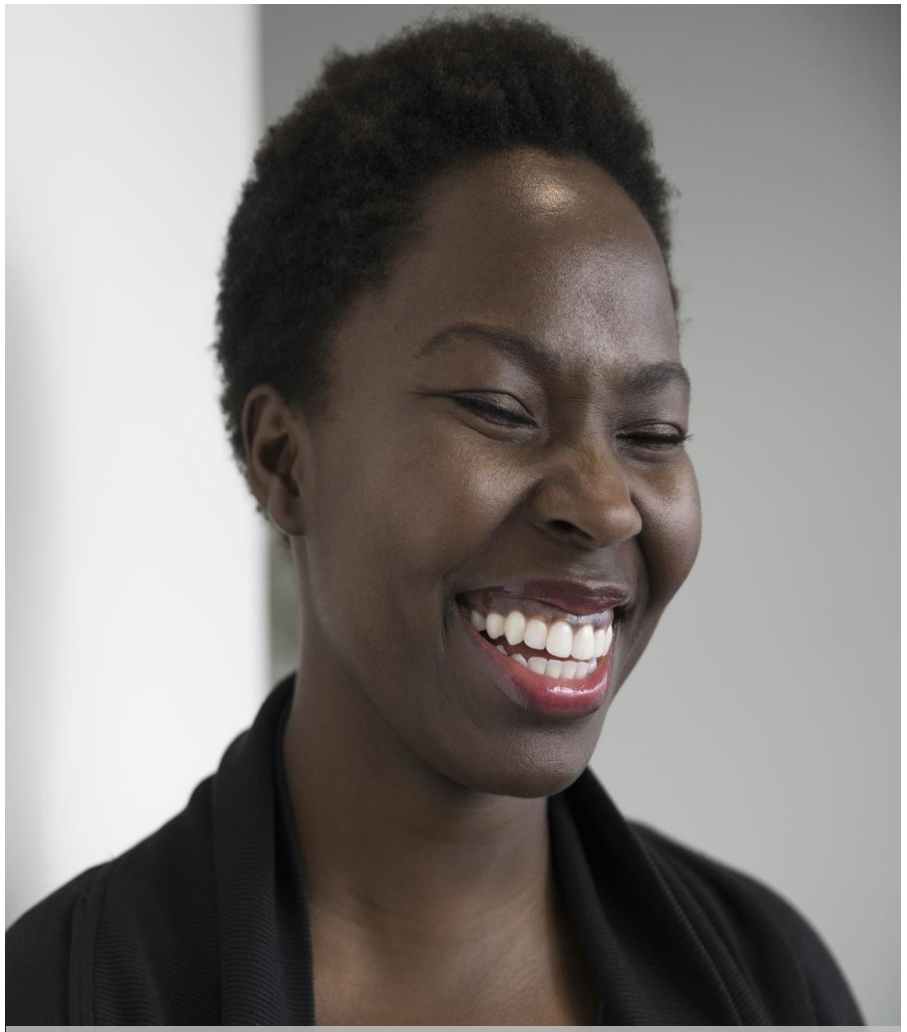
13% **Search for metastatic breast cancer**

Microsoft Internal Data, QP & CDJ, Lung Cancer searches, January – June 2020 | Minority Health Report, HHS.gov, July 2020

Microsoft

AUDIENCE INSIGHTS

African-Americans have the highest mortality rates



Deborah

35+ years old	**63%** AA Female searchers	**14%** 5-year survival rate
East Urban Location	**3-4** Paid search Interactions	**9** Days to SEM conversion

Sites visited:

NIH · WebMD · Drugs.com Know more. Be sure. · American Cancer Society®

15% **Search for metastatic breast cancer**

Microsoft

Microsoft Internal Data, QP & CDJ, Lung Cancer searches, January – June 2020 | Minority Health Report, HHS.gov, July 2020

AUDIENCE INSIGHTS

Men in southern states have the lowest survival rates

Sam

50+ years old	**34%** Male searchers	**16%** 5-year survival rate
South Central Location	**3** Paid search interactions	**8** Days to SEM conversion

Sites visited:

NIH

American Cancer Society

WebMD

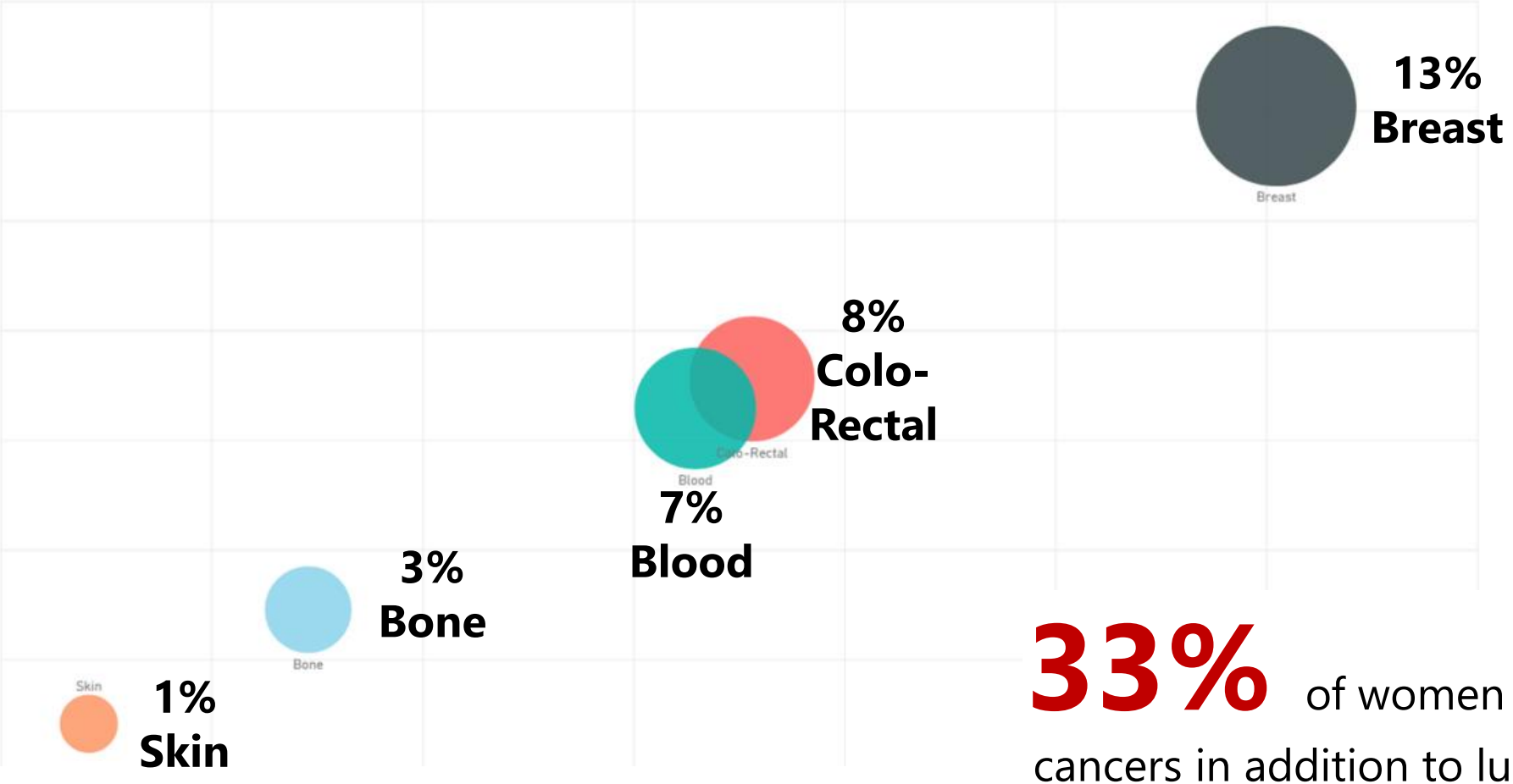
26% **Search for colo-rectal or prostate cancer**

Microsoft

Microsoft Internal Data, QP & CDJ, Lung Cancer searches, January – June 2020

AUDIENCE INSIGHTS

1-in-3 women search other cancers on lung cancer journey



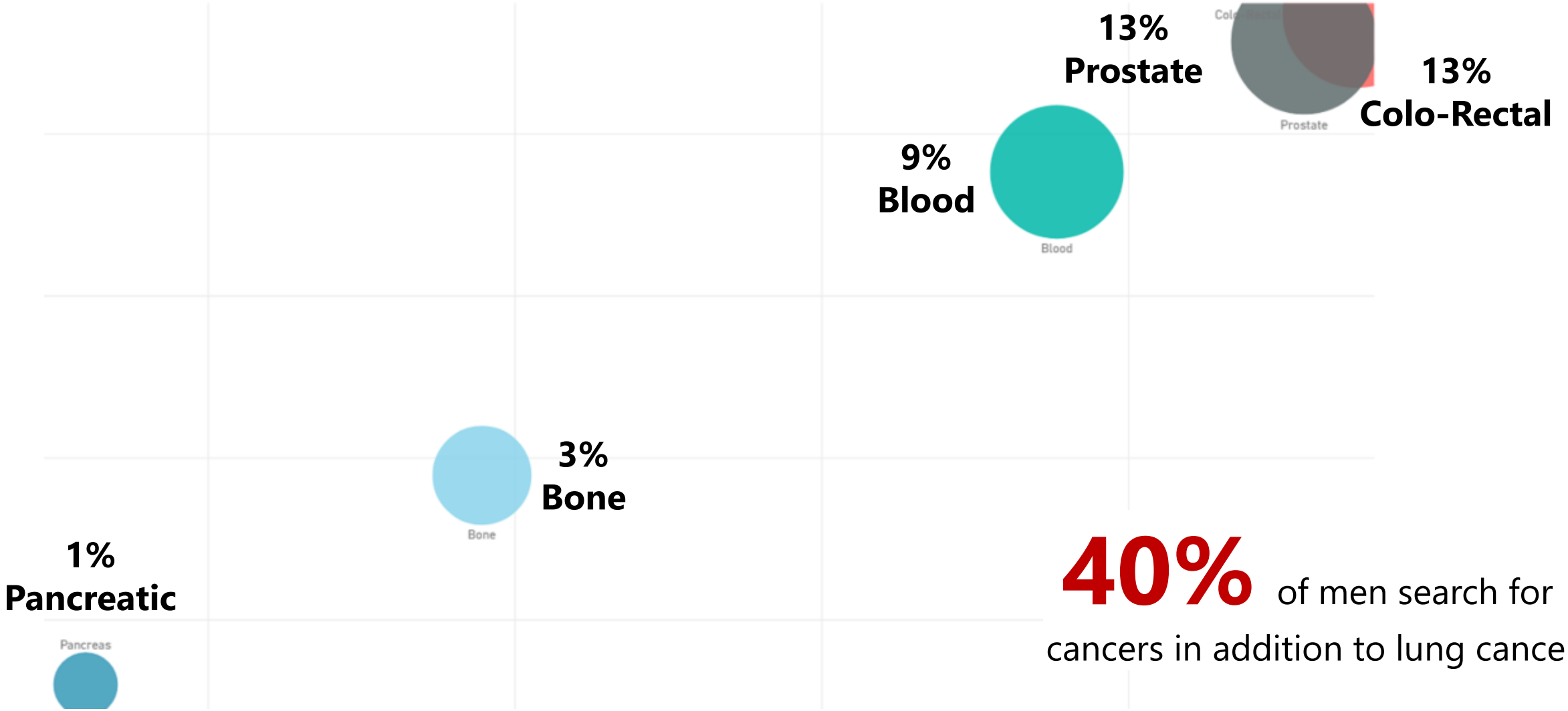
33% of women search for cancers in addition to lung cancer

