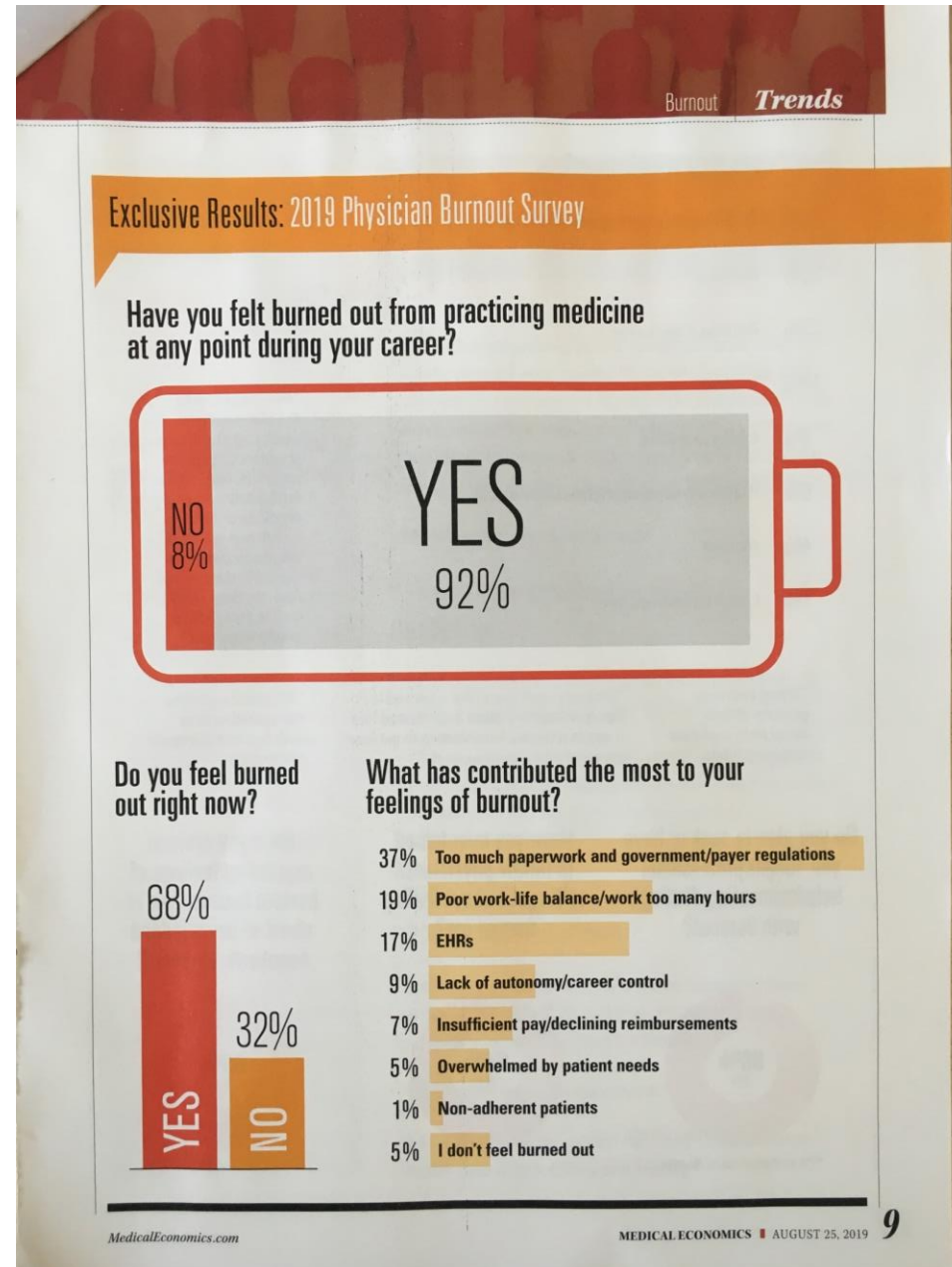# Tools for Compassion: Macros to Ease Provider Workload

Family Care Network, 2019

Jonathan Ploudre & Derrick Bovenkamp

Burnout Survey

- EMRs seen as major cause of Burnout.