Microsoft Internal Data, query path, April – June 2020

Microsoft

AUDIENCE INSIGHTS

2-in-5 men search other cancers on lung cancer journey



40% of men search for cancers in addition to lung cancer

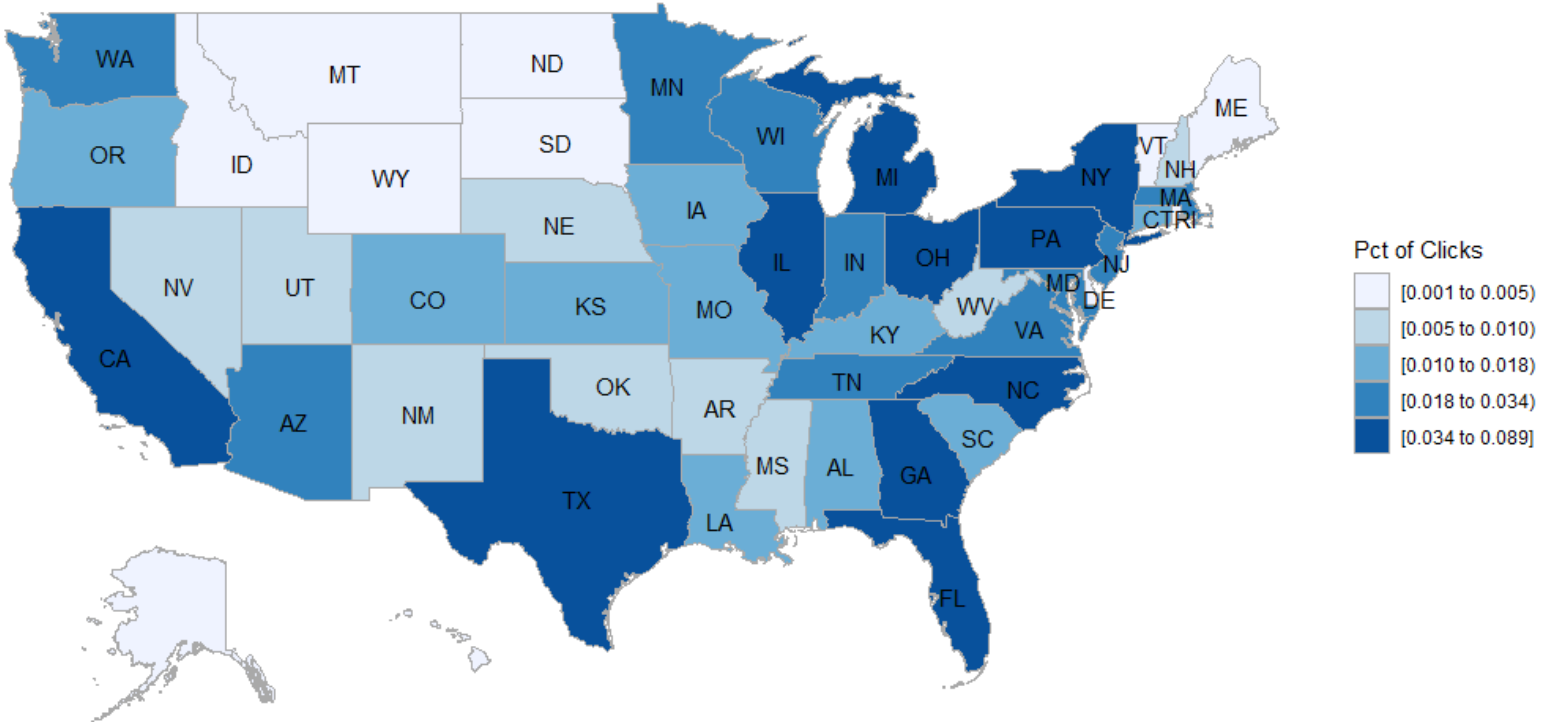
Microsoft Internal Data, query path, April – June 2020

Microsoft

Southern and Eastern states have the highest click volumes

Top 5 states % of clicks

California 8.9%
Texas 7.4%
Florida 7.2%
New York 5.9%
Ohio 4.7%



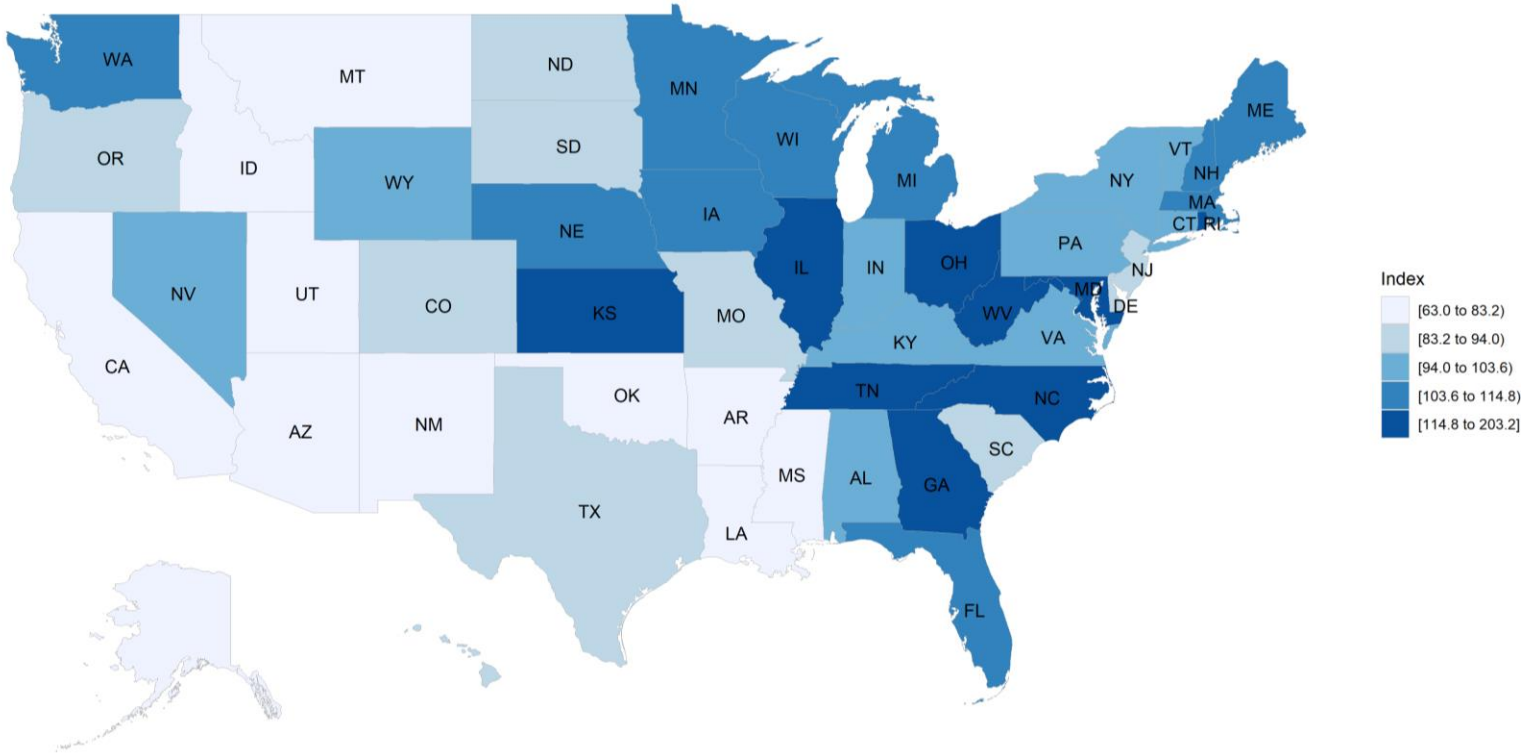
Microsoft Internal Data, Lung Cancer searches, April – June 2020
State populations from Statista 2019

Microsoft

After adjusting for population, the leading states change

Top 5 overindexed clicks

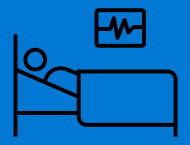
District of Columbia 203
Ohio 131
Maryland 125
Georgia 118
Rhode Island 118



Microsoft Internal Data, Lung Cancer searches, April – June 2020
State populations from Statista 2019

Microsoft

Twitter sentiment: COVID-19 remains a concern for lung cancer stakeholders



Lung cancer patients express concern on chemotherapy & COVID-19 risks:

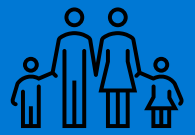
Will chemo put me at risk of COVID-19?

-User891

Doctors & researchers share the latest white papers on lung cancer anti-inflammation:

Drug linked to 45% lower risk of dying among COVID-19 patients on ventilators #ConnectingHopetoHealing https://t.co/oaiX0h9gDP

-@SurgeonGeneral



Family & friends worry about loved ones in hospice and senior care facilities:

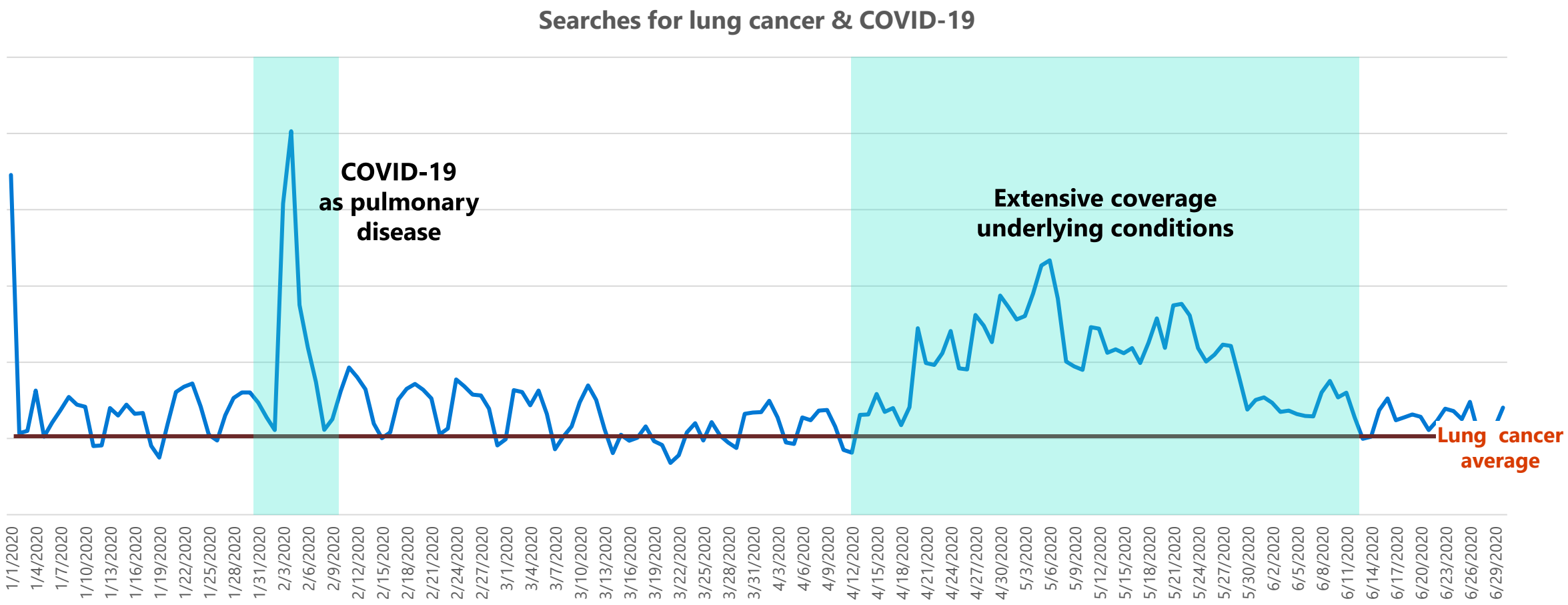
90 year old grandparent has lung cancer caught covid and is dead! https://t.co/W9qn5P3Bhn

-@Steve_c1970

Microsoft Internal Data, Lung Cancer searches, April – June 2020 | Twitter Developer: Top 1,000,000 Lung Cancer + COVID-19 Tweets (July 7 – July 15, 2020)

Microsoft

Searches for lung cancer spike on news cycle



Source: Microsoft internal data on terms, lung cancer and covid-19, mapped to news cycle activity on global pandemic, Jan. 1, 2020 – June 30, 2020

Microsoft

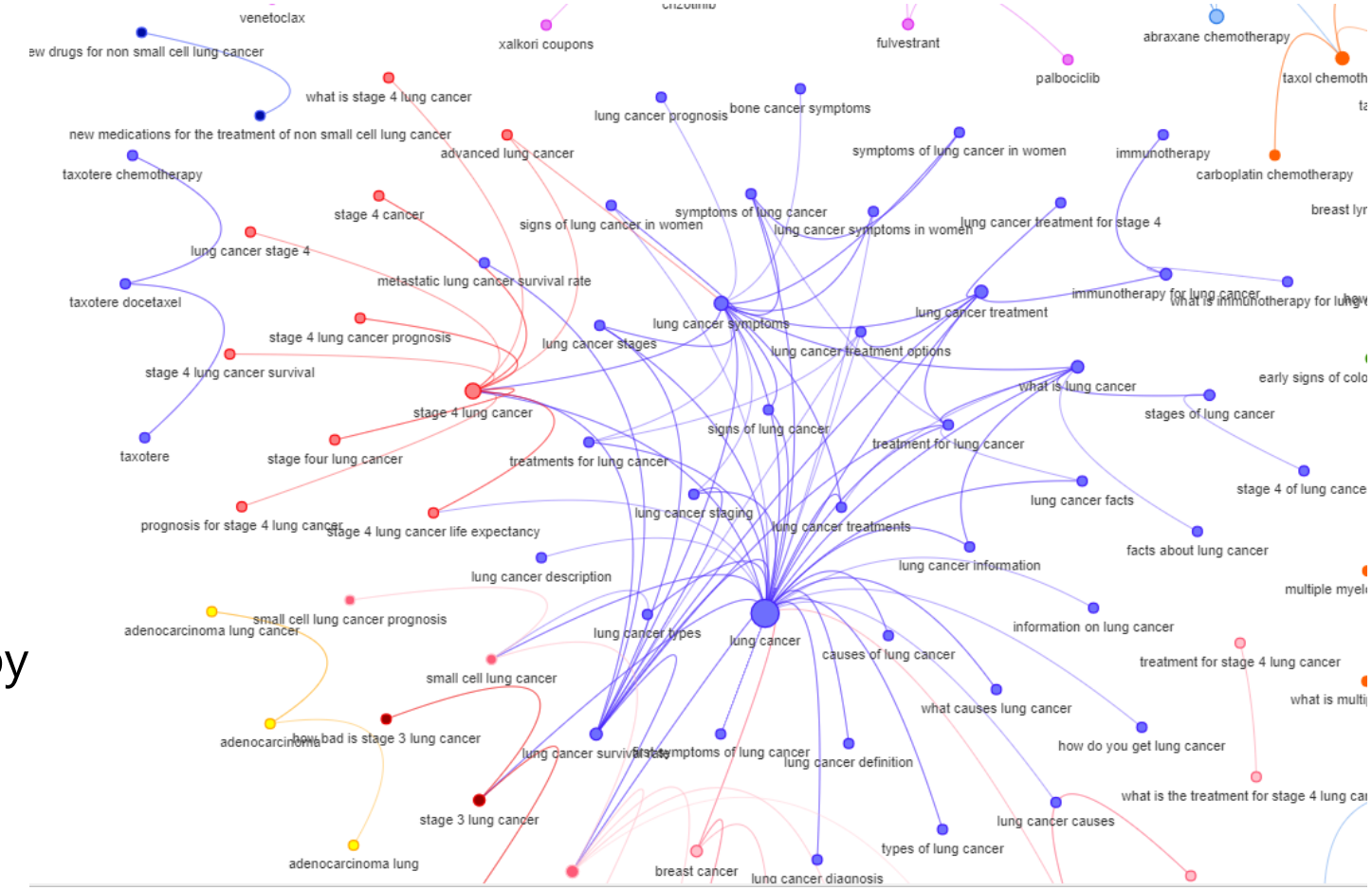
Lung cancer general term is the primary driver for all searches

Within the lung cancer community related prominent queries are:

- ‘symptoms’
- ‘what is’
- ‘survival rate’

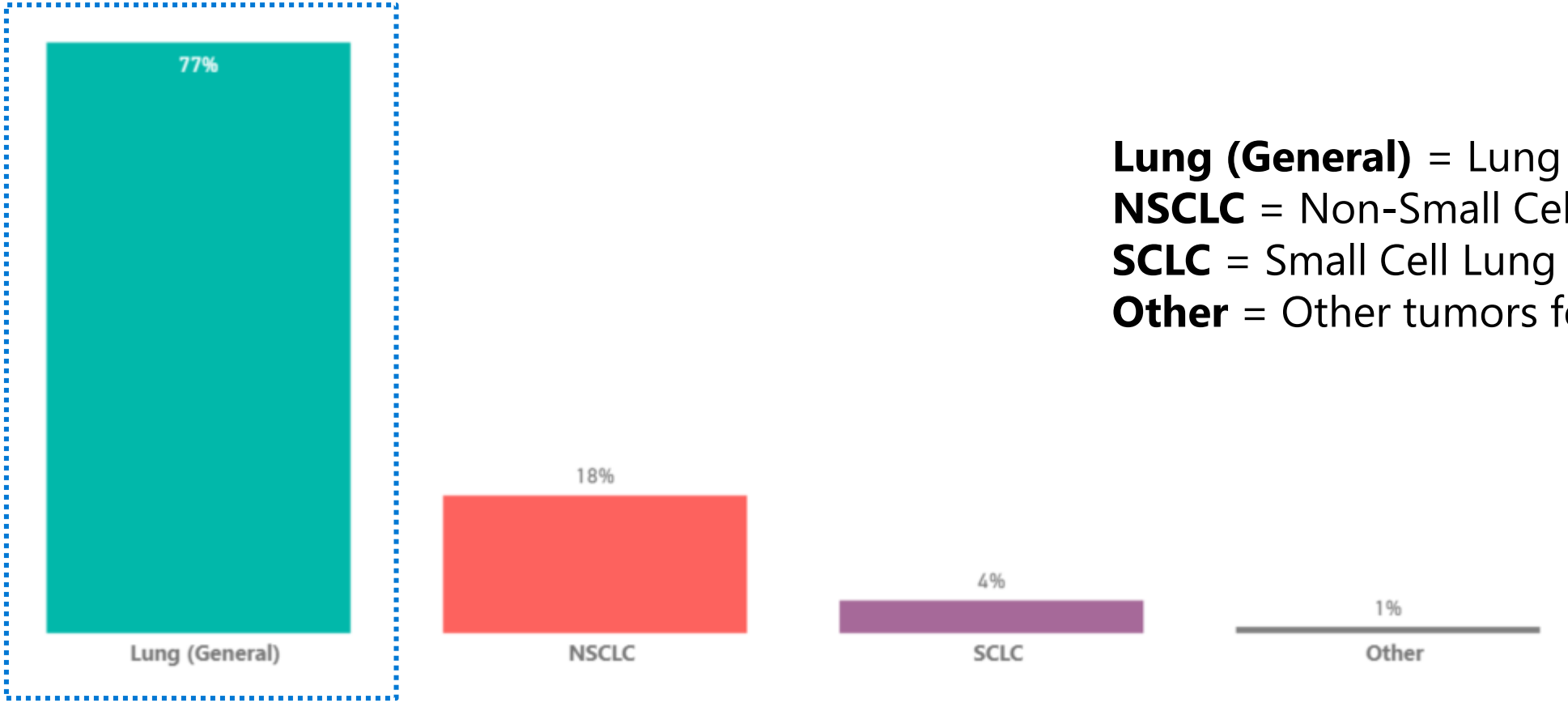
Connected communities to the lung cancer community:

- Stage 4 lung cancer searches, which particularly are connected by queries related to ‘survival rate’ and ‘life expectancy’



Microsoft

Most searchers use general lung cancer terms in queries

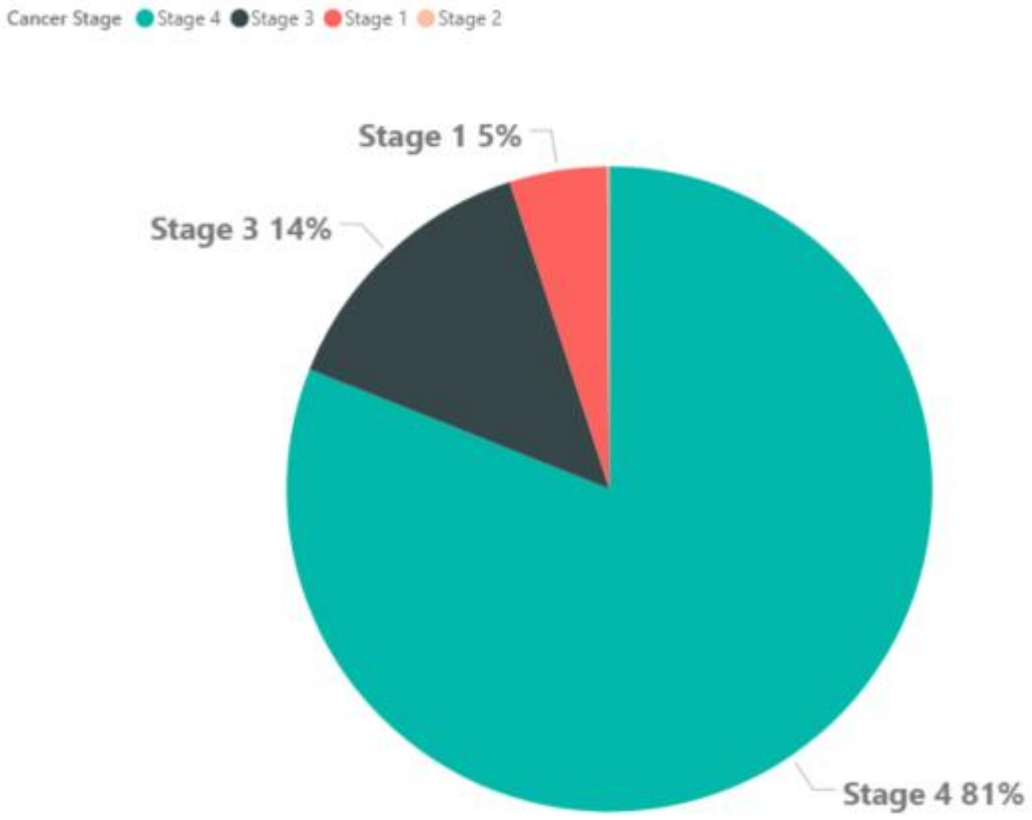


Lung (General) = Lung Cancer
NSCLC = Non-Small Cell Lung Cancer
SCLC = Small Cell Lung Cancer
Other = Other tumors found in lungs

Microsoft Internal Data, Lung Cancer searches, April – June 2020

Microsoft

Stage 4 is most searched for cancer diagnosis



Stage categorization requires the use of an explicit stage, early or late indication in queries to categorize

Stage 1 uses ‘stage 1’ or ‘early’ words in queries

Stage 4 uses ‘stage 4,’ ‘metastatic,’ ‘advanced,’ or ‘late’ words in queries

Stage 2 words appeared in less than 1% of queries

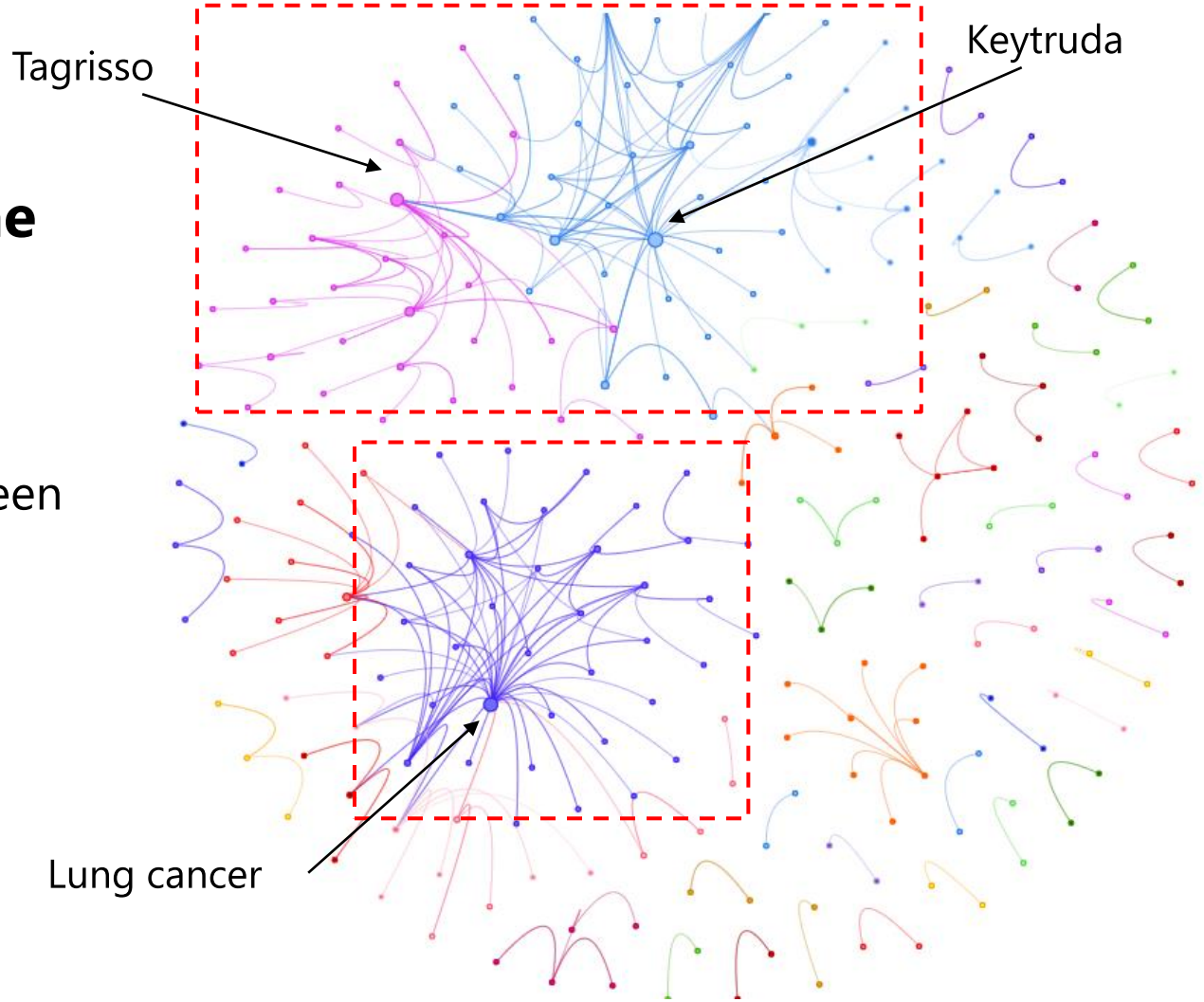
Microsoft Internal Data, Lung Cancer searches, April – June 2020

Microsoft

Keytruda and Tagrisso dominate brand searches

3 main clusters are evident in the overall query network:

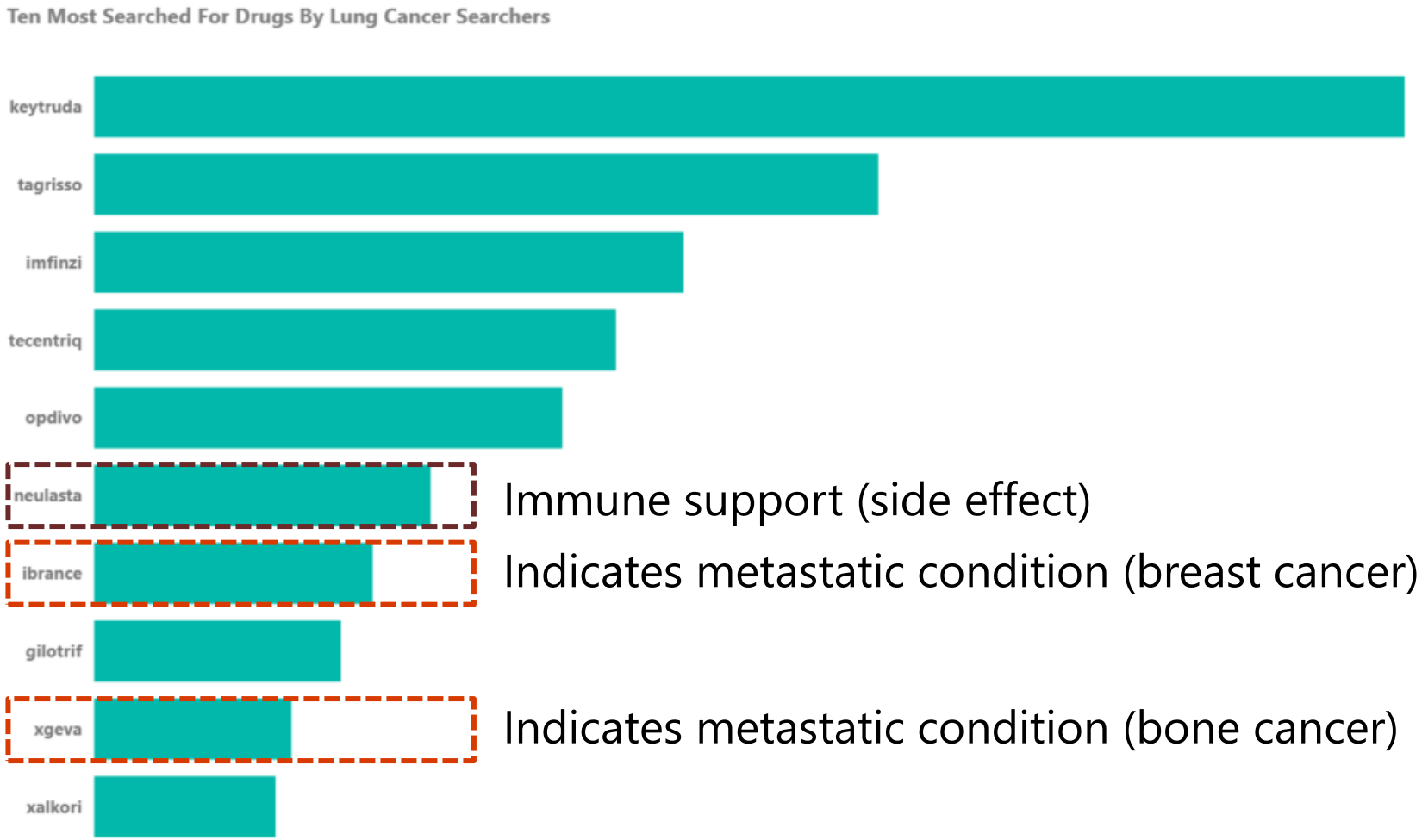
- Two of the central nodes are brand terms and one is non-brand
- Close to no relationship at all between brand and non-brand queries



Microsoft Internal Data, Lung Cancer searches, April – June 2020

AUDIENCE INSIGHTS

Lung cancer searchers look for NSCLC treatments



Microsoft Internal Data, Lung Cancer searches, April – June 2020

Microsoft

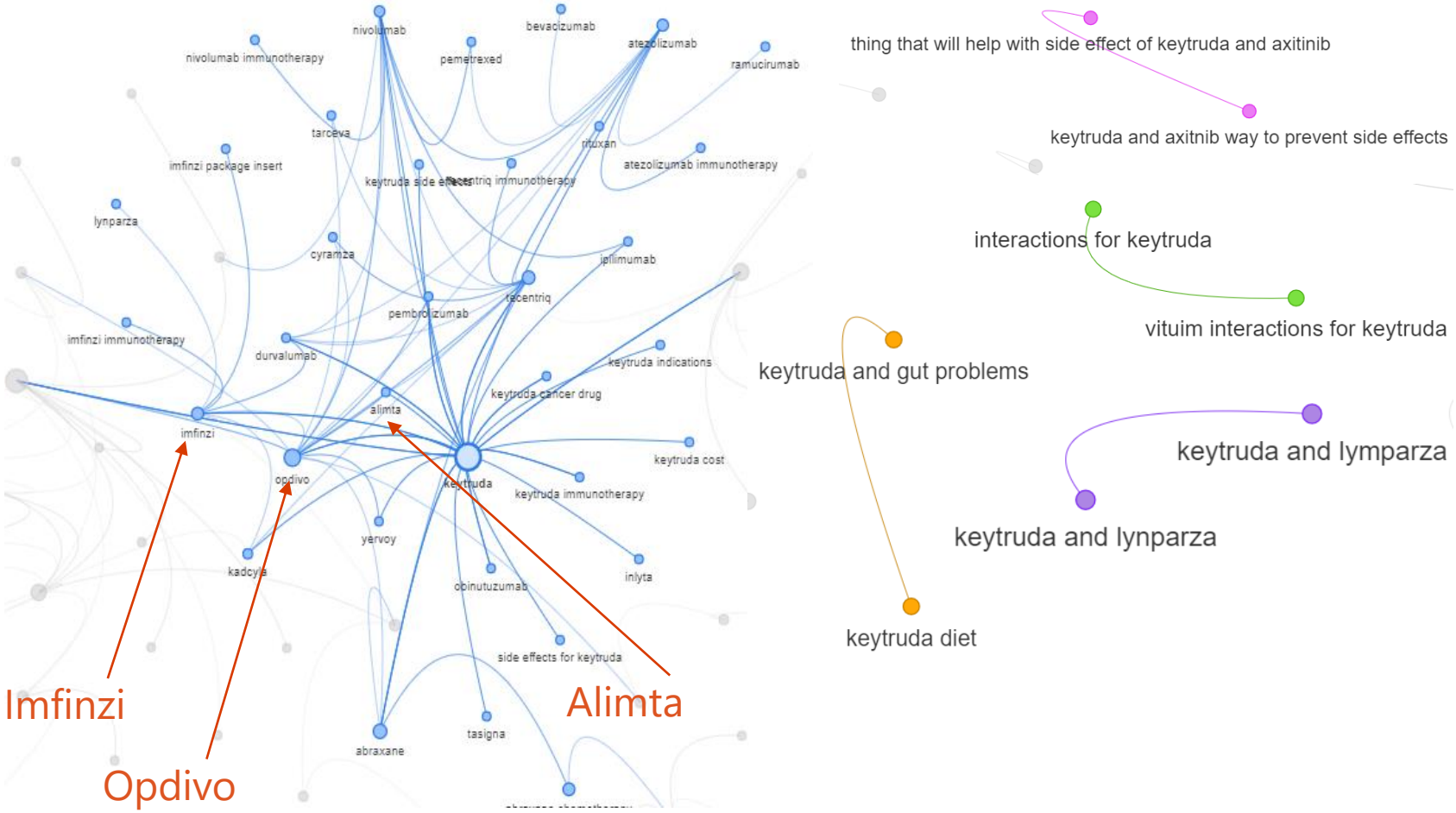
AUDIENCE INSIGHTS

Keytruda search indicates cross-shopping behavior and side effects

The main Keytruda community includes a lot of other brands

When a brand is connected to Keytruda, it is often connected to other brands as well indicating customers are comparing

Searches related to Keytruda is often a single connection through smaller communities, such as side effects and costs



Microsoft Internal Data, Lung Cancer searches, April – June 2020

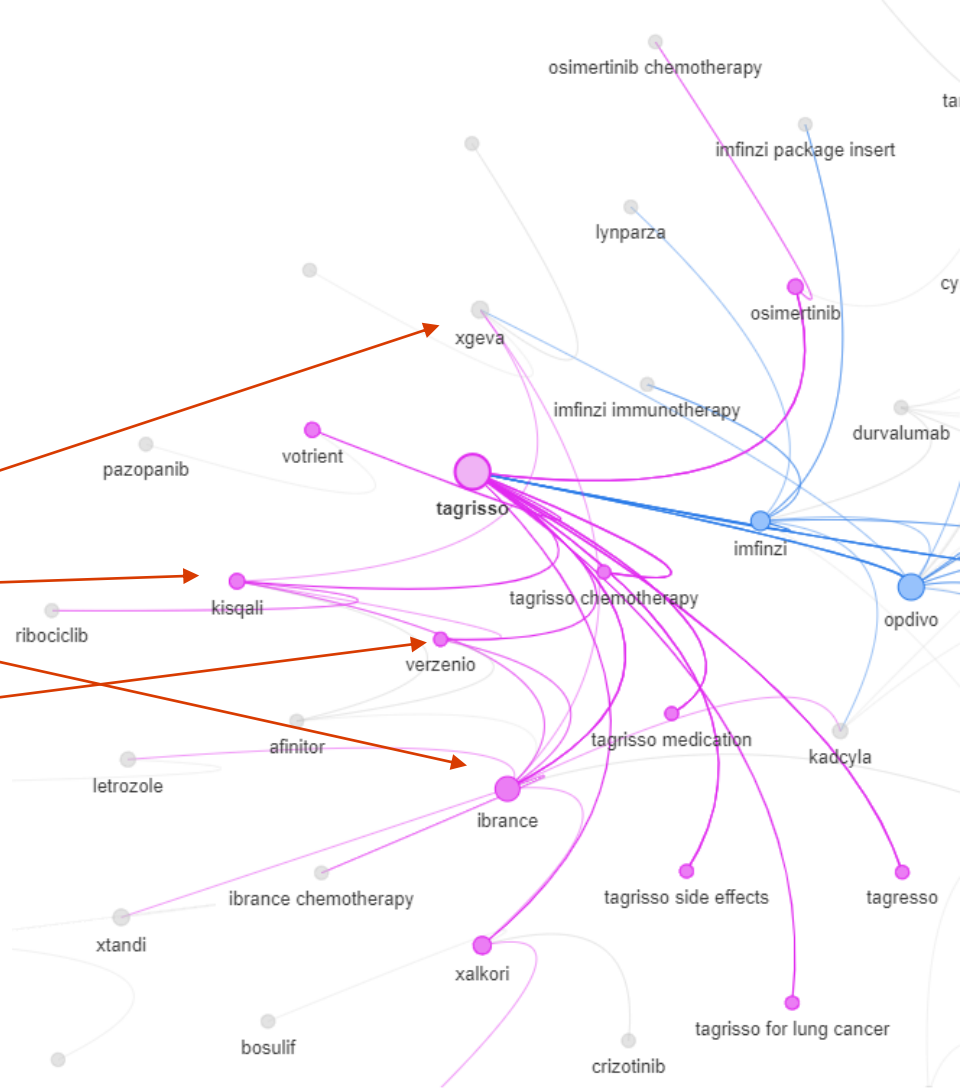
Microsoft

Tagrisso search leads to other drugs, metastatic cancers

Tagrisso searchers continue to look for drugs to treat breast and bone cancer

Examples:

- Ibrance
- Kisqali
- Xgeva
- Verzenio
- Generic forms



Microsoft Internal Data, Lung Cancer searches, April – June 2020

Microsoft

Brands in lung cancer searchers' consideration set

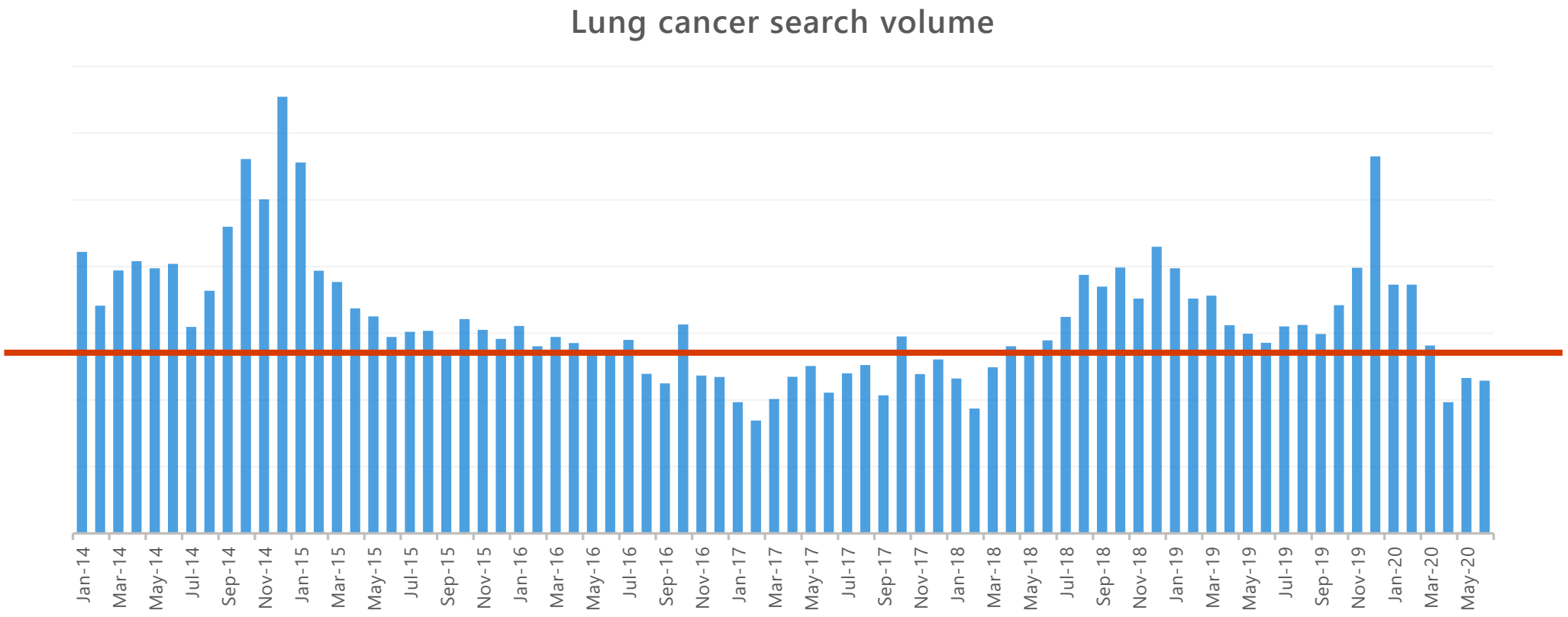
Drug Name	General Lung Cancer	NSCLC	SCLC
Alimta	Yes	Yes	No
Cyramza	Yes	Yes	No
Gilotrif	Yes	Yes	No
Imfinzi	Yes	No	Yes
Keytruda	Yes	Yes	Yes
Lorbrena	Yes	No	No
Opdivo	Yes	Yes	Yes
Tabrecta	Yes	Yes	No
Tagrisso	Yes	Yes	No
Xalkori	Yes	Yes	Yes