- Work done in EMR seen as major cause (paperwork)

- Increased worktime (many providers less efficient in EMRs than older charting) seen as major cause.

Burnout *Trends*

Exclusive Results: 2019 Physician Burnout Survey

Have you felt burned out from practicing medicine at any point during your career?

NO 8%

YES 92%

Do you feel burned out right now?

68% YES
32% NO

What has contributed the most to your feelings of burnout?

- 37% Too much paperwork and government/payer regulations
- 19% Poor work-life balance/work too many hours
- 17% EHRs
- 9% Lack of autonomy/career control
- 7% Insufficient pay/declining reimbursements
- 5% Overwhelmed by patient needs
- 1% Non-adherent patients
- 5% I don't feel burned out

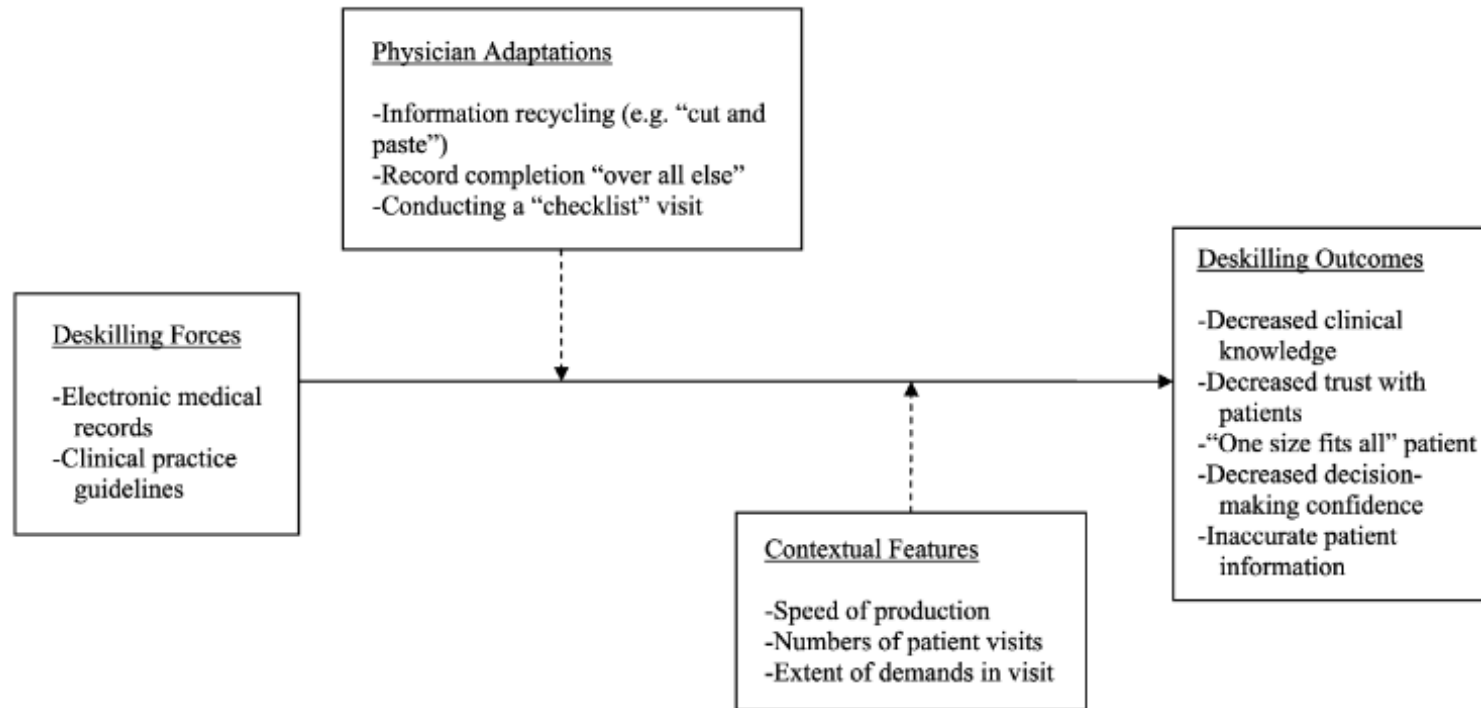MedicalEconomics.com   MEDICAL ECONOMICS ▪ AUGUST 25, 2019   9

Craftsperson

▶ Video on woodworking with hand tools. In a 75 minute video, nearly an hour was spent on how to sharpen hand tools.