Microsoft Internal Data, Lung Cancer QP Sequences, April – June 2020

Marketplace performance

MARKETPLACE PERFORMANCE

Lung cancer searches have remained stable over a six-year period

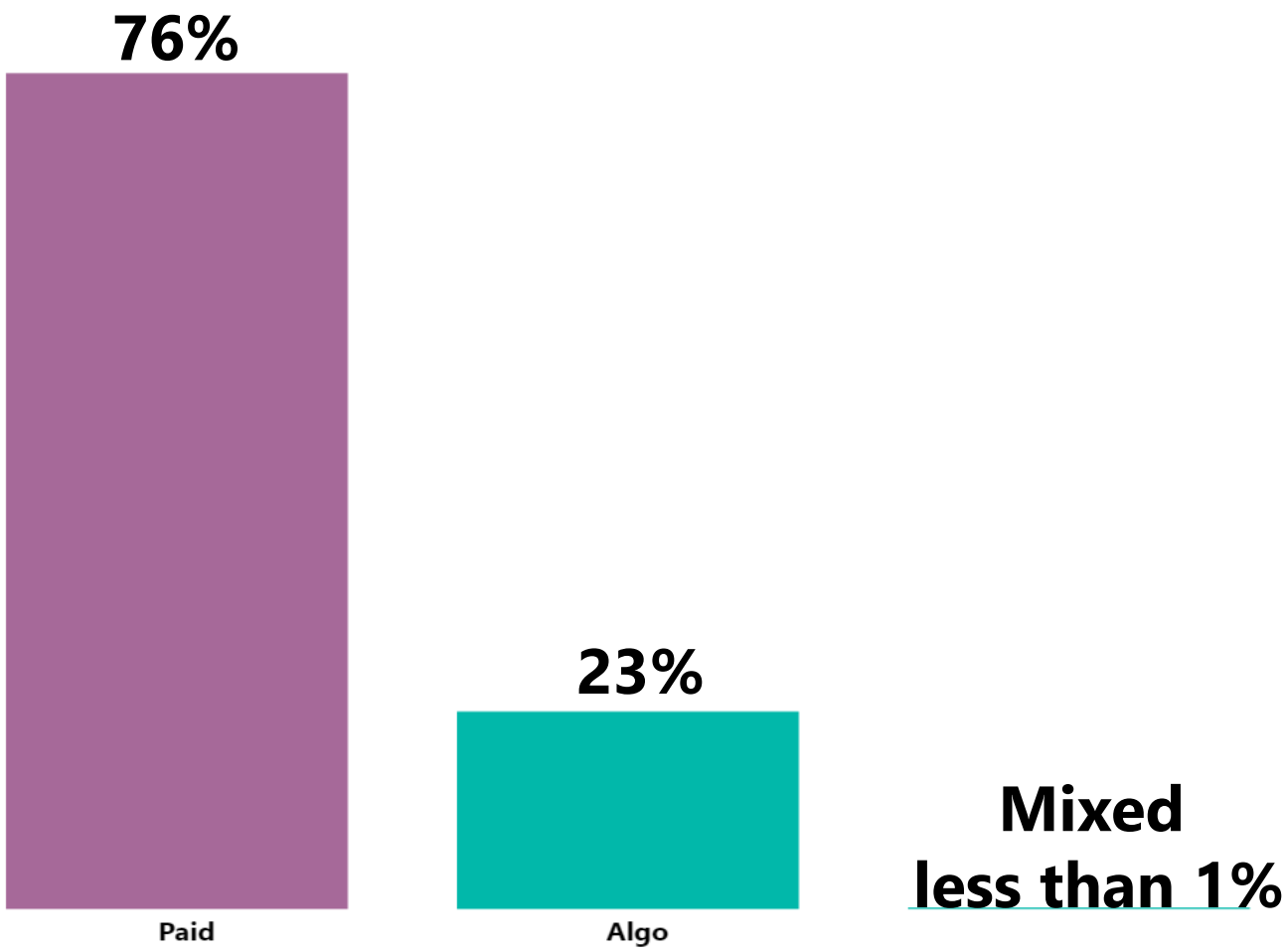


Historic average

Microsoft internal data, Customer Performance Monthly, Jan. 2014 – June 2020

Microsoft

Searchers use paid search 3x more than organic listings



Most searchers opted to use paid search listings
to educate themselves about lung cancer and its treatment options

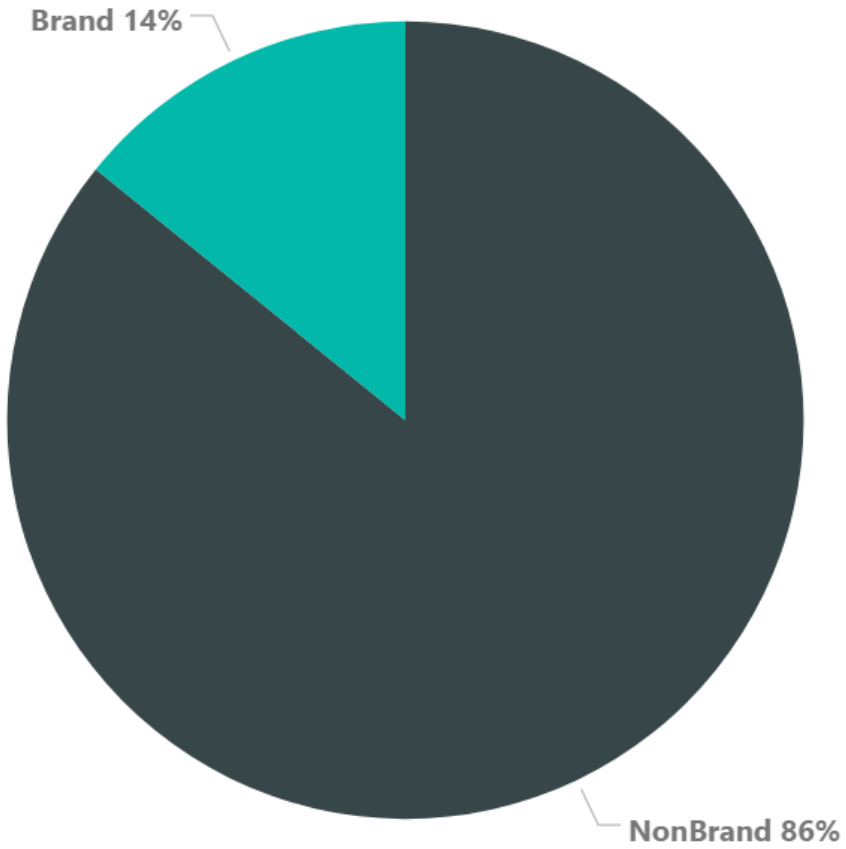
Organic listings were used more for side effects and survival rates

Less than 1% of searchers used both paid and organic listings

Microsoft Internal Data, Lung Cancer QP Sequences, April – June 2020

Microsoft

Searchers click for brands, but after general lung cancer terms



Non-brand terms fall into different segments

Upper funnel terms include condition and symptoms

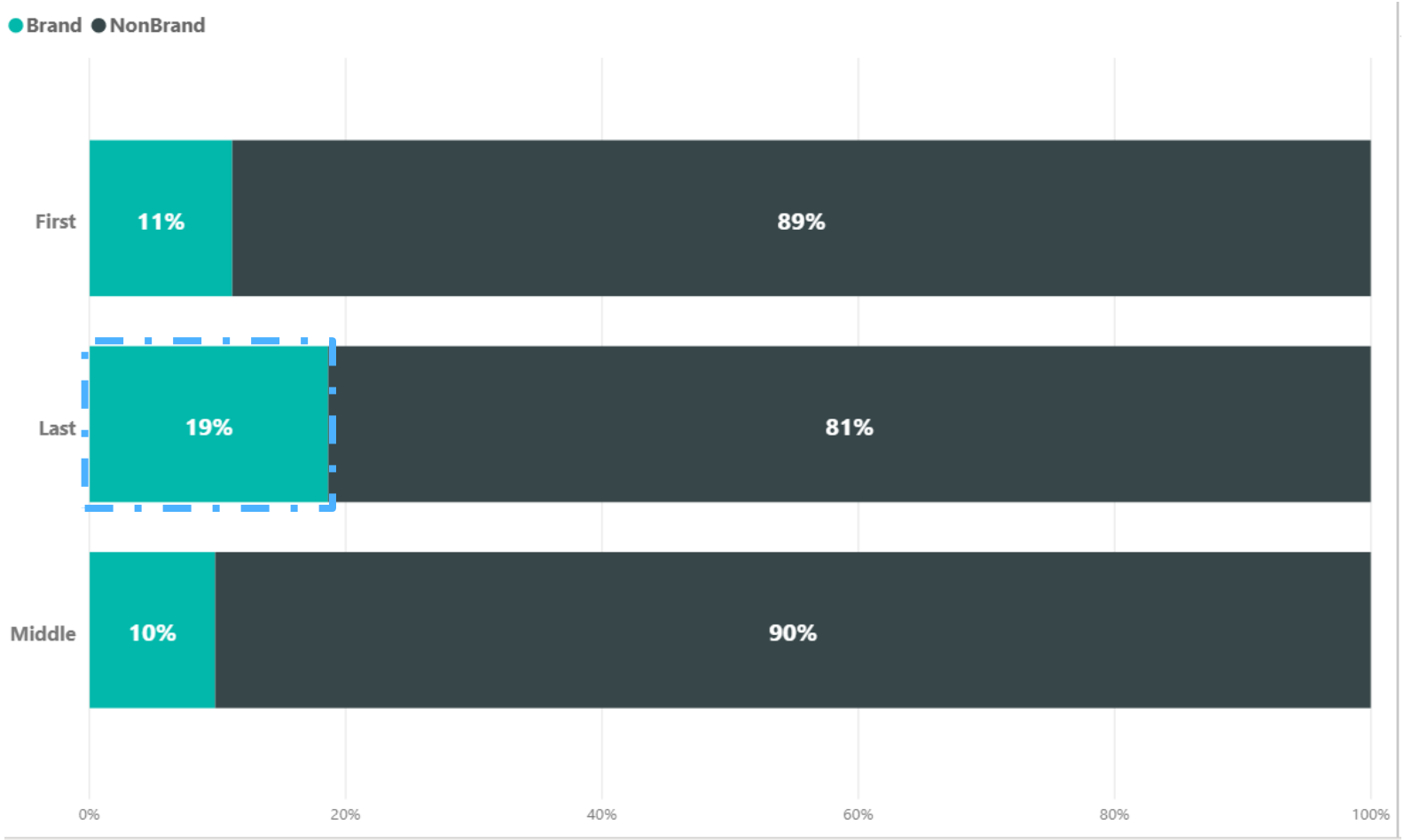
- 'lung cancer'
- 'lung cancer symptoms'

Lower funnel terms include diagnosis and treatment

- 'stage 4 lung cancer'
- 'drugs for lung cancer'

Microsoft Internal Data, Lung Cancer QP Sequences, April – June 2020

Non-brand terms dominate each stage of conversion funnel



Notice how brand terms increase or "lift" at the very end of the conversion funnel as non-brand terms teach searchers about lung cancer treatment

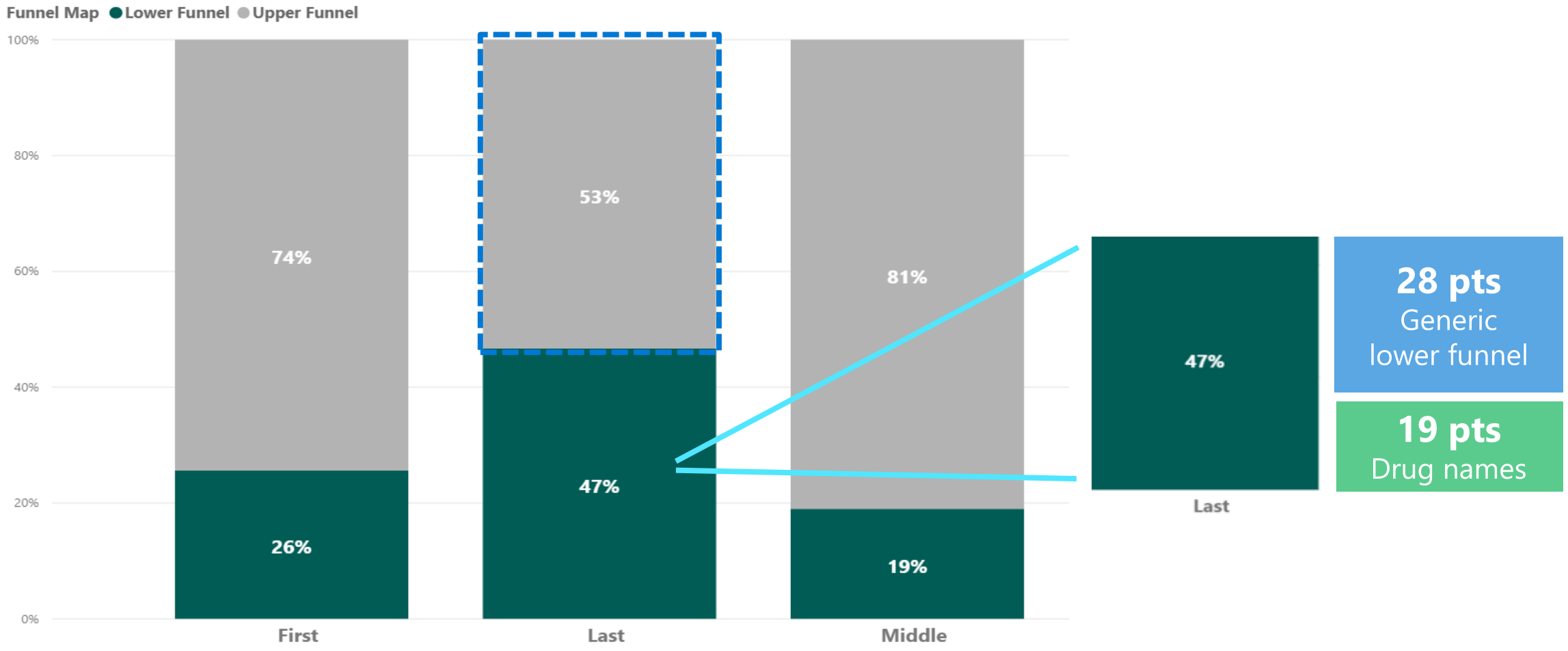
That's about **+80%** lift

Microsoft Internal Data, Lung Cancer QP Sequences, April – June 2020

Microsoft

MARKETPLACE PERFORMANCE

Upper funnel terms deliver 50+% of last clicks for searchers



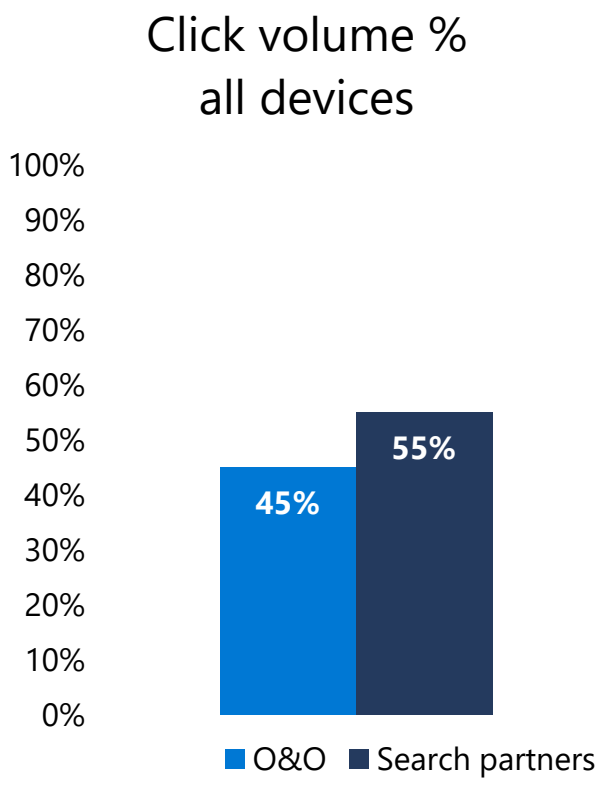
Microsoft Internal Data, Lung Cancer QP Sequences, April – June 2020