EMRs & Deskilling

Figure 1

A speculative model of physician use of innovations drawn from study vignettes

Physician Adaptations

-Information recycling (e.g. "cut and paste")
-Record completion "over all else"
-Conducting a "checklist" visit

Deskilling Forces

-Electronic medical records
-Clinical practice guidelines

Contextual Features

-Speed of production
-Numbers of patient visits
-Extent of demands in visit

Deskilling Outcomes

-Decreased clinical knowledge
-Decreased trust with patients
-"One size fits all" patient
-Decreased decision-making confidence
-Inaccurate patient information

Automating little tasks

Automating and the 'Little Things'

Keystroke Level Model

▶ Computer Science tool from early 1980s that estimates how much time it takes typical users to perform tasks.

Action	Time
Keystroke, Button Press	0.1 seconds
Pointing with mouse	1.1 seconds (highly variable)
Homing Hands to/from Keyboard	0.4 seconds
Mental Prep	1.4 seconds
Choose from Dropdown	4.5 seconds

So … Let's estimate creating an Append: ~18 seconds of EMR Friction

- Mental Prep
- Home hands to mouse
- Move Pointer
- Click 'Append Icon'
- Move Pointer
- Click 'Click Here to do full update'
- Mental Prep (Some users)
- Move Pointer
- Click in Text Field
- Home Hands to Keyboard
- Type 'CPOE'

- Home Hands back to Mouse
- Move Pointer
- Click 'OK'
- Wait for Append to Open (3 seconds)
- Move Pointer
- Click CPOE
- Move Pointer
- Select Assessment (~4 seconds)

Time and Effort (both measured in seconds)

- It's not just that it takes 18 seconds of time for a typical user

- It takes 18 seconds of continuous effort and attention

- When we automate, we can save both time and attention/effort.

- Often from a user's perspective it can feel much faster even if it is exactly the same amount of time because they are not having to do the work/attention

- It's only '5 clicks' to do an append, but when you break it down, it's dramatically more effort than that.

- A savvy user might feel 'fast' by doing it at 10 seconds – still tremendous waste

Autohotkey for automating little tasks

- Open Source, Free tool for Windows

- Very 'High Level' so useful scripts can be relatively short

- Excellent Help: Often you can cut and paste code from documentation

- FCN's Macros can serve as example code. (You can use as is, modify, resell, whatever, etc)
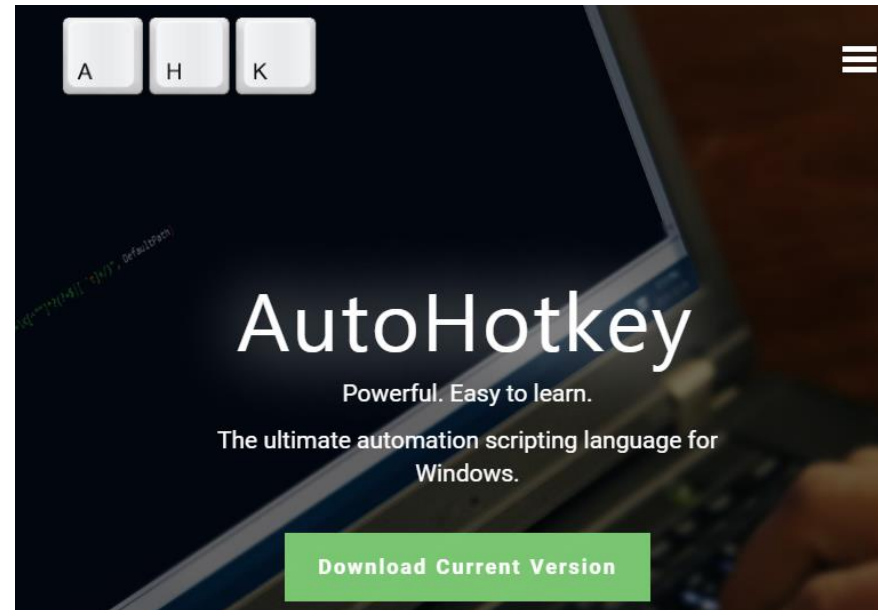
Autohotkey works across Windows