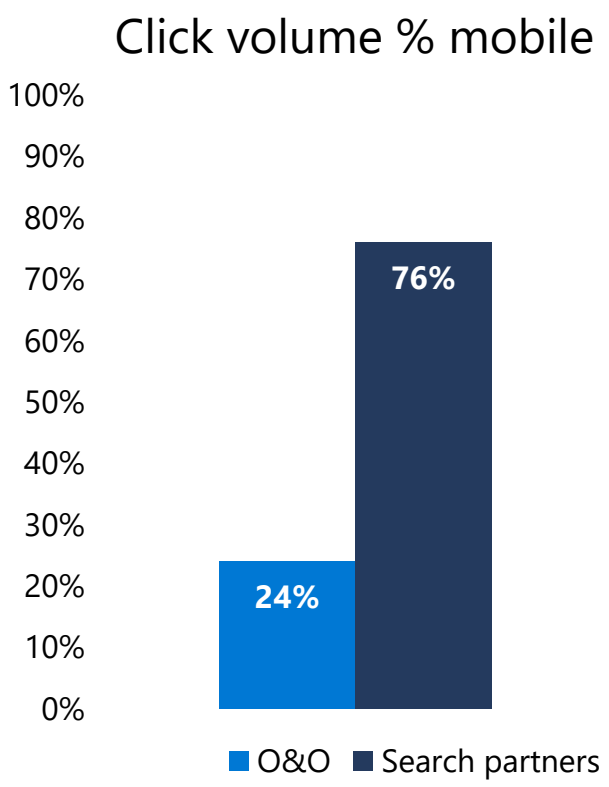
Microsoft

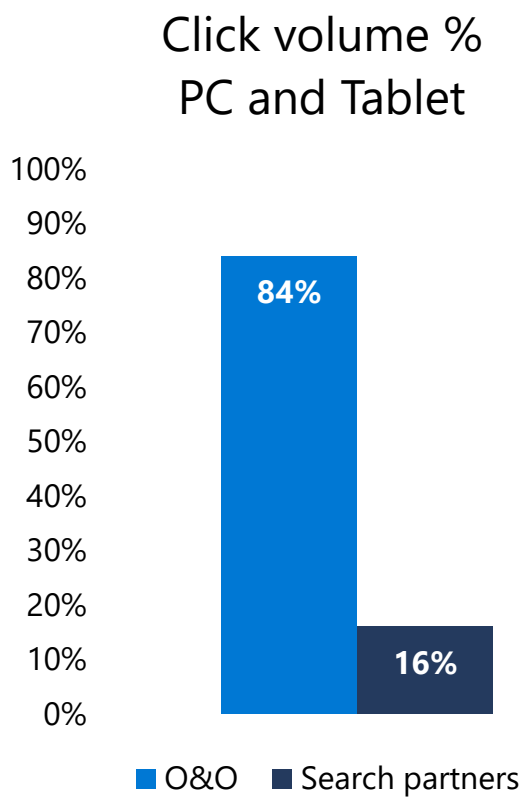
Microsoft

Syndication performance

Search partners deliver 3x more mobile traffic





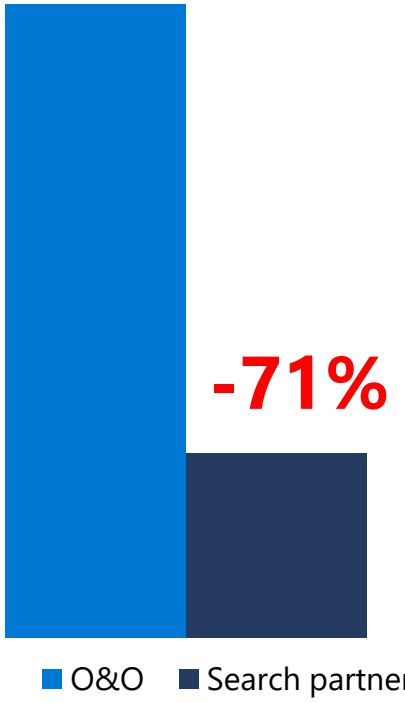


Microsoft Internal Data, Lung Cancer searches, April – June 2020

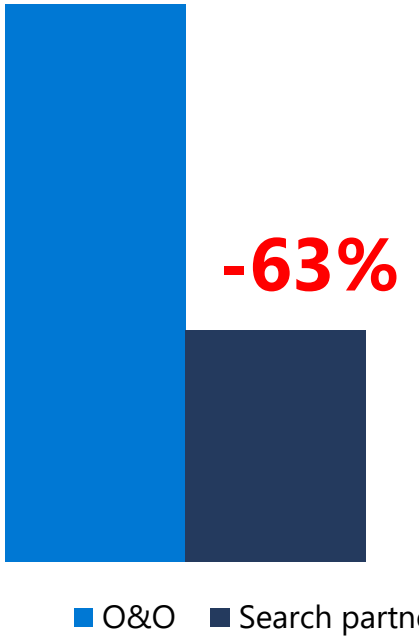
Microsoft

Search partners deliver more efficient CPCs

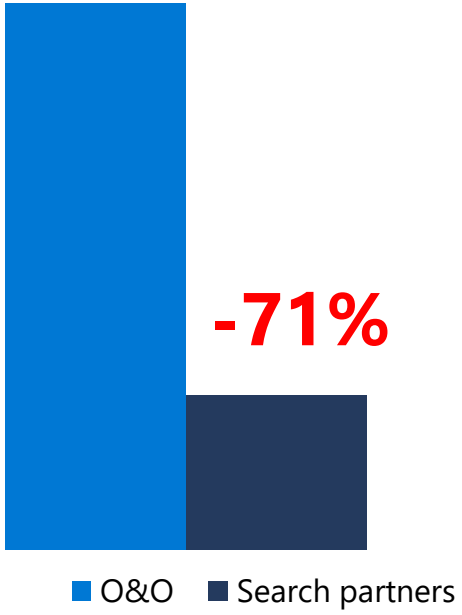
CPC all devices



CPC mobile



CPC PC and tablet

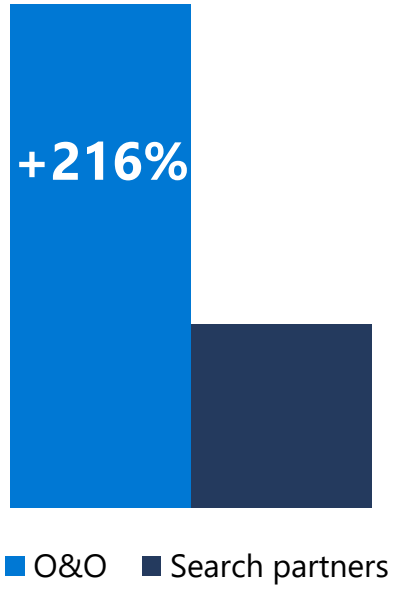


Microsoft Internal Data, Lung Cancer searches, April – June 2020

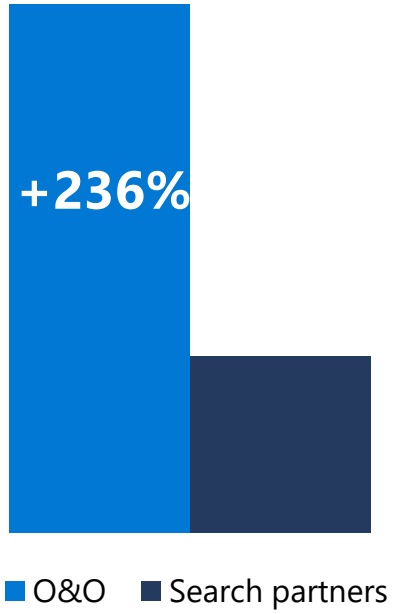
Microsoft

O&O drives higher conversion rates

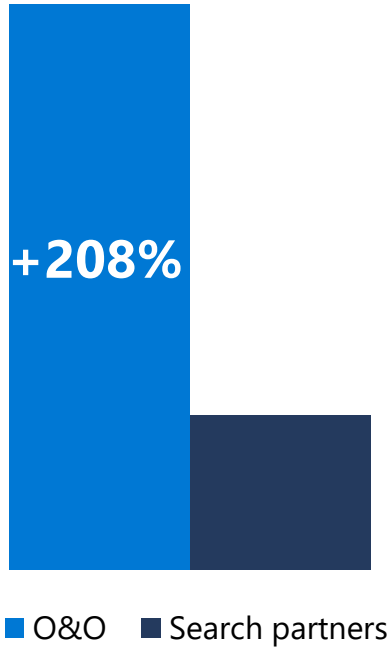
Conversion rates (CVR) all devices



CVR mobile



CVR PC and tablet



PCT = PC + tablet

Microsoft Internal Data, Lung Cancer searches, April – June 2020

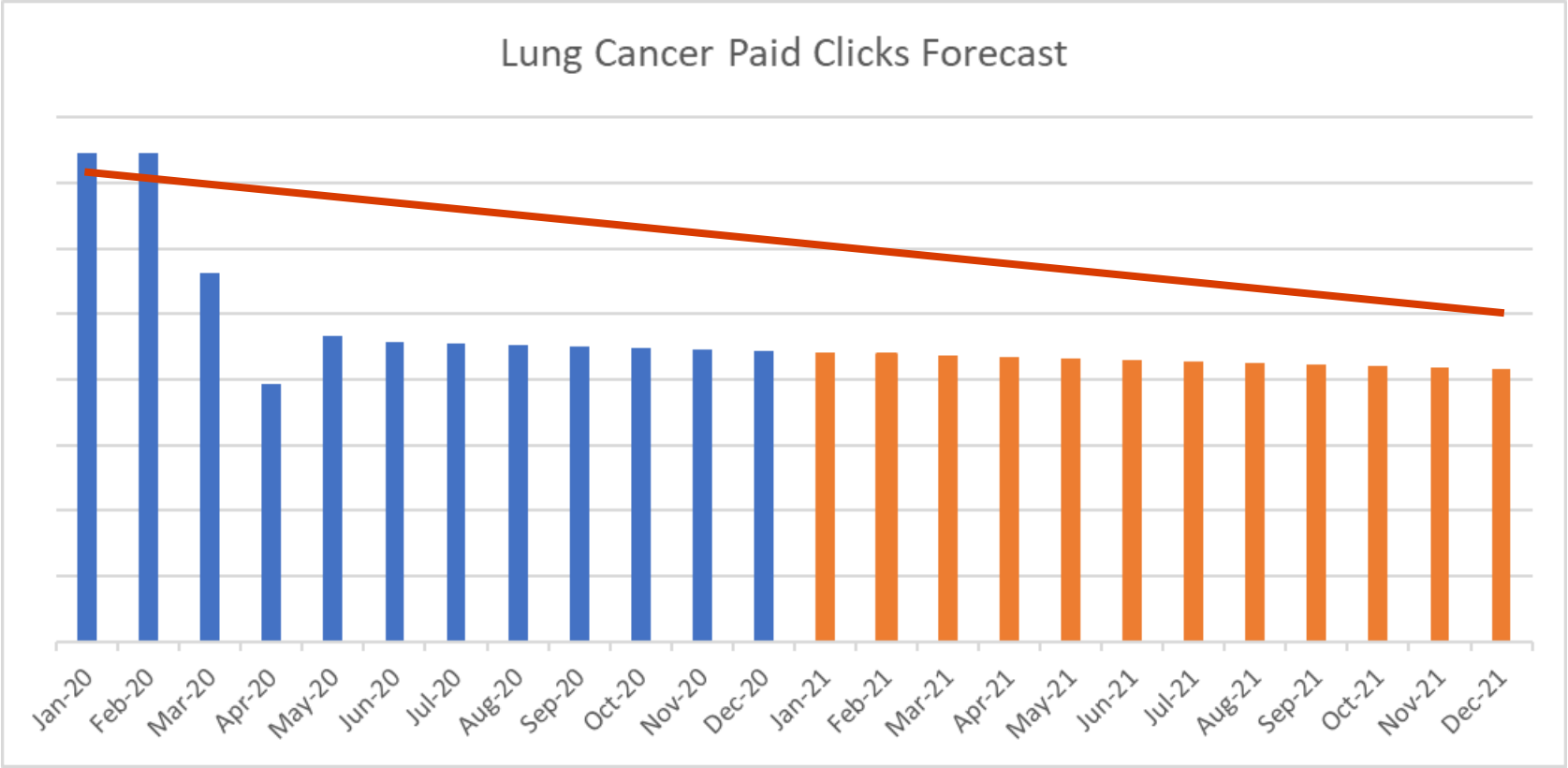
Microsoft

Microsoft

Lung cancer forecasts

O&O only

Lung cancer click volume will decrease through 2021

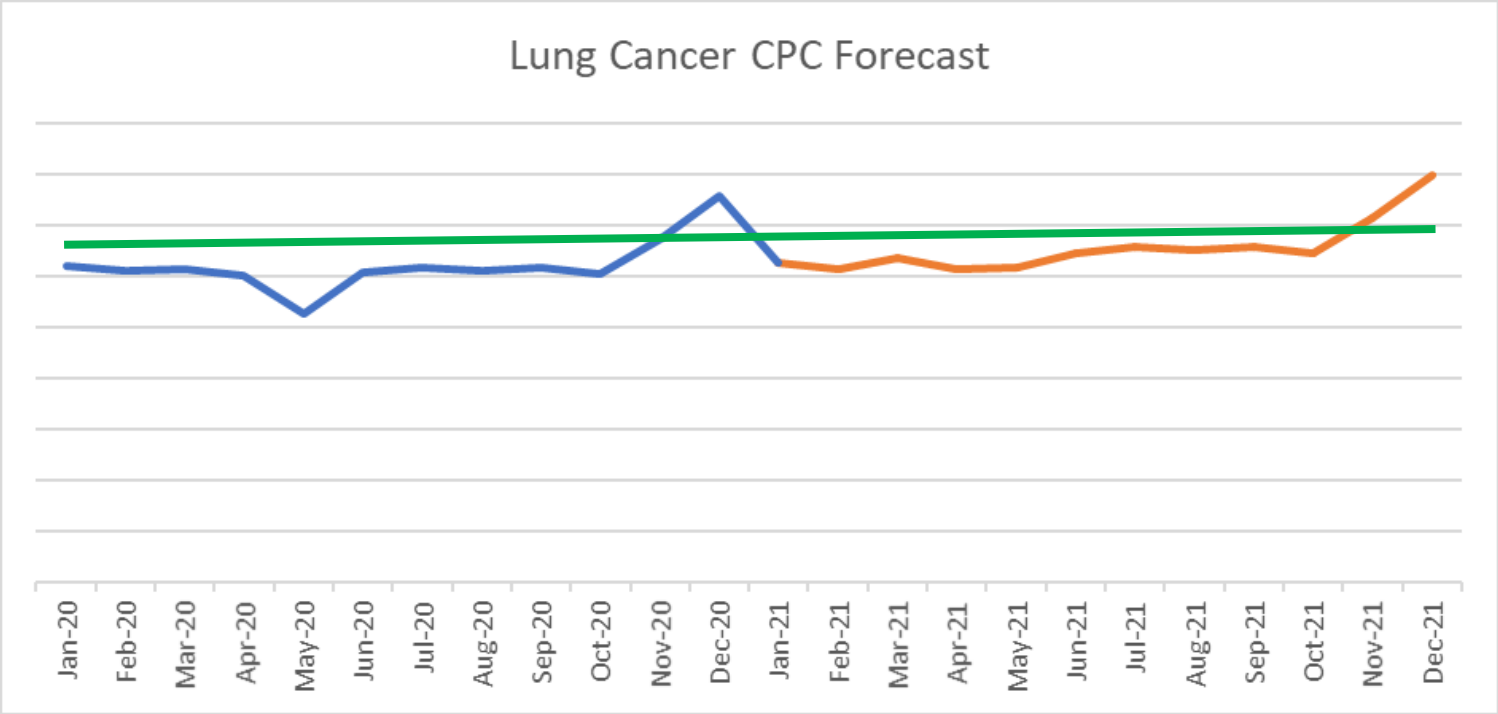


-15% growth

Microsoft internal data, Customer Performance Monthly, Jan. 2014 – June 2020

Microsoft

Lung cancer CPCs will increase through 2021

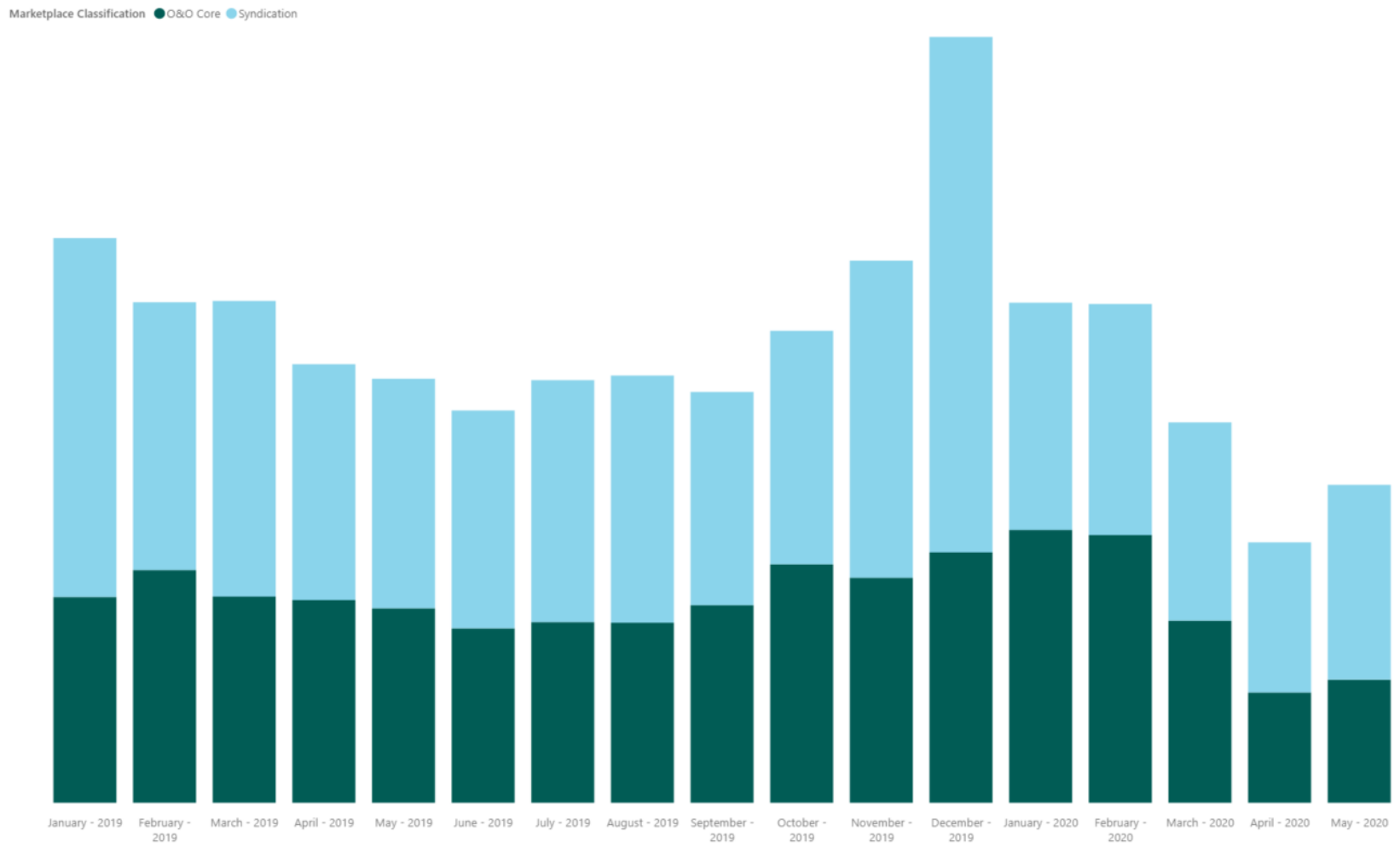


+6% growth

Microsoft internal data, Customer Performance Monthly, Jan. 2014 – June 2020

Microsoft

Cancer click volume shifts to syndication



55% click volume Syndication

Microsoft internal data, Customer Performance Monthly, Jan. 2019 – June 2020

Microsoft

Recommendations

Audience

- Discuss targeting optimizations by gender, related cancers, location & Remarketing

HCP Search

- Review sequencing for HCP-specific terms and keyword expansions

Upper funnel

- Upper funnel lung cancer terms drive over 50% of converting clicks: Consider them throughout the lung cancer journey

Syndication

- Create specific campaigns for syndication to reach searchers looking for treatment options

Strategies and recommendations

Learn immediate and recovery-phase strategies, and how to approach new opportunities and optimize account health in the Digital Advertiser's Guide to COVID-19

Microsoft

Appendix

Query path methodology

How we select users and what we analyze

Criteria

Users were qualified as searching for lung cancer terms over a 3-month period

User base

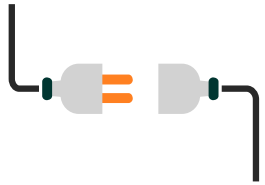
48,000 people were identified as qualified lung cancer searchers

Location

All users analyzed were in the U.S. on a PC, tablet or mobile device

Timeline

Digital research behavior was collected for April – June 2020



Conversion

Users were assumed to have ended their journey when they trigger a tracking event or stop searching on lung cancer for 2 weeks