- Could be used in any windows application.

- Example: Our Lab Software has a pair of popups that are needed for phlebotomists.

- But when a person in the lab is checking in samples, they don't need those popups – so over an hour they might have to dismiss ~1000 popups.

- AHK knowledge could be used for a different EMR down the road if it runs on Windows.

- Puts locus of control closer to the user.

1.0 (1985) 3.1 (1992) 95 (1995) XP (2001) VISTA (2006)

7 (2009) 8 (2012)

(We're sharing Free Software)

- We'll be showing our work, you can borrow/modify/re-sell/etc.

- Your CPS instance may have differences in implementation/etc.

Permissions

- ✔ Commercial use
- ✔ Modification
- ✔ Distribution
- ✔ Private use

Limitations

- ✖ Liability
- ✖ Warranty

Example: 'Swap Key'

- At least in FCNs implementation of Citrix/CPS, swapping from an Update, to review something in Chart doesn't work reliably with Windows standard 'Alt-Tab'. Other CPS windows will sometimes activate instead.

- So imagine a slow user in an update wanting to go back to chart. Home to Mouse, Move Pointer, Hover, Mental Prep to decide which window to switch, Move Pointer, Click.

- When you watch a non-savvy user, it's horribly painful. It's surprising how much time it takes a person to check something in chart and come back to an update.

Example: 'Swap Key'

```
#IfWinActive, Update -
`::WinActivate, Chart
```

- Reads like this: This applies only in a window with title starting with 'Update –'. Make the ` key a command. When someone types `, Activate the Chart Window.

- So you can use the ` key normally everywhere except in a Window starting 'Update –'. In that window it's remapped.

Use the same key in multiple ways

- So by targeting different parts of CPS we can make the same key do different things.

- The Swap Key goes from update to Chart. In chart it goes back to update (if one is open) or to Chart Desktop. In Chart Desktop, it goes to Chart.

  - Lots of words: By feel, it just seems like it swaps you back

- The CPOE Key opens appends from Chart Desktop, Chart, or a Scanned Document and then focuses on the CPOE form.

- The "I'm Done Key" closes, signs, Oks, etc. in ~15 different places in CPS.

FCN Macros (Most Popular)

- Send to Buddy (in an Update)
  - Double Tap the \ Key.
  - Ends Update
  - Addresses to your most common person (Buddy)
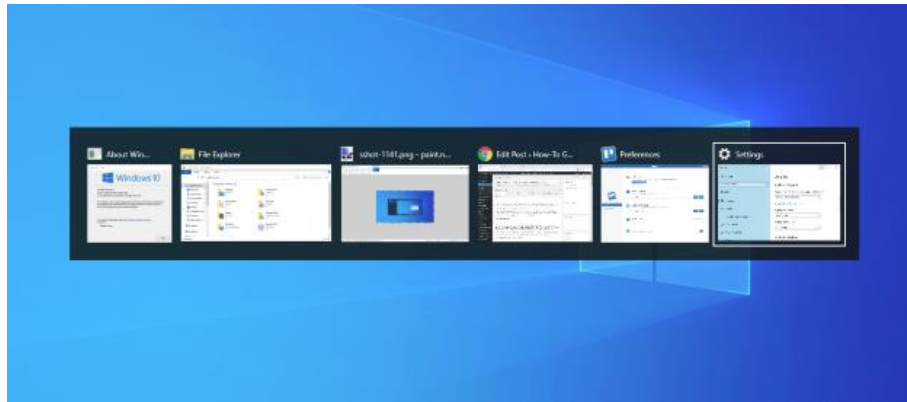 - Removes any other routing
  - Sends
  - Goes back to Chart Desktop

FCN Macros (Most Popular)

▶ CPOE Key

   ▶ In Chart or Chart Desktop or a Scanned Document, Opens a CPOE Append for documentation, Navigates to the CPOE Form
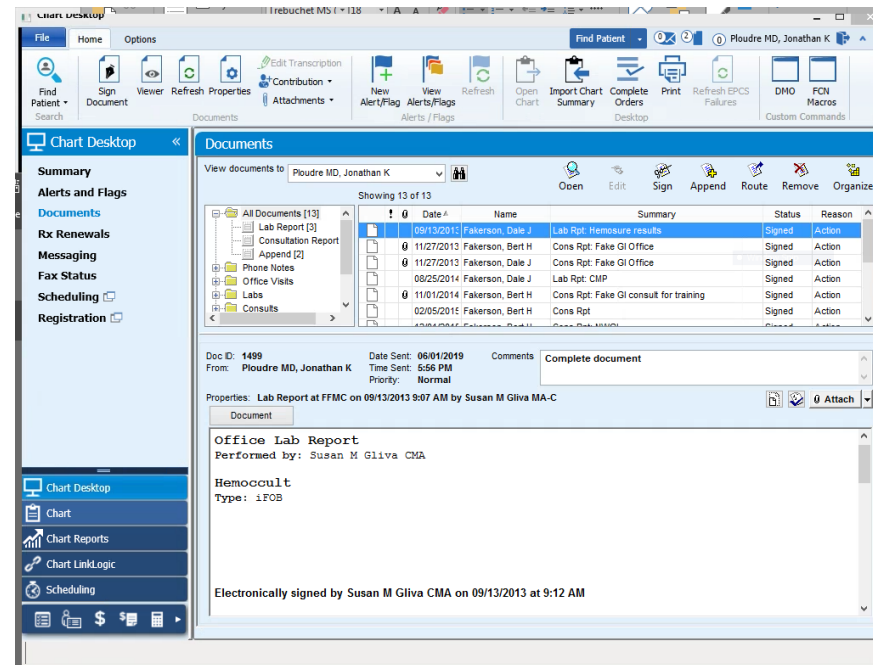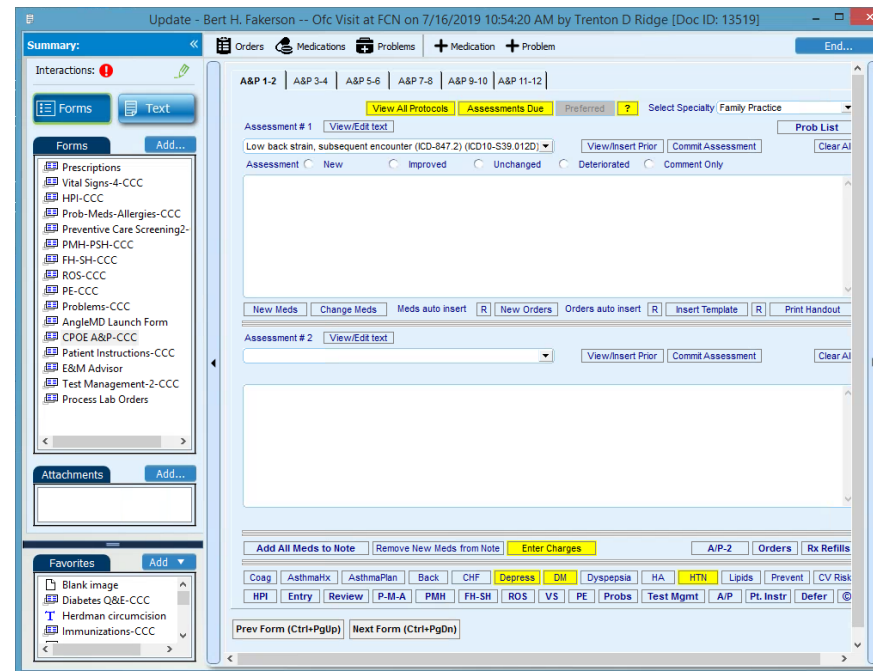
FCN Macros (Most Popular)