Microsoft Advertising QP data, April 2020-June 2020

Microsoft

Twitter sentiment methodology

How we select users and what we analyze

Criteria

Users were qualified as posting lung cancer & COVID-19 terms over a 1-week period

User base

1,000,000 Tweets were identified as qualified lung cancer & COVID-19 stakeholders

Location

All users analyzed were in the US on a PC, tablet or mobile device

Timeline

Digital research behavior was collected for July 7-15, 2020

Twitter Developer API data, July 7-15, 2020

Microsoft

Query network

Evaluating relationships between lung cancer queries

Microsoft

Microsoft

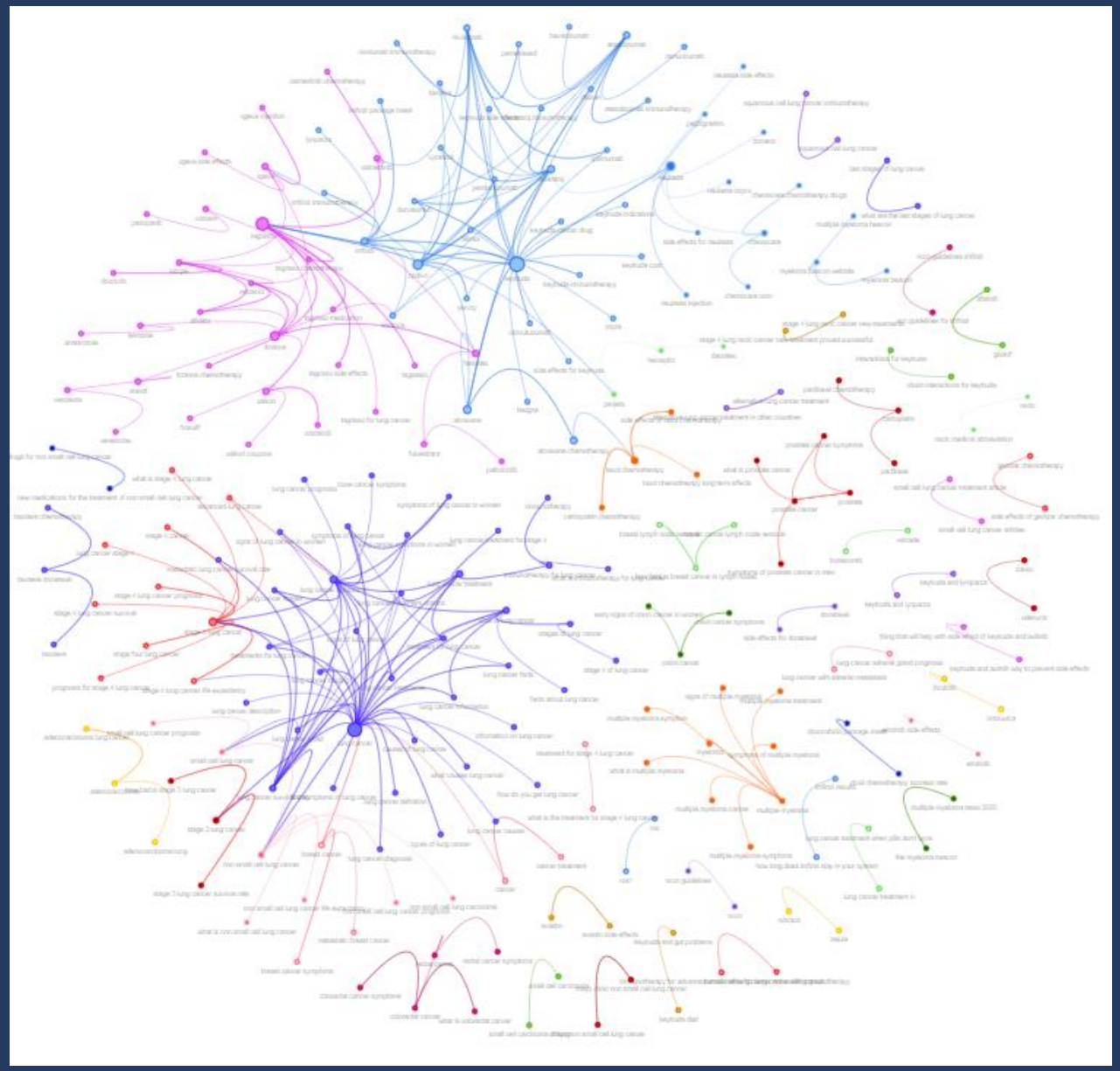
Query networks, briefly explained

On color…

Queries who interact each other more frequently within the same consumer search path are coded with the same color

On node size…

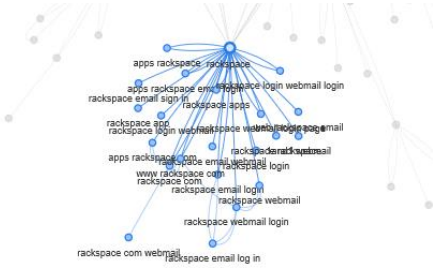
node size is representative of the number of unique queries that query has occurred in paths with



Network science terminology

Node – the visual representation of one value in a network. In our case, a query.

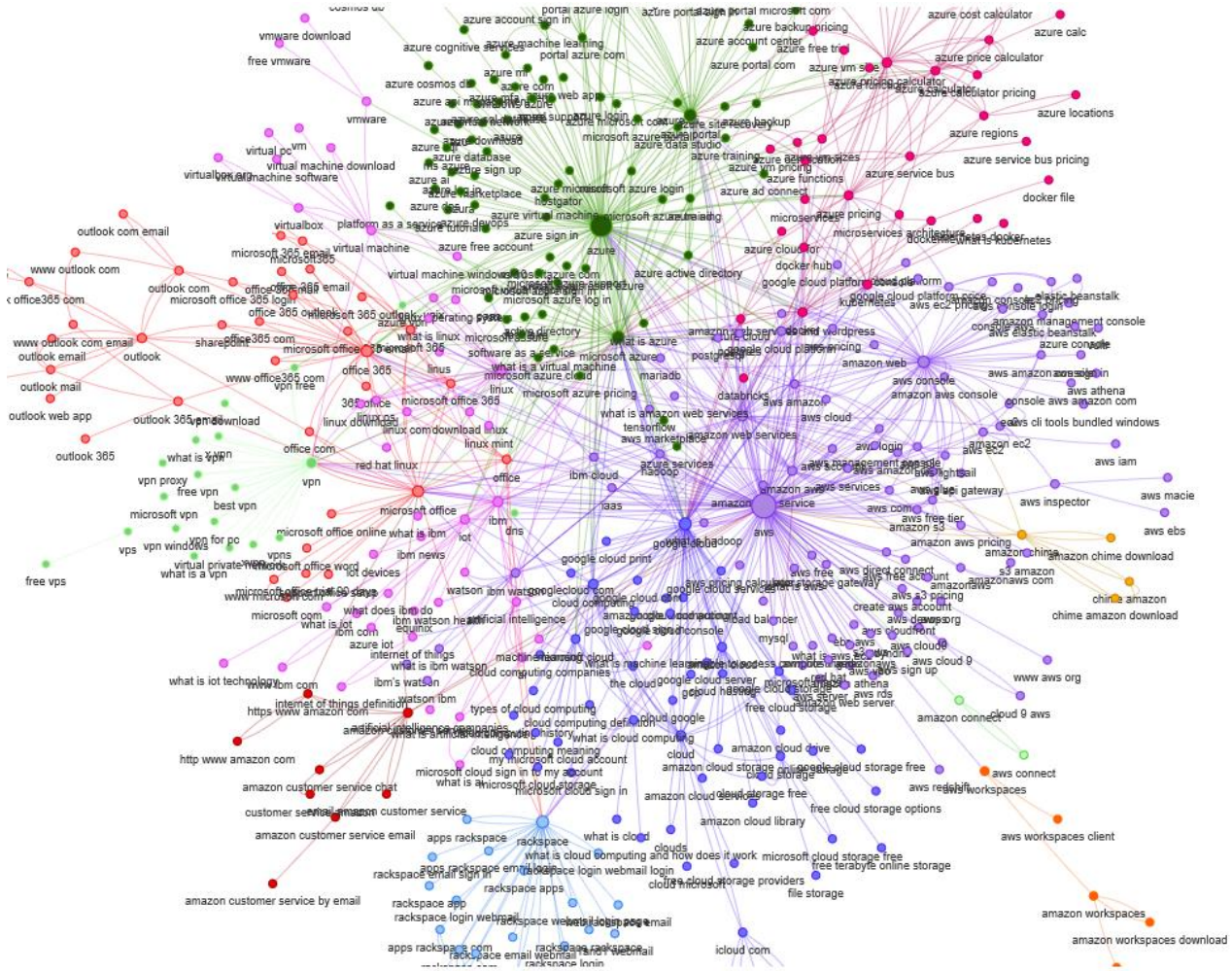
Edge – the line connecting one node to another, indicating a relationship. In this case, meaning they have regularly occurred in the same query path.



Community – a group of nodes and edges that have been algorithmically determined to have stronger relationships with each other than with the rest of the network. In this case, meaning they occur in query paths together with more frequency.

Microsoft

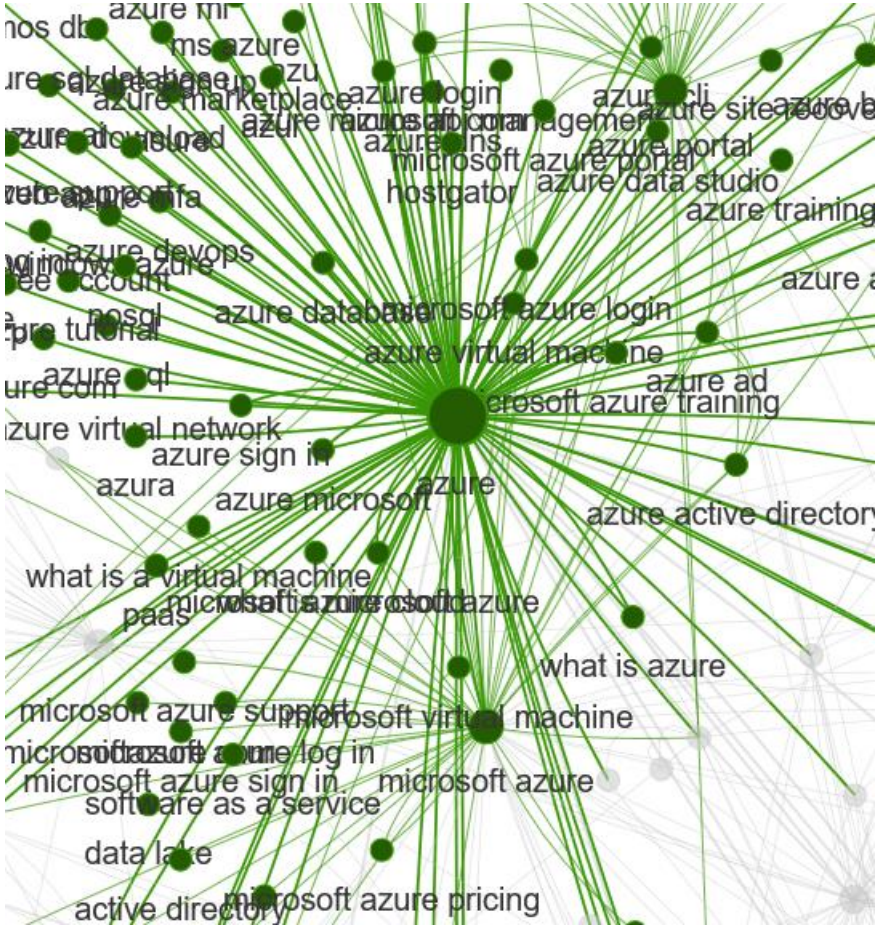
On color…



Community detection algorithms have color-coded queries by community

Queries who interact each other more frequently within the same consumer search path are coded with the same color

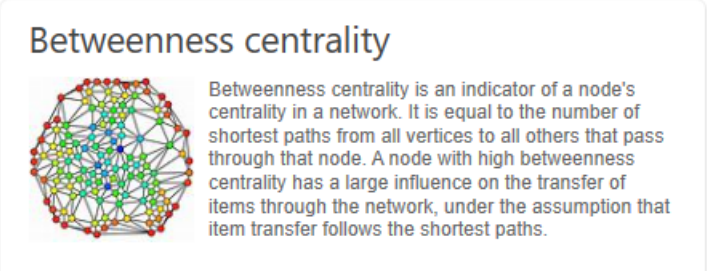
On node size…



The size of a node is representative of its ***centrality*** within the network. In layman's terms, you can think of these as being the most important queries in the network

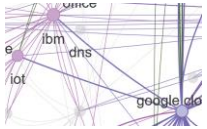
The literal interpretation is: node size is representative of the number of unique queries that query has occurred in paths with

For our networks, centrality is calculated using a metric called ***betweenness***

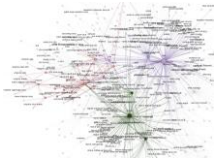


What we look for in the query network

Large nodes



Nodes that interact across communities



How many different communities illuminate when a central node in a community is selected

Instances of nodes in unlikely communities, such as “microsoft cloud” being in the “google cloud” community

Microsoft