- Swap Key
  - In Update → Chart
  - In Chart → Update
  - In Chart → Chart Desktop
  - In Chart Desktop → Chart

FCN Macros (Most Popular)

▶ I'm Done (Control-Spacebar)

  ▶ In Update: Ends update, removes any routing, signs update, goes back to Chart Desktop

  ▶ In many other spots it clicks the default action in a window 'OK', etc.

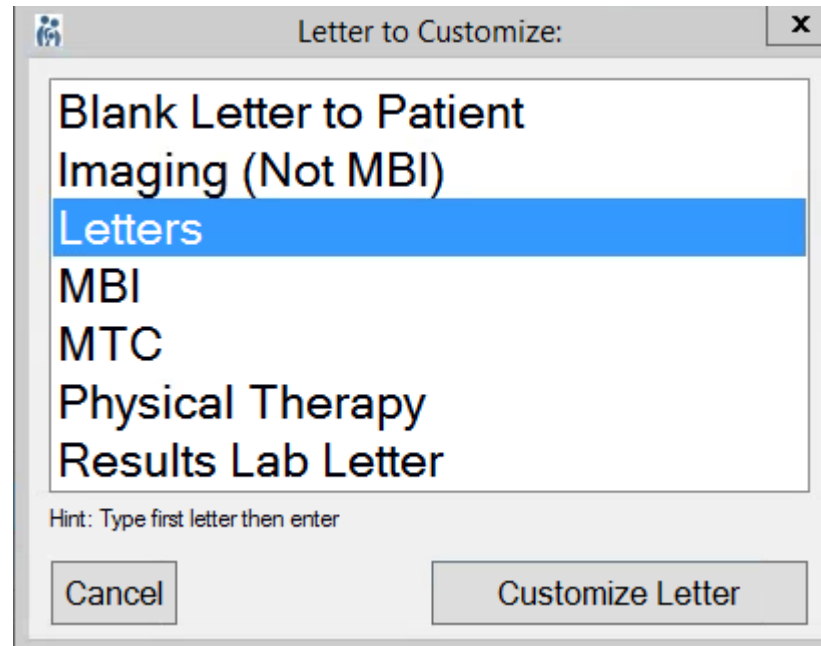 ▶ Single Hotkey that grows as you use it. Saves more time than you'd expect – keeps hands on the keyboard.

FCN Macros (Most Popular)

- The 'Coffee' Key.
  - I should be able to review consults and sign them off one-handed so I can enjoy my coffee.
  - Spacebar – page down in consults.
  - Spacebar Double Tap: Sign
  - (If you need to annotate, use 'CPOE' key.)

FCN Macros (Most Popular)

- Letters

Code is not what matters

- Reducing Time/Effort is the point
- Excellent code that's unused is waste
- A 'CPOE' key changes an 18 second task into 7 seconds. (Time)
- A 'CPOE' key changes an 18 second task into 1 second. (Effort/Attention)
- A provider might do this 10 times every day.
- So if you magically add time and effort, a single macro might save 4+ minutes a day.
- If 40 Providers are using it, it's saves a real amount of frustration

- **How do you get a busy provider to actually use the CPOE Key?**

Sharing Macros

Lead from Strength

- Imagine that users might be categorized as squirrels, bunnies and frogs.

- If you have a tree climbing task, give it to a Squirrel

- If we're trying to share a tool that saves time for burned out providers, we really need people to try and learn. It's easiest to start with the fastest and least burned out providers. So the providers who need it the least might still be the best place to start.

- At FCN we selected a half dozen providers and had them 'play around' with macros.

Emails: Brief with Informal Tone

▶ Once our macros seemed to be generally working for different providers at different clinics, we sent a series of Not-Too-Serious™ emails.

▶ Those emails are the title of this presentation. Tools for Compassion. Try gently focus away from technology and toward what we're doing.

▶ Short (& slightly funny) emails that shared a macro to try out

▶ The emails are included with the software if you'd like to use them as a starting spot for your organization

Example: Email about "I'm Done"

Good morning,

(**Little usage update**: More than 20 providers at FCN have used the macros repeatedly. Another 15 gave it a try last week.)

Visualize a great piano player.

I suspect your mind's eye sees them playing the instrument, not plinking out single notes with their index finger.

Now imagine a using centricity with a mouse. Click, click, click. Single finger.

Today's hot-key is a 'chord'. It's what I think as 'All Done'.

Hold down the control key and press the spacebar. Written 'Control-Space'.

Say you've got a phone note that you need to sign off – don't need to route to anyone, this is 'All Done'. Control-Space.

If you haven't printed out the cheatsheet from last week or tried macros yet, you might go back and check that e-mail.

Example: Keyboard Stickers

Example: Telemetry
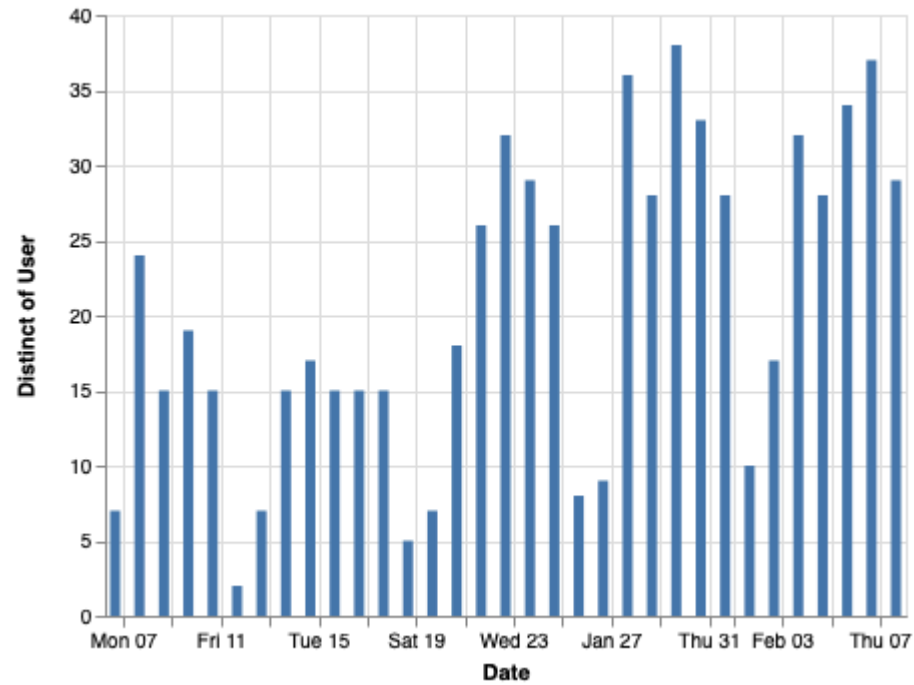
And as time goes by: Telemetry
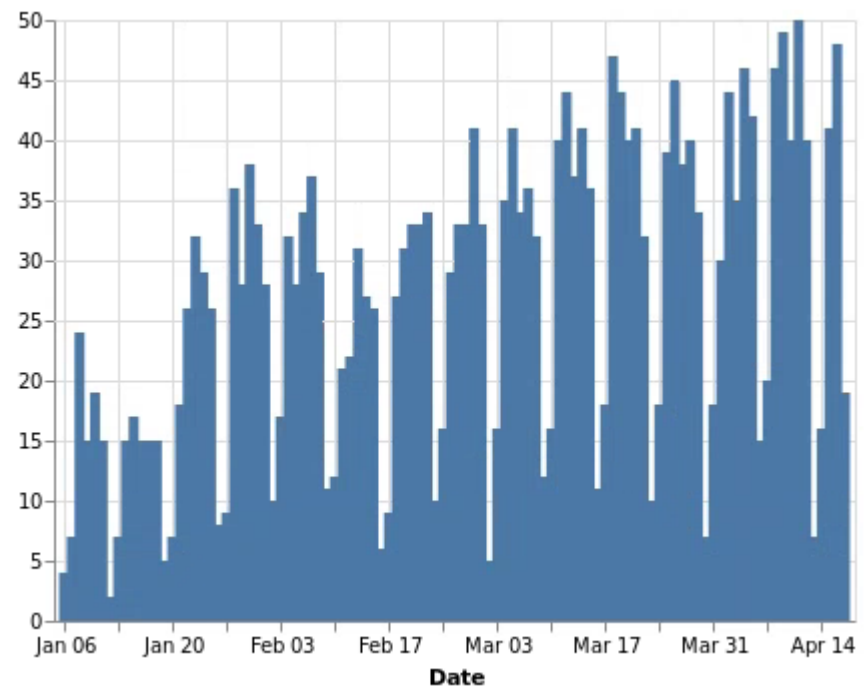
It's not all roses though

Issue: Different Setups

- Easy for a single user to do basic automation
  - Click
  - Send "CPOE"
  - Click….
- Across multiple users, there's differences in setup.

Issue: Citrix, Database, System Lag

▶ Macros can be much faster than a user. Can be faster than our system performance.

▶ It's awesome when it 'pops' for a user and is crazy fast.

▶ But slower can be more reliable

▶ Partial Solution: Add Pauses

▶ Partial Solution: Try several times

▶ Partial Solution: Check for success
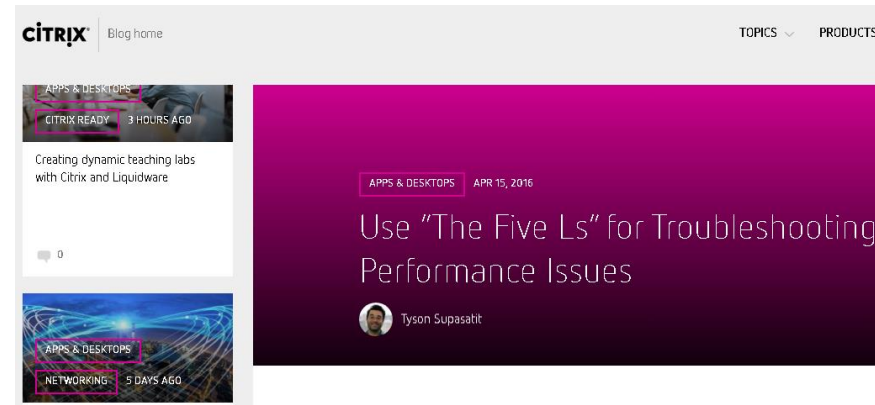
Issue: Unexpected Results

```python
total_usage = usage_df.fillna(value="Success!", axis=1)
today_usage = total_usage[(total_usage["Month"] >= 7) & (total_usage["User"] == "treesman")]
today_usage.groupby(["Function", "Error"]).count().drop(
    ["Year", "Month", "Day", "Hour"], axis=1
)
```

Function	Error	User	Hotkey
ChartDesktopSwap()	Success!	1	1
CreateCPOEAppend()	Append to didn't activate	1	1
EndUpdate()	Success!	1357	1357
GoChartDesktop()	Success!	639	639
	chart-desktop image not found	21	21
SendtoBuddy()	Success!	2	2
SignUpdateBackToDesktop()	Chart didn't activate	15	15
	Success!	658	658

Issue: Reliability

- Multiple ways it can break.

- In our testing we're around 98-99% of functions working.

- Citrix font rendering still problematic.

- Installing macros on server helped

- Feedback from our EMR team helped.

- Generally: Our team is generous

Issue: Helping the most burned out?

Next Steps

- https://github.com/jploudre/FCN-Hotkeys
- Google: "FCN Hotkeys"

Q&A…